Final Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program

February 2009

Volume III: Appendices G-N

National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

APPENDIX G

NMFS PERMIT NO. 932-1489-10

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JUN 20 2008

Teri Rowles, D.V.M., Ph.D.
National Coordinator, MMHSRP
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910

Dear Dr. Rowles:

Enclosed is an amendment to Permit No. 932-1489-09, for enhancement and research activities on marine mammals. The amendment has been assigned Permit No. 932-1489-10 and the changes to specific Terms and Conditions are reflected in bold font in the attached permit. This permit amendment is effective upon your signature and valid through June 30, 2009 or until the new permit (application File No. 932-1905) is issued, whichever comes first. Please note that this permit amendment replaces all previous versions of the permit.

Both an original and a "file copy" of the signature page are enclosed with your amended permit. Please sign and date both signature pages where indicated, keeping the original with the permit for your records. You must return the "file copy" signature page, with your dated signature, to this office as proof of your acceptance of the permit. Please return the signature page marked "file copy" to the Chief, Permits Division (F/PR1), 1315 East-West Highway, Silver Spring, MD 20910. You may also submit the "file copy" of the signature page by facsimile to 301-427-2521 and confirm it by mail.

As the Responsible Party of this amended permit, you are ultimately responsible for all activities of any individual operating under its authority. Therefore, you should read all sections of the amended permit carefully before signing it and before conducting any activities pursuant to the amended permit. If you have any problems or questions, please contact Amy Sloan or Carrie Hubard at 301-713-2289 before signing the amended permit.

Sincerely,

P. Michael Payne
Chief, Permits, Conservation
and Education Division
Office of Protected Resources

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

NMFS Permit No. **932-1489-10**
Expiration Date: **June 30, 2009**

SCIENTIFIC RESEARCH and ENHANCEMENT PERMIT TO TAKE MARINE MAMMALS

Authorization

The Marine Mammal Health and Stranding Response Program (MMHSRP), Office of Protected Resources, National Marine Fisheries Service (NMFS) [Responsible Party and Principal Investigator (PI): Dr. Teri Rowles], is hereby authorized to take marine mammals in the manner specified below for the purpose of scientific research and enhancement, subject to the provisions of the Marine Mammal Protection Act of 1972 (MMPA; 16 U.S.C. 1361 *et seq.*), the Regulations Governing the Taking and Importing of Marine Mammals (50 CFR part 216), the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*), the Regulations Governing the Taking, Importing, and Exporting of Endangered and Threatened Fish and Wildlife (50 CFR parts 222-226), the Fur Seal Act of 1966, as amended (FSA; 16 U.S.C. 1151 *et seq.*), and the Terms and Conditions hereinafter set out. **This permit, as amended, supersedes all previous versions.**

Abstract

The purposes of the authorized activities, as stated in the application, are to: (1) collect, receive, preserve, label, and transport marine mammal cadavers, hard parts, tissue, and fluid samples for physical, chemical, or biological analyses, import, and export; (2) take stranded or distressed marine mammals and endangered or threatened species; (3) salvage specimens from dead marine mammals and endangered or threatened species; (4) conduct aerial surveys to locate imperiled marine mammals or survey the extent of disease outbreaks or die-offs; (5) harass marine mammals on land incidental to other MMHSRP activities authorized by this permit; and (6) develop and maintain cell lines from species under NMFS jurisdiction.

A. Number and Kind(s) of Marine Mammals and Location(s) [50 CFR 217.36(a)(i)]

1. PROJECT I - SPECIMEN COLLECTION: MARINE MAMMAL AND ENDANGERED OR THREATENED SPECIES

a. At any time of the year, the Permit Holder, PI, and Co-investigators (CIs) [hereinafter "Researchers"] may, subject to the conditions herein, collect, receive, analyze, archive, and import/export (worldwide), unlimited numbers and kinds of specimens, including cell lines, from the following marine mammal and endangered or threatened species:

1) Order Cetacea; and
2) Order Pinnipedia (except walrus).

b. The specimens authorized in A.1.a. may be taken from any of the following sources:

1) On-going live animal capture/release programs as authorized under Part A.2.

2) Live animal capture/release as part of a disease, emergency response or die-off investigation;

3) Live animals stranded or in rehabilitation (specimens may include biopsies);

4) Captive animals when sampling is beyond the scope of normal husbandry;

5) Directly taken in fisheries for such animals where such taking is legal and humane;

6) Killed during subsistence harvests by native communities;

7) Killed incidental to commercial fishing operations;

8) Killed incidental to other human activities (e.g., ship strikes, blasting, etc.);

9) Found dead on the beach or at sea;

10) Found dead as part of NOAA investigations (e.g., hazmat spills, oil spills, harmful algal blooms, etc.);

11) Found on the beach or on land within 1/4 mile of the ocean (bones, teeth or ivory of any dead animal);

12) Soft parts sloughed, excreted, or discharged; or

13) Specimens from other permitted research and authorized activities.

c. Researchers may receive/possess samples taken from species of the Order Sirenia, polar bear (*Ursus maritimus*), sea otter (*Enhydra lutris*), and marine otter (*Lontra felina*).

2. PROJECT II - ENHANCEMENT ACTIVITIES: MARINE MAMMALS AND ENDANGERED OR THREATENED SPECIES

a. Researchers may "take", as defined in the MMPA and ESA[1], live marine mammals that are stranded; entangled; disentangled; trapped out of habitat; in peril (e.g., in vicinity of an oil spill); injured; part of a population that is experiencing or has experienced a die-off, unusual mortality event, or repeat morbidity/mortality event; extra-limital; and nuisance marine mammals and endangered or threatened species by the following activities:

1) Capture/release or if capture is not necessary, use means available (as approved by the Permit Holder/PI or a CI) to lure trapped or nuisance animals out to sea or deter them away from an area of imminent danger;

2) Treat distressed conditions, including temporary captivity in an adequate treatment or rehabilitation facility;

3) Disentangle from gear, ropes or other material which may be adversely affecting the animal;

4) Transport for rehabilitation or return to wild;

5) Attach tags to and/or biopsy; conduct auditory brainstem response and auditory evoked potential procedures; or

6) Euthanize animals for humane or medical reasons (see B.2.b.).

b. Researchers may harass marine mammals during aerial surveys to locate imperiled marine mammals or to survey the extent of a disease outbreak or die-off.

c. Researchers may harass marine mammals on land incidental to MMHSRP activities authorized by this permit.

[1]As defined in the MMPA and promulgating regulations, "take" means to harass, hunt, collect, capture, or kill, or to attempt to harass, hunt, collect capture, or kill any marine mammal; as defined in the ESA, "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or attempt to engage in such conduct.

3. PROJECT III - IMPORT/EXPORT OF LIVE MARINE MAMMALS [MMPA §109(h)]

a. At any time of the year, Researchers may import/export (worldwide), non-listed marine mammals, for medical treatment, from the following species:

1) Order Cetacea (except endangered or threatened species); and

2) Order Pinnipedia (except walrus and endangered species).

B. Research/Enhancement Conditions [50 CFR 216.36(b)]

1. PROJECT I - SPECIMEN COLLECTION: MARINE MAMMALS AND ENDANGERED OR THREATENED SPECIES

a. The Working Group on Unusual Marine Mammal Mortality Events (WGUMMME) will provide advice on any live animal investigative activities.

b. Only experienced and trained personnel will perform any live animal investigative activities.

c. Samples in A.1.c. may be acquired and possessed only if the samples were taken under authority of a U.S. Fish and Wildlife Service permit or authorization and samples were taken in a humane manner.

2. PROJECT II - ENHANCEMENT ACTIVITIES: MARINE MAMMALS AND ENDANGERED OR THREATENED SPECIES

a. Tagging

1) Prior to release, Researchers may tag marine mammals and threatened or endangered species undergoing rehabilitation;

2) Animals entangled in rope or other debris may be tagged and monitored; and

3) Only experienced personnel can apply and deploy tags by acceptable means.

b. Euthanasia

1) For ESA-listed species, the NMFS National Stranding Coordinator(s) must be consulted and provide approval (verbal or written), in advance, of euthanasia for humane or medical purposes; and

2) For both MMPA and ESA-listed species, euthanasia must only be performed by an attending, experienced, and licensed veterinarian or other qualified individual according to applicable laws governing state veterinary practices.

3. PROJECT III - IMPORT/EXPORT OF LIVE MARINE MAMMALS (MMPA §109(h))

a. Researchers may only import or export non-listed marine mammals for medical treatment, rehabilitation or return to wild (including the return of extra-limital animals).

b. The Convention on International Trade in Endangered Species (CITES) shall apply to imports and exports authorized in this Project.

4. PROJECTS I, II and III

a. The following individuals may participate in the conduct of the activities authorized herein: Teri Rowles, Ph.D., D.V.M. (Responsible Party/PI) and Janet Whaley, D.V.M. (CI). Dr. Rowles or Dr. Whaley may designate additional individuals to participate as CIs in the conduct of the research and enhancement activities authorized herein. Each additional CI must receive a letter from Dr. Rowles or Dr. Whaley confirming his/her status and detailing specific roles and responsibilities, attached to a copy of this permit. Designation of CIs is at the sole discretion of the Permit Holder/PI and may be rescinded at any time.

b. The Permit Holder/PI, or an identified CI with approval of the Permit Holder/PI, may designate members of the National Stranding or Disentanglement Network that hold Stranding Agreements, other network participants, and/or other federal, state or local agencies or their employees, and other qualified individuals as agents of the Permit Holder/PI authorized under this permit to conduct activities authorized herein.

c. Researchers may conduct activities by the means and for the purposes described in the application, as limited by the Terms and Conditions of this

permit, and as otherwise authorized by the Permit Holder/PI or identified CIs.

d. For marine mammal and endangered species stranding response activities (including capture/release activities), the Permit Holder/PI and/or CIs must:

1) Notify the Permits, Conservation and Education Division, Office of Protected Resources (hereinafter "Permits Division"), prior to any capture/release activities;

2) Only perform capture/release activities as advised by the WGUMMME for any live animal investigative activities (B.1.a.);

3) Only perform capture/release activities in conjunction with researchers and managers for that stock or species;

4) Process animals in small groups;

5) Minimize handling time;

6) Exercise caution when approaching all animals, particularly female/pup or female/calf pairs;

7) Monitor all biopsy or tagging sites for possible infection;

8) Keep animals cool and wet during triage and/or transport (when appropriate);

9) Use standardized, humane methods for sterilization and sample collection; and

10) Use scientifically reviewed and acceptable tagging and biopsy sampling techniques that are not considered controversial. In no instance will Researchers attempt to biopsy a cetacean anywhere on the front half of the animal.

e. For large whale disentanglements, Researchers must:

1) Approach the whales gradually to minimize or avoid any sort of startle response;

2) Use caution when approaching mothers and calves; and

3) For the safety of the Researchers and whales, only use individuals that have been sufficiently trained, to the satisfaction of the Permit Holder/PI, to disentangle animals.

f. Researchers must perform all activities and collect all samples in a humane manner.

g. Researchers must not kill any animal for the express purpose of providing specimens to be obtained and/or imported/exported under this permit.

h. Researchers must assign a permanent catalogue number, including any prior identification numbers, to all individuals or samples.

5. IMPORT/EXPORT REQUIREMENTS

a. Researchers must not import specimens into the United States from marine mammals:

1) Taken illegally in the country of origin or taken in a directed fishery, unless such taking is legal and humane;

2) Taken in any high seas driftnet fishery after December 31, 1992;

3) Taken during any commercial whaling operation or any scientific whaling operation which does not meet the criteria established by the International Whaling Commission at the time of taking; or

4) Deliberately killed for the purposes of fulfilling this permit.

b. Researchers must comply with the requirements of the CITES for import and export [50 CFR part 23].

c. Marine mammals and marine mammal parts imported under the authority of this permit must be taken, imported or exported in a humane manner, and in compliance with the Acts and any applicable foreign law. Importation of marine mammals and marine mammal parts is subject to the provisions of 50 CFR parts 14 and 216.

d. All specimens imported into the United States must be accompanied by documentation giving a description of each animal from which specimen materials were taken including, if possible:

1) Identification, age, size, sex, reproductive condition;

2) Date and location of collection;

3) Circumstances causing the death; and

4) The date and port of entry of each location.

e. Any marine mammal part imported under the authority of this scientific research permit must not have been obtained as the result of a lethal taking that would be inconsistent with the Acts, unless specifically authorized in writing by the Office Director.

f. The Permit Holder/PI must maintain records of the types, species, and numbers of specimens imported or exported, the importing or exporting country for each shipment, and circumstances surrounding the specimen acquisition (i.e., stranding, subsistence harvest, etc.).

g. All specimen materials obtained under this authority shall be maintained according to accepted curatorial standards.

h. Designated Ports of Entry: The USFWS Customs ports of entry (see Attachment A) are designated for the importation or exportation of wildlife and are referred to hereafter as "designated ports" (50 CFR 14.12). Please notify the USFWS wildlife inspectors at these ports at least 48 hours prior to import or export.

To use a port of entry other than the designated ports listed in Attachment A, Researchers must obtain a Designated Port Exception Permit from the USFWS as required in 50 CFR 14.31 and 14.32. Additional information may be obtained from the USFWS website. http://permits.fws.gov/.

6. DISPOSITION OF PARTS

a. After completion of initial research goals, Researchers must deposit any remaining samples or specimens into a *bona fide* scientific collection that meets the minimum standards of collection, curation, and data cataloging as established by the scientific community.

b. Researchers may dispose of carcasses, skeletal material, and soft parts from marine mammals and endangered species, as deemed appropriate and as limited by the MMPA, ESA, and FSA.

7. Transfer of Specimens (50 CFR 216.37): Marine mammal and endangered species parts taken or imported under authority of this permit may be transferred by the Permit Holder/PI or CI(s) provided:

   a. Marine mammal parts, including cell lines, are not bought or sold.

   b. Specimens are transferred for research [including analysis, diagnostics and archival in a laboratory], maintenance in a scientific collection, or for education[2] purposes.

   c. Recipients of marine mammal parts adhere to the Terms and Conditions of this permit, regulations at 50 CFR 216.37, and any additional conditions required by the Permit Holder/PI.

   d. Recipients of cell lines are designated as CIs under this permit or are holders of a special exception permit for scientific research and/or enhancement activities that includes development or research on cell lines, of the same species of marine mammal and/or endangered species.

8. The authority of this permit will extend from the date of issuance through **June 30, 2009**. The Terms and Conditions of the permit will remain in effect as long as the Researchers maintain the authority and responsibility of the marine mammal specimens collected, received, or imported hereunder. Attached is section 216.37 of the Regulations Governing the Taking and Importing of Marine Mammals that contains additional conditions applicable to maintaining marine mammal parts. These regulations are made a part hereof.

C. Notifications/Coordination [50 CFR 216.36]

1. The Permit Holder/PI or CIs must notify the appropriate NMFS Assistant Regional Administrator for Protected Resources (see Attachment C) regarding events occurring in that Region. This notification must include (when possible) a description of the proposed activity, location, dates, and duration of activities.

2. If the events occur within the boundaries of a National Marine Sanctuary, the Permit Holder/PI or CIs must notify the Sanctuary Manager at the appropriate Sanctuary Office listed in Attachment C. When possible, this notification must include specific dates, locations, and participants involved in the activities.

[2]In the case of transfers for educational purposes the recipient must be a museum or educational institution or equivalent that will ensure that the part is available to the public as part of an educational program.

3. To the maximum extent practical, the Permit Holder must coordinate permitted activities with activities of other Permit Holders conducting the same or similar activities on the same species, in the same locations, or at the same times of year to avoid unnecessary disturbance of animals. The appropriate Regional Office may be contacted (see Attachment C) for information about coordinating with other Permit Holders.

D. Reporting Conditions [50 CFR 216.38]

1. ANNUAL REPORT

Each year the permit is valid, the Permit Holder/PI must submit an annual report of research by March 31 of each year. The report shall cover research conducted during the previous year ending December 31 and describe the specific activities that have been conducted. For each marine mammal part taken, imported, exported or otherwise affected pursuant to permitted activities, the annual report must include the following:

a. Carcasses/parts:

1) A description of the part and its assigned identification number;

2) Source, collector, country of origin, and authorizing government agency (for imported samples) for each sample reported;

3) A summary of the research analysis conducted on the samples; and

4) A description of the disposition of any marine mammal parts, including an identification of the part as required §216.37(a)(4) and the manner of disposition.

b. Live animal activities:

A description of the species, numbers of animals, locations of activities, and types of activities for:

1) Live captures;

2) Stranding response/disentanglement of marine mammals and endangered/threatened species;

3) Specimen collections;

4) Euthanasia (including reason for euthanasia, drugs used, etc.); and

5) Incidental harassment during aerial surveys and land activities.

Please also describe the animals' reactions to any of the above activities.

2. FINAL REPORT

Upon completion of the research, the Permit Holder/PI must submit a final report within 180 days of the last annual report. A final report should include information requested in 1 above, and:

a. A summary of research objectives and results of research as it relates to the objectives; and

b. An indication as to when and where the research results will be published

3. Researchers must submit all reports and any papers or manuscripts published as a result of the research authorized herein, to the Director, Office of Protected Resources, NMFS, 1315 East-West Hwy., Silver Spring, Maryland 20910.

E. Photography/Filming Restrictions [50 CFR 216.36]

1. Researchers working under this permit must obtain prior approval by the Permits Division for the following:

a. Non-research related (i.e., commercial) use of photographs, video and/or film that were taken to achieve the research objectives; and

b. All activities not essential to achieving the research objectives (e.g., still photography, videotaping, motion picture film making). Such activities must not influence the conduct of research in any way.

2. Researchers are hereby notified that failure to obtain NMFS approval prior to conducting or facilitating such activities will be considered a violation of the permit. The Permit Holder/PI and Researchers must agree, upon request by NMFS, to make space available on the vessel or aircraft for a NMFS observer during any trips where activities identified in E.1.b. may be conducted.

3. Any commercial/documentary film approved for use must include a credit, acknowledgment, or caption indicating that the research was conducted under a permit issued by NMFS under the authority of the MMPA and/or the ESA.

F. General Conditions [50 CFR 216.35 and 216.36]

1. The Permit Holder/PI is ultimately responsible for all activities of any individual who is operating under the authority of the permit.

   Co-investigators (CIs): The PI may designate additional CIs, provided that a copy of the letter designating the individual to conduct the activities authorized herein, and a copy of the individual's curriculum vitae is provided to the Permits Division by facsimile on the day of designation and confirmed by mail. The PI must ensure that the letter designating the individual(s) contains specific restrictions and a copy of the permit is attached to the designation letter.

2. Research Assistants are individuals who work under the direct supervision of the PI or CI(s) and who are authorized, for example, to record data, serve as safety observers and boat tenders, or handle and process samples.

   a. Restrictions: Underwater observations and/or photography and operation of vessels may only be performed by personnel with documented experience (e.g., professional and/or experienced photographers/videographers or licensed and/or experienced boat operators).

   b. Photographer/videographer: A professional and/or experienced videographer/photographer under the direct, on-site supervision of the Researchers may conduct activities requiring underwater observations and/or photography. The Permit Holder/PI or CI(s) must be present at all times when activities are being conducted.

3. Individuals conducting activities authorized under the permit must possess qualifications commensurate with his/her duties and responsibilities, or must work under the direct supervision of the PI or CI.

4. Persons who require state, Federal, or foreign licenses to conduct activities authorized under the permit must be duly licensed when undertaking such activities.

5. The Permit Holder cannot transfer or assign the permit to any other person. If the Permit Holder requests authorization to add a person to this permit, the Permit Holder cannot require compensation from the individual, in exchange for this request.

6. The Permit Holder and all other persons operating under the authority of this permit must possess a copy of the permit when engaged in a permitted activity, when a marine mammal is in transit incidental to such activity, and whenever marine mammals or marine mammal parts are in the possession of such persons. A duplicate copy of this permit must be attached to the container, package, enclosure,

or other means of containment, in which the marine mammals or marine mammal parts are placed for purposes of storage, transit, supervision, or care.

Activities conducted by the United States Coast Guard personnel authorized as Co-Investigators, LANTAREA will keep a copy of the permit on file for reference landside at each of the following in Districts 1, 5, 7, and 8: General Counsel offices, OPCON, each Station/Group/Activities office; and at the Offices of Law Enforcement. LANTAREA will also advise vessels 87' and greater to keep a copy of the permit on board.

7. Inspection: Upon request by NMFS personnel or agents designated by the Director, Office of Protected Resources, the Permit Holder must make available for inspection, any records collected under authority of this permit.

8. Permit Amendments: The Director, Office of Protected Resources, NMFS, may amend the provisions of this permit upon reasonable notice.

9. No remuneration, either financial or in-kind, may be offered for the taking of animals from the wild. This does not preclude the payment of legitimate collection and transportation expenses (e.g., hiring staff, freight costs). It does, however, apply to paying bounties or incentive pay for the removal of animals from the wild.

11. Any falsification of information pertaining to the permitted activities, including information provided to NOAA personnel, will be considered a violation of the permit.

12. The Permit Holder/PI, in signing this permit, has accepted and will comply with the provisions of this permit, applicable Regulations (50 CFR parts 216 and 222-226), and the MMPA, ESA, and FSA.

G. Penalties and Permit Sanctions (50 CFR 216.40)

1. Any person who violates any provision of this permit is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the MMPA, ESA and 15 CFR part 904 [Civil Procedures] and 50 CFR part 11.

2. All permits are subject to suspension, revocation, modification, and denial in accordance with the provisions of subpart D [Permit Sanctions and Denials] of 15 CFR part 904 and 50 CFR part 13.

JUN 20 2008

James H. Lecky
Director
Office of Protected Resources
National Marine Fisheries Service

Date

June 23, 2008

Teri Rowles, Ph.D., D.V.M.
Responsible Party/Principal Investigator
Marine Mammal Health and Stranding
Response Program
Office of Protected Resources
National Marine Fisheries Service

Date

Attachment A: U.S. Fish and Wildlife Service Wildlife Inspectors, Division of Law Enforcement

DESIGNATED PORTS	
Anchorage P.O. Box 190045 Anchorage, Alaska, USA 99519 Phone: (907) 271-6198 Fax: (907) 271-6199	Los Angeles 370 Amapola Ave. #114 Torrance, California 90501 Phone: (310)328-6307 Fax: (310)328-6399
Atlanta P.O. Box 45287 Atlanta, Georgia 30320 Phone: (404)763-7959 Fax: (404)763-7560	Miami 10426 N.W. 31st Terrace Miami, Florida 33172 Phone: (305)526-2610 Fax: (305)526-2695
Baltimore 40 S. Gay Street, #223 Baltimore, Maryland 21202 Phone: (410)865-2127 Fax: (410)865-2129	New Orleans 2424 Edenborn, Room 100 Metairie, Louisiana 70001 Phone: (504)219-8870 Fax: (504)219-8868
Boston 70 Everett Avenue, Suite 315 Chelsea , Massachusetts 02150 Phone: (617)892-6616 Fax: (617)889-1980	New York 70 E. Sunrise Hwy. #419 Valley Stream, New York 11580 Phone: (516)825-3950 Fax: (516)825-1929 - Inspectors Fax: (516)825-3597 - Special Agents
Chicago Wildlife Inspection Program P.O. Box 66726 Chicago, Illinois 60666-0726 Phone: (773)894-2910 Fax: (773)894-2916	Newark 1210 Corbin St. SeaLand Bldg., 2nd Fl. Elizabeth, New Jersey 07201 Phone: (973)645-6171 Fax: (973)645-6533
Dallas/Ft. Worth 1717 West 23rd, Suite 104 DFW Airport, Texas 75261 Phone: (972)574-3254 Fax: (972)574-4669	Portland 7000 NE Airport Way, Rm. C2732 Portland, Oregon 97238 Phone: (503)231-6135 Fax: (503)231-6133

Honolulu 3375 Koapaka St., #F275 Honolulu, Hawaii 96819 Phone: (808)861-8525 Fax: (808)861-8515	San Francisco 1633 Old Bayshore Hwy., Ste. 248 Burlingame, California 94010 Phone: (650)876-9078 Fax: (650)876-9701
Seattle 2580 South 156th Street Seattle, Washington 98158 Phone: (206)764-3463 Fax: (206)764-3485	
U.S. Fish and Wildlife Service, Division of Law Enforcement NON-DESIGNATED PORTS[3]	
Blaine 9925 Pacific Highway Blaine, Washington 98230 Phone: (360)332-5388 Fax: (360)332-3010	Great Falls 2800 Terminal Dr. Suite #105 Great Falls, Montana, USA 59404 Phone: (406) 453-5790 Fax: (406) 453-3657
Brownsville 1500 E. Elizabeth St. #239 Brownsville, Texas 78520 Phone: (956)504-2035 Fax: (956)504-2289	Nogales 9 N. Grand Avenue #2229 A Nogales, Arizona 85621 Phone: (520)287-4633 Fax: (520)287-3877
Buffalo 405 N. French Road #120 B Amherst, New York 14228 Phone: (716)691-3635 Fax: (716)691-3990	Laredo Convent & Zaragoza Bridge #1, 200.9 Laredo, Texas 78040 Phone: (956)726-2234 Fax: (956)726-3718
Detroit Bldg. 830 2599 World Gateway Place Detroit Metro Airport, Michigan, USA 48242 Phone: (734) 247-6800 Fax: (734) 247-6805	Puerto Rico 651 FED. Dr. Suite 372-12 Guaynabo, PR 00965 Phone: (787) 749-4338 Fax: (787) 749-4340

[3]The USFWS Law Enforcement Division MUST authorize ALL non-designated port usage. If you prefer to use a non-designated port, please contact the appropriate Law Enforcement Office.

Dunsieth RR1, Box 115 Dunseith, North Dakota, USA 58329 Phone: (701) 263-4462 Fax: (701) 263-4463	San Diego 185 West F Street, Room 440 San Diego, California 92101 Phone: (619)557-5794 Fax: (619)557-2997
El Paso Bota, 3600 E. Paisano, #142A El Paso, Texas 79905 Phone: (915) 872-4765 Fax: (915)532-4776	Tampa 9549 Koger Blvd. #111 St. Petersburg, Florida 33702 Phone: (727)570-5398 Fax: (727)570-5450
Guam 415 Chalan San Antonio Road Baltej Pavillion, Suite 209 Tamuning, Guam 96913-3620 Phone: (671) 647-6064 Fax: (671) 647-6068	St. Paul/Minneapolis HHH Terminal 7100 34th Avenue S. Minneapolis, Minnesota 55450 Phone: (612)726-6302 Fax: (612)726-6303

Attachment B: 50 CFR §216.37 Marine mammal parts

With respect to marine mammal parts acquired by take or import authorized under a permit issued under this subpart:

(a) Marine mammal parts are transferrable if:

(1) The person transferring the part receives no remuneration of any kind for the marine mammal part;

(2) The person receiving the marine mammal part is:

(i) An employee of NMFS, the U.S. Fish and Wildlife Service, or any other governmental agency with conservation and management responsibilities, who receives the part in the course of their official duties;

(ii) A holder of a special exception permit which authorizes the take, import, or other activity involving the possession of a marine mammal part of the same species as the subject part; or

(iii) In the case of marine mammal parts from a species that is not depleted, endangered or threatened, a person who is authorized under section 112(c) of the MMPA and subpart C of this part to take or import marine mammals or marine mammal parts;

(iv) Any other person specifically authorized by the Regional Director, consistent with the requirements of paragraphs (a)(1) and (a)(3) through (6) of this section.

(3) The marine mammal part is transferred for the purpose of scientific research, maintenance in a properly curated, professionally accredited scientific collection, or education, provided that, for transfers for educational purposes, the recipient is a museum, educational institution or equivalent that will ensure that the part is available to the public as part of an educational program;

(4) A unique number assigned by the permit holder is marked on or affixed to the marine mammal part or container;

(5) The person receiving the marine mammal part agrees that, as a condition of receipt, subsequent transfers may only occur subject to the provisions of paragraph (a) of this section; and

(6) Within 30 days after the transfer, the person transferring the marine mammal part notifies the Regional Director of the transfer, including a description of the part, the person to whom the part was transferred, the purpose of the transfer, certification that the recipient has agreed to comply with the requirements of paragraph (a) of this section for subsequent transfers, and, if applicable, the recipient's permit number.

(b) Marine mammal parts may be loaned to another person for a purpose described in paragraph (a)(3) of this section and without the agreement and notification required under paragraphs (a)(5) and (6) of this section, if:

(1) A record of the loan is maintained; and

(2) The loan is for not more than one year. Loans for a period greater than 12 months, including loan extensions or renewals, require notification of the Regional Director under paragraph (a)(6).

(c) Unless other disposition is specified in the permit, a holder of a special exception permit may retain marine mammal parts not destroyed or otherwise disposed of during or after a scientific research or enhancement activity, if such marine mammal parts are:

(1) Maintained as part of a properly curated, professionally accredited collection; or

(2) Made available for purposes of scientific research or enhancement at the request of the Office Director.

(d) Marine mammal parts may be exported and subsequently reimported by a permit holder or subsequent authorized recipient, for the purpose of scientific research, maintenance in a properly curated, professionally accredited scientific collection, or education, provided that:

(1) The permit holder or other person receives no remuneration for the marine mammal part;

(2) A unique number assigned by the permit holder is marked on or affixed to the marine mammal specimen or container;

(3) The marine mammal part is exported or reimported in compliance with all applicable domestic and foreign laws;

(4) If exported or reimported for educational purposes, the recipient is a museum, educational institution, or equivalent that will ensure that the part is available to the public as part of an educational program; and

(5) Special reports are submitted within 30 days after both export and reimport as required by the Office Director under §216.38.

Attachment C: Relevant Addresses

NMFS Regional Offices

Assistant Regional Administrator for Protected Resources, Northwest Region, NMFS, 7600 Sand Point Way NE, BIN C15700, Bldg. 1, Seattle, WA 98115-0700; phone (206) 526-6150; fax (206) 526-6426.

Assistant Regional Administrator for Protected Resources, Alaska Region, NMFS, P.O. Box 21668, Juneau, AK 99802-1668; phone (907) 586-7235; fax (907) 586-7012.

Assistant Regional Administrator for Protected Resources, Southwest Region, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, CA 90802-4213; phone (562) 980-4020; fax (562) 980-4027.

Assistant Regional Administrator for Protected Resources, Pacific Islands Regional Office, NMFS, 1601 Kapiolani Blvd., Suite 1110, Honolulu, HI 96814-4700; phone (808) 973-2935; fax (808) 973-2941.

Assistant Regional Administrator for Protected Resources, Northeast Region, NMFS, One Blackburn Drive, Gloucester, MA 01930-2298; phone (978) 281-9346; fax (978) 281-9371.

Assistant Regional Administrator for Protected Resources, Southeast Region, NMFS, 263 13th Avenue South, St. Petersburg, FL 33701; phone (727) 824-5312; fax (727) 824-5309.

NOS National Marine Sanctuaries

Channel Islands National Marine Sanctuary, 113 Harbor Way, Santa Barbara, CA 93109; phone (805) 966-7107.

Cordell Bank National Marine Sanctuary, Fort Mason, Building #201, San Francisco, CA 94123; phone (415) 561-6622.

Fagatele Bay National Marine Sanctuary, P.O. Box 4318, Pago Pago, AS 96799; phone (011-684) 633-7354.

Florida Keys National Marine Sanctuary, P.O. Box 500368, Marathon, FL 33050; phone (305) 743-2437.

Florida Keys National Marine Sanctuary (Lower Region), 216 Ann Street, Key West, FL 33040; phone (305) 292-0311.

Florida Keys National Marine Sanctuary (Upper Region), P.O. Box 1083, Key Largo, FL 33037; phone (305) 852-7717.

Flower Garden Banks National Marine Sanctuary, 216 W. 26th Street, Suite 104, Bryan, TX 77803; phone (409) 779-2705.

Gray's Reef National Marine Sanctuary, 10 Ocean Science Circle, Savannah, GA 31411; phone (912) 598-2345.

Gulf of the Farallones and Cordell Bank National Marine Sanctuaries, Fort Mason, Building 201, San Francisco, CA 94123; phone (415) 561-6622.

Hawaiian Islands Humpback Whale National Marine Sanctuary, 726 South Kihei Road, Kihei, HI 96753; phone (808) 879-2818.

Monitor National Marine Sanctuary, The Mariners' Museum, 100 Museum Drive, Newport News, VA 23606-3759; phone (757) 599-3122.

Monterey Bay National Marine Sanctuary, 299 Foam Street, Suite D, Monterey, CA 93940; phone (408) 647-4258.

Olympic Coast National Marine Sanctuary, 138 W. 1st Street, Port Angeles, WA 98362; phone (360) 457-6622.

Stellwagen Bank National Marine Sanctuary, 14 Union Street, Plymouth, MA 02360; phone (508) 747-1691.

US Fish and Wildlife Service

Sirenia (other than Florida manatee) - Office of Management Authority, 4401 N. Fairfax Drive, Arlington, VA 22203; phone (800) 358-2104.

Florida manatee - Field Supervisor, Jacksonville Field Office, 6620 South Point Drive South, Suite 310, Jacksonville, FL 32216-0312; phone (904) 232-2580; fax (904) 232-2404.

Southern sea otter - Field Supervisor, Ventura Field Office, 2493 Portola Road, Suite B, Ventura, CA 93003; phone (805) 644-1766; fax (805) 644-3958.

Northern sea otter, walrus, polar bear - Marine Mammals Management, 1101 E. Tudor Road, Anchorage, AK 99503-6199; phone (907) 786-3800; fax (907) 786-3816.

APPENDIX H

GENERAL DESCRIPTIONS OF RESEARCH METHODOLOGIES UNDER THE ESA/MMPA PERMIT

Many public comments on the draft PEIS were specific to the methodologies addressed in this Appendix. In several areas, revisions were included below. For more specifics on how public comments were addressed, please refer to Appendix N of this PEIS.

1. Current ESA/MMPA Permit Activities

The activities described in this Section are those that may be conducted under the current ESA/MMPA permit issued to the Marine Mammal Health and Stranding Response Program. Many of the activities are only applicable to the scientific research conducted by Co-Investigators under the permit. Some activities are also applicable to the emergency response of ESA-listed species, which is covered under the ESA/MMPA permit. This section does not include information on basic stranding response activities.

1.1.1 Close Approach

Animals may be taken through close approaches by aircraft for disentanglement, photo-identification, behavioral observation, hazing (during emergency response), and incidental harassment. Animals may be taken through close approaches by vessel for disentanglement, photo-identification, behavioral observation, capture, tagging, marking, biopsy sampling, skin scrapes, swabs, collection of sloughed skin and feces, breath sampling, blood sampling, administration of drugs, video recording, hazing (during emergency response), and incidental harassment. More than one vessel may be involved in close approaches and vessels may approach an animal more than once, in order to complete research tasks. Incidental harassment of non-target animals may occur during close approaches by aircraft or vessel. During emergency response and research activities, close approaches may occur for any age class, sex, and species (including ESA-listed species).

1.1.2 Aerial Surveys

Aerial surveys are used to: locate imperiled marine mammals (ESA-listed and non-listed species); monitor behavior or disease in a given population or individual; survey the extent of disease outbreaks or die-offs; and locate carcasses. During emergency response and research activities, aerial surveys may occur for any age class, sex, and species (including ESA-listed species).

The aircraft type used during emergency response activities depends upon the aircraft available at the time of the response and the logistics of the activity. Aircraft type includes helicopters and fixed-wing aircraft. The frequency of surveys is dependent on the circumstances of the involved stranded or entangled animals, the disease, or the occurrence of an Unusual Mortality Event (UME). Aerial

surveys are flown along predetermined transect lines at a set altitude and air speed while observers scan the water for signs of marine mammals.

The speed and altitude of the aircraft depends on the aircraft and the response or research situation. For large cetaceans, surveys would be flown at an altitude of 230-300 m (750-1,000 ft) at approximately 110 knots (203 km/hr). For right whales, surveys would be flown at 100 knots (185 km/hr). For smaller cetaceans, surveys would be flown at an altitude of approximately of 230 m (750 ft). Large survey aircraft would be flown at 110 knots (203 km/hr) and small aircraft would be flown at 97 knots (179 km/hr). When an animal or group of animals is sighted, the survey aircraft descends and circles over the animal or animals to obtain photographs and assess the animal, if necessary.

A minimum altitude of 153 m (500 ft) would be used for pinniped surveys. The typical altitude would be between 182-244 m (600-800 ft) at 80 to 100 knots (148-185 km/hr). For Steller sea lion surveys during the breeding season, an altitude of at least 214 m (700 ft) would be used to collect photographs. In the non-breading season, surveys would be flown between 150-200 m (492-655 ft) at a speed of 100-150 knots (185-278 km/hr). All aerial surveys will be flown according to the NOAA Aviation Safety Policy (NOAA Administrative Order 209-124), with trained observers and pilots.

1.1.3 Vessel Surveys

Vessel surveys of both ESA-listed and non-listed marine mammals may be conducted to: collect data on animal abundance; assess animals; locate animals for research activities; and collect research samples. The vessels themselves may be used as a platform for conducting animal sampling. Vessel surveys may be used to monitor animals subsequent to capture-release sampling for assessment, photo-identification, and tracking.

For small cetaceans, inshore monitoring surveys are conducted using small (5-7 m) outboard motor powered boats. Animals are located by having crew members visually search waters as the boat proceeds along a specified route at slow speeds (8-16 km/hr). Animals outfitted with Very High Frequency (VHF) radio tags are located by listening for the appropriate frequency and, after detecting a signal, maneuvering the boat towards the animal using a combination of signal strength and directional bearings. Frequencies and remote sensors may also be monitored. Once a group of animals is located, the boat approaches the group so that crew members can assess their physical and medical condition. Photographs of the dorsal fins of individual animals are taken for later identification and matching to existing dorsal fin catalogs. When an animal is located that has been recently caught for a health evaluation, an attempt is made to photograph the dorsal fin and body to

confirm identification, health, position, and behavior. A photograph of the dorsal fin would also be used to assess wound healing from tag attachment. The area behind and below the posterior aspect of the dorsal fin may also be photographed to assess biopsy wound healing. A telephoto lens would be used for photographs, so vessels would not need to be too close to animals.

Multiple approaches may be required to obtain appropriate quality photographs, particularly if there are multiple individuals within a group. Close approach is terminated and the boat moves away from the group if animals begin to display behavior that indicates undue stress (e.g., significant avoidance behavior such as chuffing [forced exhalation], tail slapping, or erratic surfacing).

1.1.4 Hazing

Hazing of ESA-listed marine mammals may occur if an animal is in the vicinity of an oil or hazardous material spill, harmful algal bloom, sonar, or other harmful situations. Animals may also be hazed to deter a potential mass stranding. For all marine mammals, including threatened and endangered species, hazing is authorized under the MMHSRP's MMPA/ESA permit. Hazing methods include, but are not limited to, the use of acoustic deterrent devices, acoustic harassment devices, visual deterrents, vessels, physical barriers, and capture and relocation. The correct use of deterrents incorporates the element of surprise, while minimizing the potential for habituation.

Acoustic deterrents that may be used to deter cetaceans include, but are not limited to: pingers, bubble curtains, Oikomi pipes, acoustic harassment devices (e.g., Airmar devices), seal bombs, airguns, mid-frequency sonar, low-frequency sonar, predator calls, and aircraft. Pingers, which are typically used in the commercial fishing industry, produce high-frequency pulses of sound to deter animals. The standard pinger emits a signal of 10 kHz (with harmonics to at least 60 kHz) with a source level of 132 dB re µPa at 1 m, which is within the hearing range of most cetaceans (Reeves *et al.* 1996). Bubble curtains may be used as a barrier from other acoustics. Oikomi pipes are banged together by personnel on boats. They have been effective in herding cetaceans, but may not be as effective in keeping animals out of a large area.

Airmar devices have a source level of 195 dB re µPa and their peak energy is at 10 kHz with higher harmonics. These devices may be moved at low speeds on small boats or may be hull mounted on boats to allow faster movement. They may be able deter animals 3 km away. A line of directional Airmar devices could be deployed at the sight of a spill of near cetaceans to move them away. The received levels needed to cause deterrence without acoustic trauma are unknown.

Seal bombs are explosive devices that are weighted with sand to sink and explode at 2-3 m underwater, producing a flash of light and an acoustic signal of less than 2 kHz and a source level of approximately 190 dB. The noise and light would potentially startle marine mammals, but not cause any injuries (Petras 2003). Airguns are generally a towed array that is deployed behind a ship. Their peak energy is dependent on size, and may range from 10 Hz to 1 kHz. Airguns produce broadband pulses with energy at frequencies ranging over 100 kHz. The higher frequencies are less intense and attenuate faster. Harbor porpoise have been seen moving away from airguns 70 km away.

Mid-frequency sonar may be used to deter cetaceans. It has caused deterrence in killer whales in Haro Strait during the 2003 USS Shoup transit episode. The sonar had a source level of approximately 235 dB (exact level is classified) and the frequency ranged from 2.6-3.3 kHz over 1-2 second signals emitted every 28 seconds (USN 2004). Mid-frequency sonar could be effective over 25 km, which would be important for deterring animals during a large oil spill. Low-frequency sonar may also be used, but may too low for some cetaceans to hear.

Predator calls (typically killer whale calls) may be played to deter potential prey. However, in most situations, predator calls have proven ineffective in changing prey behavior. Aircraft, such as helicopters, generate a fair amount of noise and wave movement at close range and could produce a startle or avoidance response. This may be effective initially, but animals would likely habituate quickly. Aircraft could also be used to deploy seal bombs, if necessary. Vessels may be used to herd animals back out to open water or away from a hazardous situation. Booms or line on the water may be used to displace small odontocetes from stranding. Fire hoses may be used at close range as a physical deterrent, although their effectiveness is not known.

Pinniped acoustic deterrents include seal bombs, Airmar devices, predator calls, bells, firecrackers, and starter pistols. Visual deterrents for pinnipeds include flags, streamers, and flashing lights. Exclusion devices for pinnipeds may include nets or fencing.

1.1.5 Capture and Restraint

Capture of marine mammals may be necessary during research and enhancement activities to collect specimens; perform an examination; evaluate wound, disease, entanglement, or injury; or attach tags and/or scientific instruments. Capture of non-ESA listed marine mammals would be necessary during research activities. During emergency response, these activities may occur for any age class, sex, and species (including ESA-listed species). For research activities, capture, restraint, and handling would occur on all animals except for young of the year.

Capture methods include, but are not limited to, nets, traps, behavioral conditioning, and anesthesia/chemical immobilization. These procedures would be performed or directly supervised by qualified personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and sedatives. Capture and restraint methods for pinnipeds and cetaceans are discussed below.

1.1.5.1 Pinniped Capture and Restraint

Capture and restraint of pinnipeds occurs during health assessment studies, emergency response, and disentanglement activities. Pinnipeds may be captured on land or in water by various methods, depending on the targeted age classes. On land, pups (>5 days to 2 months old) and juveniles (>2 months to 3 years old) may be captured by hand. Juveniles and adults (>3 years old) may be captured using circle, hoop, dip, stretcher, and throw nets. Net guns and pole nooses may be used for capture of pinnipeds. An injectable immobilizing agent, administered remotely by a dart, may also be used to subdue older animals. Herding boards may be used to maneuver animals into cages. For water captures of pinnipeds, dip nets, large nets, modified gill nets, floating or water nets, and platform traps may be used. Purse seine nets may be used offshore of haul-out sites to capture animals when they stampede into the water (Jeffries et al. 1993). Animals become entangled by the net as it is pulled ashore. Once removed from the net, animals are placed head first into individual hoop nets. Pups may be restrained by hand, in a hoop net, or with the inhalation of a gas anesthesia (administered through a mask over their nose). Older animals may be restrained using gas anesthesia (administered through an endotracheal tube), a fabric restraining wrap, a restraining net, or through sedation (either intramuscular (IM) or intravenous (IV)).

An animal would not be manually restrained for more than 30 minutes. Procedures would be conducted as quickly as possible to reduce stress on the animal. Vital signs, including respiration, heart rate, and temperature, would be continuously monitored and recorded at the start of handling and every 5 minutes thereafter.

1.1.5.2 Cetacean Capture and Restraint

Capture and restraint of cetaceans occurs during health assessment studies, emergency response, and disentanglement activities. Typical methods currently used during health assessment studies and for emergency response are described below. However, these methods may vary depending on the species and location. All capture and restraint protocols would be approved by NMFS PR1 before their use. For health assessment studies of small cetaceans, small schools of animals are approached

for identification (see description under vessel surveys). If the school contains animals desired for capture, the school is followed until it is in waters that facilitate safe captures (waters outside of boating channels, equal to or less than 1.5 m deep, where currents are minimal). Typically no more than three animals are captured at one time. The animals are encircled with a 600 m long by 4 m deep seine net, deployed at high speed from an 8 m long commercial fishing motor boat. Small (5-7 m) outboard-powered vessels are used to help contain the animals until the net circle is complete. These boats make small, high-speed circles, creating acoustic barriers.

Once the net is completed, about 15-25 handlers are deployed around the outside of the corral to correct net overlays and aid any animals that may become entangled in the net. The remaining 10-20 or more team members prepare for sampling and data collection and begin the process of isolating the first individual. Isolation is accomplished by pinching the net corral into several smaller corrals. Handlers are usually able to put their arms around the selected animal as it bobs in place or swims slowly around the restricted enclosure. However, a few animals may strike the net and become entangled. After animals are restrained by handlers, an initial evaluation is performed by a trained veterinarian. Once cleared by the veterinarian, the animal is transported to the processing boat via a navy mat and/or a sling. A sling is also used to place an animal back in the water for release.

In some cases, cetaceans may need to be captured in deep waters. A break-away hoop-net is used to capture individuals as they ride at the bow of the boat. When they surface to breathe, the hoop is placed over their head and they move through the hoop, releasing the net. The additional drag of the net slows the animals substantially, but the design allows the animal to still use its flukes to reach the surface to breathe. The net is attached to a tether and large float, and the animal is retrieved, maneuvered into a sling and brought onboard the capture boat.

For emergency response, small cetaceans in shallow water may be caught using a net deployed from a boat with methods similar to those described above. In rivers and canals, responders may use their bodies to herd an animal and then hand catch it. In deep water, hoop net may be used to capture animals.

1.1.6 Transport

Vehicles, boats, or aircraft are used to transport marine mammals to rehabilitation facilities or release sites. Cetaceans may be transported on stretchers, foam pads, or air mattresses. For short-term transport, closed-cell foam pads are preferred because they are rigid and do not absorb water. Open cell foam is typically used for long-term transport of cetaceans because it can contour to the animal's

form. Boxes may be constructed to transport the animal upright in a stretcher. Cetaceans must be protected from exhaust fumes, sun, heat, cold, and wind, as transport often occurs on the flatbed of a truck. Animals are kept moist and cool, to avoid overheating (Geraci and Lounsbury 2005).

Small pinnipeds are typically transported in plastic kennel cages. Cages are large enough for animals to turn around, stretch out, and raise their heads. Cages should prevent animal contact with waste and allow proper air circulation. As with cetaceans, pinnipeds traveling by vehicle must be protected from the sun, heat, cold, wind, and exhaust fumes. Pinnipeds may overheat during transit and wetting the animal helps to prevent hyperthermia (Geraci and Lounsbury 2005). Large pinnipeds may need to be sedated during transport. Sedation of large pinnipeds would be performed or directly supervised by qualified personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of sedatives.

Transport procedures for marine mammals under U.S. jurisdiction follow the Animal and Plant Health Inspection Service's "Specifications for the Humane Handling, Care, Treatment, and Transportation of Marine Mammals" (9 CFR Ch 1, Subpart E). The "Live Animal Regulations" published by the International Air Transport Association (IATA), and accepted by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, are followed for the air transport of animals under foreign jurisdiction (IATA 2006). Both sets of standards have specifications for containers, food and water requirements, methods of handling, and care during transit.

1.1.7 Tagging/Attachment of Scientific Instruments

Tagging of ESA-listed marine mammals may be used to monitor an animal's movements after immediate release (from a stranding site), release after rehabilitation, or release after research activities. Tagging of non-listed marine mammals may occur as part of a research project or for monitoring rehabilitated animals post-release when such tag devices are considered intrusive or experimental. Other tags or scientific instruments may be used to obtain data on dive depth, dive time, water temperature, light levels, and animal and other underwater sounds. During emergency response activities, tags or scientific instruments may be attached to any age class, sex, and species (including ESA-listed species). During research activities tags will not be attached to large cetacean calves less than six months of age or females accompanying such calves. For small cetaceans, no tagging will occur on calves less than one year of age.

A variety tags (including scientific instruments) may be attached to or implanted in an animal. The type of tag and method of attachment depends on the species being tagged and the research or

question being addressed. Types of tags that are used include, but are not limited to: roto-tags (cattle tags), button tags, very high frequency (VHF) radio tags, satellite tags, Passive Integrated Transponder (PIT) tags, D-tags, code division multiple access (CDMA) tags, pill (e.g., stomach temperature telemeters), time-depth recorders (TDRs), life history transmitters (LHX tags), and crittercams (video cameras). Tag attachment methods vary with tag type, species, and circumstances. Attachment methods for cetaceans include, but are not limited to: bolt, buoy, punch, harness, suction cup, implant, or ingestion. Pinniped attachment methods include, but are not limited to: glue, bolt, punch, harness, suction cup, surgical implant, or ingestion. Specific tags and methods of attachment will be evaluated for each situation.

1.1.7.1 Tagging of Cetaceans

Tags are generally attached to free-swimming cetaceans by crossbow, compound bow, rifles, spear guns, slingshot (or throwing device), pole or jab spears. Tags will only be applied by experienced marine mammal biologists. Prior to deployment, tag type and attachment method will be approved by NMFS PR1. Attachments are temporary and occur via a suction cup device or implant. Scientific instruments attached to suction cups include, but are not limited to D-tags, TDRs, VHF tags, satellite tags, and crittercams. Large, slow moving whales may be tagged via suction cups using a pole delivery system, cantilevered on the bow of a boat. Bow-riding animals may be tagged using a hand held pole. Crossbows are the preferred method for tagging fast-moving toothed whales. Tags are attached on the dorsal surface of the animal behind the blowhole, closer to the dorsal fin. Tag placement ensures that the tag will not cover or obstruct the whale's blowhole, even if the cup migrates after placement (movement would be toward the tail).

Implantable tags may be attached in free-swimming cetaceans by mounting the instrument on an arrow tip or other device designed to penetrate the skin of the animal. Tags would typically be attached by crossbow and may include, but not limited to satellite tags, VHF tags, and TDRs. Buoys are used to attach VHF or satellite tags to gear on entangled whales. Buoys may also be attached to increase drag in an attempt to slow a whale for disentanglement.

For animals in hand, tags may be attached for longer deployments. Roto-tags may be attached to cetaceans with a plastic pin to the trailing edge of the dorsal fin. Button tags are plastic disks attached with a bolt through the dorsal fin. VHF tags (roto-radio tags) may also be bolted through the trailing edge of the dorsal fin. The bolts on each type of tag are held in place by magnesium nuts that will corrode in seawater and allow the tag to be released.

Satellite or VHF tags can be mounted on a molded plastic or fabric saddle that would be bolted through the dorsal fin (Geraci and Lounsbury 2005) or dorsal ridge. Plastic saddles would be padded with foam on the inside to reduce skin irritation. Saddles will be attached to the dorsal fin with two or three Delrin pins secured with magnesium nuts. The nuts would corrode in seawater, allowing the package to be released within a few days or weeks. The saddle will be raised off the surface of the dorsal fin by inserting foam washers on the pins between the skin and saddle. Two washers would be used to provided approximately 6 mm of separation

Dorsal ridge "spider tags" may be used on beluga whales (NMFS Permit No. 782-1719) (Litzky *et al.* 2001). Up to four holes are bored in the region of the anterior terminus of the dorsal ridge using a coring device (trochar) with a diameter of no more than 1 cm. Each insertion and exit point for the trochars would be prepared by cleaning with an antiseptic wipe, or equivalent. Rods of nylon or other non-reactive material, not greater than 1 cm in diameter and 50 cm in length, would then be pushed through the holes and attached to the wire cables or fabric flange or straps of the satellite tags or through bolt holes in the tag. The wire cables would be tightened to hold the tag against the back of the animal to minimize tag movement and drag, but would not be put under significant tension to avoid pressure necrosis around the pin insertion points. The other attachment systems would be manipulated to achieve the best possible fit depending on their design. Excess rod would then be cut off. All equipment would be sterilized in cold sterile solution, alcohol, or equivalent, and kept in air- and water-tight containers prior to use. Trochars and rods would be coated with antiseptic gel prior to insertion and each trochar would only be used for one hole before it is cleaned, sharpened, and re-sterilized. Where more than one instrument is to be attached, the number of pins would be limited to four.

1.1.7.2 Tagging of Pinnipeds

A fast drying epoxy adhesive is used to glue scientific instruments to pinnipeds. Instruments may be attached to the dorsal surface, head, or flippers and will release when the animal molts. Roto-tags can be attached to flippers using a single plastic pin. Tags can also be surgically implanted into the body cavity or muscle of pinnipeds. Implanted tags include PIT and LHX tags.

A PIT tag is a glass-encapsulated microchip, which is programmed with a unique identification code. When scanned with an appropriate device, the microchip transmits the code to the scanner, enabling the used to determine the exact identity of the tagged animal. PIT tags are biologically inert and are designed for SQ injection using a syringe or similar injecting device. The technology is well

established for use in fish and is being used successfully on sea otters (Thomas et al. 1987), manatees (Wright et al. 1998), and southern elephant seals (Galimberti et al. 2000). PIT tags are also commonly used to identify domestic animals. PIT tags may be injected just below the blubber in the lumbar area, approximately 5 inches lateral to the dorsal midline and approximately 5 inches anterior to the base of the tail. Tags may also be injected at alternative sites on a pinniped's posterior, but only after veterinary consultation. The injection area would be cleansed with Betadine (or equivalent) and alcohol prior to PIT tag injection. PIT tags are currently being used in Hawaiian monk seals (NMFS Permit No. 848-1695).

LHX tags are implantable, satellite-linked life history transmitters used to measure mortality events in pinnipeds. The tag allows continuous monitoring from up to five built-in sensors, including pressure, motion, light levels, temperature, and conductivity. The tag is surgically implanted into the abdominal cavity while the animal is anesthetized. An incision of 7-8 cm long through the abdominal wall, including abdominal muscles and peritoneal layers, is required to insert the tag. The incision is closed using absorbable sutures and may be further secured with surgical glue or dissolvable staples. When the animal dies, the tag is released from the body and floats to the surface or falls out onshore. Data from the tag is transmitted via the ARGOS system to a NOAA satellite. The battery life of an LHX tag is well over five years. LHX tags are being evaluated under current NMFS PR1 research permits (Permit No.1034-1685 [California sea lions] and No. 881-1890 [Steller sea lions]).

1.1.8 Marking

Marking methods for marine mammals during emergency response and research activities include, but are not limited to: bleach, crayon, zinc oxide, paint ball, notching, and freeze branding. Hot branding will not be used as a marking method. Crayons, zinc oxide, and paint balls can be used on cetaceans and pinnipeds for temporary, short-term marking. Bleach or dye (human hair dye) markings can be used on pinnipeds. The marks are temporary, with the length of time dependent on molting. Notching can be used to permanently mark cetaceans by cutting a piece from the trailing edge of the dorsal fin. Notching in pinnipeds removes a piece of skin from the hind flipper of phocids (true or earless seals) and the foreflipper of otariids (sea lions and fur seals).

Cetaceans can be marked using freeze branding, typically on both sides of the dorsal fin and/or just below the dorsal fin. Freeze branding is used during health assessment studies to mark all animals for post-release monitoring. Freeze branding uses liquid nitrogen to destroy the pigment producing cells in skin. Each brand (typically 2" numerals) is supercooled in liquid nitrogen and applied to the dorsal

fin for 15-20 seconds. After the brand is removed, the area is wetted to return the skin temperature to normal. During health assessments, each animal is photographed and videotaped to record the locations of freeze brands. Brands will eventually re-pigment, but may remain readable for five years or more. Freeze brands provide long-term markings that may be important during subsequent observations for distinguishing between two animals with similar fin shapes of natural markings.

Freeze branding may be used to produce two types of marks on pinnipeds. Short contact by the branding iron destroys pigment producing cells, leaving an unpigmented brand. Longer contact with the brand destroys these cells and the hair, leaving a bald brand (Merrick *et al.* 1996). Hot branding of pinnipeds will not be conducted during permit activities.

1.1.9 Disentanglement

Disentanglement efforts are conducted for many marine mammals. For large whales, disentanglement efforts may include vessel and aerial surveys for the affected animal and incidental harassment of non-entangled animals during these searches. Close approaches may occur to assess the extent of the entanglement and the health of the animal. The animal may be either physically or chemically restrained. Physical restraint of the animal may be used to slow down an animal, provide control, and maintain large whales at the surface. Physical restraint is accomplished by attaching control lines, floats, buoys, and/or sea anchors to the entangling gear with a grappling hook or by attaching new gear to the animal to hold it. The drag from small boats may also slow down an animal. Remote sedation may also be used to restrain the animal. Animals may be tagged with telemetry buoys to monitor their location. Responders use control lines to pull themselves up to the whale. Cutting of lines and possibly flesh (when the line is embedded) may occur during disentanglement. Biopsy sampling may occur, either through the use of a remote dart (described below under biopsy sampling) or the collection of tissues from the removed fishing gear. If the injuries from an entanglement appear to be life-threatening, the animal may be euthanized. NMFS and marine mammal experts would be consulted before deciding to euthanize a large whale. Euthanasia techniques are discussed later in this application. A necropsy would be performed and the carcass would be properly disposed.

Disentanglement efforts for small cetaceans may include capture with incidental disturbance of non-entangled animals, restraint, surgery, rehabilitation, administration of chemical agents (sedatives and/or antibiotics), and release. Response to entangled small cetaceans typically requires in-water capture of free-swimming animals. Some animals may have impaired locomotion if the gear is heavy

or anchored. Capture methods for small cetaceans are described above. If the injuries from an entanglement appear to be life-threatening, the animal is not likely to make a recovery on its own, or if the animal is afflicted with a potentially treatable illness or infection, it may be placed in rehabilitation. If rehabilitation space is not available, the animal would be euthanized. A necropsy would be performed and the carcass would be properly disposed.

An entangled pinniped would be selected for capture if: 1) the entanglement or injury impedes feeding, swimming, or ambulation; 2) the gear is unlikely to fall off on its own; 3) the animal is likely to "grow" into the gear, causing constriction; 4) the gear is cutting into the flesh or likely to cut into the flesh into the future; 5) the injury appears life-threatening or infected, or likely to become infected; or 6) the benefits of capturing and disentangling or collecting the animal for rehabilitation outweigh the risks to the animal and the herd. Entangled pinnipeds are typically captured on land when they are hauled out. Capture methods for pinnipeds are described above.

Disentanglement of pinnipeds may be achieved by simply cutting off the gear. A variety of instruments, including shielded knives, bandage scissors, wire cutters, and dog nail clippers may be used to safely accomplish this task. For emergency situations (e.g., entangled animals anchored in the water) or if the situations allows, long-handled, shielded knives can be used to cut off netting from a distance. The attending veterinarian (or other qualified individual) will determine which instrument(s) is appropriate for the situation. Once the gear is removed, it is photographed, measured, and retained for submission to NMFS. The wound (if any) is cleaned thoroughly by flushing with copious amounts of an appropriate disinfectant and treated with a topical antiseptic cream. An animal may be freed of gear and immediately released, or brought into a rehabilitation facility for a period of time prior to release. Every disentangled animal (except those that are not restrained) are tagged with: a roto-tag on the rear flipper; a head tag glued to the fur or marked; and/or paint stick markings for post release monitoring. Satellite tags maybe considered for healthy animals, weighing 75 lbs or more, if supplies and experienced personnel are available. Methods for tagging are described above.

If the pinniped will be immediately released after disentanglement, the following data will be collected (as feasible): straight length; sex; weight estimate; photographs of the animal, wound (if any), and gear; general locations; and GPS coordinates. Alert animals would be released from the original capture site unless conditions dictate otherwise. Animals would not be released near high drop-offs, heavy boat traffic, heavily human populated beaches, or obvious hazards. The attending veterinarian (or qualified individual) will direct the removal of restraint devices and withdrawal of the animal for a safe release. Crowder boards would be placed between the animal and the water, to

prevent the animal from fleeing into the water before the capture net has been removed. Once the animal has completely freed itself from the capture net, the crowder boards would be opened to allow access to the water. The animal would retreat to the water at is own pace.

An animal may be placed into rehabilitation if the injuries appear to be life-threatening, it is not likely to make a recovery on its own, or if it is afflicted with a potentially treatable illness or infection. Transport methods are described above. If rehabilitation space is not available, the animal would be euthanized. A necropsy would be performed and the carcass would be properly disposed.

1.1.10 Sample Collection and Analysis

Specimen samples would be taken from ESA-listed species during both research and enhancement (i.e., stranding/entanglement response) and from non-listed species during intrusive research [the Order Cetacea and the Order Pinnipedia (except walrus)]. Specimen materials may include, but are not necessarily limited to: earplugs, teeth, bone, tympanic bullae, ear ossicles, baleen, eyes, muscle, skin, blubber, internal organs and tissues, reproductive organs, mammary glands, milk or colostrums, serum or plasma, urine, tears, blood or blood cells, cells for culture, bile, fetuses, internal and external parasites, stomach and/ or intestines and their contents, feces, air exhalate, flippers, fins, flukes, head and skull, and whole carcasses. Specimens may be acquired opportunistically with ongoing studies or prospective design plans; therefore specific numbers and kinds of specimens cannot be predetermined. Because all specimens will be acquired opportunistically, the MMHSRP will have minimal control over the age, size, sex, or reproductive condition of any animals that are sampled. During research activities, samples would not be collected from young of the year animals. Specific methods for biopsies, blood, breath, ultrasound, and other sampling are described below under the corresponding section.

Marine mammal specimens collected for analysis or archiving would be legally obtained from the following sources:

1. On-going live animal capture/release research programs authorized by this permit or under separate permit of other researchers;

2. Live animal capture/release as part of a stranding response, disease, emergency response, or die-off investigation of ESA-listed marine mammals in the U.S., and any marine mammal species abroad;

3. Live ESA-listed animals stranded or in rehabilitation in the U.S. [and from any marine mammal species abroad stranded or in rehabilitation];

4. Captive animals (public display, research, or rehabilitating), when sampling is beyond the scope of normal husbandry or normal rehabilitation practices (i.e., intrusive research on ESA-listed or non-listed species);

5. Captive public display or research animals during normal husbandry or other permitted research;

6. ESA-listed marine mammals found dead on the beach or at sea in the U.S.; and any marine mammal species found dead on the beach or at sea in a foreign country/waters.

7. Animals directly taken in fisheries in countries where taking of such animals is legal;

8. Animals killed during subsistence harvests by native communities;

9. Animals killed incidental to recreational and commercial fishing operations;

10. Animals killed incidental to other human activities;

11. ESA-listed marine mammals found dead as part of NOAA investigations in the U.S. (*e.g.* harmful algal blooms, oil spills, etc.);

12. Soft parts sloughed, excreted, or discharged by live animals (including blowhole exudate);

13. Live animals during disease surveillance;

14. Bones, teeth, or ivory of ESA-listed species found on the beach or on land within ¼ mile of the ocean;

15. Confiscated animals (*e.g.*, as part of enforcement action); or

16. Animals legally taken in other permitted research activities in the U.S. or abroad.

Specimen and data collection from marine mammal carcasses may follow the necropsy protocols for pinnipeds (Dierauf 1994), right whales (and other large cetaceans) (McLellan *et al.* 2004), killer whales (Raverty and Gaydos 2004), small cetaceans (HSWRI 2005) and all marine mammals (Pugliares *et al.* 2007). These include how samples would be stored, transported, and analyzed. During live animal response or research, specimen and data collection protocols would depend on the samples being collected and the intended analyses. All sample analyses occur at various diagnostic laboratories in the U.S. and abroad.

1.1.11 Biopsy Sampling

Biopsy sampling would be conducted to collect skin, blubber, muscle, or other tissue (see below for details) samples. Sampling may occur on free ranging animals and captured animals during research activities. Only skin and blubber biopsies would be collected remotely during research activities. Skin and blubber biopsy sampling from a vessel may be conducted using crossbows, compound crossbows, dart guns, or pole spears. The depth of the biopsy tip penetration would vary depending on the species being sampled, the need, and the depth of their blubber layer. For small cetaceans, such as bottlenose dolphins, the biopsy tip used to collect blubber for contaminant analysis penetrates to a depth of approximately 1.0-2.5 cm. Shorter tips may be used when only epidermal sampling is required. A crossbow would be used to collect a sample from animals within approximately 5 to 30 m of the bow of the vessel.

Remote biopsy darts may be used to collect skin and blubber biopsy samples from free-swimming cetaceans. This standard technique involves using a blank charge in a modified .22 caliber rifle to propel a dart with small cutting head 3-6 m into the side of a dolphin, below the dorsal fin. A stopper prevents the dart from penetrating to a depth greater than the thickness of the blubber and aids in the removal of the sample form the animal. The floating dart is retrieved, and the approximately 1 cm diameter by 1.5 – 2 cm long sample is processed for archiving and analysis. A video camera mounted on the sampling rifle allows evaluation of the response of the dolphin to the darting.

Pole spears would be used to collect skin and blubber biopsy samples from small, bow-riding cetaceans. The biopsy tip is attached to the pole spear (approximately 5.5 m in length), which is tethered to a vessel. The pole spear is lowered to within 0.5 m of the target, which allows a specific area of the animal to be targeted with a high degree of accuracy.

Blubber biopsies may be taken during health assessment studies. An elliptical wedge biopsy is obtained from each animal. For small cetaceans, the sampling site is located on the left side of the animal, just below the posterior insertion of the dorsal fin. Local anesthetic (typically Lidocaine) is injected in an L-block at the biopsy site. A veterinarian then uses a clean scalpel to obtain a sample that is approximately 5 cm long and 3 cm wide, through nearly the full depth of blubber (approximately 1.5-2.0 cm). A cotton plug soaked with ferric subsulfate is inserted into the site once the sample is removed in order to stop bleeding. The sample is then partitioned into separate containers for each project. Skin obtained with the blubber biopsy is used for genetic analyses. Skin scrapings, biopsy samples, or needle aspirates will be collected for clinical diagnoses from sites of

suspected lesion. These samples are processed by various diagnostic laboratories and a subsample is sent to the National Marine Mammal Tissue Bank.

Biopsy sampling may also occur on animals in rehabilitation for diagnostic purposes. Skin and blubber may be collected as described above for capture animals. Biopsy sampling for diagnostic purposes would also include surgical procedures. Samples may be taken from muscle, lymph nodes, masses, abscesses, liver, kidneys, and other organs. Surgical procedures would be performed by experienced marine mammal veterinarians.

Small muscle biopsies may be collected from pinnipeds. The procedure has been performed on a number of different pinniped species without adverse effects or complications (Kanatous *et al*. 1999; Ponganis et al. 1993). Prior to sampling, a local anesthetic will be injected subcutaneously and intramuscularly at the sampling site to minimize pain. The sampling site will be cleaned with a Betadine scrub and a small incision will be made with a scalpel blade. All biopsies will be taken using appropriately sized sterile biopsy punches at the incision. The punch will be pushed through the blubber and into the muscle layer and the biopsy (~50 mg) is then withdrawn and pressure is applied to the wound. The biopsy site will be irrigated with Betadine. Sutures are not needed for the wound.

1.1.12 Blood Sampling

Blood sampling in cetaceans may be collected from the dorsal fin, caudal peduncle, pectoral flipper, or flukes. Sampling at any of these sites would be done using an 18- gauge 4-cm needle, with a scaled down needle bore for calves, Dall's porpoise, and harbor porpoise. Blood sampling of small cetaceans during health assessments may occur in the water prior to coming aboard the vessel, or once aboard the vessel. Typically, the blood sample is drawn from a blood vessel on the ventral side of the fluke, using an 18-20 gauge ¾" catheter. Approximately 200-350 cubic centimeters (cc) of blood are removed from each individual. The samples are placed in a variety of Vacutainers and other containers specific to the analyses, and are stored in a cooler until they are transported to a laboratory. Some samples may be processed on deck with a portable centrifuge system. Samples are separated and prepared for: standard chemistry, hematology, and hormonal analysis; contaminant analyses; immune function studies; aliquots for culturing for assessment of pathogens; and other preparations as necessary.

Blood samples in both phocids and otariids may be collected through the bilaterally divided extradural vein, which overlies the spinal cord. Otariids may also be sampled using the caudal gluteal

vein. Sampling would be done with a 20-gauge, 4-cm needle for small animals and an 18-gauge, 4-cm needle for larger animals. Phocids may also be sampled by inserting a needle into the metatarsal region of the hind flipper (Geraci and Lounsbury 2005).

1.1.13 Breath Sampling

Breath sampling may be conducted on both ESA-listed and non-listed cetaceans to assess their nutritional status and health for research purposes only. Breath sampling will not be used as a diagnostic tool at this time. A specially designed vacuum cylinder would be used to collect breath samples. The system has previously been used on several cetacean species and elephants. Samples would be collected from free ranging cetaceans by positioning a funnel at the end of a pole (which is connected to the vacuum cylinder via plastic tubing) over the blowhole of the surfacing animal. The cylinder valve would be manually opened during exhalation. An algal culture plate inside the funnel would be used for bacterial cultures of the breath. The culture plate would be sealed and transported to a laboratory for analysis. The equipment typically would not touch the animal, although in some instances there may be brief (less than 10 seconds) contact. An individual animal may be approached up to three times to obtain a sample, if it is exhibiting avoidance behaviors. If an animal exhibits rapid evasion during approaches, the animal will not be pursued. Samples may also be collected during health assessments, emergency response activities, or on any live captured animal. Sampling is being conducted to determine if it may be an appropriate diagnostic tool. Samples will be taken from targeted populations at specific times to compare with visual assessments and/or biopsies. The samples will then be examined using gas chromatography-mass spectrometry for volatile compounds to evaluate respiratory disease, nutritional status, and physical condition.

1.1.14 Ultrasound Sampling

Ultrasound sampling may be conducted on all free ranging animals, animals captured during emergency response, or any species during research studies. Ultrasound may be used to evaluate blubber thickness, wounds, lesions, the presence of lesions, pregnancy, reproductive organs, and blood vessels. Ultrasound may also be used to evaluate cardiac function, other internal organs, and the presence of fat or gas emboli. B-mode, 2-D, and 3-D imaging may be used on marine mammals. Any standard diagnostic ultrasound unit with a “scroll” or “zoom” capability (to visualize deeper structures) would be used to examine marine mammals (Brook *et al.*2001). Transducer type will depend on the area of interest and the size of the patient. Chapter 26 of the *CRC Handbook of Marine Mammal Medicine* will be used as a reference for equipment and methods of ultrasonography for marine mammals (Brook *et al.* 2001). External and internal (transvaginal and transrectal) ultrasound

procedures may be conducted. During transvaginal and transrectal ultrasounds, a well lubricated transducer probe is inserted into the appropriate orifice to the minimum depth required to visualize the structures being observed. The length and diameter of the probe will be determined by the species and individual anatomy. Sedation may be necessary for the comfort of the animal. The level of sedation/restraint is at the discretion of the attending veterinarian. Cetacean ultrasounds will be conducted, as often as possible, while the animal is in water.

For example, during health assessment studies of bottlenose dolphins, a diagnostic ultrasound is used to examine the condition of the internal organ and to measure testis length and diameter to assess male maturity. Females are also examined by a veterinarian during the initial evaluation for pregnancy and the presence of developing follicles. The ultrasound operates at a frequency of about 2.5-5.0 MHz, well above the dolphin's hearing. The examinations are recorded on video and audio tape, and thermal prints are made of features of interest. In addition, digital video thermography is used to measure skin temperature.

1.1.15 Tooth Extraction

The age determination of animals is conducted using the deposition of growth layer groups in teeth. A tooth is extracted from the animal by a veterinarian trained in this procedure. Tooth extraction typically occurs during cetacean health assessment studies. The tissue surrounding the tooth (usually #15 in the lower left jaw of cetaceans) is infiltrated with Lidocaine without epinephrine (or equivalent local anesthetic), applied through a standard, high-pressure, 30 gauge needle dental injection system. Once the area is anesthetized, the tooth is elevated and extracted using dental extraction tools. A cotton plug soaked in Betadine, or equivalent, solution is inserted into the alveolus (pit where the tooth was) as a local antibiotic and to stop bleeding. This plug is removed prior to release. This procedure is modified from that described by Ridgway et al. (1975), wherein the entire mandible was anesthetized. The revised procedure has been used in captivity and in live capture and release sampling for many years. Extracted teeth are sent to a laboratory for age determination.

Tooth extraction in pinnipeds requires capture, restraint, and sedation. In pinnipeds, the post-canine or incisor teeth may be extracted. The tooth and gums are cleaned with an antiseptic solution before, during, and after the tooth is extracted. A scalpel is used to loosen attachments and the tooth is extracted with a dental elevator. Extraction methods would be similar to those described by Arnbom et al. (1992).

1.1.16 Urine Sampling

Urine analyses are diagnostically useful to evaluate the urinary system (kidneys, ureters, bladder, and urethra). Important diagnoses can be made by determining the color, pH, turbidity, chemical constituents, presence or absence of blood, and by identifying any bacteria or yeast present in the urine. These diagnoses would likely be missed without such an examination. Samples may be collected using urinary catheterization. A veterinarian experienced with cetaceans or pinnipeds and a qualified veterinary technician would perform the catheterization procedure. For small cetaceans, the animal would be lying on its side on the foam-covered deck of the boat serving as the veterinary laboratory during health assessment studies. Wearing sterile surgical gloves, the assistant gently retracts the folds of the genital slit to allow visualization of the urethral orifice. The veterinarian (wearing sterile gloves) carefully inserts a sterile urinary catheter, lubricated with sterile lubricating gel, into the bladder via the urethra. A 50 ml collection tube without additive is used to aseptically collect the urine as it flows from the catheter. The catheter is removed after the urine is collected. Pinnipeds would be restrained and sedated before the catheter is inserted. The respiration, heart rate, and temperature of the animal would be monitored during the procedure. The animal would be monitored after the procedure until it is released. Urine may also be collected opportunistically, by holding an open sterile container in the urine stream.

1.1.17 Blowhole Sampling

Microbiological samples may be collected from the blowhole of a cetacean. A sterile swab is inserted into the blowhole during a breath, gently swabbed along the wall of the blowhole, and removed during the next breath. Samples are sent to a laboratory for culturing and species identification.

1.1.18 Fecal Sampling

Fecal samples are obtained either from a small catheter inserted about 10 cm into the colon or from a sterile swab of the rectum. The samples are sent to a diagnostic laboratory for culturing and species identification. Cetacean feces may also be collected in the water column either from a vessel or a diver in the water. Pinniped feces may be collected directly from haul-out or rookery sites. Samples are sent to a laboratory for culturing and species identification.

1.1.19 Milk Sampling

Milk samples are collected to measure the levels of lipophilic organic contaminants and to determine composition. All adult females are checked for lactation and milk samples are collected from all

lactating females. A “breast-pump” apparatus is used to obtain the sample. Milk is expressed with gentle manual pressure exerted on the mammary gland while suction is provided by a 60 cc syringe attached by tubing to another 12 cc syringe placed over the nipple. Samples of up to 30-50 ml may be collected.

1.1.20 Sperm Sampling

A potential impact of environmental contaminants on animal health is the reduction of reproductive capabilities. This may be measured indirectly in males through ultrasonic examination, measurement of testes, and measurement of testosterone concentrations. Collection and examination of sperm samples would be a more direct measurement of male reproductive function. If possible, ejaculate samples would be collected through manual manipulation of the penis. Samples are examined for sperm count, motility, and condition.

1.1.21 Colonic Temperature

Colonic temperature is collected to understand vascular cooling and reproductive status (Rommel *et al.*1992, 1994). Temperature measurements are obtained with a linear array of thermal probes interfaced to a laptop computer. The probes are typically housed in a 3 mm OD flexible plastic tube. The probe is sterilized, lubricated, and then inserted into the colon through the anus to a depth of 0.25-0.40 m, depending on the size of the animal. Temperature is continuously monitored.

1.1.22 Gastric Sampling

Gastric samples may be obtained using a standard stomach tube to evaluate health and evidence of toxin exposure.

1.1.23 Hair, Nails, and Vibrissae Sampling

A vibrissa may be pulled from anesthetized pinnipeds (age limit greater than 2 months). Vibrissae are pulled by gripping with forceps or fingers and pulling forcefully and rapidly in one smooth motion. Nails will be also be clipped close to the base of the nail bed without causing bleeding. Hair samples will be collected with scissors at the base of the hair without removing the follicle.

1.1.24 Administration of Drugs and Euthanasia

Drugs may be administered for sedation/chemical restraint during stranding response and disentanglement activities. These procedures would be performed or directly supervised by qualified

personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and sedatives. Anesthetics and analgesics may be used during research before performing biopsies, tooth extractions, and other procedures. Antibiotics, antifungals, and other medicines may be administered during response and rehabilitation of ESA-listed species. Chapter 31 of the *CRC Handbook of Marine Mammal Medicine* will be used as a reference for potential drugs and doses for marine mammal species (Stoskopf *et al.* 2001). Drugs may be administered orally or through injection, intubation, or inhalation. Orally administered medications are typically hidden in fish but may also be given via stomach tube.

Subcutaneous (SQ), IV, IM, intraperitoneal (IP), and intranasal injections may be used to deliver drugs. All of these methods would require some level of animal restraint. SQ injections are made in the interface between the blubber layer and the skeletal muscle layer. Animals must be maintained in a certain position for prolonged periods of time. The most common site for SQ injections in pinnipeds is the craniodorsal thorax between the scapulae. SQ injections would not be used in cetaceans.

In general, IV injections are complicated and rarely used in marine mammals. In cetaceans, medications may be injected in the fluke vessel if the volume is low and the medicine is not harmful if delivered perivascularly. An indwelling catheter may be used if repeated administration or slow infusion occurs (McBain 2001).

IM drug injections require longer needles because of the thickness of skin and blubber. Caution is taken to avoid accidental injection into the blubber, which may cause sterile abscess formation or poor absorption (Gulland *et al.* 2001). Injection into the blubber also has different drug-partitioning properties than muscle. This may result in the failure to activate a systemic distribution of highly lipid soluble medications (Stoskopf *et al.* 2001). Injection sites for phocids are the muscles surrounding the pelvis, femur, and tibia. These sites, as well as the large muscles overlying the scapulae, are appropriate for otariids (Gulland *et al.* 2001). IM injections in cetaceans may be made off the midline, slightly anterior to, parallel to, or just posterior to the dorsal fin. Caution is taken to avoid the thoracic cavity if the injection is anterior to the dorsal fin (McBain 2001). Multiple injection sites may be used and the volume per site should be reasonable depending on the animal.

IP injections deliver medications into the abdominal cavity. Non-irritating drugs may be delivered by this method. During injection, caution must be taken to avoid damaging major organs. A

contaminated needle or puncturing the gastrointestinal tract could introduce bacteria into the abdominal cavity (Gulland *et al.* 2001). Intranasal methods may be used to deliver drugs to cetaceans, via the blowhole (Dunn 2006).

Euthanasia of an ESA-listed animal may be conducted if: an animal had an irreversibly poor condition and rehabilitation would not be possible; rescue would be impossible; or no rehabilitation facility is available. Euthanasia may occur at a rehabilitation facility when an animal is deemed unreleasable and cannot be placed in permanent captivity. Humane euthanasia procedures would only be carried out by an attending, experienced, and licensed veterinarian or other qualified individual. Sedation may precede the administration of euthanasia drugs. Pinnipeds are typically euthanized using a lethal injection of barbiturates or other agent normally used to euthanize domestic species. Smaller cetaceans can be euthanized by injecting barbiturates or other lethal agent into a vein of the flippers, dorsal fin, flukes, or caudal peduncle. It may also be injected directly into the heart of abdominal cavity using an in-dwelling catheter. A small cetacean may be sedated before injection occurred. For large cetaceans, a method is currently being developed to sedate the animal via IM injection and then deliver euthanasia agents via IV. Large cetaceans may be euthanized by lethal injection directly into the heart. Injection into a vein of the flippers or flukes would likely be unsuccessful. Large whales may also be euthanized via intranasal method (injection into the blowhole) (Dunn 2006). Large whales may be euthanized by using ballistics (shooting) or by exsanguination (Geraci and Lounsbury 2005)

1.1.25 Auditory Brainstem Response /Auditory Evoked Potential

Auditory Brainstem Response (ABR) and Auditory Evoked Potential (AEP) procedures may be conducted as a method to evaluate the hearing abilities of individual animals or species. Procedures may be conducted on stranded animals, animals in rehabilitation, or on animals captured during research studies. The ABR technique involves repeatedly playing a test sound stimulus while simultaneously recording the neural evoked potential from surface electrodes.

1.1.25.1 Pinniped Testing Procedures

Pinniped audiometric testing may be conducted while individuals undergo scheduled sedation and/or anesthesia for necessary medical procedures during rehabilitation. SQ electrodes are used for obtaining electrophysiological recordings from pinnipeds and are harmless to the animals. The SQ electrodes are sterile 27 gauge x 10 mm needles that are place subcutaneously beneath the skin on the animals' head. One or two electrodes record AEPs and the other is a reference or ground electrode,

which subtracts the biological noise produced by the animal to enhance the recorded evoked potential responses.

Testing would be conducted under the supervision of the rehabilitation facility's attending veterinarian. Individuals are not tested more than once and testing sessions do not last longer than 60 minutes, except in cases where the individual requires euthanasia upon completion of the anesthetic procedure. Testing time has no impact on animal health or recovery from anesthesia in these individuals. Therefore, in situations where animals require euthanasia upon completion of anesthesia, testing may be allowed to continue for longer intervals at the discretion of the attending veterinarian. This protocol maximizes the amount of information that can be obtained from each subject, improves the quality of the data, and precludes any potential residual impact on anesthetic recovery on the individuals tested. Cases in which animals require euthanasia following anesthesia will be given highest priority in screening for potential study candidates.

1.1.25.2 Odontocete Testing Procedures

Procedures on odontocetes are non-invasive and can be conducted in short time frames. An animal may be resting at the surface or may be physically restrained (held by researchers) during the procedure. ABR signals are collected through suction cup electrodes. Standard EEG gel is used on the electrodes to establish an electrical connection between the electrode and the skin. Sounds may be presented through a jawphone attached to the lower jaw via suction cup. Sounds may also be presented in the water and the animals hear naturally through their lower jaws and other sound paths to the ear. A reference electrode is attached near the dorsal fin and a recording electrode is attached about 5 cm behind the blowhole. The electrodes are on the surface of the skin and are connected to an amplifier via long wires that exceed the length of the tank. The suction cups can easily be removed if there is any difficulty with the procedure. Evoked potentials are recorded from the electrodes. Frequencies used for testing range from 1 to 160 kHz (the range of frequencies that many odontocetes hear) and the maximum sound pressure level is less than 160 decibels re μPa.

Procedures would only be conducted on odontocetes. AEP procedures would not be conducted on mysticetes as there is no documentation on methodology that is likely to be successful in applying audiometric procedures on mysticetes. AEP experiments with animals of this size are inherently difficult for a number of reasons and mysticete anatomy presents additional challenges. All AEP procedures performed on stranded and rehabilitating odontocetes and pinnipeds will follow NMFS PR1 policies and protocols. Testing would not delay treatment, movement, or release of a stranded

animal nor would it interfere with rehabilitation activities. Testing would be stopped if an animal exhibited any adverse reaction, including abnormal respiration and locomotion, vocalization, vomiting, or other signs of distress.

1.1.26 Import and Export of Marine Mammals or Marine Mammal Parts

Exportation privileges are necessary for the MMHSRP to provide specimens to the international scientific community for analyses or as control/standard reference materials and to export animals for release. Importation privileges are necessary for the MMHSRP to acquire legally obtained specimens from outside the U.S. for archival in the National Marine Mammal Tissue Bank or for real time analyses. Importation privileges are also necessary to import live animals for treatment. An unlimited number and kinds of marine mammal specimens, including cell lines, would be imported or exported (worldwide) at any time during the year. Imported and exported specimens would include those taken from the Order Cetacea, Order Pinnipedia (including walrus), Order Sirenia, polar bear, sea otter, and marine otter; this includes threatened and endangered species. Specimen materials may include, but are not necessarily limited to: earplugs, teeth, bone, tympanic bullae, ear ossicles, baleen, eyes, muscle, skin, blubber, internal organs and tissues, reproductive organs, mammary glands, milk or colostrums, serum or plasma, urine, tears, blood or blood cells, cells for culture, bile, fetuses, internal and external parasites, stomach/intestines and their contents, feces, flippers, fins, flukes, head and skull, and whole carcasses. Specimens would be acquired opportunistically; therefore specific numbers and kinds of specimens, the countries of exportation, and the countries of origin cannot be predetermined.

Most specimens would be acquired opportunistically, and the MMHSRP will have minimal control over the age, size, sex, or reproductive condition of any animals that are sampled. However, in cases of prospective or retrospective analyses for a given health related study, these conditions would be provided to NMFS PR1 before activities occur. Imported specimens would be legally obtained from:

- Animals directly taken in fisheries for such animals in countries and situations where such taking is legal and humane;
- Animals killed during subsistence harvest by native communities;
- Animals killed incidental to commercial fishing operations;
- Animals stranded live;
- Animals found dead on the beach or at sea;

- Captive animals, when sampling is beyond the scope of normal husbandry practices or when sampling is taken during normal husbandry practices; and
- Live animals in a permitted, live capture study.

An unlimited number and kinds of marine mammal specimens, including cell lines, would be imported and/or exported (worldwide) at any time during the year. Specimens would be taken from the Order Cetacea and the Order Pinnipedia (except walrus), including threatened and endangered species. Specimen materials may include, but are not limited to: earplugs; teeth; bone; tympanic bullae; ear ossicles; baleen; eyes; muscle; skin; blubber; internal organs and tissues; reproductive organs; mammary glands; milk or colostrums; serum or plasma; urine; tears; blood or blood cells; cells for culture; bile; fetuses; internal and external parasites; stomach and/or intestines and their contents; feces; flippers; fins; flukes; head and skull; and whole carcasses. Specimens are acquired opportunistically; therefore specific numbers and kinds of specimens, the countries of exportation, and the countries of origin cannot be predetermined.

All marine mammals under NMFS jurisdiction, including ESA-listed species, may be imported or exported for medical treatment. Transport methods would be the same as those described in Section 1.1.5.

2. New ESA/MMPA Permit Activities

This Section describes scientific research and enhancement activities that may potentially be conducted under the new ESA/MMPA permit.

2.1.1 Blood Sampling

Currently, no procedures exist to remotely collect blood from free-swimming animals. However, if blood sampling procedures are developed and approved within the timeframe of the permit (five years), the MMHSRP would use these to conduct research. All protocols (including species) would be provided to NMFS PR1 for approval prior to any research activity.

2.1.2 Health Assessment Studies

In addition to the current health assessment studies on bottlenose dolphins, future studies would be conducted on other cetacean species. New tagging, tracking, and telemetry packages would also be used. All species and methods would be provided to NMFS PR1 for approval before any activities occurred.

2.1.3 Acoustics

The use of AEP procedures on any mysticete would not occur under the current ESA/MMPA permit. However, if a successful methodology for applying audiometric procedures on mysticetes is developed within the timeframe of the permit (five years), the MMHSRP would likely use these to conduct research. All protocols (including species) would be provided to NMFS PR1 for approval prior to any research activity.

Passive acoustic recording would involve the used of a hydrophone (underwater microphone). A hydrophone would be placed in the water directly off of a vessel or in a pool, and sounds would be recorded and taped via an apparatus on the vessel or on the pool deck. The purpose of passive acoustic recording is to record the vocalizations of a group of animals and/or the background noise in an area around the group of animals. Passive acoustic recording also indirectly provides background information on noise and vocalizations.

Active acoustic playbacks would be used to expose cetaceans and pinnipeds to playbacks of pre-recorded songs, social sounds, and feeding calls of that species. Playbacks may be used during capture and release activities and during rehabilitation. Sounds and songs would be projected from an underwater speaker hung over the side of a small vessel or in a pool. Sounds or songs would be

projected from the speaker at a volume and quality as close to a real sound/song as possible. The playback system would be calibrated so precise levels of sound can be projected. The physiological and/or physical response of the animals to the sounds and songs would be measured, often through behavioral observation and photographs/video recording of the subject animal(s). Playbacks would be used to determine if an animal can hear and assess how they are responding to sounds. This information would be used to determine the releasability of a rehabilitated animal.

2.1.4 Cognitive Assessment of Sea Lions in Rehabilitation Suffering from Domoic Acid Intoxication.

This study is designed to increase the extent of clinical assessment of California sea lions exposed to domoic acid. Standard veterinary clinical procedures have been used to evaluate the health and prognosis for survival of these cases, including hematology, serum biochemistry, MRI, EEG, and satellite tagging to monitor released animals. Work to date on sea lions (Goldstein et al. 2008) and parallel studies in laboratory animals suggest that there may be additional impacts on sea lion health due to changes in behavior and cognitive function. In an effort to qualify and quantify the cognitive effects of domoic acid exposure on California sea lions, subjects will be assessed will in rehabilitation using behavioral methods. Performance will be evaluated on simple tasks designed to reveal aspects of cognitive function, including auditory habituation, behavioral flexibility, spatial memory, and object recognition. Both passive (observational) and active (food reward) approaches will be used. Direct human contact will be minimized and should not exceed that typically experienced in a rehabilitation setting.

The California sea lion subjects to be assessed will be selected by the veterinary staff at The Marine Mammal Center (TMMC) (Sausalito, CA) from the pool of animals undergoing rehabilitation. Subjects will include prescreened animals identified as domoic acid exposed (by fecal samples, EEG, MRI, and basic neurological assessment) and an equal number of prescreened controls with no apparent neurological deficits (e.g., trauma and malnutrition cases). A maximum of 50 exposed sea lions and 50 controls will be evaluated, but the actual number of subjects will depend on animal availability during the course of the study. Animals of all ages will be examined, based on the availability of stranded animals. Assays will be conducted at TMMC or at the Long Marine Laboratory's (Santa Cruz, CA) marine mammal holding facilities. Each subject will be evaluated during a period not to exceed 30 days. Medical care, feeding schedules, and activity levels for subjects will be similar to those provided for animals in standard rehabilitation settings. Upon completion of their participation, subjects will be assessed for release, continued care, or euthanasia

by the TMMC veterinary staff according to their standard operating procedures. Decisions on the disposition of each animal will be based on medical condition and the ability to survive in the wild, according to the NMFS release guidelines for marine mammals in rehabilitation.

3. References

Arnbom *et al.* 1992 — Arnbom, T.A., N.J. Lunn, I.L. Boyd, and T. Barton. 1992. Aging Live Antarctic Fur Seals and Southern Elephant Seals. *Marine Mammal Science* 8(1): 37-43.

Dierauf 1994 — Dierauf, L.A. 1994. Pinniped forensic, necropsy and tissue collection guide. NOAA Technical Memorandum NMFS-OPR-94-3. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD.

Dunn 2006 — Dunn, J.L. 2006. Multiple-agent euthanasia of a juvenile fin whale, *Balaenoptera physalus*. *Marine Mammal Science* 22(4): 1004-1007.

Galimberti *et al.* 2000 — Galimberti, F. and S. Sanvito. 2000. Marking of southern elephant seals with passive integrated transponders. *Marine Mammal Science* 16(2): 500-504.

Geraci and Lounsbury 2005 — Geraci, J.R. and V.J. Lounsbury. 2005. Marine Mammals Ashore: A Field Guide for Strandings, Second Edition. National Aquarium in Baltimore, Baltimore, MD.

Gulland *et al.* 2001 — Gulland, F.M.D., M. Haulena, and L.E. Dierauf. Seals and Sea Lions. In: *CRC Handbook of Marine Mammal Medicine*. Second Edition. L.A. Dierauf and F.M.D. Gulland, eds. CRC Press LLC, Boca Raton, FL.

HSWRI 2006 — Hubbs-SeaWorld Research Institute (HSWRI). 2006. Workshop to Evaluate the Potential for Use of *Morbillivirus* Vaccination in Hawaiian Monk Seals. Final Report. San Diego, CA.

IATA 2006 — International Air Transport Association (IATA). 2006. *Live Animal Regulations.* 33rd Edition. International Air Transport Association, Montreal, Quebec, Canada.

Jeffries *et al.* 1993 — Jeffries, S.J., R.F. Brown, and J.T. Harvey. 1993. Techniques for capturing, handling and marking harbour seals. *Aquatic Mammals* 19.1: 21-25.

Kanatous *et al.* 1999 — Kanatous, S. B., L. V. DiMichele, D. F. Cowan, and R. W. Davis. 1999. High aerobic capacities in the skeletal muscles of pinnipeds: adaptations to diving hypoxia. *Journal of Applied Physiology* 86:1247-1256.

Litzky *et al.* 2001 — Litzky, L.K., R.C. Hobbs, and B.A. Mahoney. 2001. Field report for tagging study of beluga whales in Cook Inlet, Alaska, September 2000. In: Marine Mammal Protection Act and Endangered Species Act Implementation Program 2000. Alaska Fisheries Science Center Processed Report 2001-06. A.L. Lopez and R.P. Angliss, eds. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, WA.

McBain 2001 — McBain, J.F. 2001. Cetacean Medicine. In: *CRC Handbook of Marine Mammal Medicine*. Second Edition. L.A. Dierauf and F.M.D. Gulland, eds. CRC Press LLC, Boca Raton, FL.

McLellan *et al.* 2004 — McLellan, W.A, S.A. Rommel, M. Moore, and D. A. Pabst. 2004. Right whale necropsy protocol. Final Report to NMFS for Contract No. 40AANF112525.

Merrick *et al.* 1996 — Merrick, R.L., T.R. Loughlin, and D.G. Calkins. 1996. Hot-Branding: A Technique for Long-term Marking of Pinnipeds. NOAA Technical Memorandum NMFS-AFSC-68. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center, Seattle, WA.

Petras 2003 — Petras, E. 2003. A Review of Marine Mammal Deterrents and Their Possible Applications to Limit Killer Whale (*Orcinus orca*) Predation on Steller Sea Lions (*Eumetopias jubatus*). AFSC Processed Report 2003-02. National Ocean and Atmospheric Administration, National Marine Fisheries Service, Seattle, WA.

Pugliares *et al.* 2007 — Pugliares, K.R., A. Bogomolni, K.M. Touhey, S.M. Herzig, C.T. Harry, and M.J. Moore. 2007. Marine Mammal Necropsy: An Introductory Guide for Stranding Responders and Field Biologists. Woods Hole Oceanographic Institution Technical Report WHOI-2007-06. Woods Hole, MA.

Raverty and Gaydos 2004 — Raverty, S.A. and J.K. Gaydos. 2004. Killer whale necropsy and disease testing protocol. SeaDoc Society, Wildlife Health Center, University of California Davis, School of Veterinary Medicine.

Reeves *et al.* 1996 — Reeves, R.R., R.J. Hofman, G.K. Silber, and D. Wilkinson. 1996. Acoustic Deterrence of Harmful Marine Mammal-Fisheries Interactions: Proceedings of a Workshop Held in Seattle, Washington, 20-22 March 1996. NOAA Technical Memorandum NMFS-OPR-10. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD.

Ridgway *et al.* 1975 — Ridgway, S.H., R.F. Green, and J.C. Sweeney. 1975. Mandibular anesthesia and tooth extraction in the bottlenose dolphin. *Journal of Wildlife Diseases* 11:415-428.

Rommel *et al.* 1992 — Rommel, S.A., D.A. Pabst, W.A. McLellan, J.G. Mead, and C.W. Potter. 1992. Anatomical evidence for countercurrent heat exchanger associated with dolphin testes. *The Anatomical Record* 232 (1):150-156.

Rommel *et al.* 1994 — Rommel, S.A., D.A. Pabst, W.A. McLellan, T.M. Williams, and W.A. Friedl. 1994. Temperature regulation of the dolphin testes: evidence from colonic temperatures. *Journal of Comparative Physiology B: Biochemical, Systemic, and Environmental Physiology* 164: 130-134.

Stoskopf *et al.* 2001 — Stoskopf, M.K., S. Willens, and J.F. McBain. 2001. Pharmaceutical and Formularies. In: *CRC Handbook of Marine Mammal Medicine*. Second Edition. L.A. Dierauf and F.M.D. Gulland, eds. CRC Press LLC, Boca Raton, FL.

Thomas *et al.* 1987 — Thomas, J.A., L.H. Cornell, B.E. Joseph, T.D. Williams, and S. Dreischman. 1987. An implanted transponder chip used as a tag for sea otters (*Enhydra lutris*). *Marine Mammal Science* 3(3): 271-274.

USN 2004 — U.S. Navy (USN), Pacific Fleet. 2004. Report on the results of the inquiry into allegations of marine mammal impacts surrounding the use of active sonar by *USS Shoup* (DDG 86) in the Haro Strait on or about 5 May 2003.

Wright *et al.* 1998 — Wright, I.E., S.D. Wright, and J.M. Sweat. 1997. Use of passive integrated transponder (PIT) tags to identify manatees (*Trichechus manatus latirostris*). *Marine Mammal Science*: 14(3): 641-645.

4. Acronyms

ABR	Auditory Brainstem Response
AEP	Auditory Evoked Potential
APHIS	Animal and Plant Health Inspection Service
cc	Cubic centimeter
ESA	Endangered Species Act
HSWRI	Hubbs-SeaWorld Research Institute
IATA	International Air Transport Association
IM	Intramuscular
IP	Intraperitoneal
IV	Intravenous
LHX	Life History transmitter
m	Meter
MMHSRP	Marine Mammal Health and Stranding Response Program
MMPA	Marine Mammal Protection Act
NMFS PR1	National Marine Fisheries Service, Office of Protected Resources, Permits, Conservation and Education Division
NMMTB	National Marine Mammal Tissue Bank
NOAA	National Oceanic and Atmospheric Administration
PIT	Passive Integrated Transponder
SQ	Subcutaneous
TDR	Time-depth Recorder
UME	Unusual Mortality Event
VHF	Very High Frequency

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APPENDIX I

REQUIRED TAKE TABLES FOR THE ESA/MMPA PERMIT APPLICATION

Table 1. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
Project 1: Emergency Response Activities								
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All (no restriction on age class)	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies[2]	Close approach, aerial and vessel surveys, disentanglement, capture, restraint, handling, tagging, marking (excluding hot branding), sample collection (including biopsy), sample analysis, anesthesia, sedation, treatment, import/export of animals, transport, relocation, rehabilitation, release, hazing away from harmful situations; and acoustic sampling, recording, and playbacks	Live animals may be transported to rehabilitation facilities and release sites. Live animals may be relocated	Beaches, coastal waters of the US, waters within the US EEZ, and international waters (for export); import/export animals world-wide	All/continuous
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Euthanasia, necropsy, carcass disposal	Carcasses may be transported to disposal sites or laboratories	Beaches, coastal waters of the US, and waters within the US EEZ	All/continuous
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Accidental mortality, necropsy, carcass disposal	Carcasses may be transported to disposal sites or laboratories	Beaches, coastal waters of the US, and waters within the US EEZ	All/continuous
All Cetacea, all Pinnipedia (including walrus), sea otter, manatee, and polar bear[3]	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Incidental harassment	N/A	Beaches, coastal waters of the US, and waters within the US EEZ	All/continuous

Table 1. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
All Cetacea, all Pinnipedia (including walrus), sea otter, manatee, dugong, and polar bear[3]	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Receipt, import/export of samples	Analytical and diagnostic samples may be transported, imported or exported as needed to laboratories	Beaches, coastal waters of the US, waters within the US EEZ, and international waters; world-wide import /export	All/continuous
Project 2: Prospective Health Assessment Research Activities								
Pinnipedia (except Guadalupe fur seal, Hawaiian monk seal, and Steller sea lion)	All	M/F	Unlimited	5	Close approach, aerial and vessel surveys	None	Coastal waters of the US, US EEZ, international waters	All
Pinnipedia (except Guadalupe fur seal, Hawaiian monk seal, and Steller sea lion)	All	M/F	Up to 300 annually (total)	5	Capture (net or hand), restraint, handling, tagging, marking (excluding hot branding), sample collection (including biopsy), release; and acoustic sampling, recording, and playbacks	None	Coastal waters of the US, US EEZ, international waters	All
Pinnipedia (except Guadalupe fur seal, Hawaiian monk seal, and Steller sea lion)	All	M/F	3 annually (total)	1	Accidental mortality during capture activities	None	Coastal waters of the US, US EEZ, international waters	All
Pinnipedia (except Guadalupe fur seal, Hawaiian monk, seal and Steller sea lion)	All	M/F	Up to 400 annually (total)	5	Collection of samples during other legal takes/permitted activities (subsistence harvest, by-catch, live capture/release)	None	Coastal waters of the US, US EEZ, international waters	All
ESA-listed Hawaiian monk seals and Guadalupe fur seals that are held in captivity and are not releasable back into the wild; and those undergoing rehabilitation	All	M//F	As warranted to satisfy the requirements of study design	As warranted to satisfy the requirements of study design	Capture (net or hand), restraint, handling, tagging, marking (excluding hot branding), sample collection (including biopsy), release; and acoustic sampling, recording, and playbacks	None	Captive holding facilities including rehabilitation centers	All

Table 1. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
Small Cetacea (*Tursiops, Stenella, Steno, Delphinus, Lagenorhynchus Lagenodelphis, Lissodelphis, Grampus, Peponocephala, Feresa, Pseudorca, Orcinus, Globicephala, Phocoena, Phocoenoides, Kogia, Delphinaterus, all beaked whales*)	All	M/F	Unlimited	5	Close approach, aerial and vessel surveys	None	Coastal waters of the US, US EEZ, international waters	All
Small Cetacea (see above)	All except YOY	M/F	Up to 200 annually (total)	5	Capture (net or hand), restraint, handling, tagging, marking (including freeze branding), sample collection, release; and acoustic sampling, recording, and playbacks	None	Coastal waters of the US, US EEZ, international waters	All
Small Cetacea (see above)	All except YOY	M/F	3 annually (total)	1	Accidental mortality during capture activities	None	Coastal waters of the US, US EEZ, international waters	All
Small Cetacea (see above)	All except YOY	M/F	Up to 400 annually (total)	5	Collection of samples during other legal takes/permitted activities (subsistence harvest, by-catch, live capture/release)	None	Coastal waters of the US, US EEZ, international waters	All
Large Whales (gray, right, humpback, fin, blue, sei, Bryde's, minke, bowhead, and sperm whales)	All except calves ≤ 6 months in age and cows with calves	M/F	Up to 5,000 annually (total)	5	Close approach, aerial and vessel surveys	None	Coastal waters of the US, US EEZ, international waters	All
Large Whales (same species as the previous entry)	All except calves ≤ 6 months in age and cows with calves (for	M/F	Up to 100 annually (total)	5	Tagging and sample collection (including biopsy and respiratory gases), acoustic sampling (including recording and playback	None	Coastal waters of the US, US EEZ, international waters	All

Table 1. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
	tagging and sampling)				experiments), collection of feces, photo-identification (for visual health assessment and ID)			
Large Whales (same species as the previous entry)	All	M/F	Up to 400 annually (total)	5	Collection of samples during other lawful "takes"/permitted activities (subsistence harvest, by-catch, live takes)	None	Coastal waters of the US, US EEZ, international waters	All
All Cetacea, all Pinnipedia (including walrus), marine and sea otter, manatee, dugong, and polar bear	All	M/F	As warranted to satisfy the requirements of study design	As warranted to satisfy the requirements of study design	Receipt, import/export of samples	Analytical and diagnostic samples may be transported, imported or exported as needed to laboratories	Beaches, coastal waters of the US, waters within the US EEZ, and international waters; world-wide import /export	All/continuous
Project 3: Cognitive Assessment of Sea Lions in Rehabilitation with Domoic Acid Intoxication								
Zalophus californianus	All	M/F	Up to 50 domoic acid exposed animals and up to 50 controls (total)	30 (up to 1/day)	Restraint, handling, and sample collection	Animals may be transported to Long Marine Laboratory.	Animals in rehabilitation at The Marine Mammal Center	Period for each animal- up to 30 days. Entire study- Over 5 years
Zalophus californianus	All	M/F	Up to 50 domoic acid exposed animals (total)	1	Accidental mortality during research activities	None	Animals in rehabilitation at The Marine Mammal Center	Entire study- Over 5 years

1 The ESA defines "take" as "harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 U.S.C. 1532).
2. Due to the nature of stranding and entanglement events, the specific numbers of individuals that might be "taken" during responses to these events cannot be determined in advance
3. dugongs, manatees, polar bears, sea otters, and walruses are under the jurisdiction of the U.S. Fish and Wildlife Service and are not addressed in this biological opinion

Table 2. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct on endangered or threatened species under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
Project 1: Emergency Response Activities								
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All (no restriction on age class)	M/F	As warranted to respond to emergencies[2]	As warranted to respond to emergencies*	Close approach, aerial and vessel surveys, disentanglement, capture, restraint, handling, tagging, marking (excluding hot branding), sample collection (including biopsy), sample analysis, anesthesia, sedation, treatment, import/export of animals, transport, relocation, rehabilitation, release; hazing away from harmful situations; and acoustic sampling, recording, and playbacks	Live animals may be transported to rehabilitation facilities and release sites. Live animals may be relocated	Beaches, coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters; world-wide import/export of animals	All/continuous
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Euthanasia, necropsy, carcass disposal	Carcasses may be transported to disposal sites or laboratories	Beaches, coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters	All/continuous
All ESA-listed Cetacea, all ESA-listed Pinnipedia under NMFS jurisdiction	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Accidental mortality, necropsy, carcass disposal	Carcasses may be transported to disposal sites or laboratories	Beaches, coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters	All/continuous
All Cetacea, all Pinnipedia (including walrus), sea otter, manatee, and polar bear[3]	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Incidental harassment	N/A	Beaches, coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters	All/continuous

Table 2. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct on endangered or threatened species under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
All Cetacea, all Pinnipedia (including walrus), sea otter, manatee, dugong, and polar bear[3]	All	M/F	As warranted to respond to emergencies*	As warranted to respond to emergencies*	Receipt, import/export of samples	Analytical and diagnostic samples may be transported, imported or exported as needed to laboratories	Beaches, coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters; world-wide import/export	All/continuous
Project 2: Prospective Health Assessment Research Activities								
ESA-listed Hawaiian monk seals, and Guadalupe fur seals that are held in captivity and are not releasable back into the wild; and those undergoing rehabilitation	All	M//F	As warranted to satisfy the requirements of study design	As warranted to satisfy the requirements of study design	Capture (net or hand), restraint, handling, tagging, marking (tagging and marking excludes hot branding and would only occur if an animal is not already marked or is not otherwise identifiable), sample collection (including biopsy), release; and acoustic sampling, recording, and playbacks	None	Captive holding facilities, including rehabilitation centers	All
Large Whales (gray, right, humpback, fin, blue, sei, Bryde's, minke, bowhead, and sperm whales)	All	M/F	Up to 4,900 annually (total)	5	Close approach, aerial and vessel surveys (collection of feces, photo-identification for visual health assessment and ID)	None	Coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters	All
Large Whales (see above)	All except calves ≤ 6 months in age and cows with calves (for tagging and sampling)	M/F	Up to 100 annually (total)	5	Close approach, aerial and vessel surveys; Tagging and sample collection (including biopsy and respiratory gases), acoustic sampling (including recording and playback experiments), collection of feces, photo-identification (for visual health assessment and ID)	None	Coastal waters and EEZ of the United States, its territories, and possessions, and adjacent marine waters	All
Large Whales (see above)	All except calves ≤ 6	M/F	Up to 400 annually (total)	5	Collection of samples from dead animals in conjunction with the	None	Coastal waters and EEZ of the United	All

Table 2. Activities representatives of the National Marine Fisheries Service's Marine Mammal Health and Stranding Response Program would be authorized to conduct on endangered or threatened species under the proposed permit

Species	Life Stage	Gender	Expected Number of Individuals "Taken[1]"	Number of Times an Individual Might be "Taken"	Proposed Action	Transport	Location	Dates/Time Period
	months in age and cows with calves (for "takes" of live animals)				activities of other investigators who are operating under other permits or legal authority (subsistence harvest, by-catch); collection of respiratory gasses and blood samples from live animals in conjunction with the activities of other investigators who are operating under other permits or legal authority or during Emergency response activities under this permit		States, its territories, and possessions, and adjacent marine waters	
All Cetacea, all Pinnipedia (including walrus), sea otter, manatee, dugong, and polar bear[3]	All	M/F	As warranted to satisfy the requirements of study design	As warranted to satisfy the requirements of study design	Receipt, import/export of samples	Analytical and diagnostic samples may be transported, imported or exported as needed to laboratories	Beaches, coastal waters of the US, waters within the US EEZ, and international waters; world-wide import /export	All/continuous

1 The ESA defines "take" as "harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect, or attempt to engage in any such conduct" (16 U.S.C. 1532)

2. "Emergencies" generally refers to health emergencies involving marine mammals and include, but are not limited to stranding events, entanglements, trauma-related incidents (for example, ship strikes and gun-shots), oil spills, disease outbreaks, and exposure to biotoxins. Due to their nature, the number of individuals that might be "taken" during responses to these health emergencies cannot be determined in advance

3. dugongs, manatees, polar bears, sea otters, and walruses are under the jurisdiction of the U.S. Fish and Wildlife Service and are not addressed in this biological opinion

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APPENDIX J

CARCASS DISPOSAL INFORMATION

PERSISTENT CONTAMINANTS IN SELECTED SPECIES OF MARINE MAMMALS IN US WATERS: A REVIEW OF THE LITERATURE FROM 1995 THROUGH 2005

A report prepared for the
National Oceanic and Atmospheric Administration,
National Marine Fisheries Service, Office of Protected Resources
Marine Mammal Health and Stranding Response Program
Purchase Order: DG133F03SE1139

by
Victoria M. Woshner, DVM, PhD

August 21, 2006

REPORT OUTLINE:

I. INTRODUCTION

II. ENVIRONMENTAL CONTAMINANTS IN SELECTED MARINE MAMMAL SPECIES IN US WATERS

A. Contaminant classes—background information
1. Persistent organic pollutants (POPs)
1. Polychlorinated biphenyls (PCBs)
2. Polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs)
3. DDT (1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane)
4. Chlordanes (including heptachlor and heptachlor epoxide)
5. Hexachlorobenzene (HCB)
6. Hexachlorocyclohexanes (HCHs)
2. Toxic metals
1. Cadmium
2. Lead
3. Mercury
4. Organotins
3. Miscellaneous contaminants
1. Polybrominated diphenyl ethers (PBDEs)
2. Polyfluoroalkyls (PFAs)

B. Concentrations of environmental contaminants in selected species of marine mammals in US waters
1. Species addressed
2. Databases reviewed, including time period examined and search terms used.
3. Overview of tissue contaminant concentrations: Literature review summary
0. General comments upon format of tables and appendices
1. Persistent organic pollutants (POPs)
2. Toxic metals
3. Miscellaneous contaminants

C. Conclusions and comments regarding the nature and adequacy of the available literature database

III. LITERATURE CITED

IV. TABLES AND APPENDICES (ACCOMPANYING EXCEL FILE)

Table 1. Summary Data for Some Persistent Organic Pollutants, Including PCBs, DDTs, Chlordanes, Mirex, Dieldrin, HCHs and HCB in Blubber of Selected Marine Mammal Species from US Waters, Reported 1994 through 2005.

I. INTRODUCTION

As charismatic megafauna, marine mammals are beloved and revered by people around the world. Consequently, mortality events and scientific research involving marine mammals are often of a high public profile. Widely publicized reports of high levels of anthropogenic contaminants in some whale species have incited concern that the carcasses of the whales themselves may constitute a toxicological hazard. This literature review was initiated with a view to gathering the collective data pertaining to levels of persistent contaminants in that subset of marine mammal species in US waters that tends to strand most frequently, so that the potential toxicological hazard generated by carcasses of these animals might be assessed.

II. ENVIRONMENTAL CONTAMINANTS IN SELECTED MARINE MAMMAL SPECIES IN US WATERS

A. Contaminant classes—background information

II.A.1. Persistent organic pollutants (POPs)

II.A.1.*1*. Polychlorinated biphenyls (PCBs) are complex mixtures of synthetic chlorinated compounds produced in the US until 1977 for use as insulators, coolants and lubricants, particularly in transformers and other electrical equipment (ATSDR, 2000). The basic structure of PCBs consists of a biphenyl backbone with 1 to 10 chlorine atoms, yielding 209 possible PCB congeners. Position and degree of chlorination are important determinants of congener toxicity, with more highly chlorinated and coplanar (dioxin-like) PCBs exhibiting greater toxicity than less chlorinated and non-planar congeners. A greater degree of chlorination also confers longer environmental persistence, which can range from months to years (ATSDR, 2000). The highly lipophilic nature of PCBs allows them to accumulate in fatty tissues of organisms or to associate with organic components of sediments in environmental samples. In animals and humans, PCBs are toxic to integumentary, immune, endocrine, reproductive, and nervous systems. At high doses, PCBs have been associated with liver and kidney damage in laboratory animals. PCBs are a known animal carcinogen and considered a probable human carcinogen by the US Environmental Protection Agency (USEPA) and other agencies (ATSDR, 2000), although no increased risk of cancer has been detected in studies of individuals occupationally exposed to PCBs (Ross, 2004). PCBs also have been implicated as environmental endocrine disruptors in wildlife species (Chiu et al., 2000), although this link is controversial (Ross, 2004). While PCBs can persist in the environment for many years, they are susceptible to both anaerobic and aerobic microbial degradation via metabolism of congeners with higher or lower degrees of chlorination, respectively (Abraham et al., 2002).

II.A.1.*2*. Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzo-p-furans (PCDFs) are chlorinated hydrocarbon compounds produced by combustion of waste and organic materials, or as contaminants in chemical manufacturing processes. Both compound classes consist of two benzene rings joined by either one (PCDFs) or two

(PCDDs) oxygen atoms. Like PCBs, PCDDs/PCDFs are environmentally persistent compounds that associate with particulate matter and that are highly lipophilic and prone to biomagnify in the food chain. The most toxic PCDD, 2,3,7,8 tetrachlorodibenzo-*p*-dioxin (TCDD) serves as a standard for comparison of other dioxins and dioxin-like PCBs, the toxicity of which is sometimes expressed in "toxic equivalency factors" (TEQs) of TCDD (ATSDR, 1998). TCDD can cause dermal and hepatic toxicity, and is classified as a human carcinogen. Other PCDDs/PCDFs may cause similar effects, depending upon their structure (ATSDR, 1998).

II.A.1.*3*. DDT (1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane) is an organochlorine pesticide banned in the US in 1972, but still used in many parts of the world for control of malaria-transmitting mosquitoes. Technical grade DDT is a mixture of *p,p'*-, *o,p'*-D, and *o,o'*-DDT isomers and may also contain DDE (1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene) and DDD (1,1-dichloro-2,2-bis(p-chlorophenyl)ethane) as contaminants. The latter two compounds may also be produced via metabolism by some organisms, including microbes in the environment. In temperate regions, soil half-life of DDT is approximately 5 years, but may be up to 4 to 6 times as long, depending on the environmental conditions (ATSDR, 2002a). Like other organochlorines, DDT, DDE and DDD are extremely lipid soluble, tending to biomagnify and to associate with organic matter (soils and sediments) in the environment. At extremely high doses, DDT may be neurotoxic (ATSDR, 2002a). DDT and its metabolites are carcinogens and may also act as endocrine disruptors, although studies on estrogenic effects of DDT have been equivocal (Turusov et al., 2002).

II.A.1.*4*. Chlordane is an organochlorine pesticide used in the US until 1988 (ATSDR, 1994). It is a complex mixture of various chlordane isomers and other compounds, the fractions of which vary depending upon the purity of the preparation. The predominant components identified in technical chlordane were *cis*-chlordane, *trans*-chlordane, *trans*-nonachlor, octachlordane, heptachlor, and *cis*-nonachlor (Dearth and Hites, 1991). Chlordane may persist for decades in the environment and is highly lipid soluble, with oxychlordane comprising the major metabolite that bioaccumulates in fatty tissues (USEPA, 1997). A component of chlordane, heptachlor was also produced and used as a pesticide in its own right. Heptachlor epoxide may be produced by degradation or metabolism of heptachlor (ATSDR, 1993). Chlordane and the related compounds heptachlor and heptachlor epoxide are lipophilic and environmentally persistent (ATSDR, 1994 and 1993). At high doses, chlordane may cause toxic effects in the liver, digestive tract and nervous system (ATSDR, 1994). While data are limited, heptachlor and heptachlor epoxide also have been associated with toxic effects to the nervous and reproductive systems, as well as to liver and kidney in humans or animals, with the epoxide metabolite being more toxic than its parent compound (ATSDR, 1993). Evidence as to carcinogenicity of chlordane is inconclusive (ATSDR, 1994; USEPA, 1997). Heptachlor and heptachlor epoxide are considered possible human carcinogens by the USEPA, while the International Agency for Research on Cancer (IARC) determined that the two compounds are not classifiable with respect to human carcinogenicity (ATSDR, 1993).

II.A.1.*5*. Hexachlorobenzene (HCB) was produced in the US until 1970s, although it continued to be used as a fungicide until 1984. Also, some HCB is formed as a by-product in the manufacture of other chlorinated compounds as well as during incineration of garbage (McGovern, 2004). HCB is ubiquitous and persistent in the environment, with a half-life of up to approximately 6 years in soil, air and surface water, while in groundwater the half-life may be almost twice as long. Like other organochlorines, HCB is insoluble in water, but highly soluble in organic solvents and lipid allowing it to bioaccumulate readily in fatty tissues. HCB is toxic to virtually all organ systems, with the central nervous system, ovary and liver comprising the most vulnerable target organs. The USEPA classifies HCB as a probable human carcinogen based on data from animal studies (ATSDR, 2002b).

II.A.1.*6*. Technical grade hexachlorocyclohexane (HCH), which contains α, β, γ, δ, and ε isomers, was produced in the US until 1983 for use as an insecticide. While other forms of HCH are now banned, γ-HCH (also known as lindane) is still imported for use as an insecticide and topical treatment for lice (Research Triangle Institute, 1999). At high doses, HCHs can result in neural, musculoskeletal and reproductive toxicity. Abnormalities in developmental, endocrine, hepatic, renal, immunologic and hematopoieitic indices associated with HCH exposure also have been documented in humans or animals. Some animal studies have found increased incidence of liver cancer in rodents following chronic oral exposure to HCHs, leading the Department of Health and Human Services to extrapolate that HCHs may be a possible human carcinogen (Research Triangle Institute, 1999).

II.A.2. Toxic metals

1. *Cadmium*
2. *Lead*
3. *Mercury*
4. *Organotins*

Toxic metals are a unique class of environmental contaminants in that they occur naturally, although human activities have allowed them to become more pervasive and accessible to biotic cycles. However, because they are innate to the environment, it is difficult to distinguish “pollutant” from “natural” sources. Moreover, metals are not degraded via microbial or physical action, but may merely metamorphose by alterations in oxidation state and/or in the other elements to which they are bound in compounds.

II.A.2.*1*. Cadmium is a heavy metal often released as a by-product during refining of zinc, copper and lead, and has some industrial uses, such as in batteries and electrical components. There also are natural releases of cadmium to the environment through events such as volcanic eruptions and forest fires. Compared to other metals, cadmium is somewhat unique in that it is taken up and may accumulate to appreciable levels in some plants. In animals, cadmium is sequestered in the kidney and liver. The target organ of cadmium is the kidney; in addition, it is toxic to a number of other organs, including liver, bone and blood vessels. While data are scant, cadmium may be carcinogenic as well (ATSDR, 1999a). Various marine mammals are exposed to or bioaccumulate high levels of cadmium compared to terrestrial species (Woshner et al., 2001a; 2001b).

Although no physiologic requirement can be demonstrated for cadmium in the majority of organisms, some researchers recently have characterized a cadmium-containing enzyme in a marine diatom, refuting the long-held belief that cadmium was not only universally toxic but also functionless in living creatures (Lane et al., 2005).

II.A.2.*2*. Lead is ubiquitous in the environment, both as a result of natural geologic distribution and because of wide industrial applications, including former usage as a gasoline and paint additive. It is also released by combustion of fossil fuels and waste incineration. Lead is believed to be universally toxic, even at very low levels, with no organisms known to date demonstrating a physiologic requirement for lead. Generally, ingested lead is not well absorbed; however, because it is chemically similar to calcium, it may be assimilated and accumulated in tissues in lieu of calcium, particularly in growing organisms that are calcium limited. Although the nervous system (particularly the developing brain) is considered the "target organ" of lead, this metal is toxic to virtually all body systems, including the hematopoietic, cardiovascular, reproductive, immune, gastrointestinal, and musculoskeletal systems. Lead is carcinogenic in laboratory species, but has not been established as a human carcinogen (ATSDR, 1999b).

II.A.2.*3*. Mercury (Hg) is another metal that is apparently toxic to all organisms, even at low levels. Relative toxicity of mercury depends largely on the form of the metal (organic versus inorganic), and as is the case for all toxicants, the route by which exposure occurs. Ingested elemental mercury is not well-absorbed and hence of low toxicity, while exposure to methylmercury by this route is highly toxic, as it is almost completely absorbed. Like other toxic metals, mercury enters the environment from natural sources, such as volcanoes and degassing of the earth's crust. However, anthropogenic activity has dramatically increased mercury emissions, primarily through burning of fossil fuels, as well as through mining and other industrial applications. While mercury is toxic to virtually all body systems, the nervous system and kidney are the primary target organs for organic and inorganic mercury, respectively (ATSDR, 1999c).

II.A.2.*4*. In its inorganic form, tin (Sn) is non-toxic. However, organic forms of tin may be highly toxic. Organotins have a variety of industrial applications, including use of mono- and di-substituted organotins as catalysts and stabilizers in PVC plastics (Appel, 2004). Tributyl tin (TBT) compounds have been widely used as pesticides, particularly in antifouling paints on ships. As such, TBTs are ubiquitous in the aquatic environment, even as their use is being phased out due to concerns with respect to their ecotoxicity (Rüdel, 2003). As with many other toxicants, organotins adsorb onto organic particulates, such that an increase in dissolved organic matter decreases bioavailability of organotins. Also, speciation of organotins is pH-dependent; hence, increasing pH is associated with formation of organotin hydroxides, which are lipophilic and therefore predisposed to bioaccumulate (Fent, 2003). Organotins, especially TBT and triphenyltin (TPT) have been associated with tumorigenicity of the adenohypophysis, developmental toxicity, reproductive toxicity, neurotoxicity and most especially immunotoxicity, with thyrotoxicity apparently consitituting the most sensitive toxic endpoint in mammals (Rüdel, 2003). Gastropods are exceptionally vulnerable to toxic effects of TBT, which disrupts steroid metabolism leading to development of imposex at even minute

concentrations. In the environment, organotins undergo aerobic degradation, but can persist for years in anoxic sediments (Fent, 2004).

II.A.3. Miscellaneous contaminants

1. *Polybrominated diphenyl ethers (PBDEs)*
2. *Polyfluoroalkyls (PFAs)*

II.A.3.*1*. Polybrominated diphenyl ethers (PBDEs) are one group of brominated flame retardants that are currently in wide usage. These compounds are added to plastics, particularly those comprising plastic components of computers and televisions as well as to plastic foams and textiles (ATSDR, 2002c; Darnerud et al., 2001). While over 200 PBDE congeners are possible, forms with fewer than four bromine atoms generally are not employed in commercial applications. Release of PBDEs into the environment is believed to occur primarily through incineration and volatilization; leaching from landfills may also serve as a source of PBDE contamination, although studies are lacking to verify this (Darnerud et al., 2001). Like other persistent organic pollutants, PBDEs are resistant to environmental and biotic degradation. Although research is limited, uptake from the environment appears to occur mainly through oral exposure, with absorption efficiency inversely related to degree of bromination (ATSDR, 2002c). PBDEs are lipophilic, and appear to have potential for both bioaccumulation and biomagnification (ATSDR, 2002c). The extent to which PBDEs are metabolized and excreted appears to vary with species and degree of congener bromination (Darnerud et al., 2001). In laboratory studies, effects of PBDEs range from immunotoxicity and thyrotoxicity, to hormone disruption, neurobehavioral abnormalities and developmental toxicity. The limited evidence available to date suggests that PBDEs do not have teratogenic or genotoxic potential. (ATSDR, 2002c).

II.A.3.*2*. Polyfluoroalkyls (PFAs) are a group of compounds comprised chiefly by fluorotelomer alcohols and perfluoroalkyl sulfonamide alcohols (as well as their breakdown products), that were used in a variety of commodities, including surface protectants, paper, insecticides, surfactants, and fire-retardants (Olsen et al., 2003; Seacat et al., 2002). Because of their toxicity and environmental persistence, some PFAs have been banned (Olsen e al., 2003; Seacat et al., 2002). Through metabolism or environmental degradation, fluorotelomer alcohols appear to form carboxylic acids, fluorotelomer carboxylic acids (FTCA), and fluorotelomer unsaturated carboxylic acids (FTUCA) (Houde et al., 2005). Degradation of perfluoroalkyl sulfonamide alcohols yields sulfonic acids (PFSAs) such as perfluorooctane sulfonate (PFOS)—a stable, bioaccumulative, toxic end product that has been found among diverse species from widely different environments (Giesy and Kannan, 2001). Toxicity of PFOS is related primarily to effects on the liver, including hepatocellular hypertrophy and altered lipid metabolism, including decreased cholesterol (Olsen et al., 2003). Some PFAs have been found to act as hepatic peroxisome proliferators or to provoke developmental and neuroendocrine toxicity (Houde et al., 2005).

II.B. Concentrations of environmental contaminants in selected species of marine mammals in US waters

II.B.1. Species addressed

Twelve species of marine mammals are included in this review, based upon the frequency and patterns with which they strand (T. Rowles and J. Whaley, pers. comm.). Species that tend to strand as individuals include: pygmy and dwarf sperm whales (*Kogia breviceps* and *K. simus*, respectively); common bottlenose dolphin (*Tursiops truncatus*); California sea lion (*Zalophus californianus*); harbor seal (*Phoca vitulina*); and elephant seal (*Mirounga angustirostris*). Species that tend to strand *en masse* are represented by: long and short-finned pilot whales (*Globicephala melas and G. macrorhynchus*, respectively); rough-toothed dolphin (*Steno bredanensis*); and white-sided dolphin (*Lagenorhynchus acutus*). Large whale species considered are the gray and humpback whales (*Eschrichtius robustus* and *Megaptera novaeangliae*, respectively).

II.B.2. Databases reviewed, including time period examined and search terms used

The online databases Biological Abstracts, PubMed, and Toxline were searched, using an exhaustive list of key words, including (but not limited to): *Kogia*, *Tursiops*, *Zalophus*, *Phoca*, *Mirounga*, *Globicephala*, *Steno*, *Lagenorhynchus*, *Eschrichtius robustus*, *Megaptera*, elephant seal, dolphin, marine mammal, pinniped, whale, cetacean, polychlorinated biphenyls, PCB, DDT, persistent organic pollutants, pollutant, contaminant, heavy metal, mercury, hexachlorocyclohexane, HCB, chlordane, heptachlor, dieldrin, aldrin, and organochlorine(s). Reports on marine mammals considered for inclusion in this review were confined to those published in peer-reviewed journals from 1995 through 2005 that addressed any of the twelve species designated above in US waters. A few ancillary studies that were either published prior to 1995, or that dealt with marine mammals in non-US waters, were included when those waters were contiguous with US waters, and when other US-based studies for those particular species were lacking. For example, Varanasi et al., 1994, was published outside of the timeframe used as a criterion for inclusion in this review. Nevertheless, I incorporated this study, as well as a few other studies (Tilbury et al., 2002; De Luna and Rosales-Hoz, 2004; Ruelas-Inzunza et al., 2002; Mendez et al., 2002) that addressed contaminants in *E. robustus* from Russian (Bering Sea) and Mexican waters, because contaminant studies for gray whales were limited. Also, because gray whales migrate long distances, whales studied in Mexican or Russian waters likely navigate US waters as well, where they may strand or die and present a carcass disposal problem.

II.B.3. Overview of tissue contaminant concentrations: Literature review summary

II.B.3.*0. General comments upon format of tables and appendices*

This review covers studies done by multiple scientists who were in various geographic locations, attempting to answer different research questions, and using diverse techniques and laboratories. Consequently the data are quite disparate and difficult to harmonize. For

this reason, and to make this report as pertinent as possible for future applications, I have compiled as much data as feasible directly from the source papers. However, whenever possible, I attempted to give contaminant concentrations on a wet weight basis (since that is the state of the carcass presented for disposal) and to standardize the units in which data were given, presenting the persistent organic pollutants, PCDD/Fs, PBDEs, and PFAs in ng/g and metals in ug/g. I converted values from ng/g lipid weight to ng/g wet weight for Shaw et al, 2005, Struntz et al., 2004, She et al., 2002 and Gautier et al., 1997. All tables and appendices (in the accompanying Excel file) contain extensive footnotes to accurately characterize the data. In addition, species designations are color-coded in a consistent manner throughout the tables and appendices, to allow for easy location and comparison of text with respect to a given species.

II.B.3.*1. Persistent organic pollutants (POPs), including PCBs, PCDD/Fs, DDTs, Chlordanes, HCB, and HCHs*

Because organochlorines, as a class, are lipophilic compounds that might be expected to reach highest concentrations in fat (Norstrom, 2002), blubber represents the tissue where maximum organochlorine concentrations are likely. Blubber is also the tissue for which the most data have been generated pertaining to organochlorine contaminants in marine mammals. Reported levels of major persistent organic pollutants (i.e., PCBs, DDTs, chlordanes, mirex, dieldrin, aldrin, endrin, HCHs, HCB, and endosulfans) in the selected cetacean and pinniped species from US waters are provided in Appendices I and II, respectively, and summarized in Table 1, while metadata for studies addressing major persistent organic contaminants in the chosen marine mammals is presented in Table 2. Twenty-one papers focused on organochlorine contaminants in the cetacean species under consideration, while 16 studies examined organochlorines in pinniped species. For all contaminant classes combined, the number of studies and the collective number of individuals sampled for each cetacean species were as follows: *T. truncatus,* 9 studies (two of which, by Reddy et al. dealt with the same animals), 218 sampled; *K. breviceps*, 1 study, 2 sampled; *L. acutus,* 3 studies (two of which, by Tuerk et al., dealt with the same animals), 53 sampled; *G. melas*, 4 studies, 60 sampled (with some overlap between studies and animals, so this number is likely somewhat inflated); *S. bredanensis*, 2 studies (both of which dealt with the same animals), 15 sampled; *E. robustus*, 3 studies, 101 sampled (again, there appears to be some overlap between studies and animals, so this number likely overstates the true number of animals represented); *M. novaeangliae*, 2 studies, 32 sampled. For pinniped species, the number of studies and maximum total number of animals sampled were: *Z. californianus*, 6 studies (Le Boeuf et al., 2002 and Kannan et al., 2004 consider the same animals), 148 sampled; *P. vitulina*, 10 studies, 201 sampled; *M. angustirostris,* 4 studies, 13 sampled (Table 2). I found no studies addressing organochlorine contaminants in *K. simus* or *G. macrorhynchus* in my review of the literature.

Among the species addressed, mean total PCB levels were highest in blubber of *T. truncatus* (240,000 ng/g lipid weight; n=6), which also had the highest single observed concentration of total PCBs, at 1,120,000 ng/g lipid weight. *P. vitulina* had the lowest mean concentration of total PCBs (1.7 ng/g wet weight, n=10). Compared to other

species targeted in this review, California seal lions had by far the highest mean blubber concentrations of sum DDTs (143,000 ng/g lipid wgt.; n=36) and sum HCHs (780 ng/g lipid wgt.; n=36), as well as the highest single observed concentration of these contaminants in blubber (1,400,000 and 2,240 ng/g lipid wgt. for sum DDTs and sum HCHs, respectively, with the latter value obtained by adding the standard deviation to the corresponding mean). Compared to other species, *E. robustus* (n=38) and *K. breviceps* (n=2) had low blubber concentrations of sum DDTs (means of 130 and 540 ng/g wet weight, respectively). K. breviceps also had the lowest documented levels of HCHs (1.1 ng/g wet weight), although little significance can be imparted to a sample consisting of two individuals. *L. acutus* displayed both highest mean and overall blubber concentrations of sum chlordanes (8,800 ng/g wet weight; n=23, and 23,900 ng/g wet weight, respectively) and dieldrin (1,810 ng/g wet weight; n=23, and 3,940 ng/g wet weight, respectively). *Tursiops* had the lowest mean and overall blubber concentration of dieldrin (non-detectable) observed, while the lowest mean blubber concentration of sum chlordanes occurred in *K. breviceps*, followed by *E. robustus* (50 and 140 ng/g wet weight, respectively). The highest mean blubber concentrations of mirex (32,000 ng/g wet weight; n=8) and HCB (4,700 ng/g wet weight; n=8) were found in *P. vitulina*, which also had the highest overall blubber concentrations of these two contaminants (60,000 ng/g wet weight and 8,500 ng/g wet weight for mirex and HCB, respectively). Overall, among the species and data represented in this review of the literature, the bottlenose dolphin appears to be the cetacean species most contaminated by persistent organic pollutants, followed by *L. acutus*, while among pinnipeds the California sea lion represents the most contaminated species, followed by harbor seals. A cursory examination of Table 1 reveals that, among the selected cetacean species, *E. robustus*, *K. breviceps* (represented by only two individuals) and *M. novaeangliae* appear the least contaminated with persistent organic pollutants. Such a perfunctorily apparent inference cannot be made with respect to the three pinniped species, however; while blubber concentrations of none of the persistent organic pollutants in *M. angustirostris* exceeds the levels in the other two species, neither are they consistently lower than concentrations observed in *P. vitulina* or *Z. californianus*.

Collectively, four studies have measured PCDD/Fs in blubber from three of the species included in this review (Table 3). For all studies combined, the total number of individuals for each species is: *E. robustus* (n=2), *M. angustirostris* (n=6), and *P. vitulina* (n=75). Two studies, Jarman et al., 1996 and Lake et al., 1995, found no detectable levels of PCDD/Fs in blubber of *E. robustus* (n=2) or *P. vitulina* (n=15), respectively. The highest reported mean concentrations of sum PCDDs and sum PCDFs were 0.279 ng/g lipid weight (n=38) and 0.026 ng/g lipid weight=5), respectively, both of which were in seals from British Columbia, Canada.

II.B.3.*2. Toxic metals, including Hg, Cd, Pb, and Sn*

Twelve studies examined one or more of the toxic metals, Hg, Cd, Pb and Sn, in the cetacean species addressed in this review, while only three studies evaluated one or more of the metals in question in the selected pinniped species. For all metal contaminants combined, the number of studies and the maximum collective number of individuals

sampled for each cetacean species were as follows: *T. truncatus,* 5 studies, 148 sampled; *K. breviceps,* 1 study, 3 sampled; *L. acutus,* 1 study, 4 sampled; *G. melas*, 1 study, 9 sampled; *S. bredanensis,* 1 study, 15 sampled; and *E. robustus,* 5 studies, 35 sampled. Similarly for pinniped species, the number of studies and total number of animals sampled were: *Z. californianus,* 1 study, 10 sampled; *P. vitulina,* 2 studies, 13 sampled; *M. angustirostris,* 2 studies, 6 sampled. No studies were found that addressed levels of the specified metal contaminants in *G. macrorhynchus, M. novaeangliae,* or *K. sima* between 1995 and 2006 in US waters. Metadata describing studies pertaining to the potentially toxic metals Hg, Cd, Pb and Sn are summarized in Table 4, while reported levels of these metals in the given species over the publication timeframe under consideration are given in Appendix III.

It is difficult to make any generalizations or to draw any meaningful comparisons about the four potentially toxic metals covered by this literature review, because reported data is quite limited and methodologies between studies vary. Overall, ten studies report values on a wet weight basis, while the remaining five present metal concentrations on a dry weight basis, and since raw data generally are not provided, the reader cannot convert data from one form to the other.

II.B.3.*3*. Miscellaneous contaminants: *PBDEs* and *PFAs*

Within the geographic and temporal confines of this review, 6 studies have evaluated concentrations of PBDEs in the selected species of marine mammals (Table 5). Four studies examined PBDEs in blubber of *Tursiops, L. acutus, S. bredanensis* and *P. vitulina*, while the remaining two studies addressed PBDE levels in *P. vitulina* blood. Among the species in these studies, adult male *Tursiops* demonstrated the highest PBDE contamination, with a mean concentration of 3,110 ng/g wet weight in blubber (range: 126–16300, n=9).

As for PBDEs, PFAs have been assessed in a limited number of individuals and species (Table 6). Kannan et al., 2001 analyzed hepatic concentrations of PFOS in the following species: *K. breviceps* (n=2), *S. bredananensis* (n=2), *T. truncatus* (n=20), *Z. califonianus* (n=6), *M. angustirostris* (n=5), *P. vitulina* (n=3). Houde et al. (2005) conducted a more extensive study of various PFA compounds in *Tursiops* blubber and found concentrations of mean sum PFAs ranging from 778 (n=42) to 1738 (n=47) ng/g wet weight between geographic locations on the eastern US coast.

II.C. Conclusions and comments regarding the nature and adequacy of the available literature database

The studies encompassed by this literature review were conducted to determine concentrations of specific environmental contaminants in various given marine mammal species. Such monitoring investigations generally are undertaken to learn how environmental contaminants may be impacting individual or population health, as well as to indicate whether environmental contaminants might be implicated as a causative factor in stranding events. Tursiops is, by far, the species for which the most comprehensive

data exist pertaining to contaminants, and among those contaminants, PCBs have been the most widely analyzed in this species. Of nine studies that sampled a combined total of 218 bottlenose dolphins for PCBs, seven studies evaluated PCBs in blubber, with a combined total sample size of 210 animals. Of these 210 dolphin blubber samples, 129 appear to have been obtained via biopsy, while 81 were apparently from stranded animals. Eighty-one of the 210 blubber samples were taken from dolphins in the Gulf of Mexico, off the FL (including Sarasota Bay), TX, or AL coasts. Sixty-two blubber samples were from Atlantic dolphins, generally from three sites: Beaufort, NC, (n=40) Charleston Bay, SC, (n=11) and Indian River Lagoon, FL (n=17). The remaining 14 blubber samples were from dolphins in San Diego Bay, CA. The blubber PCB data reported among the seven studies is in a variety of formats. Hansen et al., (2004) reported the geometric means of their data, while Wells et al., (2005) did not report means at all. Other studies reported arithmetic means. The number of PCB congeners which comprise "sum PCBs" among these seven studies also vary widely, from ten to eighty-seven congeners, while three studies did not report the identity or number of congeners analyzed. All seven studies report PCB concentrations on a lipid weight basis. However, if the concern is not the consequences of PCB contamination on the dolphin itself, but rather the dispersion of the PCBs contained within the blubber throughout the environment during carcass decomposition or scavenging, the entity of interest is the level of contamination expressed on a wet weight basis. Because individual animal data including blubber percent lipid are not specified in any of these seven studies, conversion of concentration data to a wet weight basis is not possible.

Sampling techniques also influence the levels of organochlorines measured in blubber. Of the seven studies that quantified blubber PCBs, only two (Salata et al., 1995 and Finklea et al., 2000) stipulated that full-thickness blubber samples were obtained. Kuehl and Haebler (1995) and Johnson-Restrepo (2005) did not specify how blubber samples were taken. The remaining three research teams employed biopsy methods, including remote dart (Hansen et al., 2004), punch (Reddy et al., 2001) and wedge (Wells et al., 2005) biopsy. All of these biopsy techniques are inherently biased towards collection of the outermost portion of the blubber. However, Aguilar and Borrell (1991) and Severinsen et al., (2000) documented that organochlorines are not homogenously distributed throughout this tissue in species of two baleen whales and a phocid seal, respectively, but rather stratified such that contaminant levels in the outermost blubber are significantly greater than that of the innermost blubber layer. Moreover, this difference was not attributable merely to variation in lipid content (Severinsen et al., 2000). Struntz et al., 2004 noted the heterogeneous morphological and histological structure of *Tursiops* blubber. Consequently, it would be imprudent to assume that PCBs or other organochlorine contaminants are homogenously dispersed throughout blubber of bottlenose dolphins. Rather, contaminants concentrations obtained from blubber biopsy specimens likely overestimate blubber contaminant burdens, and should be interpreted with caution.

The above summary briefly illustrates the extremely limited nature of the database for the most thoroughly studied species and contaminant combination (*Tursiops* and PCBs) among those considered by this review. For other contaminants and species, the data are

even scantier. Certain generalizations might be made about the distribution of particular contaminants within tissues, and among individuals in a given population. For example, it is generally understood that species higher trophic species such as dolphins are more prone to bioaccumulating higher levels of some contaminants than species that feed at lower trophic levels, such as baleen whales. Also, lipophilic contaminants such as PCBs tend to be at highest levels in blubber of adult males, because contaminant levels increase with age, and because females can depurate some of their acquired contaminant load through transfer to offspring (Wells et al., 2005). This latter phenomenon accounts for the observation that immature animals may have higher blubber PCB concentrations than adults, when levels are evaluated on a lipid weight basis. Despite such documented patterns of PCB accumulation within *Tursiops*, overall the data are quite limited with respect to samples sizes, tissues analyzed and geographic locations represented.

Contaminant monitoring studies tend to focus on tissues that represent target organs of a given toxicant or are sites of bioaccumulation. Because few tissues are assayed, there is generally insufficient information to infer the total body burden of a given contaminant for an individual in a given population. Moreover, patterns of contaminant accumulation will vary based upon exposures. Individuals from highly contaminated areas will not serve to represent animals from less contaminated regions, and vice versa. The heterogeneous nature of contaminants data published for the selected marine mammals in US waters encompassed by this review make it difficult to compare between studies, much less to unify this disparate research into an assemblage with utility for other applications such as the evaluation of the potential toxicological environmental hazards posed by decomposing carcass. At current, the database for the contaminants in the species encompassed by this review is inadequate to support such an assessment.

III. LITERATURE CITED (for literature review text, tables 1-6, and appendices I-III)

Abraham, WR, Nogales, B, Golyshin, PN, Pieper, D, & Timmis, KN. (2002) Polychlorinated biphenyl-degrading microbial communities in soils and sediments. *Current Opinion in Microbiology* **5**, 246-253.

Aguilar, A & Borrell, A. (1991) Heterogeneous distribution of organochlorine contaminants in the blubber of baleen whales: Implications for sampling procedures. *Marine Environmental Research* **31**, 275-286.

Appel, KE. (2004) Organotin compounds: Toxicokinetic aspects. *Drug Metabolism Reviews* **36**, 763-786.

ATSDR, 2002a. *Toxicological profile for DDT, DDE, and DDD.* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 497 pp.

_____, 2002b. *Toxicological profile for hexachlorobenzene*. Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 403 pp.

_____, 2002c. *Draft toxicological profile for polybrominated biphenyls and polybrominated diphenyl ethers.* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 497pp.

_____, 2000. *Toxicological profile for polychlorinated biphenyls (PCBs).* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 948 pp.

_____, 1999a. *Toxicological profile for cadmium.* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 439 pp.

_____, 1999b. *Toxicological profile for lead.* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 640 pp.

_____, 1999c. *Toxicological profile for mercury*. Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 676 pp.

_____, 1998. *Toxicological profile for chlorinated dibenzo-p-dioxins*. Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 723 pp.

_____, 1994. *Toxicological profile for chlordane.* Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 262 pp.

_____, 1993. *Toxicological profile for heptachlor/heptachlor epoxide*. Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 162 pp.

Beck, KM, Fair, P, McFee, W, & Wolf, D. (1997) Heavy metals in livers of bottlenose dolphins stranded along the South Carolina coast. *Marine Pollution Bulletin* **34**(9), 734-739.

Becker, P, Mackey, E, Demiralp, R, Schantz, M, Koster, B, & Wise, S. (1997) Concentrations of chlorinated hydrocarbons and trace elements in marine mammal tissues archived in the U.S. National Biomonitoring Specimen Bank. *Chemosphere* **34**, 2067-2098.

Chiu, A, Chiu, N, Beaubier, N, Beaubier, J, Nalesnik, R, Sing, D, Hill, W, Lau, C, & Riebow, J. (2000) Effects and mechanisms of PCB ecotoxicity in food chains: Algae → fish → seal → polar bear. *Environmental Science & Health* **18**, 127-152.

Darnerud, PO, Eriksen, GS, Jóhannesson, T, Larsen, PB, & Viluksela, M. (2001) Polybrominated diphenyl ethers: Occurrence, dietary exposure, and toxicology. *Environmental Health Perspectives* **109**(Suppl. 1), 49-68.

De Luna, CJ & Rosales-Hoz, L. (2004) Heavy metals in tissues of gray whales *Eschrichtius robustus*, and in sediments of Ojo de Liebre Lagoon in Mexico. *Bulletin of Environmental Contamination & Toxicology* **72**, 460-466.

Dearth, M & Hites, R. (1991) Complete analysis of technical chlordane using negative ionization mass spectrometry. *Environmental Science & Technology* **25**, 245-254.

Debier, C, LeBoeuf, B, Ikonomou, M, De Tillesse, T, Larondelle, Y, & Ross, P. (2005) Polychlorinated biphenyls, dioxins, and furans in weaned, free-ranging northern elephant seal pups from central California, USA. *Environmental Toxicology & Chemistry* **24**, 629-633.

Debier, C, Ylitalo, G, Weise, M, Gulland, F, Costa, D, Le Boeuf, J, de Tillesse, T, & Larondelle, Y. (2005) PCBs and DDT in the serum of juvenile California sea lions: Associations with vitamins A and E and thyroid hormones. *Environmental Pollution* **134**, 323-332.

Fent, K. (2003) Ecotoxicological problems associated with contaminated sites. *Toxicology Letters* **140-141**, 353-365.

Finklea, B, Miller, G, & Busbee, D. (2000) Polychlorinated biphenyl residues in blubber of male Atlantic bottlenose dolphins *(Tursiops truncatus)* that stranded and died at Matagorda Bay. *Bulletin of Environmental Contamination & Toxicology* 64, 323-332.

Gauthier, JM, Metcalfe, CD, & Sears, R. (1997) Chlorinated organic contaminants in blubber biopsies Northwestern Atlantic balaenopterid whales summering in the Gulf of St. Lawrence. *Marine Environmental Research* **44**(2), 201-223.

Giesy, J & Kannan, K. (2001) Global distribution of perfluorooctane sulfonate in wildlife. *Environmental Science & Technology* **35**, 1339-1342.

Hansen, LJ, Schwacke, LH, Mitchum, GB, Hohn, AA, Wells, RS, Zolman, ES, & Fair, PA. (2004) Geographic variation in polychorinated biphenyl and organochlorine pesticide concentrations in the blubber of bottlenose dolphins from the US Atlantic coast. *Science of the Total Environment* **319**, 147-172.

Hayteas, DL & Duffield, DA. The determination by HPLC of PCB and *p,p'*-DDE residues in marine mammals stranded on the Oregon coast, 1991-1995. (1997) *Marine Pollution Bulletin* **34**(10), 844-848.

Hong, CS, Calambokidis, J, Bush, B, Steiger, GH, & Shaw, S. (1996) Polychlorinated biphenyls and organochlorine pesticides in harbor seal pups from the inland waters of Washington State. *Environmental Science & Technology* **30**, 837-844.

Houde, M, Wells, R, Fair, P, Bossart, G, Hohn, A, Rowles, T, Sweeney, J, Solomon, K, & Muir, D. (2005) Polyfluoroalkyl compounds in free-ranging bottlenose dolphins (*Tursiops truncatus*) from the Gulf of Mexico and the Atlantic Ocean. *Environmental Science & Technology* **35**, 6591-6598.

Jarman, WM, Norstrom, RJ, Muir, DCG, Rosenberg, B, Simon, M, & Baird, RW. (1996) Levels of organochlorine compounds, including PCDDs and PCDFs, in the blubber of cetaceans from the west coast of North America. *Marine Pollution Bulletin* **32**(5), 426-436. 96.

Johnson-Restrepo, B, Kannan, K, Addink, R, & Adams, D. (2005) Polybrominated diphenyl ethers and polychlorinated biphenyls in a marine foodweb of coastal Florida. *Environmental Science & Technology* **39**, 8243-8250.

Kajiwara, N, Kannan, K, Muraoka, M, Watanabe, M, Takahashi, S, Gulland, F, Olsen, H, Blankenship, AL, Jones, PD, Tanabe, S, & Giesy, JP. (2001) Organochlorine pesticides, polychlorinated biphenyls, and butytin compounds in blubber and livers of stranded California sea lions, elephant seals, and harbor seals from coastal California, USA. *Archives of Environmental Contamination & Toxicology* **41**, 90-99.

Kannan, K, Kajiwara, N, Le Boeuf, BJ, & Tanabe, S. (2004) Organochlorine pesticides and polychlorinated biphenyls in California sea lions. *Environmental Pollution* **131**, 425-434. 2004.

Kannan, K, Koistinen, J, Beckmen, K, Evans, T, Gorzelany, JF, Hansen, KJ, Jones, PD, Helle, E, Nyman, M, & Giesy, JP. (2001) Accumulation of perfluorooctane sulfonate in marine mammals. *Environmental Science & Technology* **35**, 1593-1598.

Kannan, K, Senthilkumar, K, Loganathan, BG, Takahashi, S, Odell, DK, & Tanabe, S. (1997) Elevated accumulation of tributyltin and its breakdown products in bottlenose dolphins (*Tursiops truncatus*) found stranded along the U.S. Atlantic and Gulf Coasts. *Environmental Science & Technology* **31**, 296-301.

Krahn, MM, Becker, PR, Tilbury, KL, & Stein, JE. (1997) Organochlorine contaminants in blubber of four seal species: Integrating biomonitoring and specimen banking. *Chemosphere* **34**(9-10), 2109-2121.

Krahn, M, Ylitalo, G, Burrows, D, Calambokidis, J, Moore, S, Gosho, M, Gearin, P, Plesha, P, Brownell, R, Blokhin, S, Tilbury, K, Rowles, T, & Stein, J. (2001) Organochlorine contaminant concentrations and lipid profiles in eastern North Pacific gray whales (*Eschrichtius robustus*). *Journal of Cetacean Research & Management* **3**, 19-29.

Kuehl, DW & Haebler, R. Organochlorine, organobromine, metal, and selenium residues in bottlenose dolphins (*Tursiops truncatus*) collected during an unusual mortality event in the Gulf of Mexico, 1990. (1995) *Archives of Environmental Contamination & Toxicology* **28**, 494-499.

Lake, CA, Lake, JL, Haebler, R, McKinney, R, Boothman, WS, & Sadove, SS. (1995) Contaminant levels in harbor seals from the northeastern United States. *Archives of Environmental Contamination & Toxicology* **29**, 128-134.

Lane, T. & Morel, F. (2000) A biological function for cadmium in marine diatoms. *Proceedings of the National Academy of Sciences* **97**, 4627-4631.

Le Boeuf, B., Giesy, J., Kannan, K., Kajiwara, N., Tanabe, S., & Debier, C. (2002) Organochloride pesticides in California sea lions revisited. *BMC Ecology* **2**, http://www.biomedcentral.com/1472-6785/2/11.

Lieberg-Clark, P, Bacon, CE, Burns, SA, Jarman, WM, & Le Boeuf, BJ. DDT in California sea lions: A follow-up study after 20 years. (1995) *Marine Pollution Bulletin* **30**(11), 744-745.

Mackey, EA, Demiralp, R, Becker, PR, Greenberg, RR, Koster, BJ, & Wise, SA. (1995) Trace element concentrations in cetacean liver tissues archived in the National Marine Mammal Tissue Bank. *Science of the Total Environment* **175**, 25-41.

Mackey, EA, Oflaz, RD, Epstein, MS, Buehler, B, Porter, BJ, Rowles, T, Wise, SA, & Becker, PR. Elemental composition of liver and kidney tissues of rough-toothed dolphins (*Steno bredanensis*). (2003) *Archives of Environmental Contamination & Toxicology* **44**, 523-532.

McGovern, V. (2004) Hexachlorobenzene exposure: Widespread toxicant produces pervasive effects. *Environmental Health Perspectives* **112**, A416.

Meador, JP, Ernest, D, Hohn, AA, Tilbury, K, Gorzelany, J, Worthy, G, & Stein, JE. (1999) Comparison of elements in bottlenose dolphins stranded on the beaches of Texas and Florida in the Gulf of Mexico over a one-year period. *Archives of Environmental Contamination & Toxicology* **36**, 87-98.

Mendez, L, Alvarez-Castańeda, ST, Acosta, B, & Sierra-Beltran, AP. Trace metals in tissues of gray whale (*Eschrichtius robustus*) carcasses from the Northern Pacific Mexican Coast. (2002) *Marine Pollution Bulletin* **44**, 217-221.

Metcalfe, C, Koenig, B, Metcalfe, T, Paterson, G, & Sears, R. Intra- and inter-species di.erences in persistent organic contaminants in the blubber of blue whales and humpback whales from the Gulf of St. Lawrence, Canada. *Marine Environmental Research* **57**, 245-260. 2004.

Neale, J., Gulland, F., Schmeltzer, K., Harvey, J., Berg, E., Allen, S., Greig, D., Grig, E, & Tjeerdema, R. (2005) Contaminant loads and hematological correlates in the harbor seal (*Phoca vitulina*) of San Francisco Bay, California. *Journal of Toxicololgy & Environmental Health, Part A* **68**, 617-633.

Neale, J, Schmeltzer, K, Gulland, F, Berg, E, & Tjeerdema, R. (2005) Organohalogen levels in harbor seal (*Phoca vitulina*) pups increase with duration of nursing. *Journal of Toxicololgy & Environmental Health, Part A* **68**, 687-691.

Norstrom, R.J. (2002) Understanding bioaccumulation of POPs in food webs: Chemical, biological, ecological and environmental considerations. *ESPR — Environmental Science & Pollution Research* **9**, 300-303.

Olsen, GW, Church, TR, Miller, JP, Burris, JM, Hansen, KJ, Lundberg, JK, Armitage, JB, Herron, RM, Medhdizadehkashi, Z, Nobiletti, JB, O'Neill, EM, Mandel, JH, Zobel, LR.. (2003) Perfluorooctanesulfonate and other fluorochemicals in the serum of American Red Cross adult blood donors. *Environmental Health Perspectives* **111**, 1892-1901.

Owen, BD & Flegal, AR. (1998) Blood lead concentrations in marine mammals validate estimates of 10^2- to 10^3-fold Increase in human blood lead concentrations. *Environmental Research* **78**(2), 134-139.

Reddy, M, Echols, S, Finklea, B, Busbee, D, Reif, J, & Ridgway, S. (1998) PCBs and chlorinated pesticides in clinically normal *Tursiops truncatus*: Relationship between levels in blubber and blood. *Marine Pollution Bulletin* **36**(11), 892-903.

Reddy, ML, Reif, JS, Bachand, A, & Ridgway, SH. (2001) Opportunities for using Navy marine mammals to explore associations between organochlorine contaminants and unfavorable effects on reproduction. *Science of the Total Environment* **274**, 171-182.

Research Triangle Institute, 1999. *Toxicological profile for alpha-, beta-, gamma-, and delta-hexachlorocyclohexane*. Agency for Toxic Substances and Disease Registry, Public Health Service, US Department of Health and Human Services, Atlanta, Georgia. 316 pp.

Ross, G. (2004) The public health implications of polychlorinated biphenyls (PCBs) in the environment. *Ecotoxicology & Environmental Safety* **59**, 274-291.

Ross, P., Jeffries, S., Yunker, M., Addison, R., Ikonomou, M., & Calambokidis, J. (2004) Harbor seals (*Phoca vitulina*) in British Columbia, Canada, and Washington State, USA, reveal a combination of local and global polychlorinated biphenyl, dioxin, and furan signals. *Environmental Toxicology & Chemistry* **23**, 157-165.

Rüdel, H. (2003) Case study: Bioavailability of tin and tin compounds. *Ecotoxicology & Environmental Safety* **56**, 180-189.

Ruelas-Inzunza, J & Páez-Osuna, F. (2002) Distribution of Cd, Cu, Fe, Mn, Pb and Zn in selected tissues of juvenile whales stranded in the SE Gulf of California (Mexico). *Environment International* **28**, 325-329.

Ruelas-Inzunza, JR, Horvat, M, Pérez-Cortés, H, & Páez-Osuna, F. (2003) Methylmercury and total mercury distribution in tissues of gray whales (*Eschrichtius robustus*) and spinner dolphins (*Stenella longirostris*) stranded along the lower Gulf of California, Mexico. *Ciencias Marinas* **29**(1), 1-8.

Salata, GG, Wade, TL, Sericano, JL, Davis, JW, & Brooks, JM. (1995)Analysis of Gulf of Mexico bottlenose dolphins for organochlorine pesticides and PCBs. *Environmental Pollution* **88**, 167-175.

Seacat, A, Thomford, P, Hansen, K, Clemen, L, Eldridge, S, Elcombe, C, & Butenhoff, J (2003) Sub-chronic dietary toxicity of potassium perfluorooctanesulfonate in rats. *Toxicology* **183**, 117-131.

Severinsen, T, Skaare, JU, & Lydersen, C. (2000) Spatial distribution of persistent organochlorines in ringed seal (*Phoca hispida*) blubber. *Marine Environmental Research* **49**(3), 291-302.

Shaw, S, Brenner, D, Bourakovsky, A, Mahaffey, C, & Perkins, C. (2005) Polychlorinated biphenyls and chlorinated pesticides in harbor seals (*Phoca vitulina concolor*) from the northwestern Atlantic coast. *Marine Pollution Bulletin* **50**, 1069-1084.

She, J, Petreas, M, Winkler, J, Visita, P, McKinney, M, & Kopec, D. (2002) PBDEs in the San Francisco Bay area: Measurements in harbor seal blubber and human breast adipose tissue. *Chemosphere* **46**, 697-707.

Struntz, D, McLellan, W, Dillaman, R, Blum, J, Kucklick, J, & Pabst, D. (2004) Blubber development in bottlenose dolphins (*Tursiops truncatus*). *Journal of Morphology* **259**, 7-20.

Struntz, WDJ, Kucklick, JR, Schantz, MM, Becker, PR, McFee, WE, & Stolen, MK. (2004) Persistent organic pollutants in rough-toothed dolphins (*Steno bredanensis*) sampled during an unusual mass stranding event. *Marine Pollution Bulletin* **48**, 164-173.

Tilbury, KL, Adams, NG, Krone, CA, Meador, JP, Early, G, & Varanasi, U. (1999) Organochlorines in stranded pilot whales (*Globicephala melaena*) from the coast of Massachusetts. *Archives of Environmental Contamination & Toxicology* **37**, 125-134.

Tilbury, KL, Stein, JE, Krone, CA, Brownell, RL, Blokhin, SA, Bolton, JL, & Ernest, DW. (2002) Chemical contaminants in juvenile gray whales (*Eschrichtius robustus*) from a subsistence harvest in Arctic feeding grounds. *Chemosphere* **47**, 555-564.

Tuerk, K, Kucklick, J., Becker, P., Stapleton, H., & Baker, J. (2005) Persistent organic pollutants in two dolphin species with focus on toxaphene and polybrominated diphenyl ethers. *Environmental Science & Technology* **39**, 692-698.

Tuerk, K, Kucklick J, Mcfee, W, Pugh, R, & Becker, P. (2005) Factors influencing persistent organic pollutant concentrations in the Atlantic white-sided dolphin (*Lagenorhynchus acutus*). *Environmental Toxicology & Chemistry* **24**, 1079-1087.

Turusov, V, Rakitsky, V, & Tomatis, L. (2002) Dichlorodiphenyltrichloroethane (DDT): Ubiquity, persistence, and risks. *Environmental Health Perspectives* **110**, 125-128.

USEPA, 1997. *Toxicological review of chlordane (technical)*. US Environmental Protection Agency, Washington, DC. 73 pp.

Varanasi, U, Stein, JE, Tilbury, KL, Meador, JP, Sloan, CA, Clark, RC, & Chan, S-L. (1994) Chemical contaminants in gray whales (*Eschrichtius robustus*) stranded along the west coast of North America. *Science of the Total Environment* **145**, 29-53.

Watanabe, M, Kannan, K, Takahashi, A, Loganathan, BG, Odell, DK, Tanabe, S, & Giesy, JP. (2000) Polychlorinated biphenyls, organochlorine pesticides, tris(4-chlorophenyl)methane, and tris(4-chlorophenyl)methanol in livers of small cetaceans stranded along Florida coastal waters, USA. *Environmental Toxicology & Chemistry* **19**(6), 1566-1574.

Weisbrod, AV, Shea, D, Moore, MJ, & Stegeman, JJ. (2000) Bioaccumulation patterns of polychlorinated biphenyls and chlorinated pesticides in northwest Atlantic pilot whales. *Environmental Toxicology & Chemistry* **19**(3), 667-677.

Weisbrod, AV, Shea, D, Moore, MJ, & Stegeman, JJ. (2001) Species, tissue and gender-related organochlorine bioaccumulation in white-sided dolphins, pilot whales and their common prey in the Northwest Atlantic. *Marine Environmental Research* **51**, 29-50.

Wells, R, Tornero, V, Borrell, A, Aguilar, A, Rowles, T, Rhinehart, H, Hofmann, S, Jarman, W, Hohn, A, & Sweeney, J. (2005) Integrating life-history and reproductive success data to examine potential relationships with organochlorine compounds for bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Science of the Total Environment* **349**, 106-119.

Wood, CM & Van Vleet, ES. (1996) Copper, cadmium and zinc in liver, kidney and muscle tissues of bottlenose dolphins (*Tursiops truncatus*) stranded in Florida. *Marine Pollution Bulletin* **32**(12), 886-889.

Woshner, V, O'Hara, T, Bratton, G, & Beasley, V. (2001) Concentrations and interactions of selected essential and non-essential elements in ringed seals and polar bears of arctic Alaska. *Journal of Wildlife Diseases* **37**, 711-721.

Woshner, V, O'Hara, T, Bratton, G, Suydam, R, & Beasley, V. (2001) Concentrations and interactions of selected essential and non-essential elements in bowhead and beluga whales of arctic Alaska. *Journal of Wildlife Diseases* **37**, 693-710.

Ylitalo, G, Stein, J, Hom, T, Johnson, L, Tilbury, K, Hall, A, Rowles, T, Greig, D, Lowenstine, L, & Gulland, F. (2005) The role of organochlorines in cancer-associated mortality in California sea lions (*Zalophus californianus*). *Marine Pollution Bulletin* **50**, 30-39.

Young, D, Becerra, M, Kopec, D, & Echols, S. (1998) GC/MS analysis of PCB congeners in blood of the harbor seal *Phoca vitulina* from San Francisco Bay. *Chemosphere* **37**(4), 711-733.

Table 1. Summary of Concentrations of Major Organochlorine Contaminant Classes in Blubber of Selected Marine Mammal Species from US Waters as Reported in Literature from 1994-2005

Table 1. Summary Data for Some Persistent Organic Pollutants, Including PCBs, DDTs, Chlordanes, Mirex, Dieldrin, HCHs and HCB in Blubber of Selected Marine Mammal Species from US Waters, Reported 1994 through 2005.
For each species, the lowest and highest overall means among reported studies are given, followed by the corresponding sample size, as well as overall ranges for animals in all studies combined.

CETACEANS	Analyte (ng/g)	Lipid (%)	∑ PCBs	∑ DDTs	∑ chlordanes	mirex	dieldrin	∑ HCHs	HCB
T. truncatus[a]	Lowest mean (n)	19.9 (4)	5644 (6)	3988 (6)	548 (6)	20.3 (2)	ND (2)	109 (33)	ND (9[b])
	Highest mean (n)	39.4 (9)	240000 (6)	51906 (5)	7022 (5)	663 (4)	1550 (5)	234 (14)	3360 (5)
	Overall range	1.2 - 82.8	420 - 1120000	428 - 87281	195 - 10553	ND - 6540	ND - 3120	9 - 354	ND - 5730
K. breviceps[c]	Mean (n)	3.4 (2)	560 (2)	540 (2)	50 (2)	NA	NA	1.1 (2)	5.5 (2)
	Overall range	2.6 - 4.1	290 - 830	400 - 680	27 - 73	NA	NA	1.1 - 1.1	1.4 - 9.7
L. acutus[c]	Lowest mean (n)	43.8 (6)	9410 (9)	4090 (9)	2200 (9)	40.4 (9)	293 (9)	91 (9)	50.6 (9)
	Highest mean (n)	43.8 (6)	29400 (23)	15900 (23)	8800 (23)	73.7 (15)	1810 (23)	301 (23)	237 (23)
	Overall range	17.2[f]	490 - 62700	498 - 43300	285 - 23900	18.4 - 112	62.6 - 3940	50.4 - 821	11[d] - 606
G. melas[c]	Lowest mean (n)	39 (16)	4172 (11)	6000 (16)	1221 (11)	27 (11)	262 (7)	57.5 (11)	200 (16)
	Highest mean (n)	75 (16)	12000 (6)	18336[a] (16)	3000 (6)	56[a] (16)	441 (11)	104[a] (16)	370 (6)
	Overall range	17.7[d] - 88	1087[d] - 25000	ND[a,d] - 42046[a,e]	55[a,d] - 5800	ND[c,d] - 90[a,e]	56.8 - 674[e]	ND[c,d] - 157[a,e]	ND[a,d] - 620
S. bredanensis[c]	Mean (n)	53 (15)	18392 (15)	9285.5 (15)	3825 (15)	269.3 (15)	233.8 (15)	26.0 (15)	28.8 (15)
	Overall range	38 - 73.3	643 - 43301	146 - 23139	74.1 - 2093	16.4 - 664	9.03 - 1220	2.6 - 177	0.4 - 67.4
E. robustus[c]	Lowest mean (n)	8.5 (22)	220 (38)	130 (38)	140 (17)	NA	NA	NA	100 (38)
	Highest mean (n)	48 (17)	1600 (22)	444 (22)	340 (22)	NA	160 (22)	NA	510 (24)
	Overall range	0.6 - 73	120 - 10000	11 - 2940	13 - 2200	ND - 100	4 - 1600	NA	17 - 2900
M. novaeangliae[c]	Lowest mean (n)	NA	897[a] (12)	NA	NA	1.8 (6)	308 (6)	104 (6)	73.4 (6)
	Highest mean (n)	44.9 (7)	1153 (7)	NA	385.6 (6)	7.2[a] (12)	363.4[a] (13)	108.1[a] (12)	172.2[a] (13)
	Overall range	27 - 63	301[a,d] - 2958	NA	125.6 - 728.3	ND - 11.1[a,e]	52.7 - 777	33.8 - 242	15.8 - 293.1[a,e]
PINNIPEDS									
Z. californianus[c]	Lowest mean (n)	4.2 (9)	1300 (5)	13947 (9)	457 (9)	NA	NA	57 (9)	ND[g]
	Highest mean (n)	50 (36)	48158 (12)	143000[a,h] (36)	3420[a] (36)	NA	190[a] (36)	780[a] (36)	ND[g]
	Overall range	1 - 88	ND - 410000[a]	456 - 1400000[a]	17 - 9450	NA	220[f]	6.5 - 2240[a,e]	ND[g]
M. angustirostris[c]	Lowest mean (n)	74 (4)	550 (6)	11000[a] (2)	1095[a] (2)	NA	NA	122[a] (2)	30 (4)
	Highest mean (n)	85 (2)	6979 (4)	12418 (4)	1118 (4)	NA	28[a] (2)	184 (4)	32.5[a] (2)
	Overall range	18 - 93	460[d] - 10440	3000[a] - 19800	290[a] - 1900[a]	NA	19[a] - 37[a]	44[a] - 279	14.8 - 43[a]
P. vitulina[c]	Lowest mean (n)	40 (3)	1.7 (10)	314 (5)	205 (5)	4.9 (3)	5 (5)	33[a] (2)	5.3 (9)
	Highest mean (n)	89 (2)	40376 (3)	8790 (3)	4015 (3)	32000 (8)	364[a] (4)	220[a] (4)	4700 (8)
	Overall range	16 - 95	ND - 78474	130 - 13612	80 - 8938	1.2 - 60000	3 - 1060[a]	22.4[a] - 425[a]	2.79[d] - 8500

Abbreviations: ND, the analyte was not detected above the limit of detection; NA, not available
[a]ng/g lipid weight
[b]Largest sample with this mean
[c]ng/g wet weight
[d]Value obtained by subtracting the SD from the corresponding mean
[e]Value obtained by adding the SD to the corresponding mean
[f]Standard deviation of mean above
[g]ND in either of two studies that address this analyte
[h]∑DDTs refers to p,p' forms of DDE, DDD and DDT only

Table 2. Metadata for Persistent Organic Pollutants, Including PCBs, DDTs, Chlordanes, HCHs and HDB in Selected Marine Mammal Species from US Waters, Reported 1994 through 2005.
An "X" in a given contaminant column denotes that contaminant was analyzed.

Source	Species	Contaminant Classes Analyzed						Date Sampled	Event	Location	Source data characterization Arith.(A) or Geo. (G) Mean; lw or ww; % lipid given?; individual animal data provided?
		PCBs (# of congeners)	DDTs	Chlordanes*	HCHs	HCB	Tissue (n)				
CETACEANS											
Hansen et al., 2004	T. truncatus	X (15)	X	X		X	blubber (62)	1995-2000	B	NC, SC, FL	G; lw; yes; no
Reddy et al., 2001; 1998	T. truncatus	X (10)	X	X	X	X	blubber (14) blood (16)	1994	B	CA	NR; lw; no; yes
Salata et al., 1995	T. truncatus	X (NR)	X	X	X	X	blubber (33)	NR	S	TX, FL	A; lw; no; no
Kuehl & Haebler, 1995	T. truncatus	X (NR)	X[a]	X		X	blubber (24)	1990	S	TX, FL	A; lw; no; no
Finklea et al., 2000	T. truncatus	X (87)					blubber (10)	1990	S	TX	A; lw; no; yes
Johnson-Restrepo et al., 2005	T. truncatus	X (NR)					blubber (20)	1991-2004	S & B[d]	FL	A; lw; yes; no
Wells et al., 2005	T. truncatus	X (22)					blubber (47) blood (NR) milk (NR)	2000-2001	B	FL	NR[f]; lw; no; no
Watanabe et al., 2000	T. truncatus	X (35)	X[a]	X	X	X	liver (6)	1989-94	S	FL	A; ww; yes; yes
	K. breviceps	X (35)	X[a]	X	X	X	liver (2)	1991-92	S	FL	A; ww; yes; yes
Tuerk et al., 2005a,b	L. acutus	X(55)	X	X	X	X	blubber (47)	1993-2000	S	MA	A;ww; no; no
Weisbrod et al., 2001	L. acutus	X (27)	X	X	X	X	blubber (6) skin (6) liver (6) lung (2) kidney (2)	1994-96	S	MA, NY	A; ww; yes; no
	G. melas	X (27)	X	X	X	X	blubber (11) skin (3) liver (8) heart (4) muscle (6) kidney (3) testis (1)	1990-96	S	MA, NY	A; ww; yes; no
Weisbrod et al., 2000	G. melas	X (27)	X	X	X	X	blubber (16) liver (17)	1990-96	S	MA	A; lw; yes; no
Becker et al., 1997	G. melas	X (33)	X	X		X	blubber (7)	NR[b]	NR[b]	MA	A; ww; no; no
Tilbury et al., 1999	G. melas[b]	X (17)	X	X		X	blubber (22) liver (25) kidney (9) brain (8) ovary (2)	1986-90	S	MA	A; ww; yes; no
Struntz et al., 2004; Tuerk et al., 2005a	S. bredanensis	X (33)	X	X	X	X	blubber (15)	1997	S	FL	A; lw; yes; yes
Varanasi et al., 1994	E. robustus	X (NR)	X	X		X	blubber (22) liver (10) brain (1)	1988-91	S	CA, WA & AK	A[c]; ww; yes; no
Tilbury et al., 2002	E. robustus	X (17)	X	X		X	blubber (17) liver (14) kidney (6) brain (6) muscle (3)	1994	H	Russia (Western Bering Sea)	A; ww; yes; no
Krahn et al., 2001	E. robustus[b]	X (17)	X	X		X	blubber (62)	1996 & '99	B & S	WA	A; ww; yes; no
Metcalfe et al., 2004	M. novaeangliae	X (25)	X[a]	X	X	X	blubber (25)	1993-99	B	Canada	A; lw; no; no
Gauthier et al., 1997	M. novaeangliae	X (19)	X[a]	X	X	X	blubber (7)	1991	B	Canada	A; lw; yes; yes
PINNIPEDS											
Lieberg-Clark et al., 1995	Z. californianus	---	X[a]				blubber (7)	1988-92	S	CA	G; ww; no; no
Hayteas & Duffield, 1997	Z. californianus	X (NR)	X[a]				blubber (5)	1991-95	S	OR	G; ww; no; yes
	P. vitulina	X (NR)					blubber (10)	1991-95	S	OR	G; ww; no; yes
	M. angustirostris	X (NR)					blubber (1)	1991-95	S	OR	G; ww; no; yes
Kajiwara et al., 2001	Z. californianus	X (NR)	X[a]	X	X	X	blubber (12) liver (9)	1991-97	S	CA	A; ww; yes; yes
	P. vitulina	X (NR)	X[a]	X	X	X	liver (10)	1991-97	S	CA	A; ww; yes; yes
	M. angustirostris	X (NR)	X[a]	X	X	X	blubber (4)	1991-94	S	CA	A; ww; yes; yes
Kannan et al., 2004; Le Boeuf et al., 2002	Z. californianus	X (NR)	X[a]	X	X		blubber (36)	2000	S	CA	A; lw; yes; no
	M. angustirostris	X (NR)	X[a]	X	X	X	blubber (2)	2000	S	CA	A; lw; yes; no
Lake et al., 1995	P. vitulina	X (18)	X[a]	X		X	blubber (9) liver (9)	1990-92	S	NY, MA	A; ww; no; no
Young et al., 1998	P. vitulina	X (20)					blood (16)	1990	S	CA	A; ww; no; no
Hong et al., 1996	P. vitulina	X (73) X (54)	X[a]			X	blubber (8) liver (8)	1990	S	WA	A; ww; no; no
Krahn et al., 1997	P. vitulina	X (17)	X	X		X	blubber (15)	1992-93	S & H	WA, OR, AK	A[f]; ww; yes; no[f]
Ross et al., 2004	P. vitulina	X (109)					blubber (60)	1996-97	B	Canada; WA	A; lw; no; no
Neale et al., 2005a	P. vitulina	X (10)	X[e]				blood (17)	2001-02	B	CA	A; ww & lw, no, no
Neale et al., 2005b	P. vitulina	X (11)	X[e]				blood (35)	2001-02	B	CA	NR; ww & lw; no; no
Shaw et al., 2005	P. vitulina	X (20)	X	X	X	X	blubber (30)	2001-02	S	MA, ME, NH, NY	A; lw; yes; yes
Debier et al., 2005a	M. angustirostris	X (141)					blubber (6)	2002	B	CA	A; lw & ww; yes; no
Debier et al., 2005b	Z. californianus	X (NR)	X				serum (12)	2002	B	CA	A; ww & lw; yes; no
Ylitalo et al., 2005	Z. californianus	X (17)	X				blubber (76)	1993-2003	S	CA	A; ww & lw; yes; no

Abbreviations: NR, not reported; S, stranded; B, biopsied; H, subsistence harvest; A, arithmetic mean; G. geometric mean; lw, reported on a lipid weight basis; ww, reported on a wet weight basis

*Number of chlordane isomers analyzed varied between studies

[a]Only *p,p'* isomers of DDT, DDE and DDD were analyzed; in some studies, not all three *p',p'* isomers were analyzed.

[b]In Appendix I, see footnotes "g," "h" and "j" for Becker et al.(1997),Tilbury et al.(1999) and Krahn et al. (2001), respectively, regarding study overlap

[c]Means exclude values below limit of detection

[d]From archived samples; from source text it appears that 14 are from stranded dolphins and the remaining 6 were biopsies

[e]4,4' DDE only

[f]Ranges only were given for data (except for some data subsets in Wells); data provided in graphic format only

Table 3. Polychlorinated dibenzo-p-dioxins and -furans (PCDD/Fs) Contaminants in Tissues of Selected Marine Mammal Species from US Waters, Reported 1995 through 2005.

	Source: Jarman et al., 1996 Event: Stranding			Source: Ross et al., 2004 Event: Biopsy									Source: Lake et al., 1995 Event: Stranding			Source: Debier et al., 2005a Event: Biopsy		
	Location: British Columbia, Canada (Vancouver Is. & Denman Is.)			Location: BC, Canada (Queen Charlotte Strait)			Location BC, Canada (Strait of Georgia)			Location: WA (Puget Sound)			Location: NY & MA			Location: CA (Ano Nuevo Is.)		
	Date Sampled: 1987-88 Species: *Eschrichtius robustus* Tissue: Blubber			Date Sampled: 1996-97 Species: *Phoca vitulina* Tissue: Blubber			Date Sampled: 1996-97 Species: *Phoca vitulina* Tissue: Blubber			Date Sampled: 1996-97 Species: *Phoca vitulina* Tissue: Blubber			Date Sampled: 1990-92 Species: *Phoca vitulina* Tissue: Blubber			Date Sampled: 2002 Species: *Mirounga angustirostris* Tissue: Blubber		
Analyte (ng/g wet weight)	n	Mean	LOD[b]	n	Mean[a,c]	SE	n	Mean[c]	SE	n	Mean[c]	SE	n			n	Mean[c]	SD
2,3,7,8-TCDD	2	ND	<2										15[d]					
1,2,3,7,8-PnCDD	2	ND	<5										15[d]					
1,2,3,4,7,8-HxCDD													15[d]					
1,2,3,6,7,8-HxCDD	2		<8										15[d]			6	0.007	NR
1,2,3,7,8,9-HxCDD	2	ND	<8										15[d]					
1,2,3,4,6,7,9-HpCDD	2	ND	<10															
1,2,3,4,6,7,8-HpCDD	2	ND	<10										15[d]			6	0.008	NR
OCDD	2	ND	<20										15[d]			6	0.017	NR
∑ 2,3,7,8-PCDDs				5	0.072	0.006	38	0.256	0.031	17	0.119	0.011						
∑ PCDDs				5	0.096	0.01	38	0.279	0.032	17	0.119	0.016				6	0.032[e]	0.023
2,3,7,8-TCDF	2	ND	3										15[d]					
1,2,4,7,8-PnCDF	2	ND	<5															
1,2,3,7,8-PnCDF													15[d]					
2,3,4,7,8-PnCDF	2	ND	<5										15[d]			6	0.007	NR
1,2,4,8,9-PnCDF	2	ND	<5															
1,2,4,6,8,9-HxCDF	2	ND	<8															
1,2,3,4,7,8-HxCDF													15[d]					
1,2,3,6,7,8-HxCDF													15[d]					
1,2,3,7,8,9-HxCDF													15[d]					
2,3,4,6,7,8-HxCDF													15[d]					
1,2,3,4,6,9-/1,2,3,6,8,9-HxC	2	ND	<8															
1,2,3,4,6,8,9-HpCDF	2	ND	<10															
1,2,3,4,6,7,8-HpCDF													15[d]					
1,2,3,4,7,8,9-HpCDF													15[d]					
OCDF													15[d]			6	0.01	NR
∑ 2,3,7,8-PCDFs				5	0.022	0.002	38	0.016	0.002	17	0.01	0.001						
∑ PCDFs				5	0.026	0.004	38	0.025	0.013	17	0.01	0.001				6	0.017[e]	0.005

Abbreviations: ND, the analyte was not detected above the limit of detection; SE, standard error of the mean; SD, standard deviation; NR, not reported

[a]Arithmetic

[b]LOD-limits of detection for individual PCDD/F congeners

[c]ng/g lipid weight

[d]All samples were near or below limits of detection (3-5 pg/g).

[e]On a wet weight basis means (SD) were: 0.025(0.017) and 0.014(0.004) for∑ PCDDs and ∑ PCDFs, respectively.

Table 4. Metadata for Toxic Metal Pollutants, Including Mercury (Hg), Cadmium (Cd), Lead (Pb) and Tin (Sn) in Selected Marine Mammal Species from US Waters, Reported 1994 through 2005.
An "X" in a given metal contaminant column denotes that metal was analyzed.

		Metal Contaminant Analyzed								
Source	**Species**	**Mercury**	**Cadmium**	**Lead**	**Tin**	**Tissue (n)**	**Date Sampled**	**Event**	**Location**	**Comments**
CETACEANS										
Ruelas-Inzunza et al., 2002	*E. robustus*	X (THg & MeHg)	X	X		Kidney (4) Liver (4) Muscle (4)	1999	S	Mexico (Gulf of California)	DW
Tilbury et al., 2002	*E. robustus*	X (THg)	X	X		Brain (6) Kidney (6) Liver (5)	1994	H	Russia (NW Bering Sea)	WW
Varanasi et al., 1994	*E. robustus*	X (THg)	X	X	X[a]	Brain (1) Kidney (10) Liver (10)	1988-1991	S	CA, WA & AK	WW
De Luna & Rosales-Hoz, 2004	*E. robustus*			X		Bone (8) Epidermis (8) Kidney (2) Muscle (8)	1999	S	Mexico (Ojo de Liebre Lagoon)	DW
Mendez et al., 2002	*E. robustus*		X	X		Blubber (5) Heart (7) Kidney (5) Liver (5) Lung (7) Muscle (5)	1999	S	Mexico (Sinaloa & Baja California Sur)	DW
Mackey et al., 1995	*G. melas*	X (THg)	X			Liver (9)	1990-1990	S	MA	WW
	L. acutus	X (THg)	X			Liver (4)	1993	S	MA	WW
Beck et al., 1997	*T. truncatus*	X (THg)	X	X		Liver (34)	NR	S	SC	WW
Kuehl & Haebler, 1995	*T. truncatus*	X (THg)	X	X		Liver (24)	1990	S	TX & AL (Gulf of Mexico)	WW
Meador et al., 1999	*T. truncatus*	X (THg & MeHg)	X[c]	X[c]		Blubber (4) Kidney (30[b]) Liver (30[b])	1990-1991	S	TX	DW[f]
	T. truncatus	X (THg & MeHg)	X[c]	X[c]		Kidney (13[b]) Liver (14[b])	1990-1991	S	FL	DW
Wood & Van Vleet, 1996	*T. truncatus*		X			Kidney (21) Liver (29) Muscle (21)	1990-1994	S	FL	DW
Kannan et al., 1997	*T. truncatus*				X[d]	Blubber (1) Brain (1) Heart (1) Liver (16) Kidney (17) Melon (1) Muscle (11)	1989-1994	S	FL	WW
	K. breviceps				X[d]	Kidney (2) Liver (3) Muscle (2)	1989-1994	S	FL	WW
Mackey et al., 2003	*S. bredanensis*	X (THg)	X		X[e]	Kidney (15) Liver (15)	1997	S	FL (Gulf of Mexico)	WW
PINNIPEDS										
Lake et al., 1995	*P. vitulina*	X (THg)				Liver (7)	1990-1992	S	NY & MA	WW
Owen & Flegal, 1998	*M. angustirostris*			X		Blood (4)	1994-1995	B	CA	WW
Kajiwara et al., 2001	*M. angustirostris*				X[d]	Liver (2)	1991-1994	S	CA	WW
	P. vitulina				X[d]	Liver (6)	1991-1997	S	CA	WW
	Z. californianus				X[d]	Liver (10)	1991-1997	S	CA	WW

Abbreviations: THg, Total mercury; MeHg, organic (methyl) mercury; NR, not reported; S, stranded; B, biopsied; H, subsistence harvest; WW, reported on a wet weight basis; DW, reported on a dry weight basis

[a]Total tin was analyzed in kidney and liver of seven animals
[b]Maximum analyzed for this tissue at this location
[c]Analyzed in kidney and liver only
[d]Sum of butyltins, including mono-, di- and tri-butyltin
[e]Total tin
[f]Except for blubber, which was reported as WW

Appendix III. Mercury, Cadmium, Lead and Tin in Tissues of Selected Marine Mammal Species from US Waters, Reported 1994 through 2005. All concentrations are reported on a wet weight basis, except where noted otherwise by an asterisk*.

Mercury (Hg)									
Species	**Tissue**	**Mean ug/g**	**Min.**	**Max.**	**n**	**Location**	**Date Sampled**	**Event**	**Reference**
E. robustus	kidney[a]	277*	140[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	kidney[b]	51*	22[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	liver[a]	185*	82[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	liver[b]	42*	34[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	muscle[a]	145*	82[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	muscle[b]	109*	40[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza et al., 2002
E. robustus	brain[a]	0.022	0.002[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]
E. robustus	kidney[a]	0.034	0.001[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]
E. robustus	liver[a]	0.16	0.061[h]	NR	5[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]
E. robustus	brain[a]	ND	ND	ND	1	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	kidney[a]	0.034	ND	0.06	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	liver[a]	0.056	0.009	0.12	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
G. melas	liver[a]	40.3	1.00	112.0	9	MA	1990-91	Stranding	Mackey et al., 1995
L. acutus	liver[a]	10.36	1.00	22.70	4	MA	1993	Stranding	Mackey et al., 1995
S. bredanensis	kidney[a]	5.8	0.9	15	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
S. bredanensis	liver[a]	70	3.4	235	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
T. truncatus	liver[a]	17.8	<0.5	146.5	34	SC	NR	Stranding	Beck et al., 1997
T. truncatus	liver[a]	0.96	0.15	2.23	5[o]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver[a]	4.39	1.72	8.36	5[g]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver[a]	45.5	5.1	87.8	9[p]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver[a]	25.9	6.1	48.7	5[q]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	blubber[b]	0.6	0.4	0.7	4	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney[a]	33*	1.0	89	29	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney[a]	68*	11.2	110	12	FL	1991-92	Stranding	Meador et al., 1999[c,d]

Mercury (Hg) (continued)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
T. truncatus	kidney[b]	4.5*	1.3	10.4	23	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney[b]	9.9*	1.4	19	13	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver[a]	212*	8.3	1404	30	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver[a]	304*	18	1312	13	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver[b]	6*	0.9	23	24	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver[b]	11*	2.5	24	14	FL	1991-92	Stranding	Meador et al., 1999[c,d]
P. vitulina	liver[a]	38.5	31.6	49.3	4	NY & MA	1990-92	Stranding	Lake et al., 1995
P. vitulina	liver[a]	69.9	16.0	138	3	NY & MA	1990-92	Stranding	Lake et al., 1995

Cadmium (Cd)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
E. robustus	blubber	0.16*	ND	0.16	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	heart	0.68*	0.16	1.81	7[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	kidney	15.4*	1.93	35.1	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	liver	1.77*	0.81	3.62	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	lung	1.16*	0.1	5.26	7[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	muscle	0.86*	0.05	2.34	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	kidney	5.7*	1.4[j]	8.0	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002
E. robustus	liver	1.1*	1.0[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002
E. robustus	muscle	0.4*	0.2[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002
E. robustus	brain	0.1	0.01[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]

Cadmium (Cd) (continued)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
E. robustus	kidney	0.59	0.11[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]
E. robustus	liver	0.21	0.04[h]	NR	5[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002[i]
E. robustus	brain	0.02	0.02	0.02	1	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	kidney	4.1	0.14	6.1	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	liver	4.3	0.06	6.2	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
G. melas	liver	7.88	2.8	14.3	9	MA	1990-91	Stranding	Mackey et al., 1995
L. acutus	liver	0.42	0.24	0.86	4	MA	1993	Stranding	Mackey et al., 1995
S. bredanensis	kidney	1.73	0.05	3.94	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
S. bredanensis	liver	0.54	0.01	1.02	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
T. truncatus	liver	0.051	0.009	0.27	34	SC	NR	Stranding	Beck et al., 1997
T. truncatus	liver	0.06	0.01	0.08	5[o]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.11	0.08	0.16	5[g]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.43	0.10	1.34	9[p]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.31	0.11	0.64	5[q]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	kidney	1.9*	ND	4.2	30 (11 ND)	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney	4.4*	ND	5.2	13 (5 ND)	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver	0.32*	ND	0.7	14 (8 ND)	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver	1.6*	ND	1.6	11 (10 ND)	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney	1.3*	ND	6.4	21	FL	1990-94	Stranding	Wood & Van Vleet, 1996
T. truncatus	liver	0.2*	ND	1.7	29	FL	1990-94	Stranding	Wood & Van Vleet, 1996
T. truncatus	muscle	ND	ND	ND	21	FL	1990-94	Stranding	Wood & Van Vleet, 1996

Lead (Pb)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
E. robustus	bone	50*[k]	NR	NR	2[l]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	bone	20*[k]	NR	NR	3[g]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	bone	30*[k]	NR	NR	3[m]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	epidermis	15*[k]	NR	NR	8	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	kidney	30*[k]	NR	NR	2[l]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	muscle	15*[k]	NR	NR	2[l]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	muscle	22*[k]	NR	NR	3[g]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	muscle	18*[k]	NR	NR	3[m]	Mexico (Ojo de Liebre Lagoon)	1999	Stranding	De Luna & Rosales-Hoz, 2004
E. robustus	blubber	1.06*	0.33	1.78	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	heart	2.31*	1.28	3.4	7[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	kidney	2.09*	0.34	6.12	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	liver	2.06*	0.78	3.62	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	lung	1.21*	0.36	4.40	7[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	muscle	1.11*	0.42	1.8	5[g]	Mexico (Sinaloa & Baja California Sur)	1999	Stranding	Mendez et al., 2002
E. robustus	kidney	0.6*	0.3[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002
E. robustus	liver	0.9*	0.8[j]	0.9	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002
E. robustus	muscle	0.6*	0.4[j]	NR	4	Mexico (Gulf of California)	1999	Stranding	Ruelas-Inzunza & Paez-Osuna, 2002

Lead (Pb) (continued)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
E. robustus	brain	0.014	0.003[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002
E. robustus	kidney	0.028	0.005[h]	NR	6[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002
E. robustus	liver	0.06	0.013[h]	NR	5[g]	Russia (NW Bering Sea)	1994	Subsistence harvest	Tilbury et al., 2002
E. robustus	brain	0.06	0.06	0.06	1	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	kidney	0.053	ND	0.10	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	liver	0.12	0.02	0.27	10	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
T. truncatus	liver	<0.10	NR	NR	34	SC	NR	Stranding	Beck et al., 1997
T. truncatus	liver	0.45	0.08	1.47	5[o]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.26	0.04	0.88	5[g]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.68	0.2	2.12	9[p]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	liver	0.48	0.09	1.20	5[q]	TX & AL (Gulf of Mexico)	1990	Stranding	Kuehl & Haebler, 1995
T. truncatus	kidney	0.17*	ND	1.6	30 (11 ND)	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	kidney	0.08*	ND	0.14	13 (11 ND)	FL	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver	0.3*	ND	2.6	30 (11 ND)	TX	1991-92	Stranding	Meador et al., 1999[c,d]
T. truncatus	liver	0.09*	ND	0.2	13 (10 ND)	FL	1991-92	Stranding	Meador et al., 1999[c,d]
M. angustirostris	blood	0.13[n]	0.071[n]	0.21[n]	4[o]	CA	1994-95	live animal collection	Owen & Flegal, 1998

Tin (Sn)

Species	Tissue	Mean ug/g	Min.	Max.	n	Location	Date Sampled	Event	Reference
E. robustus	kidney	0.04[r]	ND	0.05	7	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
E. robustus	liver	0.04[r]	ND	0.04	7	CA, WA & AK	1988-91	Stranding	Varanasi et al., 1994
K. breviceps	kidney	0.062[e]	0.059	0.065	2	FL	1989-94	Stranding	Kannan et al., 1997
K. breviceps	liver	0.39[e]	0.35	0.41	3	FL	1989-94	Stranding	Kannan et al., 1997
K. breviceps	muscle	0.021[e]	0.016	0.026	2	FL	1989-94	Stranding	Kannan et al., 1997
S. bredanensis	kidney	0.053[r]	0.01	0.14	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
S. bredanensis	liver	5.4[r]	3.8	7.3	15	FL (Gulf of Mexico)	1997	Stranding	Mackey et al., 2003
T. truncatus	blubber	0.63[e]	0.63	0.63	1	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	brain	0.11[e]	0.11	0.11	1	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	heart	0.05[e]	0.05	0.05	1	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	kidney	0.20[e]	0.025	0.67	16	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	liver	1.4[e]	0.11	11.34	17	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	melon	0.19[e]	0.19	0.19	1	FL	1989-94	Stranding	Kannan et al., 1997
T. truncatus	muscle	0.041[e]	0.013	0.11	11	FL	1989-94	Stranding	Kannan et al., 1997
M. augustirostris	liver	0.08[e]	0.06	0.099	2[f]	CA	1991-94	Stranding	Kajiwara et al., 2001
P. vitulina	liver	0.034[e]	0.002	0.091	6[f]	CA	1991-97	Stranding	Kajiwara et al., 2001
Z. californianus	liver	0.045[e]	0.024	0.087	10[f]	CA	1991-97	Stranding	Kajiwara et al., 2001

Abbreviations: ND, the analyte was not detected above the limit of detection; NR, not reported

*dry weight

[a]Total Hg

[b]Organic (i.e., methyl) Hg

[c]Mean ratios of dry to wet weight were 0.26 and 0.22 for TX liver and kidney, respectively (n=31), and 0.29 (n=14) and 0.23 (n=13) for FL liver and kidney, respectively.
[d]Means for analytes with data below detection limits (ND) were determined with maximum likelihood method for censored data. Means with no ND values were estimated following the procedure of Gilbert (1987) for lognormally-distributed data.

[e]Sum of butyltins, including mono-, di- and tri-butyltin
[f]Data for individual animals and organotins given in cited source.

[g]Juveniles

[h]Standard error of the mean
[i]For values below the limit of detection (LOD), one-half the LOD was used to calculate the mean

[j]Standard deviation

[k]Value extrapolated from graph

[l]Calves

[m]Adults (both sexes)

[n]ug/dl
[o]sucklings (live, for Owen & Flegal, 1998; stranded, for Kuehl & Haebler, 1995)

[p]Adult males

[q]Adult females

[r]Total Sn

Euthanasia Questionnaire Response Summary

Responder	Species	Stranding Type*	Frequency (or #) of Euthanasia in past year	Euthanasia Agent & Route	Induction Agent & Route	Adverse Reactions?	Disposal Methods	Comments
MarMamCenter, CA	*Zalophus californianus* *Mirounga angustirostrus* *Phoca vitulina*	I	96/796	pentobarb IV, IC	tiletamine/zolazepam IM	No	Renderer	no disposal problems
HBOI, FL	*Tursiops truncatus* *Kogia breviceps* *Kogia simus*	I	4	pentobarb +- phenytoin IC, IP	---	No	Beach burial Landfill	no disposal problems
Nat'l Aquarium, MD	*Phoca vitulina* *Pagophilus groenlandicus* *Tursiops truncatus* *Phocoena phocoena*	I	1 in 2003 avg. 1.9/yr (11 yrs)	pentobarb.+ phenytoin	tiletamine/zolazepam diazepam	Yes - lack of sedation	not indicated	generally not problematic
C. Harms, NCSU	*Tursiops truncatus* *Kogia breviceps* *Kogia simus* *Grampus griseus*	I	done 3-4	pentobarb +- phenytoin IV, IC	xylazine, acepromazine	Yes - hyperexcitability in G. gri. with xylazine or metomidate	Beach burial (if drugs admin.) disposal at sea (no drugs)	no disposal problems
W. McFee, NOS, SC	*Kogia breviceps* *Kogia simus* *Ziphius cavirostris*	I, P	~60% 1 in past yr.	pentobarb IV, IC	---	Yes - excitability in K. bre.	Burial	no disposal problems
Mote Mar Lab, FL	*Tursiops truncatus* *Kogia breviceps* *Kogia simus* *Globicephala macrorhynchus* *Lagenodelphis hosei*	I, M (Kogia & Glob.)	1-3/yr.	pentobarb. IV	xylazine	No	not indicated	Disposal problematic, did not elaborate
Cape Cod SN, MA	*Lagenorhynchus acutus* *Phocoena phocoena* *Delphinus delphis* *Globicephala melas*	I, M	179/403 over 5 yr period	pentobarb.+- phenytoin	---	Yes - hyperexcitability in cetaceans (T. tru., L. acu., D. del., G. mel.)	truck off Cape to landfill tow to sea & sink	Disposal very problematic, no rendering service avail., landfill won't accept, perception that whale remains contain contaminants, high cost
VA Marine Sc. Museum, VA	*Phoca vitulina* *Delphinus delphis* *Kogia breviceps*	I	7 in 2003	pentob. +- phenytoin	xylazine diazepam	Yes, Observed violent death throes in D. delphis w/ or w/o induction agent, and appeared to have violent rx to acepromazine also, slight excitability in Grampus w/ xylazine	commercial carcass dispo. co. to transport to landfill burial landfill	Difficulty procuring heavy eqp't.

Euthanasia Questionnaire Response Summary

Responder	Species	Stranding Type*	Frequency (or #) of Euthanasia in past year	Euthanasia Agent & Route	Induction Agent & Route	Adverse Reactions?	Disposal Methods	Comments
Litz, NOAA Fisheries SER, Southeast US, PR & Virgin Is	*Tursiops truncatus* *Kogia spp.* *Steno bredanensis* *Globicephala spp.*	I, P, M	68/474 from 1995-2000 (may be more-do not keep these stats.)	pentobarb. IV, IC	---	---	landfill	Disposal very problematic in mass strandings or with large cetaceans
George, GA DNR	*Feresa attenuata* *Kogia breviceps*		5 Kogia breviceps (3 adults/2 calves) 1 Feresa attenuata in 2004	Euthasol (390mg/mL) Gunshot	Xylazine (100mg/mL)	Yes- "Convulsions" prior to death seen with xylazine alone	left on beach buried on site landfill	Disposal in remote areas where removal of the carcass isn't possible precluding use of barbituates for euthanasia due to relay toxicosis concerns.

*I = individuals
P = pairs
M = mass

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APPENDIX K

PRESCOTT GRANT PROGRAM

Prescott Overview FY01-09

				Running Totals:	
Year	**Applications**	**Awards**	**Amount**	**Awards**	**Amount**
2001-2002	84	68	$5,781,494	68	$5,781,494
2003	53	48	$4,465,343	116	$10,246,837
2004	35	31	$2,663,983	147	$12,910,820
2005	97	40	$3,620,154	187	$16,530,974
2006	74	42	$3,654,271	229	$20,185,245
2007	80	41	$3,689,886.30	270	$23,875,131
2008	75	39	$3,504,647.00	309	**$27,379,778**
2009	84	2009 funding has not been awarded (to date).			

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2002	AK	Alaska Sealife Center	Alaska Sealife Center Rescue and Rehabilitation Program	$99,993
2002	AK	Aleut Community of St Paul Island	Assessment of northern fur seal entanglement in marine debris on the Pribilof Islands	$95,945
2002	AK	Seward Association for the Advancement of Marine Science	Improved rehabilitation techniques through monitoring of nutrition and growth rates in free-ranging and rehabilitated harbor seal pups	$100,000
2002	AK	University of Alaska Anchorage	Cellular and subcellular structure of the adrenal medulla of the Atlantic bottlenose dolphin (Tursiops Ttruncatus) in relation to physiological stress.	$33,591
2002	AK	University of Alaska Fairbanks	Marine mammal tissue and specimen archives - University of Alaska Museum	$100,000
2002	AL	Spring Hill College	Enhancement of Data Collection	$45,785
2002	CA	California Department of Fish and Game	Marine mammal pathology service for the central California coast	$99,935
2002	CA	Marine Animal Rescue Rehabilitation and Release	Diagnostic and Surgery Center (at the Marine Mammal Care Center at Fort MacArthur)	$70,000
2002	CA	Marine Mammal Center	Advancement of clinical care of stranded marine mammals at the Marine Mammal Center	$100,000
2002	CA	Marine Mammal Center	Development of a biomonitoring program to detect novel diseases and changes in prevalence of known diseases in pinnipeds stranded along the central California coast	$100,000
2002	CA	Northcoast Marine Mammal Center	Obtain operating funds to improve rehabilitation facility and provide more advanced and comprehensive diagnostic abilities.	$100,000
2002	CA	Regents of the University of California/UCSC Stranding Network	UCSC Long Marine Lab Stranding Network upgrade of Information Management Systems and capabilities to improve or allow access to the National Database.	$2,500
2002	CA	San Jose State Univ. Foundation	Movements, Dive Behavior and Survival of Post Release CA Sea Lions after Rehabilitation for Domoic Acid Toxicity	$95,019
2002	CA	San Jose State Univ. Foundation	Gray whale and other large whale stranding investigations: A collaboration of marine mammal stranding participants in central California	$95,680
2002	CA	Sea World, San Diego	Improved care and monitoring of beached marine mammals in Southern California	$100,000
2002	CT	Mystic Aquarium	Marine mammal stranding program support for Mystic Aquarium	$100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2002	CT	Mystic Aquarium/Sea Research Foundation	Prognostic indicators for rehabilitation and survival of stranded harp and hooded seals	$99,924
2002	DE	DE Dep't. of Natural Resources and Environmental Conservation	Renovation of a Seal Holding Facility	$27,000
2002	FL	Clearwater Marine Aquarium	Transportation, rehabilitation facilities, and technology for marine mammal stranding events	$94,175
2002	FL	Dynamac Corporation	Marine mammal rescue and stranding program on Florida's space coast	$16,732
2002	FL	Florida Fish and Wildlife Conservation Commission	Development of standardized protocols for stranding networks in Florida	$96,498
2002	FL	Florida Keys Marine Mammal Rescue Team	South Florida cetacean rescue triage and necropsy facility and response enhancement project	$57,430
2002	FL	Gulf World Inc	To upgrade the quality of Gulf World Marine Park's existing stranding facility, improve response time and capabilities.	$100,000
2002	FL	Harbor Branch Oceanographic Institution	Marine Mammal Necropsy Facility Ehancement	$69,811
2002	FL	Hubbs-SeaWorld Research Institute	Life history and stranding patterns of pygmy and dwarf sperm whales (genus Kogia) as critical tools in interpreting health assessment trends in wild populations	$98,240
2002	FL	Hubbs-SeaWorld Research Institute	Comprehensive stranding enhancement along the central east coast of Florida	$76,339
2002	FL	Marine Animal Rescue Society	Upgrade MARS from a Short-Term Critical Care Facility to a Long-Term Rehabilitation Center	$99,579
2002	FL	Mote Marine Laboratory	Mortality Patterns of Cetaceans Stranded on the Central West Coast of Florida	$100,000
2002	FL	Mote Marine Laboratory	Facility, staff and equipment upgrades for the dolphin and whale hospital	$100,000
2002	FL	SeaWorld (Orlando)	Enhancement of live stranding response capabilities and necropsy of code 2 animals in Northeast and east-central Florida: SeaWorld Florida equipment upgrades	$98,946
2002	FL	University of Florida, College of Veterinary Medicine	Marine Mammal Microbiology Diagnostic and Support Laboratory	$100,000
2002	GA	Georgia Depart. Natural Resources	Implement Marine Mammal Stranding Network in Georgia	$43,000
2002	HI	Hawaiian Islands Stranding Response Group	Cooperative partnerships in Hawaii which upgrade the capacity of the region's stranding ntework, detect, and dtermine the cause of marine mammal morbidity/mortalities	$99,830

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2002	HI	Robert C. Braun	Incidence of disease and health evaluation of Hawaiian Monk Seals (Monachus schauinslandi)in the Main Hawaiian Islands	$99,650
2002	MA	Cape Cod Stranding Network	Enhanced mass stranding response on Cape Cod: Success through preparation, protocols and cooperation	$100,000
2002	MA	Cape Cod Stranding Network	Health assessment of stranded marine mammals: Interpretation and field applications of blood and tissue analyses	$100,000
2002	MA	New England Aquarium Corporation	Marine Mammal Stranding Response, Rescue and Rehabilitation at the New England Aquarium in Support of the National Marine Fisheries Service under the Marine Protection Act	$98,671
2002	MA	New England Aquarium Corporation	An Analysis of the Spacial Patterns and Genetic Characteristics of the Harp and Hooded Seals Along the United States Eastern Coast	$99,996
2002	MA	Whale Center of New England	A Program to Respond to Stranded Marine Mammals in Northeastern Massachusetts-Evaluation, Rescue, Data Collection, and Public Education	$90,262
2002	MA	Woods Hole Oceanographic Institution	Necropsy enhancement for stranded marine mammals on Cape Cod	$93,897
2002	MD	Maryland Depart Natural Resources	Marine Mammal Stranding Response in Maryland	$47,002
2002	MD	National Aquarium in Baltimore	Enhanced Operations: Hospital pool restoration and satellite tags. Marine animal rescue program of the National Aquarium in Baltimore	$99,850
2002	MD	National Aquarium in Baltimore	Stranded Marine Animal Education and Outreach for professionals and the Public Marine Animal Rescue Program of the National Aquarium in Baltimore	$98,425
2002	ME	College of the Atlantic	Enhancement of the marine mammal stranding response and rescue program for the Maine coastal region, Rockland (ME) east, by creation of a new personnel position, network expansion, equipment upgrades, and acquisitions, and facility improvements	$72,750
2002	ME	College of the Atlantic	Use of stable isotope analysis to determine individual population and ecosystem health of Gulf of Maine Balaenopterids	$63,850
2002	ME	Marine Animal Lifeline	Enhancing seal rehabilitation care through improved isolation and the implementation of dedicated areas for veterinary treatments and necropsy	$87,015

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2002	ME	Marine Animal Lifeline	Development and use of a Geographic Information System for analysis of harp, hooded and harbor seal sightings/stranding locations: Adding a spatial dimension to strandings	$30,400
2002	MS	Institute for Marine Mammal Studies/Marine Life Oceanarium	Enhancement and Refurbishment of a Pre-Existing Stranding Facility and Development of First Response Capability Including Equipment and Training for Marine Mammal Live Response	$100,000
2002	NC	University of North Carolina, Wilmington	Enhanced evaluation of human interaction with bottlenose dolphins (*Tursiops truncatus*) in North Carolina and Virginia	$74,240
2002	NC	University of North Carolina, Wilmington	Enhance tissue collection and health monitoring of stranded of marine mammals in NC	$100,000
2002	NJ	Marine Mammal Stranding Center	To provide safe water and land transport of marine mammals	$71,250
2002	NJ	Marine Mammal Stranding Center	Operational expenses to support and enhance marine mammal and sea turtle rehabilitation	$100,000
2002	NY	Riverhead Foundation for Marine Research and Preservation	Request for operational support to upgrade facilities for the New York State Marine Mammal and Sea Turtle Stranding Program	$81,190
2002	NY	Riverhead Foundation for Marine Research and Preservation	Characterization of ice seal movements and evaluation of existing treatment protocols employed in the rehabilitation and field assessment through the uses of satellite telemetry and video documentation of stranded pinnipeds	$59,181
2002	OK	Oklahoma State University	A comprehensive two-year study of the viral, bacterial, mycologic and toxicologic conditions associated with marine mammal strandings in the Gulf coast of the US	$100,000
2002	OR	Oregon State University	Enhancing the capabilities of the Oregon Marine Mammal Stranding Network	$100,000
2002	PA	Trustees of the University of Pennsylvania	Toxicological and Pathoanatomic Stranding response and post-mortem evaluation of stranded marine mammals in San Juan Couny Washington	$75,206
2002	TX	Texas Marine Mammal Stranding Network	Improved recovery and rehabilitation of stranded marine mammals	$99,936
2002	TX	Texas Marine Mammal Stranding Network	Improved data collection from living and dead marine mammal strandings	$99,904
2002	VA	Virginia Marine Science Museum	Improving Triage and Treatment of Live Stranded Marine Mammals in Virginia	$82,850

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2002	VA	Virginia Marine Science Museum	Improving response to and assessments of dead marine mammal stranding in Virginia	$99,000
2002	WA	Cascadia Research Collective	Trends, spatial distribution, health effects of contaminants in Washington harbor seals from stranded animals	$98,968
2002	WA	Cascadia Research Collective	Strandings of large whales in Washington state and examination of contaminant accumulation	$99,461
2002	WA	WA Depart. Fish and Wildlife	Investigation of health parameters and causes of mortality in marine mammals from Washington waters	$100,000
2002	WA	Whale Museum	Stranding response and post-mortem evaluation of stranded marine mammals in San Juan Couny Washington	$89,123
2002	WA	Wolf Hollow Wildlife Rehabilitation Center	Enhancement and Support of Marine Mammal Treatment Facility	$75,053
2002	WA	Wolf Hollow Wildlife Rehabilitation Center	Upgrade of Life Support System for Marine Mammal Holding Pools	$99,400
2003	AK	University of AK Anchorage	The effects of acute and chronic stress on the Atlantic bottlenose dolphin (Tursiops Truncatus) Adrenal gland.	$74,619
2003	CA	City of Malibu	Consistency and improvement in marine mammal stranding response for the City of Malibu coastline	$100,000
2003	CA	Friends of the Seal Lion Marine Mammal Center	Pathology enhancement and database development	$97,975
2003	CA	Marine Mammal Care Center	Veterinary Fellowship Program at the Marine Mammal Care Center at Fort MacArthur	$100,000
2003	CA	Marine Mammal Center	Continuation of a biomonitoring program to detect novel diseases and changes in prevalence of know diseases in pinnipeds stranded along the central California coast	$100,000
2003	CA	Marine Mammal Center	Advancement of clinical care of stranded marine mammals, especially those intoxicated with the algal toxin domoic acid	$100,000
2003	CA	Natural History Museum of Los Angeles County	Development of an Improved Protocol for Examining Stranded Cetaceans: Combining Museum-based Science and Veterinary Medicine	$95,000
2003	CA	Regents of the University of CA	Cancer in stranded CA sea lions: answering questions about the role of contaminants, genetics, and diagnostic of herpes virus infection and early cancers	$100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2003	CA	Regents of the University of CA	Enhancement of Stranding Response at the University of CA Santa Cruz Long Marine Lab	$49,703
2003	CA	San Jose State University Foundation	Improving the Response to Marine Mammal Strandings by Moss Landing Marine Laboratories in Central CA	$99,716
2003	CA	Santa Barbara Museum of Natural History	Enhancement of Facility, Equipment and Supplies to Recover and Archive Dead, Stranded Cetaceans	$99,989
2003	CA	Sea World, San Diego	Improving response, care and diagnostic for stranded marine mammal in Southern CA	$100,000
2003	CA	Sea World, San Diego	Enhancement and integration of southern CA stranded marine mammal post-mortem evaluations and materials archives	$100,000
2003	CT	Mystic Aquarium	Support for the Marine Mammal Stranding Program at Mystic Aquarium	$100,000
2003	CT	Mystic Aquarium	Application and refinement of a prognostic index to evaluate the health, nutritional status, and cause of stranding of stranded harp seals and hooded seals in the Northeastern U.S., with particular emphasis on a disease with epizootic potential	$99,997
2003	CT	University of Connecticut	Evaluation of immune functions are potential diagnostic and prognostic tools in stranded marine mammals	$95,744
2003	DC	Smithsonian Institution	Enhancement and Maintenance of the Smithsonian Institution's Cetacean Distributional Database and Research Collection's (1 Year)	$97,580
2003	DE	Delaware DNR	Outfitting a necropsy lab to improve acquisition, analysis and storage of levels A, B and C data from stranded marine mammals in coastal Delaware and it's inland waterways	$100,000
2003	FL	FL Fish & Wildlife Conservation Commission	Facilities of Southwest Florida Cetaceans Rescue and Recovery	$90,800
2003	FL	Gulf World, Inc.	Request for equipment to help facilities large animals and to make moving of all animals easier, safer and faster and for financial assistance with stranding facility operations	$45,675
2003	FL	Hubbs-Sea World Research Institute	Enhancing live animal stranding response, necropsy procedures and tissue archiving capabilities along the central and northeast coast of FL	$96,826

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2003	FL	Marine Animal Rescue Society (MARS)	Improve MARS' impact on live stranding events in South FL, while nurturing existing outreach channels with a better presence	$99,952
2003	FL	Mote Marine Lab	Facility expansion for the Dolphin and Whale Hospital	$100,000
2003	FL	University of Florida	Poxvirus Infections in North American Pinnipeds	$38,181
2003	LA	Audubon Nature Institute, Inc.	Enhancement of data collection from stranded marine mammals by the Louisiana Marine Mammal Rescue Program	$74,940
2003	MA	Cape Cod Stranding Network, Inc.	Enhanced stranding response and investigation on Cape Cod: assessment, data, collection, sampling, and disposal	$100,000
2003	MA	New England Aquarium Corporation	Improved field diagnostic and post release monitoring of mass stranded cetaceans	$99,958
2003	MA	New England Aquarium Corporation	Improving marine mammal stranding response and rehabilitation in Massachusetts, New Hampshire, and Southern Maine	$100,000
2003	MA	Woods Hole Oceanographic Institution	2003 Necropsy Enhancement for Stranded Marine Mammals	$99,267
2003	MD	Maryland DNR	Improving Response to and Assessment of Dead Stranded Marine Mammals in Maryland	$99,997
2003	MD	National Aquarium in Baltimore	Enhanced operations of Marine Animal Stranding Rescue and Rehabilitation through the procurement of medical/rescue equipment and a centralized storage facility.	$99,030
2003	ME	College of the Atlantic	A medium-range response vessel to enhance the Marine Mammal Stranding Response Program (MMSRP) for Mid-coast/Downeast Maine	$80,000
2003	ME	Marine Animal Lifeline	Improved veterinary care and marine mammal rehabilitation program support	$98,401
2003	ME	Marine Animal Lifeline	Enhancing and supporting marine mammal rescue response and stabilization procedures	$99,734
2003	ME	University of Southern Maine	Establishing a national resource of marine mammal cell lines for toxicological, infectious disease, and other biomedical research	$100,000
2003	MS	Institute for Marine Mammal Studies, Inc.	Evaluation of trends and possible causes of marine mammal strandings in the Mississippi sound and adjacent waters	$100,000
2003	NC	University of North Carolina, Wilmington	Enhancing response to and necropsy of stranded large whales in North Carolina and Virginia	$93,262

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2003	NC	University of North Carolina, Wilmington	Enhanced tissue collection and health monitoring of stranded marine mammal's in North Carolina and Virginia	$94,046
2003	NJ	Marine Mammal Stranding Center (MMSC)	To ensure and support MMSC staffing requirements	$100,000
2003	NY	Mount Sinai School of Medicine	Atlas of mysticete anatomy	$92,181
2003	NY	Riverhead Foundation for Marine Research and Preservation	Facility upgrade to enhance access to veterinary care for marine mammals while collecting valuable supplemental data	$99,711
2003	OR	Oregon State University	Enhancing the capabilities of the Oregon marine mammal stranding network	$99,967
2003	SC	South Carolina DNR	Continuation of South Carolina's Marine Mammal Strandings Network	$86,690
2003	TX	Texas Marine Mammal Stranding Network (TMMSN)	Improved Recovery and Treatment of Live Stranded Animals--Rescue, Rehabilitation and Release	$99,649
2003	TX	Texas Marine Mammal Stranding Network (TMMSN)	Improved data collection from living and dead marine mammal strandings	$99,319
2003	VA	Virginia Marine Science Museum	Supporting response to dead marine mammal strandings in Virginia	$100,000
2003	WA	Washington Department of Fish & Wildlife	Investigations of marine mammals health parameters and causes of mortality in marine mammals from Washington waters	$72,256
2003	WA	Whale Museum	Stranding response and post-mortem evaluation of stranded marine mammals in San Juan County, Washington	$95,178
2004	AK	Aleut Community of St Paul Island	Assessment of northern fur seal entanglement in marine debris on the Pribilof Islands.	$100,000
2004	AK	Seward Association for the Advancement of Marine Science	Rescue and Rehabilitation of Pinnipeds and Cetaceans in AK	$99,815
2004	AK	University of AK Fairbanks	Morbidity and mortality of marine mammals on the north coast of Alaska Peninsula	$99,908
2004	AL	Marterra Foundation, Inc.	Enhancement of data collection Phase 2	$99,924
2004	CA	Marine Mammal Care Center	Enhanced Veterinary Medical Program at the Marine Mammal Care Center at Fort MacArthur	$100,000
2004	CA	Northcoast Marine Mammal Center	Enhance diagnostic and treatment abilities, improve facilities for stranded marine mammals; continue employment of facility manager and primary investigating veterinarian to accomplish goals and objectives	$100,000
2004	CA	Regents of the University of CA	Marine Mammal Pathology for the Central CA	$99,980

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2004	CA	San Jose State University Foundation	Movements, Dive Behavior and Survival of Post Release CA Sea Lions after Rehabilitation for Domoic Acid Toxicity	$97,322
2004	CA	Santa Barbara Marine Mammal Center	Pinniped Rescue Capture Techniques Training Program	$32,000
2004	DC	Smithsonian Institution	Enhancement and Maintenance of the Smithsonian Institution's Cetacean Distributional Database and Research Collection's (Year 2)	$97,467
2004	FL	Dynamac Corporation	Marine Mammal Stranding Program on Florida's Space Coast: Upgrade Rescue and Data Collection	$43,198
2004	FL	Harbor Branch Oceanographic Institution	Diagnostic Equipment Purchase	$54,964
2004	FL	Harbor Branch Oceanographic Institution	Stranding Center Pool Enhancement	$97,763
2004	FL	Hubbs-Sea World Research Institute	Cetacean stranding response and the development of a photographic stranding atlas for network education and training	$94,720
2004	FL	Marine Animal Rescue Society (MARS)	Improve MARS' impact on live stranding events in South FL, while nurturing existing outreach channels with a better presence (2nd Year Funding)	$32,602
2004	FL	Mote Marine Laboratory	Enhancement of marine mammal rescue and stranding program for central west FL	$100,000
2004	HI	Hawaiian Islands Stranding Response Group	Collect consistent level A data throughout the jurisdiction, including remote areas, and collect level B and C data from stranding of dead marine mammals	$100,000
2004	HI	Hawaiian Islands Stranding Response Group	Collect consistent level A data throughout the jurisdiction, including remote areas, and collect level B and C data from stranding of dead marine mammals (2nd Year Funding)	$100,000
2004	LA	Audubon Nature Institute, Inc.	Enhancement of data collection from stranded marine mammals by the Louisiana Marine Mammal Rescue Program	$32,740
2004	MA	Cape Cod Stranding Network, Inc.	The science of stranding response: supporting data collection from live and dead stranded marine mammals on Cape Cod	$100,000
2004	MA	Whale Center of New England	A project to increase the breadth and efficiency of marine mammal stranding response on Massachusetts' North Shore	$86,658

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2004	MD	National Aquarium in Baltimore	Enhanced operations of Marine Animal Stranding Rescue and Rehabilitation through the procurement of medical/rescue equipment (2nd Year Funding)	$71,344
2004	ME	College of the Atlantic	Enhancement of the Marine Mammal Stranding Response Program (MMSRP) for the Mid-coast/Downeast Maine	$66,058
2004	NC	North Carolina State University	Improving live marine mammal stranding response in North Carolina through rapid diagnostic capability and short-term holding capacity	$83,195
2004	NJ	Marine Mammal Stranding Center (MMSC)	To ensure and support MMSC staffing requirements (2nd Year Funding)	$100,000
2004	NY	Riverhead Foundation for Marine Research and Preservation	Evaluation of current rescue response protocols and post-rehabilitation monitoring of marine mammals through the enhancement of data collection, satellite and radio tracking, and data on the prevalence of morbilli and herpes in pinnipeds in the northwest	$100,000
2004	VA	Virginia Marine Science Museum	Recovery and treatment of Live Stranded Marine Mammals in Virginia	$100,000
2004	WA	Cascadia Research Collective	Cetacean stranding response in Washington with special attention to gray whales and harbor porpoise	$83,595
2004	WA	Cascadia Research Collective	Trends, spatial distribution, health effects of contaminants in Washington pinnipeds	$96,372
2004	WA	Whale Museum	Stranding response and post-mortem evaluation of stranded marine mammals in San Juan County, Washington (2nd Year Funding)	$94,378
2004	WA	Wolf Hollow Wildlife Rehabilitation Center	Advancement of Marine Mammal Rehabilitation Program, Facilities, Techniques, Training and Research	$99,980
2005	AK	Seward Association for the Advancement of Marine Science	Alaska Region Stranding Network coordination and development project	$97,837
2005	AK	University of Alaska - Fairbanks	Salvaging beach-dead marine mammals - collaborative effort between UAM, volunteer salvage crews and NOAA	$89,718
2005	CA	Hubbs-SeaWorld Research Institution (CA)	Post-release monitoring of rehabilitated marine mammals in southern California through the use of VHF and UHF (satellite-linked) radio telemetry	$96,093
2005	CA	Marine Mammal Care Center at Fort MacArthur	Support and upgrade of the Veterinary Medical Program at the Marine Mammal Care Center at Fort MacArthur	$100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2005	CA	Pacific Marine Mammal Center	Enhancing diagnostic applications for stranded marine mammals and improving operational capabilities	$69,566
2005	CA	San Jose State University Foundation	Body burden assessments of total mercury in stranded Pacific harbor seals, *Phoca vitulina richardii* , in central California	$98,814
2005	CA	Sea World San Diego	Equipment and personnel for improving response and care for live stranded marine mammals in southern California	$76,108
2005	CA	The Marine Mammal Center	Development of a biomonitoring program to detect novel diseases and changes in prevalence of known diseases in pinnipeds stranded along the central California coast - year 3	$100,000
2005	CA	The Regents of the University of California	Enhancement of stranding response at University of California Santa Cruz Long Marine Lab	$37,581
2005	CA	The Regents of the University of California	Marine Mammal Pathology Service for the central California coast, Part 3	$99,980
2005	CT	Mystic Aquarium	Support and enhancement for the Marine Mammal Stranding Program at Mystic Aquarium	$100,000
2005	DC	Smithsonian Institution	Enhancement of Level A, B and C Cetacean Data: Improving data quality and access to the Smithsonian Institution's Cetacean Distributional Database	$88,685
2005	DE	Delaware Department of Natural Resources	Support staffing and operational needs to facilitate improved stranding response for marine mammals occurring along the Delaware coast and its waterways	$100,000
2005	FL	Dynamac Corporation	Marine Mammal Stranding Program on Florida's space coast	$36,961
2005	FL	Florida Fish and Wildlife Conservation Commission - Jacksonville	Equipping the Northeast Florida Stranding Network for response to cetacean strandings	$65,116
2005	FL	Harbor Branch Oceanographic Institution	Research project on cardiomyopathy of dwarf and pygmy sperm whales	$99,706
2005	FL	Hubbs-Sea World Research Institute	An evaluation of demographic and health related factors of the Indian River Lagoon dolphin population following an Unusual Mortality Event	$76,540
2005	FL	Marine Animal Rescue Society	Improve MARS' impact on live stranding events in South Florida, while nurturing existing outreach channels with a better presence	$99,996
2005	FL	Mote Marine Laboratory	Support for operation with the increased capacity of the Dolphin and Whale Hospital	$84,169

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2005	FL	Mote Marine Laboratory	Enhancement of the marine mammal stranding program and post-release monitoring of rehabilitated cetaceans for central west Florida	$100,000
2005	HI	Robert C. Braun, D.V.M.	Hawaiian monk seal health trend surveillance and captive care response	$100,000
2005	LA	Audubon Nature Institute, Inc.	Enhancement and maintenance of data collection from stranded marine mammals by the Louisiana Marine Mammal Rescue Program: Phase 2	$99,900
2005	MA	Cape Cod Stranding Network	Pursuing excellence in marine mammal stranding response: support for basic operational needs and innovative solutions to stranding challenges	$100,000
2005	MA	New England Aquarium	Strengthening marine mammal stranding response and rehabilitation at the New England Aquarium	$88,246
2005	MA	The Whale Center of New England	Marine mammal stranding response on Massachusetts' north shore: Continuation and expansion of data collection and assistance to stranded animals	$73,377
2005	MA	Woods Hole Oceanographic Institution	Development of necropsy, anatomy, and pathology training materials from stranded marine mammals	$99,969
2005	MD	Maryland Department of Natural Resources	Enhancing the quality and quantity of data collection from dead stranded marine mammals in Maryland	$88,387
2005	ME	College of the Atlantic	Maintenance and enhancement of the Marine Mammal Stranding Response Program (MMSRP) for the midcoast/downeast region of Maine, 2005-2006	$77,388
2005	ME	University of New England	The enhancement of pinniped rehabilitation at Marine Animal Rehabilitation Center	$85,615
2005	ME	University of Southern Maine	Establishing a national resource of marine mammal cell lines for toxicological, infectious disease, and other biomedical research	$100,000
2005	MS	Institute for Marine Mammal Studies	Evaluation of trends and possible causes of Atlantic bottlenose dolphin (*Tursiops truncatus*) strandings in the Mississippi Sound and adjacent waters (continuation study)	$100,000
2005	NC	University of North Carolina - Wilmington	Enhanced tissue collection and health monitoring of stranded marine mammals in North Carolina and Virginia	$98,587
2005	NJ	Marine Mammal Stranding Center	To enhance and support basic needs for volunteer training and response, treatment and data collection of live and dead stranded marine mammals in New Jersey	$100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2005	NY	The Riverhead Foundation for Marine Research	Facility upgrade to enhance operational support and response to live marine mammal strandings while collecting valuable supplemental data	$100,000
2005	OR	Oregon State University	Enhancing the capabilities of the Oregon Marine Mammal Stranding Network	$99,201
2005	OR	Portland State University	Implementation of an archival system for cetacean tissue and anatomical specimens collected during 10 years of stranding network activity	$76,462
2005	TX	Texas Marine Mammal Stranding Network	Response, treatment and data collection from living and dead stranded marine mammals	$99,905
2005	VA	Virginia Aquarium Foundation	Enhancing response to live marine mammal strandings in Virginia	$100,000
2005	WA	Washington Department of Fish and Wildlife	Investigations of marine mammal health parameters and causes of mortality in Washington state	$94,655
2005	WA	Wolf Hollow Wildlife Rehabilitation Center	Advancement of marine mammal rehabilitation program, operations, facilities, training and research	$88,068
2006	AK	Aleut Community of St. Paul Island	Assessment of northern fur seal (*Callorhinus ursinus*) entanglement in marine debris on the Pribilof Islands	99,083
2006	AK	University of Alaska Fairbanks	Improvements to marine mammal data and specimen archives at UAM	100,000
2006	AK	University of Alaska Fairbanks	Morbidity and mortality of marine mammals on the north coast of the Alaska Peninsula	100,000
2006	CA	City of Malibu	Advancement of marine mammal stranding response for the city of Malibu coastline	87,698
2006	CA	Marine Mammal Care Center at Fort MacArthur	Staffing resources upgrade at the Marine Mammal Care Center at Fort MacArthur	83,200
2006	CA	Northcoast Marine Mammal Center	Enhance response, rescue and rehabilitation on Northern California's remote coastline	100,000
2006	CA	Pacific Marine Mammal Center	Enclosure renovation and pool construction project	58,539
2006	CA	Regents of the University of California	Marine Mammmal Pathology Service for the Central California Coast, Part 4	99,946
2006	CA	Regents of the University of California	Enhancement of Stranding Response at University of California Santa Cruz Long Marine Lab	48,389
2006	CA	Santa Barbara Museum of Natural History	Support for and enhancement of data collection from Dead-Stranded cetaceans	63,756
2006	CA	Sea World San Diego	Personnel for improving stranded animal response in Southern California	100,000
2006	CA	The Marine Mammal Center	Development of diagnostic assays to detect lungworm (Otostrongylus circumlitus) infection in stranded northern elephant and Pacific harbor seals	99,550

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2006	CT	Sea Research Foundation, Inc. (Mystic Aquarium)	Support and Enhancement for the Marine Mammal Stranding Program at Mystic Aquarium	99,310
2006	CT	University of Connecticut	Evaluation of immune functions as potential diagnostic and prognostic tools in stranded marine mammal, a regional approach.	100,000
2006	FL	Florida Fish and Wildlife Conservation Commission	Stranding and Necropsy Training For Increasing Quality of Level A, B, and C Data Collection by the Florida Cetacean Stranding Network	99,913
2006	FL	Hubbs-SeaWorld Research Institute	Enhancing live animal stranding response, assessing cetacean health trends, and evaluating neonatal mortality trends of the bottlenose dolphin (Tursiops truncatus) along the east coast of Florida	99,479
2006	FL	Hubbs-SeaWorld Research Institute	Validation of historic marine mammal stranding data from the southeastern United States	64,474
2006	FL	Marine Animal Rescue Society (MARS)	Improve MARS' mass stranding response capability (immediate triage and necropsy support) and post-rehabilitation monitoring preparedness for the SEUS stranding region	64,296
2006	FL	Mote Marine Laboratory	Investigating brevetoxin-induced mortality in bottlenose dolphins stranded in central west Florida	100,000
2006	FL	Nova Southeastern University	An Analysis of Kogia Stranding Data Collected by the Southeast Region Marine Mammal Stranding Network	29,177
2006	FL	University of Florida	Clinical Pathology and Histopathologic Processing and Analysis of Cetaceans in Northern and Central Florida	99,955
2006	GA	GA Dept. of Natural Resources	Enhance Georgia Marine Mammal Stranding Network	55,848
2006	MA	Cape Cod Stranding Network	The Next Step: Operational Support to Enhance Stranding Response Capabilities and Promote Data Analysis and Publication	100,000
2006	MA	New England Aquarium Corporation	Advancement of Clinical Care, Data Collection, and Pathology Training for Marine Mammal Stranding Response	99,954
2006	MA	The Whale Center of New England	Marine mammal stranding response on Massachusetts' North Shore: Timely assistance for living animals and comprehensive regional data collection	85,062
2006	MA	Woods Hole Oceanographic Institution	2006 Necropsy of Fresh and Human-Impacted Marine Mammal Strandings in SE Massachusetts and Cape Cod	98,714

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2006	MD	National Aquarium in Baltimore	2006 National Aquarium in Baltimore, Marine Animal Rescue Program Operations	46,800
2006	ME	College of the Atlantic	Maintenance and Enhancement of the Marine Mammal Stranding Response Program (MMSRP) for the Mid-coast/Downeast Region of Maine, 2006-2007	82,890
2006	ME	Marine Animal Lifeline	Veterinary care staffing and rehabilitation supply expense support for the marine mammal rehabilitation program	100,000
2006	ME	University of New England	The Enhancement of Cetacean Response, Treatment and Data Collection in Southern Maine	93,596
2006	ME	University of New England	Composting as a Disposal Option	60,025
2006	NC	North Carolina State University	Improving live marine mammal stranding response in North Carolina through a rapid diagnostic capability and short-term holding capacity	56,930
2006	NC	University of North Carolina Wilmington	Enhancing response to and necropsy of large whales in North Carolina, Virginia and South Carolina	92,830
2006	NC	University of North Carolina Wilmington	Enhanced tissue collection and health monitoring of stranded marine mammals in North Carolina and Virginia	99,986
2006	NJ	Marine Mammal Stranding Center	To enhance and support Marine Mammal Stranding Center staffing requirements	100,000
2006	NY	Riverhead Foundation for Marine Research and Preservation	Facility Upgrade to Enhance Operational Support and Response to Marine Mammal Strandings	100,000
2006	OR	Oregon State University	Enhancing the capabilities of the Oregon Marine Mammal Stranding Network	99,931
2006	TX	Texas Marine Mammal Stranding Network	Response, treatment and data collection from living and dead stranded marine mammals	99,998
2006	VA	Virginia Aquarium and Marine Science Center Foundation	Continuing Investigation of Dead Marine Mammal Strandings in Virginia	100,000
2006	WA	Orca Network	Stranding response and post-mortem examination of stranded marine mammals in Central Puget Sound, Washington	99,772
2006	WA	Washington Department of Fish and Wildlife	Response to stranded marine mammals and investigating causes of mortality in Washington waters	99,532
2006	WA	Wolf Hollow Wildlife Rehabilitation Center	Care of Live Stranded Harbor Seals in the Northwest Region: Treatment, Data Management, Research, and Training	85,638

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2007	AK	Alaska Department of Fish and Game	Reduce Entanglements of Live Stranded Steller Sea Lions in Alaska	54,000
2007	AK	Seward Association for the Advancement of Marine Science	Basic operations and medical care of rehabilitation patients	99,803
2007	AK	Seward Association for the Advancement of Marine Science	Alaska Region Stranding Network Development and Training	40,000
2007	AK	University of Alaska Fairbanks	Improvements to marine mammal data and specimen archives at UAM.	100,000
2007	AK	Alaska Whale Foundation	Improving Alaska Whale Foundation's disentanglement preparedness in Southeast Alaska	39,540
2007	CA	Northcoast Marine Mammal Center	Enhance response, rehabilitation and data collection of stranded marine mammals on Northern California's remote coastline	94,780
2007	CA	The Marine Mammal Center	Stranded harbor seals as indicators of pathogen prevelance in harbor seals of San Francisco, a heavily urbanized environment	95,792
2007	CA	The Marine Mammal Center	Understanding the cyclic dynamics of leptospirosis in California sea lions (*Zalophus californianus*)	99,428
2007	CA	The Regents of the University of California	Continued Prescott Program Enhancement of Stranding Response at University of California Santa Cruz Long Marine Lab	90,906
2007	CA	The Regents of the University of California	Marine Mammal Pathology Service for the Central California Coast, Part 5	97,883
2007	CA	San Jose State University Foundation	Enhancing the Response to Marine Mammal Strandings by Moss Landing Marine Laboratories in Central California	99,838
2007	CA	Santa Barbara Museum of Natural History	Enhancement of Cetacean Bio-Monitoring in Central and Southern California	75,984.90
2007	CA	Marine Mammal Care Center at Fort MacArthur	Improving operational capabilities at the Marine Mammal Care Center at Fort MacArthur	96,100
2007	CA	Friends of the Sea Lion, Inc. dba Pacific Marine Mammal Center	Diagnostic and Treatment Enhancements for Stranded Marine Mammals	99,644
2007	CA	Biomimetica	Establishing Auditory Evoked Potential Measurement Capabilities for Stranding Response Teams	51,978.90

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2007	CT	Mystic Aquarium	Support and Enhancement for the Marine Mammal Stranding Program at Mystic Aquarium	100,000
2007	DE	DNREC - Delaware Division of Fish and Wildlife	Support staffing and operational needs for comprehensive stranding response and health assessments for marine mammals stranding in Delaware	99,680
2007	FL	Hubbs-SeaWorld Research Institute	Enhancing live animal response, public outreach and education, and improving the assessment of cetecean health trends and interactions between bottlenose dolphins and recreational fishing gear	99,581
2007	FL	Hubbs-SeaWorld Research Institute	Age, growth, reproduction and feeding ecology of rough-toothed dolphins from single and mass strandings in Florida, with a compilation of voucher materials deposited in various institutions	91,421
2007	FL	Florida Fish and Wildlife Conservation Commission	Cetacean Stranding Response and Training in Lee and Collier Counties, Florida	40,086
2007	FL	Mote Marine Laboratory, Inc.	Support for Operation of the Dolphin and Whale Hospital	100,000
2007	HI	Attractions Hawaii , dba Sea Life Park by Dolphin Discovery	Development of live cetacean stranding response teams on the main Hawaiian Islands and a long-term cetacean rehabilitation facility on Oahu, Hawaii	100,000
2007	HI	Hawaii Pacific University	Continuing To Enhance Cetacean Necropsy Capabilities in the Main Hawaiian Islands	100,000
2007	MA	Cape Cod Stranding Network, Inc.	Maintaining Readiness: Operational Support for Single and Mass Stranding Response and Training on Cape Cod and Southeastern Massachusetts	100,000
2007	MA	New England Aquarium Corporation	Enhancement of Marine Mammal Response, Rehabilitation and Data Collection with a Focus on Mass Stranding Events	99,906
2007	MD	Maryland Department of Natural Resources	Continuation of Enhanced Level B and C Data Collection from Dead Stranded Marine Mammals in Maryland	65,435
2007	ME	College of the Atlantic	Maintenance and enhancement of the Marine Mammal Stranding Response Program (MMSRP) for the Mid-coast/ Downeast region of Maine, 2007-2008	97,800
2007	ME	Maine Department of Marine Resources	Support basic needs of organizations for response, treatment, and data collection from living and dead stranded marine mammals.	100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2007	ME	University of New England	Marine Animal Rehabilitation Center Diagnostic Enhancement, Disease Surveillance, and Operational Support	99,559
2007	MP	Northern Marianas College	Building the capacity of US Insular areas for Marine Mammal Stranding Response	80,000
2007	NC	University of North Carolina Wilmington	Enhanced tissue collection and health monitoring of stranded marine mammals in North Caorlina and Virginia	98,240
2007	NJ	Marine Mammal Stranding Center	To enhance and support Marine Mammal Stranding Center staffing and veterinary requirements	100,000
2007	NY	Riverhead Foundation for Marine Research and Preservation	Program Support to Enhance Operations for Response, Treatment and Data Collection from Living and Dead Stranded Marine Mammals	100,000
2007	OR	Oregon State University	Enhancing the Capabilities of the Oregon Marine Mammal Stranding Network	98,502
2007	OR	Portland State University	Diagnostic Assessment of Health and Investigation of Potential Relationship of Diet and Exposure to Biotoxins in Stranded Marine Mammals in Oregon	98,393
2007	PR	Puerto Rico Department of Natural and Environmental Resources	Puerto Rico Marine Mammal Rescue Network	100,000
2007	TX	Texas Marine Mammal Stranding Network	Response, treatment and data collection from living and dead marine mammals stranded along the Texas coast	100,000
2007	VA	Virginia Aquarium & Marine Science Center Foundation, Inc.	Response, rehabilitation & examination of stranded marine mammals in Virginia	99,990
2007	WA	Cascadia Research Collective	Stranding response in southern Puget Sound and central outer coast Washington 2007-2009 including large whale stranding response for all Washington	99,832.50
2007	WA	Washington Department of Fish and Wildlife	Enhanced response to stranded marine mammals and investigating causes of mortality in Washington waters.	100,000
2007	WA	Wolf Hollow Wildlife Rehabilitation Center	Care of Live Stranded Harbor Seals in the Northwest Region: Treatment, Data Collection and Compilation, and Training	85,783
2008	AK	Seward Association for the Advancement of Marine Science	Basic Operations and Medical Care of Rehabilitation Patients	$99,994
2008	AK	Seward Association for the Advancement of Marine Science	Alaska Region Stranding Network Annual Meetings and Training	$99,997

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2008	CA	Northcoast Marine Mammal Center	Enhanced Stranding Response and Rehabilitation on the Lost Coast: Support for Basic Operational Needs and Development of Written Protocols and Manuals	$94,136
2008	CA	California Academy of Sciences	Improving marine mammal data collection facilities and specimen archives at the California Academy of Sciences	$100,000
2008	CA	Regents of the University of California, Davis	Monitoring post-release movement and survival of rehabilitated harbor seal pups	$97,398
2008	CA	Regents of the University of California, Santa Cruz	Continued Prescott Program Enhancement of Stranding Response at University of California Santa Cruz Long Marine Lab	$99,106
2008	CA	San Jose State University Foundation	A vessel for whale disentanglement in central california	$20,000
2008	CA	Santa Barbara Museum of Natural History	Enhancement of Cetacean Bio-Monitoring in Central and Southern California	$77,297
2008	CA	City of Malibu	Marine Mammal Stranding Response and Data Collection for the City of Malibu	$74,740
2008	CA	Marine Mammal Care Center at Fort MacArthur	Facility expansion and Upgrade at the Marine Mammal Care Center at Fort MacArthur	$93,155
2008	CT	Sea Research Foundation, Inc.	Support and Enhancement for the Marine Mammal Stranding Program at Mystic Aquarium	$74,966
2008	FL	Florida Atlantic University Foundation (Harbor Branch Oceanographic Institution)	Furthern Investigations of the Etiopahogenesis of *Kogia* spp. Cardiomyopathy	$99,997
2008	FL	Hubbs-SeaWorld Research Institute	Enhancing public and network outreach and education in the SEUS stranding network and support for marine mammal stranding response along the east coast of Florida	$99,966
2008	FL	Marine Animal Rescue Society	Enhance MARS' stranding support, facility capacity and outreach within the network through continual improvements of proven methods	$100,000
2008	FL	Mote Marine Laboratory	Monitoring natural and human-related mortality of cetaceans along the central West coast of Florida and post-release tracking of rehabilitated animals	$100,000
2008	FL	Mote Marine Laboratory	Facility and Equipment Enhancement at the Dolphin and Whale Hospital	$100,000
2008	GA	GA Department of Natural Resources	Enhancing the Georgia Marine Mammal Stranding Network Through Improved Academic Collaboration	$34,877

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2008	HI	Hawaii Pacific University	Continuing to Build Capacity for Cetacean Necropsies in the Main Hawaiian Islands and the Greater Pacific	$100,000
2008	LA	Audubon Nature Institute, Inc.	Louisania Marine Mammal Rescue Program: continued program operations and response for live and dead strandings while increasing Level A, B, and C data collection and samples for analysis	$95,400
2008	MA	New England Aquarium	Expanding Our Understanding of Marine Mammal Strandings through Enhanced Proficiency of Staff and Volunteers, Increased Sample Collection and Analysis, and More Efficient Manipulation of Data	$99,676
2008	MA	Woods Hole Oceanographic Institution	2008- Examination of Offshore Large Whale Mortalities	$99,918
2008	MD	National Aquarium in Baltimore	2008 Support and Enhancement of the National Aquarium in Baltimore's Marine Animal Rescue Program	$76,813
2008	MD	Maryland Department of Natural Resources	Enhanced Tissue and Data Collection from Dead Stranded Marine Mammals in Maryland	$57,390
2008	ME	College of the Atlantic	Maintenance and Enhancement of the Marine Mammal Stranding Program (MMSRP) for the Mid-Coast/Downeast Region of Maine, 2008-2009	$92,308
2008	ME	University of New England	Broadening Observations Through Technology, Continuation of Infectious Disease Monitoring, and Operational Support for the Marine Animal Rehabilitation Center at the University of New England	$99,225
2008	ME	Maine Department of Marine Resources	Prescott Funds for the Maine Department of Marine Resources Marine Mammal Response	$100,000
2008	MS	Institute for Marine Mammal Studies, Inc	Enhancement of marine mammal stranding response, data collection, and tissue analysis in the Mississippi Sound and the adjacent waters of the North-Central Gulf of Mexico	$100,000
2008	NC	University of North Carolina, Wilmington	Enhanced tissue collection and health monitoring of stranded marine mammals in North Carolina and Virginia	$99,974
2008	NJ	Marine Mammal Stranding Center	Support and Enhancement for the Marine Mammal Stranding Program at MMSC	$100,000
2008	NY	Riverhead Foundation for Marine Research and Preservation	Operational Support to Enhance Resources for Response, Treatment, and Date Collection from Living and Dead Stranded Marine Mammals Recovered in New York State	$100,000

YEAR	STATE	APPLICANT	TITLE	FEDERAL AMOUNT
2008	OR	Portland State University	Enhancement of Diagnostic Capabilities and Extension of Geographic Coverage for the Northern Oregon/Southern Washington Marine Mammal Stranding Program (NOSWSP)	$100,000
2008	OR	Oregon State University	Enhancing the Capabilities of the Oregon Marine Mammal Stranding Network	$99,627
2008	TX	Texas State Marine Mammal Stranding Network	Response, Treatment, and Data Collection from Living and Dead Marine Mammals Stranded Along the Texas Coast	$100,000
2008	VA	Virginia Aquarium	Processing archived samples from stranded Tursiops in VA	$99,865
2008	VA	Virginia Aquarium	Supporting Expert Response to Stranded Marine Mammals in Virginia	$100,000
2008	WA	Makah Tribe	Investigations of Marine Mammal Strandings on the Makah Indian Reservation	$29,288
2008	WA	The Whale Museum	Response and postmortem evaluation of marine mammals stranded in San Juan County, Washington	$94,881
2008	WA	Orca Network	Enhanced stranding response, post-mortem examination, and diagnostics of stranded marine mammals in Central Puget Sound, Washington.	$94,750
2008	WA	Cascadia Research Collective	Enhanced Reponse to Stranded Marine Mammals in Washington Including Searches of Outer Coast Beaches and Smith Island to Examine Underreporting of Stranding Rates and Follow Up of Unusual Mortalities	$99,903

APPENDIX L

MARINE MAMMAL OIL SPILL RESPONSE GUIDELINES

MARINE MAMMAL HEALTH AND STRANDING RESPONSE PROGRAM

Marine Mammal Oil Spill Response Guidelines

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources
Marine Mammal Health and Stranding Response Program

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MARINE MAMMAL HEALTH AND STRANDING RESPONSE PROGRAM

Marine Mammal Oil Spill Response Guidelines

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U.S. DEPARTMENT OF COMMERCE
Carlos M. Gutierrez, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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NATIONAL MARINE FISHERIES SERVICE
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Many individuals and organizations helped make this publication possible through the generous contributions of their time and effort and we offer our sincere thanks to everyone involved.

Table of Contents

Internet Resources

NOAA Fisheries, Marine Mammal Health and Stranding Response Program
http://www.nmfs.noaa.gov/pr/health/

NOAA, Damage Assessment and Restoration Program (DARP):
http://www.darp.noaa.gov/

U.S. Coast Guard Oil Spill Response: http://www.uscg.mil/hq/g-m/nmc/response/index.htm

U.S. Coast Guard Area Contingency Plans: http://www.uscg.mil/vrp/acp/acp.shtml

U.S. National Response Team: http://www.nrt.org/

Wildlife Health Center, UC Davis: http://www.vetmed.ucdavis.edu/whc/

Oiled Wildlife Care Network: http://www.vetmed.ucdavis.edu/owcn/

Introduction

Marine Mammals and Oil: A Brief Overview

In comparison to marine birds, marine mammals are infrequently affected by oil spill incidents. The number of individuals and species affected, as well as the degree of pathological impact of such exposure, will depend on many variables, such as the location and size of the spill, the characteristics of the oil, weather and water conditions, types of habitats affected, the time of year the spill occurs, as well as the behavior and physiology of the marine mammal. Information on the effects of oil on marine mammals is sparse, and is mostly a result of the *Exon Valdez* oil spill in Alaska in 1989 and a limited number of exposure experiments on a narrow range of species exposed to relatively low doses of oil (Geraci and St. Aubin, 1990).

The sensitivity of marine mammals to spilled oil is highly variable and appears to be most directly related to the relative importance of fur and blubber to thermoregulation. In those species with relatively sparse fat stores, direct contact with oil impairs the thermal insulative value of fur thus resulting in hypothermia. External exposure can also result in dermal injury and conjunctivitis. Internal exposure of oil by ingestion (either by direct ingestion or indirect through food and water sources) can result in gastrointestinal ulcers and liver and kidney damage. Inhalation of volatile hydrocarbons can result in central nervous system and pulmonary damage and behavioral abnormalities. Depending upon the extent of external exposure, the toxicity of the petroleum product, the volume ingested or inhaled, the presenting clinical signs, and the species affected, some marine mammals exposed to oil may not need rehabilitation. Oil spill responders must consider that such procedures involving capturing, holding, treating, and releasing the wild animals places stress on the animal, and the consequences of capture and captivity may be a greater risk to its well being than contacting oil. Exceptions may include abandoned or moribund young pups of any species and species that rely on fur for thermal insulation. These animals will most likely require rehabilitation when oiled due to the physical and toxicological effects of petroleum exposure.

Pathological Effects of Petroleum Exposure

Documented clinical and histopathological effects of oil in pinnipeds and sea otters include ambulatory restrictions, thermoregulatory imbalance, central nervous system depression, interstitial pulmonary emphysema, aspiration pneumonia, anemia, conjunctivitis and corneal edema, gastrointestinal irritation, and hepatic and renal tubular necrosis/lipiosis, and adrenal gland dysfunction (Davis and Anderson, 1976; Geraci and Smith, 1976; Engelhardt et al., 1977; Engelhardt, 1985; Geraci and St. Aubin, 1988; Geraci and Williams, 1990; St. Aubin, 1990; Lipscomb et al., 1993). Small laboratory studies on the effects of oil have been conducted on ringed and harp seals (Smith and Geraci, 1975; Geraci and Smith, 1976); however most studies have been unable to correlate the degree of oiling with the type of effect and many of these lesions may be related to captivity stress or other underlying factors. Changes in acute phase proteins and cytokines (e.g. elevated IL-6, haptoglobin and creatine kinase) have been correlated with probable petroleum exposure in river otters (Duffy et al., 1993; Duffy et al., 1994). Oiled sea otters displayed evidence of hepatic and renal dysfunction as well as anemia in their blood parameters (Williams et al., 1995).

Heavy oiling did not appear to interfere with seal locomotion during the *Exxon Valdez* oil spill (Lowry et al., 1994), but in previous spills seal pups encased in oil have drowned due to their inability to swim (Davis and Anderson, 1976). During *Exxon Valdez*, harbor seals were observed exhibiting abnormally tame or lethargic behavior. These observations are most likely explained by midbrain nerve damage found in oiled harbor seals and Steller sea lions (Spraker et al., 1994). In addition to the acute mortalities associated with the loss of thermoregulation and buoyancy, many physiological and behavioral problems have been attributed to internal exposure to petroleum and polycyclic aromatic hydrocarbon (PAH) compounds in sea otters. However, many of these conditions have been difficult to differentiate from lesions attributed to, or compounded by, shock and chronic stress associated with capture and the rehabilitation process (Williams and Davis, 1995). It has become clear that animals captured during oil spill responses undergo additional stressors that may or may not be offset by the medical care they receive.

Background

The purpose of the Marine Mammal Oil Spill Response Guidelines (Guidelines) is to provide a foundation for coordination and communication between the National Marine Mammal Health and Stranding Response Program participants and other state and federal governmental agencies involved in oil spill response and marine mammal conservation and protection. The National Oceanic and Atmospheric Administration (NOAA) Fisheries, Office of Protected Resources, Marine Mammal Health and Stranding Response Program (MMHSRP) enlisted the University of California (UC) Davis, Wildlife Health Center to assist in the development of these Guidelines with input and assistance from NOAA's National Ocean Service, Office of Protected Resources, Damage Assessment and Restoration Program (DARP) and NOAA Fisheries, Office of Law Enforcement (OLE). The UC Davis, Wildlife Health Center, through its Oiled Wildlife Care Network (OWCN) program is among the world's leading experts on oiled wildlife response methods and standards. The primary purpose of the document is to: outline appropriate standardized data collection techniques for response activities and damage assessment; define chain-of-custody protocols for animal collection, necropsy and sampling; provide recommendations for protection of human health and oil spill safety training for responders; and present guidelines for best achievable care of oiled marine mammals. Standardization of this information between and among oiled marine mammal responders should allow for more accurate collection of data for analysis, which then may yield better information on the effects of oil on marine mammals and further improvements in oil spill response involving marine mammals. These Guidelines by their design do not address overall marine mammal husbandry methods in detail, but are intended to provide basic information on oil spill specific issues (such as search and collection, transport, emergency care and stabilization), and procedures specific to oil spill response. For more information on general marine mammal rescue and rehabilitation, the reader should consult references such as Marine Mammals Ashore (Geraci and Lounsbury, 1993) and the CRC Handbook of Marine Mammal Medicine (Dierauf and Gulland, 2001).

Intended Uses

These Guidelines are intended for use by the NOAA Fisheries MMHSRP, other natural resource management agencies, marine mammal stranding networks and rehabilitators, On-Site Coordinators, and Potentially Responsible Parties (PRPs) as a guide in:

- Developing appropriate sections of Area Contingency Plans (ACPs)
- Stimulating communication and documentation coordination between interested parties
- Caring for oiled marine mammals
- Evaluating marine mammal rehabilitation center capabilities for oil spill response
- Collecting evidence for assessment of impacts on marine mammals
- Making informed choices during spill responses

Responses to spills impacting marine mammal will depend upon factors including the size of the spill, species involved, type of product spilled, time of year, and location. It is important that spill responders and pre-spill planners recognize that the variability in degree of effort and complexity in marine mammal response can be significant when comparing small and large events.

This document is not intended for use as a training manual. Nor is this document an exhaustive list of techniques in this field, in which practical knowledge is being continuously refined and developed. It is to serve as guidance for acquiring the best achievable care and data collection during an oil spill response and should be periodically reviewed and updated.

Organizational Structure

Organizational Structure of Wildlife Response

Actions taken to protect wildlife resources follow an organized and agreed-upon cascade of agency notifications and activities. All activities of the oil spill response are coordinated through the Unified Command (UC) and follow an Incident Command System (ICS) structure as standardized by the National Interagency Incident Management System (NIIMS) and modified for oil and hazardous substance spill response by the National Response Team (Figure 1., NRT 2004). The UC is the governing body ultimately responsible for all decision making processes during the spill response, and is made up of a Federal On-Scene Coordinator (FOSC) (usually a Coast Guard Captain of the Port for the affected area), a State Incident Commander (IC) or On-Scene Coordinator (SOSC), and a qualified individual from the Responsible Party (RP), if known. When appropriate, local government representatives can be included in the UC. The FOSC has the ultimate responsibility for directing the oil spill response if a consensus cannot be reached among the members of the UC. Wildlife response activities usually exist within the Operations Section of the ICS, though some wildlife actions (primarily baseline assessment and planning) also occur with the Environmental Unit of the Planning Section. The Wildlife Branch within the Operations Section coordinates and initiates wildlife response activities. Guidance for dealing with oiled wildlife is not specifically provided in the National Contingency Plan, therefore the Wildlife Branch operational plan is developed uniquely within each Regional and Area Contingency Plan based on the specific resources and agency involvement.

Early but prudent initiation of a wildlife response plan and the previous development of the Wildlife Branch ensure timely mobilization of dedicated staff, equipment, and volunteers. This structure allows for effective lines of communication, making the response effort much more efficient. The degree of the wildlife response effort is designed to be flexible and scalable to the size of the oil spill - only those positions necessary and appropriate for a specific spill incident are filled.

Trustee Organizations

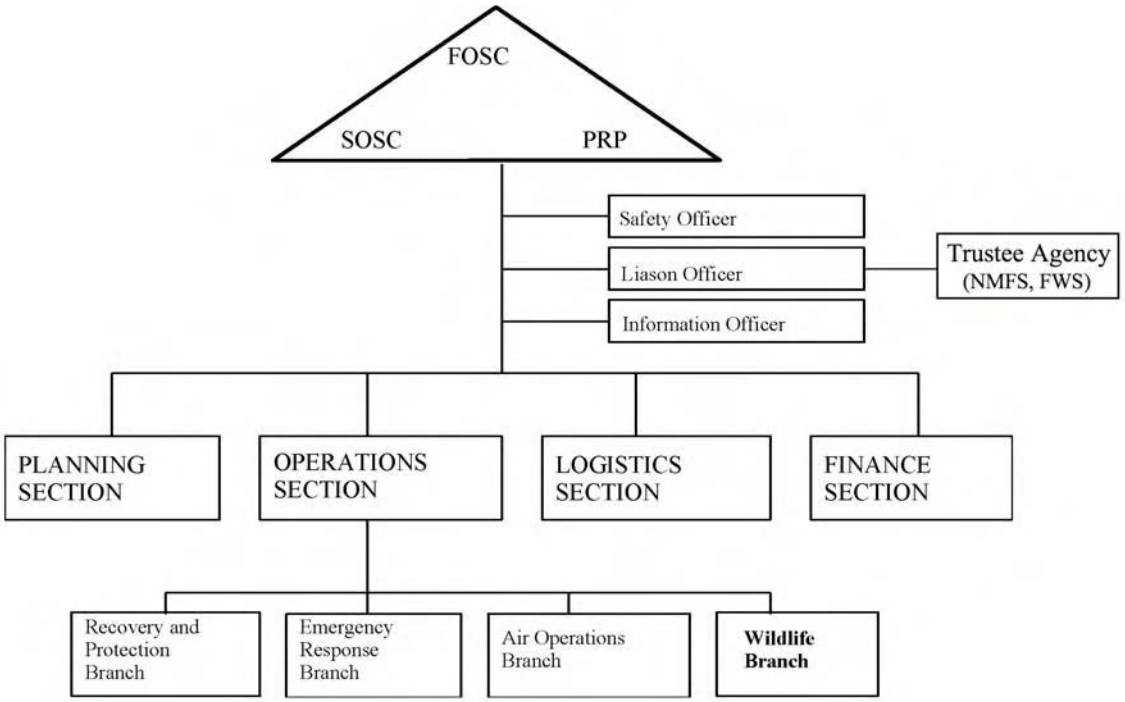
Under federal statutes, NOAA Fisheries, National Marine Fisheries Service (NMFS) has responsibility for managing and protecting all cetaceans and pinnipeds in U.S. waters, except walruses; U.S. Fish and Wildlife Service (FWS) has responsibility for managing and protecting manatees, walruses, sea otters, and polar bears. NOAA Fisheries is responsible for the administration of the Endangered Species Act (ESA) as it applies to certain cetaceans and pinnipeds and the FWS is responsible for the administration of the ESA as it applies to remaining marine mammals and terrestrial mammal and bird species. Following an oil spill, specific information on wildlife resources at risk and appropriate wildlife response actions are made available to the Federal On-Site Coordinator (FOSC) and other members of the Unified Command (UC) through representatives of appropriate wildlife resource managers. Therefore, the UC must immediately consult with FWS or NMFS whenever a response may affect these resources. The Marine Mammal Protection Act (MMPA) prohibits the "take" of sea otters, seals, sea lions, walruses, whales, dolphins, and porpoises, which includes harassing or disturbing these animals as well as actual harming or killing; however, Section 109(h) of the MMPA allows take by

Federal, State, or local governmental officials, during their official duties, provided the take is for the welfare and protection of the animal or public health. Accordingly, the FOSC/UC is authorized to take marine mammals during an oil-spill response if to protect the welfare of the animal. Section 12(c) of the MMPA allows NMFS to enter into cooperative agreements (e.g. Stranding Agreements) that allow stranding network participants marine mammal take in order to carry out the purposes of the MMPA. The ESA and its implementing regulations provide special provisions for consultations during emergencies (such as oil spills) with FWS and/or NMFS for making recommendations to the FOSC to avoid the taking of listed species or to otherwise reduce response-related impacts. In some State statutes, management and protection of wildlife resources are joint responsibilities between NMFS, FWS and the State. Because of these shared trust responsibilities, both federal and state agencies are required to respond to spills, or potential spills, that may impact marine mammals. To facilitate efficient and effective coordination during an oil spill response, federal and state agencies may consider developing Memorandums of Agreement (MOA's) or Memorandums of Understanding (MOU's) that pre-designate regional primary points of contact, establish lead representatives, and define roles for natural resource emergency situations.

In the wake of the *Exxon Valdez* spill, Congress passed the Oil Pollution Act of 1990 (OPA 90). OPA 90 sets forth an extensive liability scheme that is designed to ensure that, in the event of a spill or release of oil or other hazardous substance, the responsible parties are liable for the removal costs and damages that result from the incident. A responsible party may be liable for removal costs and damages to natural resources, real or personal property, subsistence use, revenues, profits and earning capacity, and public services. OPA 90 also set aside a significant trust fund that can be utilized quickly to implement a spill response prior to establishment of liability.

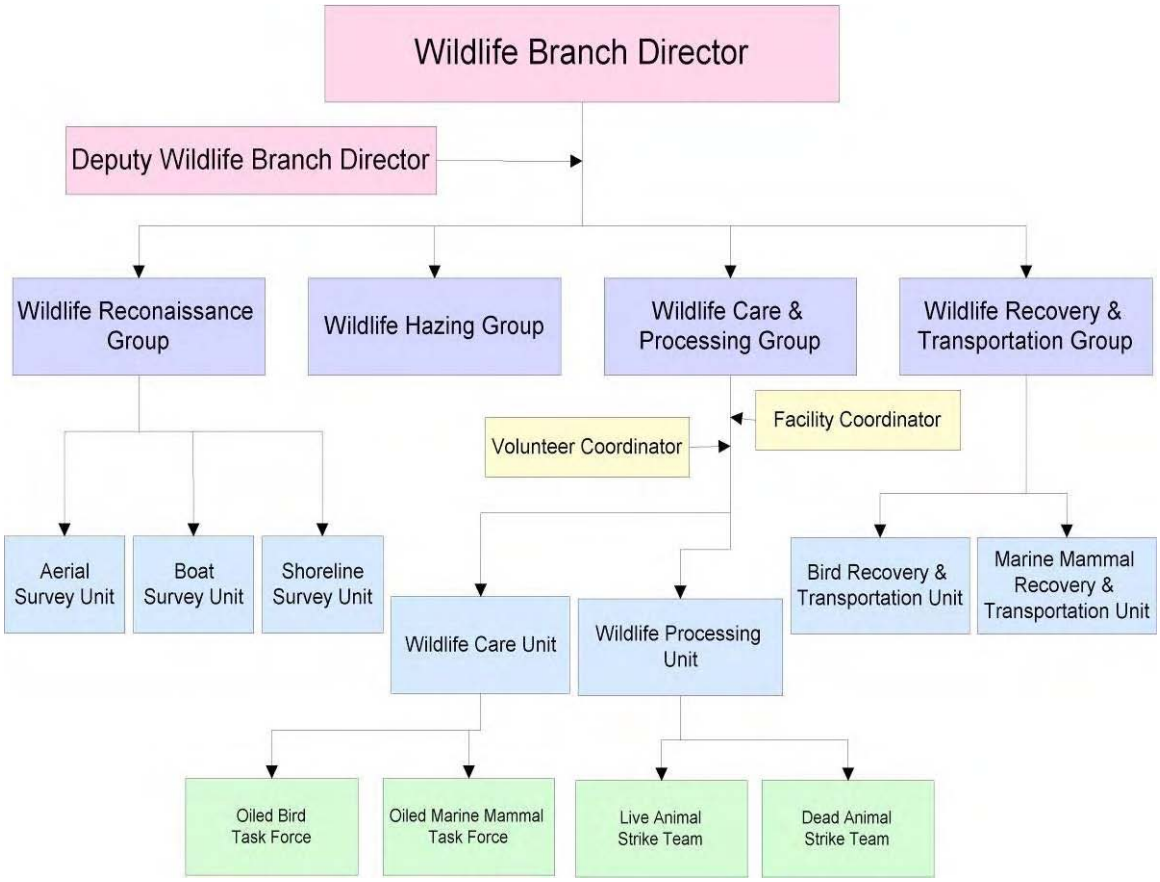
OPA 90 directs the appointed trustees to conduct natural resource damage assessments (NRDAs) and develop and implement plans to restore, rehabilitate, or replace damaged natural resources. Authority to claim damages to natural resources also stems from Clean Water Act (CWA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under the CWA, federal and state agencies with diverse jurisdictions and missions are directed to combine their response and planning efforts in the event of an oil spill or release of another hazardous substance under the aegis of a National Contingency Plan (NPC) or an Area Contingency Plan (ACP). An Area Contingency Plan must provide for efficient, coordinated, and effective action to minimize damage from oil and hazardous substance discharges. In so doing, an ACP assigns duties and responsibilities to various federal and state agencies, provides for maintenance of necessary equipment and supplies, and establishes Coast Guard strike teams with specialized training in oil and hazardous substance control. In addition, an ACP is designed to provide for surveillance and notification systems to detect oil spills as early as possible. Further, an Area Contingency Plan is to provide for a specific fish and wildlife response plan, developed with the advice of expert agencies, to minimize disruptions to fish and wildlife and their habitat. Regional and Area Contingency Plans can be located at the U.S. National Response Team website (www.nrt.org) and the USCG website: (http://www.uscg.mil/vrp/acp/acp.shtml).

Figure 1: Incident Command Structure for Oil Spill Response (NRT 2004)



Once the FOSC activates the Wildlife Branch, several components of oiled wildlife response can be initiated, including reconnaissance to determine species and areas to focus operations, hazing of animals to prevent oiling, search and collection for live and dead animals in the spill area, treatment and rehabilitation of oiled animals, and release and monitoring of recovered animals. The agencies, organizations, and individuals responsible for these functions should be outlined in the Area Contingency Plan. An example of Wildlife Branch organization is shown in Figure 2.

Figure 2: Wildlife Branch Organization (State of California, Wildlife Response Plan, 2004)



Under the direction of the Wildlife Branch Director (WBD), the principal objectives of Wildlife Operations during spill response and cleanup are to:

- Provide the best achievable care to impacted and/or threatened wildlife
- Document for the Unified Command the immediate impacts of the oil spill to wildlife
- Minimize injuries to wildlife
- Protect wildlife and habitats from adverse effects of wildlife recovery

To ensure these objectives are achieved with maximum efficiency, the WBD (in coordination with the Environmental Unit) manages the activities of the federal, state, and local agencies along with commercial and non-profit organizations responsible for wildlife protection and management who fall under the authority of the Unified Command during spill response

Stranding Network and Facility Requirements

Wildlife Operation plans should include (where available and appropriate) properly trained regional Stranding Network Participants because of their experience with live animal stranding response and rehabilitation for the local area. In order for Stranding Network Participants to contribute during wildlife response, they must hold a Stranding Agreement or Letter of Authorization (MMPA, Section 112(c)) with NMFS/FWS and have received specific oil spill training and meet facility requirements for oiled marine mammal rehabilitation. NOAA Fisheries, Office of Protected Resources, may include oil spill response authorization in the Stranding Agreement with the Participant when it is determined that the Stranding Network Participant meets these criteria. Authorized marine mammal rehabilitation organizations should make efforts to become engaged in the development of their Area Contingency Plans to ensure their involvement during oil spill response.

Criteria for Evaluating Marine Mammal Rehabilitation Groups

The following criteria can be used when considering and evaluating marine mammal rehabilitators for conducting oil spill response.

- Holds all necessary permits, Stranding Agreements (NMFS) and Letter of Authorizations (FWS) for marine mammal stranding and response activities.
- Experience in the capture, treatment, and care of oiled marine mammals
- Knowledge of conducting marine mammal response activities within an Incident Command System structure including appropriate communication and notification procedures
- Sufficiently trained (health/safety and animal care), equipped, and experienced supervisory staff
- Ability to train and equip personnel and volunteers for marine mammal response during an emergency oil spill response
- Ability to quickly mobilize to perform marine mammal capture, field evaluation, stabilization and transport (including to remote locations if necessary)
- Access to appropriate facilities for treating and housing oiled marine mammals (including adequate animal care, hazardous waste, and personnel infrastructure)
    - Ability to establish and operate marine mammal intake, holding, and isolation areas within 12-24 hours of wildlife response activation.

  - Ability to establish and operate marine mammal cleaning and pre-release areas within 72 hours of wildlife response activation.

- Agreement with a licensed veterinarian experienced in the treatment of oiled marine mammals to provide necessary medical care

- Use of best practices as outlined in the remainder of this document

Facility Requirements for Marine Mammal Oil Spill Rehabilitation

General Considerations

The size of the spill, its location, and the number and species of animals oiled will help determine the type and location of a facility that can meet the required need. Not all spill responses will be in the vicinity of a permanent rehabilitation facility. Temporary facilities that can care for oiled marine mammals in the short or long-term can be established in local, fixed structures, or mobile units can be brought to a spill location to set up as a temporary facility. However, it is critical that spill responders and pre-spill planners recognize the degree of effort, the unique requirements of oiled wildlife care and the complexity required to implement and establish an adequate facility. Pre-spill planning is strongly encouraged to achieve wildlife response systems that will adequately address the needs of small as well as large rescue efforts as rapidly as possible during a spill.

There are published standards for the design of facilities housing marine mammals in captivity. In the United States, these standards are published by the Department of Agriculture, Animal and Plant Health Inspection Service (APHIS, www.aphis.usda.gov/ac/cfr/9cfr3.html) and are a requirement for facilities that wish to display animals to the public. They include such items as haul-out requirements, pool size and depth, water quality, number of animals to be kept in a particular environment, and strict standards for food preparation areas and medications. The USDA standards are useful guidelines but may not be appropriate for animals that require constant medical attention and handling, or for facilities that only keep animals for a short period of time. NMFS is in the process of developing specific marine mammal rehabilitation facility guidelines (NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release: Pinniped and Cetacean Rehabilitation Facility Guidelines).

Facility design for rehabilitation centers is an ongoing area of study and no perfect facilities exist to suit all needs for each species and age class of marine mammal. Notwithstanding, certain principles should be kept in mind when designing an oil spill response facility or when attempting to house oiled marine mammals in an existing facility (Davis and Davis, 1995). An ideal facility should include: intake/physical exam/evidence processing area; a veterinary hospital with isolation capabilities; indoor wildlife housing/caging areas; food storage and preparation facilities; animal washing and rinsing areas; drying areas; outdoor pool and pen areas; pathology facilities; volunteer training and eating areas (with restrooms); administrative offices with multiple phone/fax lines and conference space; storage; and access to a large parking area.

Minimizing stressors is an important aspect of creating a good rehabilitation environment. Specific animal needs must be taken into account when trying to provide adequate housing for animals during an oil spill. These needs may be affected by such factors as the animal's species, age, physical condition, degree of oiling, and nature of the product with which it was oiled.

Housing Requirements and Considerations

Indoor and outdoor housing should maximize safety to humans and the animals, provide an escape-proof enclosure, and minimize visual stress and human traffic. Within an oil spill response facility, housing should be set up so that there are appropriate areas for holding animals prior to intake, pre-wash assessment and stabilization, post-wash, quarantine, and longer term housing. These areas will differ in the amount of access to the animals that is required, the space that each animal requires, the degree to which the environmental temperature can be controlled, and type (if any) of water requirements (fresh versus salt). Ideally, all of these areas should have separate filtration systems. Separate systems are required for pre- and post-wash animals to prevent oil contamination of animals that have already been washed.

Environmental Control: A finer degree of environmental temperature control is required for newly admitted animals, neonates, and animals that are more compromised due to poor nutritional state, greater extent of secondary effects, or underlying disease. Animals that are compromised require easy or limited access to water, haul-out areas, and heat sources such as heating pads and lamps, but may need frequent observation to ensure that severely debilitated animals are able to move away from heat sources to prevent hyperthermia and burns. Some animals may require more frequent handling for monitoring, sample collection, feeding or medicating. Housing should minimize stress but maximize accessibility and ease of monitoring (Tuomi et al., 1995)

Ventilation: Adequate ventilation is an extremely important factor for maintaining marine mammals in captivity and is more important in oil spill situations to protect against the toxic effects of volatile agents and prevent the spread of infectious agents between animals. Ten to fifteen air changes per hour has been recommended as adequate for inside animal holding (NIH, 1985) and these standards should be adhered to if at all possible. Outdoor housing is ideal for maintaining ventilation but drawbacks include lack of environmental control, discomfort for personnel working with the animals, and more challenging access control by staff.

Quarantine: The potential for the spread of disease is an important issue to consider for marine mammals in captivity. Captured animals, staff and volunteers may carry infectious agents without showing signs of disease and could pose a threat to oiled animals. Staff should use effective quarantine protocols including foot baths containing appropriate antimicrobial solutions between housing areas, cleaning/disinfecting or changing protective clothing between animals, designating separate feeding and cleaning equipment for different areas, and minimizing movement of animals and personnel between areas. Extra care must be taken in areas where animals with infectious diseases are kept and when handling immunocompromised animals.

Water Supply: Oiled wildlife care facilities require large quantities of water to provide all areas simultaneously (e.g., wash/rinse area, pool area, laundry). The quantity should be sufficient to provide at a minimum a continuous flow of 4 gallons/minute to all indoor valves and additional supply to fill, operate filtration and ozonation equipment, and provide overflows for pools. Washing and rinsing areas require temperature-controlled hot water (98-108°F) with water hardness of 2-5 grains per gallon at pressure of 40-60 psi.

Waste Water: Facilities must dispose of all oil and animal wastewater in accordance with appropriate Federal, State, and municipal regulations. Oil contaminated water often must be contained in separate holding tanks and not released in normal sewer system.

Data Collection

Data Collection and Chain-of-Custody Procedures

Systematic search and recovery, transportation, processing, and treatment of all oil-affected wildlife are critical for guiding response actions and gaining an understanding of the short-term and long-term consequences of oil spills to wildlife populations. In addition, these data can be used after the emergency response for natural resource damage assessment activities. In order to track the samples and collect data during oiled wildlife response, the trustee agencies and response organizations must adhere to pre-established chain-of-custody and animal identification procedures. For tracking purposes, data on oiled animals are compiled on standard data log forms (Appendix 2-3). During large-scale responses, pre-identified wildlife agency personnel or their agents will complete log forms; however, field and rehabilitation responders should be familiar with the forms and their completion for smaller-scale responses and for individual oiled animals that present to participating facilities independent of a spill response. In addition to the tracking of live animal data, all samples (carcasses, samples, photos, records) that may be used in legal cases must be tracked and secured at all times.

Quality assurance (QA) procedures are necessary to ensure that data are collected in a scientifically valid manner. It is important throughout any sampling and analysis program to maintain integrity of the sample from the time of collection, through the point of data reporting, to the final sample disposition. Proper chain-of-custody procedures allow the possession and handling of samples traced from collection to final disposition. Documents needed to maintain proper chain-of-custody include:

Field Logbook: All pertinent information on field activities and sampling efforts should be recorded in a field logbook. The logbook should enable someone else to completely reconstruct the field activity without relying on the memory of the field crew. All entries should be made in indelible ink (preferably ballpoint), with each page signed and dated by the author, and a line drawn through the remainder of any page. All corrections should consist of permanent line-out deletions that are initialed. An example of a Search Effort Log is presented in Appendix 1. For tracking and chain-of-custody purposes, all live and dead animals recovered should be identified (tagged/marked) in the field and the identification noted on the Search Effort Log. Permanent tags will then be applied and logged at the processing facility.

Animal Logs: At admittance to a wildlife care and processing facility, the animal must be logged into the Live Marine Mammal Data Log or Dead Marine Mammal Data Log (Appendix 2-3) and all of the boxes on these forms must be completed. All animals collected dead or alive should be given a unique log number and identifier (e.g. tag), as well as a Level A data field number, in order to track the individual animals through the capture/collection, processing, and for live animals the rehabilitation and release process.

Sample Collection and Label: It is necessary to collect an oil sample from each individual animal. A detailed protocol for the collection of evidence is provided in Appendix 6. Each sample must be identified with a waterproof label that is securely attached to the outside of each sample container. Labels must contain the oil spill name, date, species, intake log number and Level A data field number of that animal, animal capture location, and flipper tag color and number and then sealed with evidence tape or custody seals. Custody seals are used to detect unauthorized tampering with the samples. Samples and photo must be properly stored in a secure location that has limited and controlled access.

Intake Form: For live animals, the Oiled Marine Mammal Intake Form (Appendix 4) must be completed for each animal. This form contains important questions about the extent of oiling, location and depth of oiling, as well as a place for documenting physical examination findings. For evidence documentation, a photo of the animal and oil sample must be taken during intake and admission into the wildlife care and processing centers (see Intake and Admission Procedures). During rehabilitation, each animal must have individual records documenting the treatment and care of that animal. Authorization for cleaning and later release must be documented on the Oiled Marine Mammal Intake Form and signed by the authorizing authority (i.e. attending veterinarian). For resource damage assessment purposes, a photo of the animal with identification (i.e. card with animal log number and date) must be taken prior to release.

Chain-of-Custody Forms: A chain-of-custody record must accompany every sample that is removed from the secured location in the wildlife processing and care facilities. The chain-of-custody form should be supplied by the managing agency (NMFS, USFWS) representative that is acquiring the sample. Both the person relinquishing custody of the sample(s) and the person receiving the sample(s) must sign the form and ensure that the samples and records are not left unattended unless secured properly. An example chain of custody form can be found in Appendix 10.

Tissue Sampling: Tissue samples are collected for either chemical or histological analysis. Only after authority is given by the appropriate trustee agency and the Unified Command can necropsies be performed by qualified veterinarians and pathologists to collect tissue samples and determine cause of death on collected carcasses and mortalities that occurred during rehabilitation. Each animal should be photographed prior to sampling and samples collected following the sample collection protocols described in Appendix 6.

Safety and Human Health

Worker health and safety are of primary importance in any oiled marine mammal rescue and rehabilitation effort. The earliest phases of an oil spill are generally the most hazardous to human health and safety. Thus, safe practices during field collection of marine mammals must be a priority. Rescue programs should not be initiated unless personnel can conduct activities safely.

As with all spill response activities, the marine mammal rescue and rehabilitation effort needs to be coordinated and monitored by the spill response command center operations, safety, and medical staffs. A written Site Safety Plan (SSP) must be developed and approved by the spill's Safety Officer for the rehabilitation facility. If field activities are on-going for marine mammal response, the site safety plan needs to be expanded to include these activities including any specialized equipment that will be used. All staff and volunteers working on the spill must be familiar with and sign the SSP prior to work.

Training for Marine Mammal Rescue/Rehabilitation Personnel

In addition to mastering specific marine mammal rescue and rehabilitation tasks, personnel must be trained to recognize and minimize risk of injuries from oil-related and physical hazards associated with oil spill response operations prior to being allowed to participate in on-site activities. Elements of required and recommended training will vary depending on the tasks of the individuals involved in the response. Training-hour requirements and specific courses vary with level of involvement, agency policy, and OSHA and state regulations.

Required Training

Personnel involved in oil spill response activities must comply with all applicable worker health and safety laws and regulations. The primary Federal regulations are the Occupational Safety and Health Administration (OSHA) standards for Hazardous Waste Operations and Emergency Response (HAZWOPER) published by the U.S. Department of Labor in Title 29 of the Code of Federal Regulations (CFR), section 1910.120 (www.osha.gov). Oiled marine mammal responders and rehabilitation centers are not specifically addressed by HAZWOPER and training to address risks associated with marine mammal stranding and oil spill response personnel may fall within the scope and application of the Hazard Communication Standard ("HAZCOM", 29 CFR 1910.1200(h)). The OSHA field compliance or Safety Officer should be contacted to ascertain the worker training requirements and develop an implementation plan to minimize the hazards of exposure to workers involved in cleanup operations. For maximum protection of the environment, OSHA has recognized the need to quickly clean-up spilled oil and has empowered the OSHA Regional Response Team representative to reduce the training requirements for responders engaged in post-emergency response operations as directed by OSHA Instructions CPL 2-2.51 (www.osha.gov). State requirements which are more restrictive will preempt Federal requirements. Marine mammal stranding network participants are responsible for training and certifying their employees and volunteers.

Recommended Training

In addition to the training required by Federal regulations, further training is highly recommended for safe and efficient operations during a spill response. This guidance is considered a minimum

essential training for marine mammal rehabilitators in accordance with the goal of establishing best practices.

Search and collection and transport personnel

- General oil spill response training
- HAZWOPER 24hr training
- Aircraft/boating/ all-terrain vehicle safety
- First aid/CPR
- Local geographical knowledge
- Marine mammal identification and capture techniques

Rehabilitation Facility Management

- Marine mammal oil spill response training
- Incident Command System
- HAZWOPER 24hr training
- Crisis management
- First aid / CPR
- Media relations

Rehabilitation/Stranding Network Facility Workers and Volunteers (Live and Dead Animal Handling)

- General oiled marine mammal training
- HAZCOM - Hazardous Communication training
- First aid / CPR

Personal Protective Equipment

Personal protective equipment (PPE) must be used to protect wildlife response personnel from exposure to hazardous substances and dangers associated with animal care activities. To guard against injury from marine mammals, all workers should wear approved personal protective equipment appropriate to their task.

Recommended PPE

Full eye protection, i.e., goggles, safety glasses, or face shield
Oil resistant rain gear or oil protective clothing (coated Tyvek, Saranex, etc.)
Gloves (neoprene or nitrile) that are oil resistant and waterproof
Non-skid shoes/boots that are oil resistant and waterproof
Ear protection (muff or ear plug type) when using pyrotechnic devices or operating machinery
Personal flotation device when working on or near water

Respiratory protection from organic vapor hazards may also be required for some operations. If respirators are used, training and fit testing are required. All workers must be trained on the proper use and limitations of all personal protective equipment prior to using the equipment.

Hazardous Substances

Rescue and rehabilitation workers may be exposed to spilled oil, and must be so informed. Prior to handling a contaminated marine mammal, the Material Safety Data Sheet (MSDS) for the

spilled material should be reviewed and all recommended precautions followed. Workers and the rehabilitation facility shall be periodically monitored, using calibrated instruments and devices to determine exposure. Ventilation in all work areas should prevent the buildup of airborne contaminants.

A portion of the rehabilitation facility should be designated for the storage of contaminated clothing, equipment, and medical waste until the items can be decontaminated or disposed of properly in accordance with the site safety plan.

Volunteers

Wildlife response programs regularly use volunteers, particularly at the rehabilitation facility. Wildlife response managers need to ensure that volunteers are appropriately trained, supervised, and informed of all hazards. A comprehensive volunteer management program is an essential component of an efficient wildlife response. This management program needs to address, at a minimum, volunteer safety, training, supervision, scheduling, and liability.

Wildlife Recovery and Transportation

Agency Oversight

Wildlife Recovery and Transportation involves the collection/capture of dead and live oiled wildlife and their transport to processing centers. Under the proposed ICS Wildlife Operation structure presented in Figure 2, these activities are performed by the Wildlife Recovery and Transportation Group, in close coordination with the UC and the state and federal trustee agencies. Marine mammal collection by any agency or organization must be done under the direction of the UC and under the agreements/permits from the appropriate management agencies (i.e., NMFS, FWS). Recovery and Transportation usually include personnel from state and federal trustee agencies, approved contractors, and marine mammal stranding network and rehabilitation organizations. Trained, qualified volunteers can be used utilized as long as OSHA and other training requirements are met and adhered to.

Search and Collection Guidelines

Rescue Team: Teamwork is essential to safe, efficient collection of oiled marine mammals. Each team should consist of at least two people, and should be outfitted with the resources and equipment necessary to complete its assignment. A plan of action should be developed and discussed among all search and collection personnel and approved by the Wildlife Branch Director prior to entering the search area. Each capture site should be evaluated and strategies developed to suit the terrain and species involved. Capture of affected animals should not be attempted if adverse weather, sea conditions, cliffs, or other physical and chemical hazards in the "hot zone" are present. Communication between the Rescue and Transportation Group and the reconnaissance personnel (within the Operation Section or the Environmental Unit) is important to maximize the success of search effort.

Equipment: Prior to a response, ensure that all equipment is ready and in working condition. Capture materials should include communication equipment (portable phone or radio), specialized vehicles (4-wheel drive with lifting tailgate or crane, adequate floor space, easily cleaned, and good ventilation), boats (capture vessel and support vessel), aircraft (fixed wing or helicopter), SCUBA gear, nets (type varies by species and location of capture), cages and transport boxes (type varies by species), herding boards, personal protection equipment (PPE) and a first aid kit for humans. Any injuries to staff or volunteers should be treated immediately and reported to the site safety officer. In addition to PPE required by the Safety Officer to protect personnel from oil exposure, appropriate attire for capture teams includes closed-toed shoes or boots, long-sleeve shirts, long pants, rain gear, coveralls, and organizational identification (e.g., clothing labeled with insignia or logo).

Procedures: Record the details of the beach search effort on the appropriate Form (Search Effort Log, Appendix 1) and include data on the start and end of a search segment, observations of oiled animals, and detailed info on the stranding and/or collection (location of capture, GPS decimal degree coordinates, reason for capture). If oil or medical samples are collected from the animal prior to reaching the intake facility, make sure they are labeled properly with a unique field

identification number for each animal. For further details on oil sample collection consult Appendix 6, Evidence Collection Protocol.

Domestic animals should not be permitted near the capture location nor should they come into contact with marine mammals. Domestic animals should not be allowed in the transport vehicle, and if the vehicle has previously been used to transport domestic animals, it should be disinfected and cleaned prior to transporting marine mammals.

Capture: The potential benefits of capture must outweigh potential negative consequences. In general, no rescue should be initiated on free-swimming or beached pinnipeds in the vicinity of an oil spill unless the animal in question is in obvious distress. Also, no rescue should ever be initiated on free-swimming cetaceans in the vicinity of an oil spill, but a rescue should be attempted on a beached cetacean. A decision to capture should consider such factors as sex, age, reproductive state, and size of individual animal, and their location with respect to other marine mammals. Additionally, all captures must be approved by the appropriate trustee agency (NMFS, FWS) prior to initiation.

Capture and transportation of oiled mammals should be performed only by qualified personnel who have received the appropriate safety training as well as marine mammal handling and restraint training. Because recovery and transportation duties vary with each response and may involve more risk than other duties, the Safety Officer will communicate to the Wildlife Branch Director what level of training is appropriate for field response personnel; this training may include a 24-hour HAZWOPER training (Hazardous Waste Operations and Emergency Response), first aid/CPR, water safety, or boat safety courses (see Safety and Human Health).

The method of capture may vary according to species and situation. Captures should generally be considered for isolated individuals on beaches, spits, tide flats or other relatively flat surfaces, using herding boards and nets (brail, breakaway or steel frame pole). Less often, captures may be attempted from rock jetties, piers, docks or even in the water for severely debilitated animals. Long-handled dip nets, floating bag nets, and a net gun have all been used with some success. Depending on the species involved, aquatic captures may use tangle nets, float nets, or Wilson traps.

Unless specifically authorized by appropriate trustee agencies, no non-oiled animals will be collected during spill incidents. Preemptive captures to prevent the oiling of sensitive species may be considered only under dire circumstances at the direction of the UC and trustee agencies and when adequate transport and holding facilities exist. Beached cetaceans should not be pushed back out to sea without first being examined by a NMFS-approved marine mammal veterinarian and the action approved by the NMFS. Prior to being returned to the open ocean, cetaceans should be affixed with a NMFS approved tag or brand.

All wildlife captured during spill responses should if at all possible be retrieved and transported to the wildlife processing and care center(s), regardless of the status and condition (i.e. degree of decomposition, degree of oiling). In addition, all capture-related information (i.e. location, name of captor, GPS decimal degree coordinates, date, and time) must accompany the animal to the facility. The presence of such documentation must be verified when processing centers receive wildlife from the Wildlife Recovery and Transportation Group. All information necessary to

complete either the live or dead mammal log should be collected prior to the animal entering the rehabilitation process or storage respectively.

Transport Procedures

Prior to transport, field stabilization techniques may be used if it will be more than one or two hours until the animal reaches the rehabilitation facility. These techniques may involve assessing the animal for hypo- or hyperthermia and treating accordingly; administering oral electrolyte solution and subcutaneous fluids; removing large amounts of oil from the eyes and nares; and administering emergency medications (under the guidance of a veterinarian).

After capture and field stabilization, the oiled animal should be placed in a well-ventilated area on a stretcher or foam (for small cetaceans) or in a transport box, airline kennel, or cage (depending on pinniped species) for transport. Animals should be staged in a quiet, sheltered area or moved directly into the transport vehicle. The cage should be large enough to allow the animal to lie down in a comfortable position. Only one animal per transport cage is recommended for the safety of the animals and to prevent cross-contamination of oil. Females and their pups are most safely transported in separate cages, although they should be positioned so that they can hear, see, and smell each other. Pinnipeds less than 70 kg (145 lbs) can be transported in large airline sky kennels. Aluminum or other lightweight material is recommended to minimize weight of cages designed for larger animals. Each cage must be firmly tied or otherwise secured in the vehicle.

Sea otter transport kennels should be fitted with a raised bottom grate to avoid additional fur fouling. Shaved ice or any other form of fresh water ice (to combat dehydration) and chew toys (to combat tooth damage, e.g. plastic/rubber dental chews manufactured for large breed dogs) are usually provided for sea otters in transport kennels, but food should be offered if transport time is greater than four or five hours.

Animals must be monitored periodically on transports greater than one hour, as directed by a response veterinarian. In most cases, sedation during transport is not recommended. Critical cases (e.g., unstable, hypo- or hyperthermic animals) may require more frequent monitoring. Personnel transporting animals between the field and the rehabilitation center must maintain contact with their supervisor at all times so that departure and arrival times may be anticipated.

Hyperthermic animals may be sprayed gently with water, or ice cubes may be added to the top of the cage and allowed to drip onto the animal as it melts. In order to prevent inhalation and subsequent drowning by unconscious animals, do not allow water to accumulate in the bottom of transport cages. Hypothermic animals should be placed in a sheltered location out of the wind, although good ventilation must be maintained to prevent animals and humans from inhaling petroleum fumes. Keep in mind that oiled, stressed, or injured seals are not able to regulate their body temperature effectively, and their conditions can change within minutes. Animals are generally transported in either a pick-up truck or an enclosed van-type vehicle. Adequate ventilation must be maintained to protect both humans and animals from inhaling fumes emitted by freshly oiled animals. Unless hypothermia is observed or suspected, keep animals damp and cool. The preferred air temperature for pinniped transport is 50-68°F (10-20°C) but should not exceed 59°F (15°C) for sea otters (Geraci and Lounsbury, 1993; Benz and Britton, 1995). Fur seals or sea otters whose coats are oiled or saturated, neonates of all species, and animals with extensive wounds or severe emaciation may require higher temperatures compared to minimally oiled animals or non-oiled, stranded animals. Keep in mind that human comfort during transport

may not be synonymous with or sufficient for the temperature and ventilation needs of the transported marine mammals.

Beached Carcass Removal

Measures must be taken to ensure that dead animals are appropriately collected, identified, documented, and not disposed of until approved by the trustees. In addition, the prompt removal of disabled and dead oiled and unoiled animals from the environment can be critical to minimize the occurrence of secondary oiling, poisoning of predators and scavengers, and decreasing re-identification of carcasses on subsequent days. Since it is not feasible, reliable, or practical to attempt to discriminate between spill-related and non-spill-related casualties while conducting beach surveys, all carcasses must be collected. For example, scavenged carcasses, animals with dark plumage, wet carcasses, or carcasses with oil sheen or small amounts of oil that may be spill related are not always identifiable in the field as such. Because all carcasses found within a spill area are evidence, they must be handled according to established chain of custody protocols in accordance with spill incident-specific instructions (refer to the Data Collection section of this document). Each carcass must be labeled with the date, time, location, species (if known), and collector's name; taken to a designated morgue location; logged into the Dead Marine Mammal Log form and placed in a refrigerated unit until further processing can be accomplished. If a necropsy cannot be performed within 24hrs the carcass should be frozen (see Disposition Section for necropsy details).

Carcass removal, storage, and disposal expenses are considered a response activity cost that should be reimbursed to the Stranding Network Participant. It is the responsibility of the Participant to notify the Unified Command of current and future carcass storage and disposal expenses during the initial cost assessment of the response activity.

Intake Procedures

Initial Intake Procedures

While completing intake procedures, it is important to perform a thorough evaluation, collect all samples and data, be safe, and minimize the animal handling time. All personnel performing intake procedures should wear appropriate PPE including safety goggles, protective clothing, and nitrile gloves (or nitrile gloves inside leather gloves). It is best to work in teams of at least two (handler, examiner) or three (handler, examiner, recorder) in order to perform the intake in an efficient manner. For larger animals, more than one handler may be required. Physical restraint devices such as squeeze cages, otter restraint boxes, and stuff bags may be needed for larger pinnipeds and sea otters (Geraci and Lounsbury, 1993; Williams and Sawyer, 1995). Some animals (e.g., sea otters, adult sea lions) may require chemical restraint for safe handling and examination (Williams and Sawyer, 1995; Haulena and Heath, 2001).

Several different forms must be completed for every animal captured for rehabilitation during an oil spill. The animal must first be logged into a **Live Marine Mammal Data Log** (example in Appendix 2) and all of the boxes on that form must be completed**.** In addition, an **Oiled Marine Mammal Intake Form** (example in Appendix 4) must be completed for each animal. This form contains important questions about the extent of oiling, location and depth of oiling, as well as a place for documenting physical examination findings. In addition to the intake form, the rehabilitation facility's standard forms for stranded marine mammals can be used to record physical exam findings, laboratory values, treatments, and feedings, provided that all information is clearly documented and assigned to the specific animal.

A brief physical examination is performed upon admission of each individual oiled animal (see below). A veterinarian or animal care specialist should conduct the examination and treat any conditions that are considered to be life threatening. The capture, transport, and intake process is extremely stressful and an oiled animal's condition may be very unstable. The intake area should be as dark and quiet as is practical and animals must be monitored closely during the examination and intake process. If an animal's condition deteriorates and a veterinarian is not participating in the examination, seek veterinary advice immediately.

General Intake Procedure for Oiled Marine Mammals

1. Obtain and Complete Intake Forms
    - Live Mammal Data Log
    - Oiled Marine Mammal Intake Form
2. Physical Examination
3. Flipper tag application
4. Oil sample collection
5. Photograph

Animals need to be identified to species and, when possible, age class (pup, yearling, subadult, adult) and sex should be determined. Consult charts on age estimation for pinnipeds and sea

otters from marine mammal guides such as Geraci and Lounsbury (1993), Reeves et al., (1992) and Ainley et al., (1980) for species and sex identification. All animals should be tagged or marked for individual identification. This can be done with plastic livestock ear tags (e.g., Rototag, Temptag), by applying hair dye, colored livestock markers, and bleach marks to the pelage, or by clipping a small patch of pelage on the flank in a recognizable pattern (phocids and sea lions only). Dye marking and clipping is not advisable for fur seals or sea otters and may be difficult in other species depending on the location and extent of oiling. Sea otters and possibly other species may be identified using a commercially available pet microchip inserted subcutaneously at the inguinal region.

For legal purposes, it is necessary to collect an oil sample from each individual animal. A detailed protocol for the collection of evidence is provided in Appendix 6. Briefly, visible oil should be scraped from the fur with a clean wooden spatula and placed into a chemically cleaned glass jar. For animals with no visible gross oiling, an affected area is rubbed with a 4x4 piece of fiberglass cloth or cotton gauze with forceps or hemostats that have been cleaned with isopropyl alcohol. Precautions must be taken to collect the sample without allowing nitrile gloves to touch the oil sample or the cloth it is collected on. The oil sample should be placed in a glass container and labeled appropriately with the following information: the oil spill name, date, species, intake log number of that animal, animal capture location, and flipper tag color and number and then sealed with evidence tape and placed in secure freezer. Sampling supplies (glass jars and cloth) can be obtained through the trustee agencies.

It is also necessary to take a Polaroid photograph of the oiled animal. The photograph should include the entire animal, the oiled region, and if possible, show the flipper tag numbers. After the photograph develops, it should be labeled with the same information as the oil sample; the oil spill name, date, species, intake log number of that animal, animal capture location, and flipper tag color and number. The photograph and oil sample are both pieces of evidence and should be securely stored. If samples are to be sent for analysis, a completed Chain of Custody form is required and will be provided by the lead trustee agency.

Physical Examination

Animals are to be weighed and measured (standard length and axillary girth, xiphoid girth in sea otters) and their temperature measured with an electronic thermometer with a flexible thermister probe (e.g., Physitemp Model BAT-12 Digital Laboratory Thermometer) inserted 15 cm into the rectum. Standard thermometers can be used in sea otters, but do not accurately measure core temperatures in pinnipeds. Normal core temperature for sea otters is 99.5-100.6 °F (37.5-38.1 °C) and most pinnipeds range from 98-102 °F (Dierauf and Gulland, 2001). If the use of a thermometer is not possible, feel the flippers (e.g., icy cold or dry and hot) and observe the animal's behavior (e.g., shivering, agitation) in order to evaluate abnormally high or low body temperature. If an animal is dry and alert/active prior to the exam, assume it will overheat with handling.

A complete whole body examination should be conducted, making note of the degree and nature of oil contamination. Assess behavior, activity level and alertness; if possible, observe the animal in the transport cage prior to handling to evaluate locomotion and central nervous system status. Evaluate overall body condition and estimate the percent dehydration. Most stranded animals are at least slightly dehydrated (<5%, demonstrated by decreased tear production and subdued behavior). More severely dehydrated animals (5-10%, demonstrated by lack of tear production,

thick ocular mucus, "sunken" or crusty eyes, dry mucous membranes, skin tenting in otariids, curling of the vibrissae in harbor seals, and lethargic or depressed behavior) may need to be treated with fluids prior to continuing the examination and intake procedures; however, it is preferable to obtain blood samples prior to hydration treatments.

Due to the risk of being bitten, a thorough oral exam is possible only in anesthetized, dead, comatose, and young animals, but a visual inspection of the oral cavity is often possible during vocalization in alert animals. Palpate the neck and thorax for evidence of subcutaneous emphysema and the musculoskeletal system for fractures, wounds, or swellings. Subcutaneous emphysema is often found in the neck and axillary area in oiled sea otters and is an indicator of severe pulmonary damage. Palpate the abdomen gently to detect masses, pregnancy, or fluid accumulation and observe the urogenital area for urine, feces, or abnormal discharges.

Routine Blood Sampling

Following the general examination, blood samples should be drawn for hematology (collected in an EDTA anticoagulant, lavender-top tube, LTT) and chemistry panels (collected in a serum separator tube, SST, or red-top tube, RTT) and serum banking. In phocids, blood is generally drawn from the epidural sinus or ventral (plantar) interdigital veins (at the apex of the web between the inner digits) of the hind flippers (e.g., harbor seals, elephant seals). In otariids, the caudal gluteal vein and plantar network (dorsal or ventral surface of the hind flipper just medial to the lateral digit or just lateral to the medial digit) are used for blood collection (sea lions and fur seals). In sea otters, blood may be drawn from the popliteal (saphenous) or femoral vein on a non-anesthetized animal using a restraint box and/or stuff bag. Alternatively, the jugular vein can be used on an anesthetized otariid or sea otter.

Blood samples should be collected at least three times during the rehabilitation process: on admission/intake, immediately prior to washing, and prior to release. Repeat sampling may not be necessary for wash or release procedures, if preformed within 48hrs of previous blood sampling or at the discretion of the response veterinarian. At these times, baseline blood work should include a complete blood count and standard serum chemistry tests. Normal blood values for marine mammal species can be found in Bossart et al. (2001).

Standard Blood Tests

Complete Blood Cell counts (CBC): White cell blood count, red cell blood count, hemoglobin, hematocrit, mean corpuscular volume (MCV), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular hemoglobin (MCH), a differential cell count, platelet and reticulocyte counts. One full lavender-top tube (EDTA) (1 or 3 ml) should be taken and refrigerated until analysis.

Chemistry Profile: Albumin, alkaline phosphatase, bicarbonate, bilirubin (total and direct), BUN, calcium, chloride, cholesterol, CK, creatinine, globulin, glucose, phosphorus, potassium, total protein, sodium, AST (SGOT), ALT (SGPT), GGT, and ratios of albumin:globulin, BUN:creatinine, and sodium:potassium. Blood should be placed in a serum separator tube or red top tube, allowed to clot, centrifuged, and refrigerated prior to analysis. Excess serum should be saved and banked (frozen) at the rehabilitation facility.

Special Biomedical Sampling Protocols

At times, additional protocols may be used that require additional blood samples for other tests (e.g., PAH estimation, immune function assays, serum protein electrophoresis, plasma chemistries, serological tests for infectious diseases). Other biomedical samples (e.g., urine sample, fecal sample, microbiological swab, blubber biopsy) may also be collected at the discretion of the response veterinarian.

Post-examination Intake Procedures

Initial Treatment

- Fluid therapy: oral, subcutaneous, intravenous
- Activated charcoal (ToxiBan) tubing if oil ingestion suspected

All animals are assumed to be at least 5% dehydrated. Administer isotonic fluids to animals that appear to have not ingested oil orally at a rate of 10-20 ml/kg once either orally (e.g., Pedialyte) or subcutaneously (lactated Ringer's solution, LRS). If the animal is alert and is likely to have ingested oil (e.g., fur seals during grooming, neonates during nursing), administer activated charcoal slurry (ToxiBan, 6 ml/kg) orally.

Animals that are chemically immobilized for intake procedures or are weak and obtunded should not be given oral fluids. Subcutaneous fluids (e.g., lactated Ringer's solution), may be administered instead at 20-40 ml/kg. If ingestion of oil is suspected, ToxiBan slurry (6ml/kg) can be administered via a stomach tube just prior to anesthetic reversal (Williams and Sawyer, 1995). Extreme care must be taken to prevent gastric reflux and aspiration during this procedure. The risks associated with passing a stomach tube must be weighed against the risks associated with continued exposure to ingested petroleum.

Severely depressed animals may require intravenous fluid administration and other medication in addition to isotonic fluids. Additional fluid therapy (maintenance fluids plus correction of fluid deficits) should be determined by the attending veterinarian, based on an evaluation of blood work, concurrent fluid losses, and continuing assessment of the animal's condition. The fluid deficit is calculated by multiplying an animal's mass in kg x 1000 ml fluid/kg x the percent dehydration (e.g., 5% = .05). This should be added to the animal's daily maintenance fluid requirement (at least 40 ml/kg/day) and administered within the first 24 hr if possible.

Monitoring

Animals should be regularly monitored during the rehabilitation process. Clinical observations, feeding observations (food consumption and/or preferences), and behavior should be written on the medical records. Body weight should also be monitored repeatedly during rehabilitation and recorded, at a minimum, upon admission, pre-washing, and prior to release. More extensive body weight monitoring may be required in critical cases. Physical examinations should be performed upon admission, prior to washing, and prior to release with all information recorded on individual medical records. Whenever medications are administered, the name of the drug, dose and route (oral, SQ, IM, IV) should be recorded as well as the initials of the person who administered the medication. Medical records are viewed as potential evidence by the law and should be carefully and completely filled out by animal caretakers.

Animal Washing and Continued Care

General Topics Associated With Cleaning

The facility where oiled animals will be cleaned should be designed to accommodate the variety of species that might be cared for at that facility. Each wash station must have adequate space for the animals, animal handlers, and restraint equipment that might be necessary. Water hardness should be tested before washing animals and adjusted to 3-5 grains of hardness (Clumpner, 1991). Dawn dishwashing liquid is the preferred washing product and has been shown to be safe and effective for removing oil from the coats of sea otters and harbor seals (Rash et al., 1990). Wastewater storage, containment, and removal must meet the requirements of the municipality, city, and county. A minimum team of two or three persons usually wash animals. Fur seals and sea otters may require teams of four or five persons because the density of their fur requires much greater effort. Large animals such as elephant seals may require a washing team with three or four persons to properly restrain the animal. Large animals, aggressive animals, fur seals and sea otters may require sedation and veterinary assistance for washing and cleaning.

General Washing Needs

- Softened water (3-5 gr)
- Temperature controlled warm water (80-98°F, 27-37°C)
- Pressured spray nozzles (30-40 psi)
- Dawn detergent
- Wastewater storage and removal

Pre-Wash Evaluation

Oiled marine mammals will require at least 24 hours of supportive care prior to being washed. Initial care is focused on addressing thermoregulatory problems, rehydration, and providing nutritional sustenance so animals are no longer in a negative metabolic balance. The washing procedure is very stressful; therefore, prior to the procedure, the animal needs to have regained strength. In the case of sea otters, they also need to be able to tolerate anesthesia and start to groom once recovered. A veterinarian should conduct a pre-wash evaluation that includes a physical examination, evaluation of alertness, strength and body condition, and blood parameters. If the animal passes the pre-wash evaluation, it is referred to the washing team.

Removing Tar Patches from Animals

If the oil present on an animal is a tar patch or very weathered, pretreatment may be necessary. This is accomplished by applying warmed (95-98°F or 35°C) olive oil, canola oil, or methyl oleate to the affected region. The pretreatment solution should be manually worked into the tarred areas for up to 30 minutes or until the tar loosens and can be wiped off using an absorptive pad or towel. While pretreating the animal, it is important to monitor the animal's body temperature and be prepared to treat the animal for hyperthermia or hypothermia. Tar removal is necessary for furred marine mammals and non-furred marine mammals if the patch(es) are large, potentially interfering with thermoregulation, or contribute to toxicity and result in clinical symptoms. Clipping away tar patches (with accompanying fur) is recommended unless molt is imminent

because the animal will have a bald patch that could cause reduction of heat retention. This procedure could have serious or life-threatening implications for fur seals, sea otters, or debilitated animals.

Washing Harbor Seals, Elephant Seals, Sea Lions

Sea lions, harbor seals and elephant seals rely on their thick blubber layer for insulation, making them less susceptible to hypothermia when they become externally oiled. These species are washed with Dawn detergent in thermal-neutral (~ 98°F or 37°C) water. Soap is applied and rubbed on the fur until the oil is visibly removed. The detergent can be made into a uniform solution by mixing it with water at a 1:1 ratio prior to applying thus making it easier to work into the hair and oil. Washing pinnipeds takes between 10-30 minutes depending on the extent and type of oil, species and health of the animal, and the proficiency of the staff. An initial quick rinse can be done at the wash station and then completed with the animal unrestrained in its pen using a pressure nozzle. This modified rinse procedure decreases the duration of manual restraint. In general, rinsing should be continued until there is no evidence of oil or detergent in the rinse water. Most pinnipeds are placed directly into their outdoor pens to dry.

General Guidelines for Washing Pinnipeds

1. Thermal neutral water (~ 98°F or 37°C)
2. Dawn detergent rubbed onto fur until oil is removed
3. Pressurized rinse in pen until oil and detergent removed
4. Air dry in pen

Washing Fur Seals

In contrast, fur seals possess a thin subcutaneous fat layer and a thick pelage that thermally insulates these animals (Reidman, 1990). Since they rely more heavily on their fur, fur seals are washed in a similar fashion to otters. Oiling 30% of a fur seal's coat will result in a 50% increase in heat loss (Geraci and St. Aubin, 1990), emphasizing the need for these animals to be closely monitored during the washing procedure. Fur seals are washed using a thermal-neutral (~98°F or 37°C), 5% diluted Dawn dish washing detergent solution. The diluted detergent solution is gently massaged into the fur and, as with other species, the washing duration depends on the extent and type of oil, the strength of the animal, and the proficiency of the staff. Fur seals are rinsed with fresh, soft (3-5 gr) water under moderate pressure (30-40 psi) with a spray nozzle. This process can require up to 40-60 minutes and animals are rinsed until no oil is visible in the rinse water and no petroleum odor is detectable on the fur (Davis and Hunter, 1995). For all pinnipeds, animals may become hyperthermic during washing in which case they may need to be washed and rinsed in cold water.

Fur seals, which depend on their coat for thermoregulation, may need to be placed in a drying enclosure that is warmed with an industrial pet dryer that blows room temperature air (68°F or 20°C). Animals in drying pens must be monitored for dehydration, hyperthermia, hypothermia, and alertness. Once dry and alert, fur seals can be returned to their outdoor pens.

Washing Sea Otters

Sea otters have the densest fur of any mammal, and, unlike most other marine mammals, replace their fur throughout the year instead of undergoing a seasonal molt (Tarasoff, 1974; Williams et al., 1992). Otters have guard hairs and many fine under-hairs that are microscopically interlocked to trap air, thus providing waterproofing, thermal insulation, and buoyancy. Oil contamination

causes fur clumping which leads to a loss of insulation and predisposes otters to hypothermia from the cold ocean water.

General Guidelines for Washing Sea Otters

1. Anesthesia/sedation
2. Diluted Dawn solution
3. Temperature controlled warm water
4. Pressurized rinse (40-60 minutes)
5. Dry with towels and blow dryers
6. Anesthesia reversal

Anesthesia

Due to their aggressive temperament, sea otters generally require sedation or anesthesia to be washed. A variety of anesthetics have been used, however, the current preferred drug combination in adult sea otters for nonsurgical procedures is fentanyl (0.22 mg/kg) and diazepam (0.07 mg/kg) used together intramuscularly. The opioid antagonist naltrexone at 0.44 mg/kg is recommended for reversal, but often 3 - 4 times the total dose of fentanyl administered is needed for complete reversal (Monson et al., 2001). While sedated, supplemental oxygen is routinely provided either via facemask, or, if the sea otter is immobilized enough to tolerate it, via endotracheal tube. During sedation and cleaning, the core temperature of the sea otter must be monitored continuously because otters can become hypothermic or hyperthermic very quickly. Whenever a sea otter is sedated, bags of crushed ice should be readily available and placed under the animal's neck and flippers if hyperthermia occurs.

Washing and Rinsing

Sea otters are washed with multiple applications of diluted (5%) Dawn dishwashing detergent. Ideally, washing tables are equipped with three or four well aerated nozzles dispensing temperature controlled (28-37 °C, 80-98 °F), softened (3-5 gr.) fresh water. The water temperature affects the body temperature and needs to be adjusted according to the otter's body temperature to prevent hyper or hypothermia (Davis and Hunter, 1995; Stoskopf et al., 1997). Four to six people are required per washing table, one (with heavy gloves) specifically to hold the head and forearms. The detergent is gently massaged into the oiled fur and then rinsed off under moderate pressure (30-40 psi) with a spray nozzle. Washing should consist of a wash, rinse, wash, rinse cycle until there is no indication of oil in the rinse water and no petroleum odor on the fur. Depending on the degree of oiling, washing will usually take from 40-60 minutes. A final rinse with a spray nozzle lasting an additional 40 minutes to one hour is essential to thoroughly remove the detergent and restore the furs' water repellency. Otters are initially hand dried with dry, clean, cotton terry cloth towels. Once the bulk of the water has been absorbed, the fur is dried with commercial pet dryers that deliver a high volume of temperature controlled air (Davis and Hunter, 1995). Sea otters become increasingly prone to hyperthermia as their hair is drying and cool (room temperature) air may be necessary for drying as the sea otter's body temperature increases.

Drying

Following drying, each animal is reversed from the anesthetic and placed in a large, slat-floor kennel with a sliding top or other easily accessible dry pen for intensive care monitoring. Animals in dry holding should be closely monitored for hyperthermia and fecal, urine, or food debris must be rinsed away immediately. When fully recovered from anesthesia, otters should be offered small blocks of ice to chew on and food (Davis and Hunter, 1995). Once the animal is stable and medical conditions allow, each otter should be moved to a pool with haulout(s) serviced by

abundant, clean, chlorine-free salt water (if available). Pools must have high seawater flow rates (e.g. 5 gallons per minute for 150 gallon pool) and drain skimmers at water level to collect debris from the pool. Fecal and food contamination of the pool water can cause fur fouling and prevent restoration of water repellency. Sea otters are not waterproof after washing and drying and must reintroduce trapped air into their fur by grooming.

Post-wash monitoring and care

During rehabilitation, sea otters need to be monitored around-the-clock by qualified personnel familiar with normal sea otter behavior and who are able to recognize clinical signs of distress. Sea otters often develop hypothermia post-wash due to lack of air insulation in washed fur and inadequate grooming. Otters that appear hypothermic, having difficulty hauling out, or experiencing seizures should be immediately removed from the water and evaluated by a veterinarian. As health and fur condition improve, otters may be moved to larger pools and/or floating holding pens. All pools should have abundant haul-out space. It will generally take a minimum of seven to ten days for the fur to recover its water repellency (Tuomi et al., 1995).

Common Problems Encountered While Washing Animals

1. Oil is not coming off with Dawn
    - Pretreatment with canola oil, olive oil, or methyl oleate is required.
2. The animal's coat is not clean
    - The animal may not have been washed or rinsed adequately. In either case, the animal may need to be re-washed or re-rinsed.
    - The wash or rinse water is too hard and mineral deposits are forming on the fur. Water hardness should be rechecked to make sure it is 3-5 grains.
    - The holding pool is not clean. Check whether the water is turbid or if there is fish oil or debris floating on the pool surface. Water flow may need to be increased or pool cleaned.

Nutritional Guidelines

The dietary requirements of stranded marine mammals are generally grouped into two categories according to age and nutritional needs: unweaned pups and weaned animals. Pups need special dietary formulas and feeding regimes based on species and age while free-feeding animals are generally fed a diet of good quality fish such as herring. Adult sea otters are usually fed a variety of fish and shellfish depending on their preference. Marine mammals also usually need to receive a supplemental multivitamin, vitamin E, and salt tablets (if housed in fresh water) with amounts based on species and weight. Monitoring fecal production and hydration status is especially important when beginning any formula, switching diets, or weaning animals. Recommended diets change with continued research and experience and stranding network participants should play an important role in the development of dietary protocols for each species and facility. More information can be obtained on marine mammal nutrition and energetics from Worthy (2001), and hand-rearing and artificial milk formulas from Williams and Davis (1995) for sea otters, and Townsend and Gage (2001) and Gage (2002) for pinnipeds.

Disposition

Release

The goal in rehabilitating oiled marine mammals is to release healthy animals back into their natural environment. Rehabilitators, in consultation with designated trustee representatives (NMFS/FWS) must prepare a release plan that is communicated to and authorized by the Unified Command through the Liaison Officer. Certain criteria must be met prior to releasing marine mammals back into wild populations. For those animals that do not meet release criteria, several options are available including additional rehabilitation, euthanasia, or placement in a long-term holding facility.

While little is known about optimal oiled marine mammal release criteria, current recommendations are based on information derived from the *Exxon Valdez* spill and husbandry practices at aquaria and rehabilitation centers in the United States. NMFS and FWS have developed guidance and criteria for release based on optimizing the chances for survival and minimizing the risk to wild populations (Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release, http://www.nmfs.noaa.gov/pr/health). The Standards for Release document describes how to characterize and assess animals using several parameters.

Standards for Release

1. Historical Assessment
2. Developmental and Life History Assessment
3. Behavior Assessment and Clearance
4. Medical Assessment and Clearance
5. Release Logistics
6. Post Release Monitoring

Current criteria require that animals show normal species-specific behavior (feeding, swimming, and diving), adequate body weight for age class and species, pelage proven to be in good condition, hematological and serum chemistry values within the normal range, no evidence of infectious diseases, and physical exam findings should be unremarkable. Other ancillary tests (e.g. *Leptospira* titer, morbillivirus titer, microbiological cultures, urinalysis, fecal examinations, etc.) may also be performed on a case-by-case basis depending on individual animal and population level concerns. The Unified Command will decide upon the location of the release with guidance from the trustee agencies

Upon approval for release by UC, an exit photo of each marine mammal must be taken and specifics of the release (location, time, personnel) recorded for Natural Resource Damage Assessment purposes.

Post-release monitoring, if at all possible, should be undertaken during marine mammal releases following oil exposure using radio or satellite telemetry. This effort should focus on survival rates, behavior, and reproductive success following oil contamination and rehabilitation, thus enabling

oiled marine mammal responders to evaluate the efficacy of oiled marine mammal care. Post-release monitoring is not usually considered a response activity expense and must be funded by the stranding network participate, trustee agency or NRDA.

Mortalities

All oiled dead marine mammals should be collected from beaches and taken to a designated morgue. Dead animals should be logged in at the morgue using a Dead Marine Mammal Data Log (example in Appendix 3). Under certain circumstances, an oiled animal may need to be humanely euthanized in order to alleviate suffering. Animals that die during an oil spill response must have this disposition information recorded on their individual animal record as well as on the Live Marine Mammal Data Log (Appendix 2). The carcass should be identified with a written tag including the species name, date of stranding and/or admission, date of death, and the flipper tag (if a tag was affixed prior to death). If a flipper tag is present, it should remain with the carcass until final disposition of the carcass. The carcass should be refrigerated or kept on ice until a necropsy is performed. If a necropsy cannot be performed within 24 hours of death, the carcass needs to be frozen.

Euthanasia

During an oil spill response, there are circumstances under which it may be necessary to humanely euthanize animals. For each spill where marine mammal rehabilitation is undertaken, the rehabilitator must prepare a written euthanasia plan in consultation with the trustee representative. Euthanasia is appropriate for oiled animals with injuries that will render it unable to survive in the wild or unsuitable for use in captivity. If animals are euthanized in the field, they are collected following the procedures outlined in the Recovery and Transportation section of this document. To prevent secondary contamination or poisoning, euthanized carcasses are never left in the field.

Necropsy

Necropsies may be performed concurrent with response activities to identify cause of death in order to differentiate between a natural versus pollution related mortality. Fatalities to apparently un-oiled wildlife may necessitate necropsies to determine if death was caused by human interactions or if sub-apparent oil exposure or ingested petroleum contributed to the mortality. Additionally, captivity-related diseases may necessitate necropsies be performed on animals that die during rehabilitation to identify potential pathogens or husbandry techniques that are detrimental to recovery.

Prior to performing a necropsy on an oiled marine mammal, specific permission must be obtained from Unified Command and the appropriate NMFS/FWS enforcement officer. The spill response veterinarian-of-record should conduct or supervise all necropsies, in consultation with the designated representative FWS or NMFS enforcement officer. In most cases, a veterinary pathologist with specialized training on marine mammals will be asked to perform the necropsy. Necropsy methods and techniques are diverse, but general procedures for marine mammal necropsies can be found in Rowles et al. (2001), Galloway and Ahlquist (1997), and Geraci and Loundsbury (1993). Specific protocols have also been developed for some marine mammals including phocids (Winchell, 1990), Killer whales (Raverty and Gaydos, 2004), Right whales (McLellan et al., 2004), and Hawaiian Monk seals (Yochem et al., 2004). These species specific procedures should be followed whenever possible in order to maintain consistency with previous data. Prior to conducting a necropsy, the trustee agency and veterinarian should agree on which forms to use; which samples to collect; how those samples will be prepared (e.g., formalin or

frozen), stored, and shipped; and where samples will be analyzed. Specific oil spill necropsy information and forms are detailed in Appendix 7-9. Tissue samples for standard histopathology, disease profiling, and petroleum hydrocarbon analysis should be collected. Sampling for oil exposure, must be performed under specific conditions detailed in Appendix 7, in order to prevent contamination of the sample. Necropsy reports are filed and all samples handled and stored using appropriate chain-of-custody protocols, as discussed previously (Data Collection) and provided by the trustee representative.

Laboratories performing the petroleum analysis must be contacted as soon as possible in order to verify that sampling protocols and sample sizes are consistent with that specific laboratory requirement. Considerations in choosing the lab should include details of forensic capabilities (ability to produce legally defensible results), quality assurance and quality control (QA/QC), and consistency with the analysis of other materials from the spill. Results can vary between labs and data should be comparable between the environmental and tissues of the different species sampled. Appendix 8 lists laboratories (not an exhaustive list), with expertise in petroleum hydrocarbon chemistry that can be contacted for oil spill sample collection and analysis information. Petroleum hydrocarbon analysis is a reimbursable response expenses if pre-approved by the UC. However, often the RP (responsible party) assumes ownership of the oil and analysis may not be preformed.

Petroleum and Polycyclic Aromatic Hydrocarbons (PAH) Analysis

In general, all crude oils are mixtures of the same hydrocarbon and non-hydrocarbon compounds, but vary in the percent composition of these compounds. Natural weathering of oil in the environment also results in highly variable compositions. Because of the continual dynamic changes in spilled oil, it can be difficult to identify and quantify all PAHs potentially present in or on an animal in the aftermath of an oil spill. Oil and tissue samples collected from marine mammals can be analyzed to determine the total amount of PAHs in tissues and identify and quantify dangerous PAHs that may have caused clinical and pathological effects. Samples can also be tested to characterize and fingerprint petroleum hydrocarbons to determine their source.

Determining source-dependent petroleum exposure during an oil spill using GC/MS or HPLC techniques on marine mammal tissues requires baseline knowledge of petroleum hydrocarbon levels and composition in the spill area and of the spilled oil. At present there are few data available on PAH levels in marine mammals inhabiting North American coastal waters. Studies have only measured PAH levels in seals and whales from the Eastern Canada (Hellou et al., 1990, Zitko et al., 1998) and Northeastern United States (Lake et al., 1995). Overall, the low concentrations of bioaccumulated PAHs in tissues from these marine mammals are fairly similar to those reported in atmospheric fallout PAHs from combustion sources (Zitko et al., 1998). Alkylated and heterocyclic PAHs are the predominant forms of PAHs in oil and coal products, and can be missed if tissues are tested only for the 16 traditionally-studied, parent PAHs listed as priority pollutants by the Environmental Protection Agency (EPA) and World Health Organization (WHO) (Means 1998). Different members of the isomeric alkylated PAHs exhibit differential toxicity, diffusion, and degradation rates, further emphasizing the importance of compound-specific analysis. With the lack of baseline PAH levels from marine mammals, control samples for comparisons were harvested at the time of *Exxon Valdez* oil spill from animals inhabiting nearby non-oiled areas (Mulcahy and Ballachey, 1994; Frost et al., 1994).

In experimental exposure studies (both immersion and ingestion) involving ringed seals (*Phoca hispida*), differences in detectability of PAHs in various tissues were noted (Engelhardt et al., 1977). In the immersion experiment, PAHs were highest in urine and bile, less elevated in blood and plasma, and lower in tissues (lowest in lung) at 2 days post-immersion. Tissue sampling in the ingestion study was limited with PAHs highest in blood, and higher in liver and blubber compared to muscle. These studies illuminate the importance of selecting appropriate tissues for PAH analysis. Specific tissue collection techniques are provided in Appendix 7.

Records

The importance of recording information cannot be over-emphasized. Record collection enhances individual animal care, response evaluations, and the ability to accurately characterize the best practices for appropriate care. In-house records are maintained at the rehabilitation facility and copies provided to the trustee agency. Final reports, including chain-of-custody and sample collection records, must be delivered to the trustee agency within 30 days of the date the Federal OSC declares the response closed.

Scientific Records

The following types of records are necessary to preserve vital information for scientific study, natural resource damage assessment, and improved rehabilitation practices and techniques:

- Oiled mammal sighting: records and maps for all reports of oiled mammals
- Search Effort Log
- Live Mammal Log
- Dead Mammal Log
- Marine Mammal Intake Form
- Rehabilitation Records: documents care for each animal, including feedings, treatments, medications, normal/abnormal activities.
- Lab Analyses Report: identifies all samples sent to labs, requested analyses, lab results.
- Marine Mammal Stranding Report - Level A Data (NOAA 89-864, OMB #0648-0178)
- Marine Mammal Rehabilitation Disposition Report (NOAA 89-878, OMB #0648-0178)
- Human Interactions Form
- Necropsy Report

References

Ainley, D.G., G.W. Page, L.T. Jones, L.E. Stenzel, and R.L. LeValley. 1980. *Beached marine birds and mammals of the North American West Coast: a manual for their census and identification.* U.S. Department of the Interior, U.S. Fish and Wildlife Service, Biological Services Program, FWS/OBS-80/03. 207p.

Benz, C.T. and R.L. Britton. 1995. Sea otter capture. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*, T.M. Williams and R.W. Davis, eds., Fairbanks, AK: University of Alaska Press. pp. 23-37.

Bossart, B.D., T.H. Reidarson, L.A. Dierauf, B.A. Duffield. 2001. Clinical Pathology. In *CRC Handbook of Marine Mammal Medicine.* L.A. Dierauf and F.M.D Gulland, eds., Boca Raton, FL: CRC Press, Inc. pp. 383-436.

Clumpner, C. 1991. Water hardness and waterproofing of oiled birds: lessons from the Nestucca, Exxon Valdez, and the American Trader spills. In *The Effects of Oil on Wildlife: Research, Rehabilitation & General Concerns*, J. White, ed., Hanover, PA: The Sheridon Press. pp. 101-102.

Davis, J.E., and S.S. Anderson. 1976. Effects of oil pollution on breeding grey seals. *Marine Pollution Bulletin* 7, 2761-2767.

Davis R.W. and C.W. Davis. 1995. Facilities for Oiled Sea Otters. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*, T.M. Williams and R.W. Davis, eds. Fairbanks, AK: University of Alaska Press. pp. 159-175.

Davis, R.W. and L. Hunter. 1995. Cleaning and Restoring the Fur. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*, T.M. Williams and R.W. Davis, eds. Fairbanks, AK: University of Alaska Press. pp. 95-102.

Dierauf, L.A. and F.M.D. Gulland, eds. 2001. *CRC Handbook of Marine Mammal Medicine.* Boca Raton, FL: CRC Press, Inc. 1063p.

Duffy, L.K., R.T. Bowyer, J.W. Testa, and J.B. Faro. 1993. Differences in blood haptoglobin and length-mass relationships in river otters (*Lutra canadensis*) from oiled and nonoiled areas of Prince William Sound, Alaska. *Journal of Wildlife Diseases* 29, 353-359.

Duffy, L.K., R.T. Bowyer, J.W. Testa, and J.B. Faro 1994. Chronic effects of the *Exxon Valdez* oil spill on blood and enzyme chemistry of river otters. *Environmental Toxicology and Chemistry* 13, 643-6470.

Engelhardt, F.R. 1982. Hydrocarbon metabolism and cortisol balance in oil-exposed ringed seals, *Phoca hispida. Comparative Biochemistry and Physiology. C: Comparative Pharmacology* 72 (1), 133-136.

Engelhardt, F.R., J.R. Geraci, and T.G. Smith. 1977. Uptake and clearance of petroleum hydrocarbons in the ringed seal, *Phoca hispida*. *Journal of the Fisheries Research Board of Canada* 34, 1143-1147.

Frost, K.J., C.A. Manen, and T.L. Wade. 1995. Petroleum hydrocarbons in tissues of harbor seals from Prince William Sound and the Gulf of Alaska. In *Marine Mammals and the Exxon Valdez*, T. R. Loughlin, ed., San Diego: Academic Press. pp. 331-358.

Gage, L.J., ed. 2002. *Hand-Rearing Wild and Domestic Mammals*. Ames, IA: Iowa State Press. 279p.

Galloway, S.B., and J.E. Ahlquist, eds. 1997. *Marine Forensics Manual, Part 1 Marine Mammals*. National Marine Fisheries Service, Southeast Fisheries Science Center, Charleston laboratory, Charleston, SC, 90p.

Geraci, J. R., and T. G. Smith. 1976. Direct and indirect effects of oil on ringed seals (*Phoca hispida*) of the Beaufort Sea. *Journal of the Fisheries Research Board of Canada* 33, 1976-1984.

Geraci, J.R., and D.J. St. Aubin. 1988. *Synthesis of effects of oil on marine mammals*. Ventura, CA: Battelle Memorial Institute. Final report. MMS 88-0049

Geraci, J.R., and D.J. St. Aubin. 1990. *Sea Mammals and Oil: Confronting the Risks*. San Diego: Academic Press. 221p.

Geraci, J. R., and T. D. Williams. 1990. Physiologic and toxic effects on sea otters. In *Sea mammals and Oil: Confronting the Risks*. D.J. St. Aubin and J.R. Geraci, eds., San Diego: Academic Press. pp. 211-221.

Geraci, J.R. and V.J. Lounsbury. 1993. *Marine Mammals Ashore: A Field Guide for Strandings*. Galveston, TX: Texas A&M Sea University Sea Grant Publication. 305p.

Haulena, M. and R.B. Heath. 2001. Anesthesia. In *CRC Handbook of Marine Mammal Medicine*. L.A. Dierauf and F.M.D Gulland, eds., Boca Raton, FL: CRC Press, Inc. pp. 655-684.

Hellou, J., G. Stenson, I. H. Ni, and J.F. Payne. 1990. Polycyclic aromatic hydrocarbons in muscle tissue of marine mammals from the Northwest Atlantic. *Marine Pollution Bulletin* 21 (10), 469-473.

Lake, C.A., J.L. Lake, R. Haebler, R. McKinney, W.S. Boothman, and S.S. Sadove. 1995. Contaminant levels in harbor seals from the northeastern United States. *Archives of Environmental Contamination and Toxicology* 29, 128-134.

Lipscomb, T.P., R.K. Harris, R.B. Moeller, J.M. Pletcher, R.J. Haebler, and B.E. Ballachey. 1993. Histopathologic lesions in sea otters exposed to crude oil. *Veterinary Pathology* 30 (1), 1-11.

Loughlin, T. R., ed. 1994. *Marine mammals and the Exxon Valdez*. Orlando, Florida: Academic Press, Inc. 395p.

Lowry, L.F., K.J. Frost, and K.W. Pitcher. 1994. Observations of oiling of harbor seals in Prince William Sound. In *Marine mammals and the Exxon Valdez*. T. R. Loughlin, ed., San Diego, New York: Academic Press. pp. 209-225.

NRT, National Response Team. 2004. ICS/UC Technical Assistance Document. website: http://www.nrt.org/

Means, J.C. 1998. Compound-specific gas chromatographic-mass spectrometric analysis of alkylated and parent polycyclic aromatic hydrocarbons in waters, sediments, and aquatic organisms. *Journal of AoAC International* 81, 657-672.

McLellan, W.A., Rommel, S.A., Moore, M., Pabst, D.A. 2004. Right Whale Necropsy Protocol. Final report to NOAA Fisheries for contract #40AANF112525. 51p.

Monson D.H., C. McCormick, and B.E. Ballachey. 2001. Chemical anesthesia of northern sea otters (Enhydra lutris): results of past field studies. *Journal of Zoo and Wildlife Medicine* 32(2),181-189.

Mulcahy, D.M., and B.E. Ballachey. 1995. Hydrocarbon residues in sea otter tissues. In *Marine Mammals and the Exxon Valdez*. T. R. Loughlin, ed., San Diego: Academic Press. pp. 313-330.

Raverty, S.A., and J.K. Gaydos. 2005. Killer Whale Necropsy and Disease Testing Protocol. UC Davis Wildlife Health Center, Sea Doc Society. 61p. http://mehp.vetmed.ucdavis.edu/pdfs/orcanecropsyprotocol.pdf.

Rash, J.A., C.R. McCormick, R. Alexander, S.J. Nichol, and D.C. Perrollaz. 1990. Coat Gradation and Conditioning of Sea Otters at the Seward Rehabilitation Center. In Sea Otter Symposium: *Proceedings of a Symposium to Evaluate the Response Effort on Behalf of Sea Otters after the T/V Exxon Valdez Oil Spill into Prince William Sound.* Anchorage, AK: US Fish and Wildlife Service. Biological Report 90 (12).

Rowles, T.K., R.M. Van Dolah, and A.A. Hohn. 2001. Gross Necropsy and Specimen Collection Protocols. In *CRC Handbook of Marine Mammal Medicine*. L.A. Dierauf and F.M.D Gulland, eds., Boca Raton, FL: CRC Press, Inc. pp. 449-470.

Reeves, R.R., B.S. Stewart, and S. Leatherwood. 1992. *The Sierra Club Handbook of Seals and Sirenians*. Sierra Club Books, San Francisco. 359p.

Reidman, M. 1990. *The Pinnipeds: Seals, Sea Lions and Walruses*. Berkeley, CA: University of California Press, pp. 16-17.

Ridgeway, S.H. 1972. Homeostatis in the aquatic environment. In *Mammals at Sea: Biology and Medicine*. S.H. Ridgeway, ed., Springfield, Il: Charles C. Thomas

Smith, T.G., and J. R. Geraci. 1975. The effect of contact and ingestion of crude oil on ringed seals of the Bearfort Sea. *Bearfort Sea Project*, Tech. Rep. No. 5. Inst. Ocean Sci., Sidney, British Columbia.

Sparker, T.R., L.F. Lowry, and K.J. Frost. 1994. Gross and histopathological lesions found in harbor seals. In *Marine mammals and the Exxon Valdez*. T. R. Loughlin, ed., San Diego: Academic Press. pp. 281-312.

St. Aubin, D.J. 1990. Physiologic and Toxic Effects on Pinnipeds. In *Sea Mammals and Oil: Confronting the Risks*. J.R. Geraci and D.J. St. Aubin, eds., San Diego: Academic Press. pp. 103-125.

Stoskopf M.K., L.H. Spelman, P.W. Sumner, D.P. Redmond, W.J. Jochem, and J.F. Levine. 1997. The impact of water temperature on core body temperature of North American river otters (Lutra canadensis) during simulated oil spill recovery washing protocols. *Journal of Zoo and Wildlife Medicine* 28(4), 407-12.

Tarasoff, F.J. 1974. Anatomical adaptions in the river otter, sea otter, and harp seal with reference to thermal regulation. In *Functional Anatomy of Marine Mammals*. R.J. Harrison, ed., London: Academic Press, pp. 111-142.

Townsend, F.I. and L. J. Gage. 2001. Hand-rearing and artificial milk formulas. In *CRC Handbook of Marine Mammal Medicine*. L.A. Dierauf and F.M.D Gulland, eds., Boca Raton, FL: CRC Press, Inc. pp. 829-849.

Tuomi, P.A., S. Donoghue, and J.M. Otten-Stanger. 1995. Husbandry and Nutrition. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*. T.M. Williams and R.W. Davis, eds., Fairbanks, AK: University of Alaska Press. pp. 103-119.

Williams, T.D., D.D. Allen, J.M. Groff, and R.L. Glass. 1992. An analysis of California sea otter (*Enhydra lutris*) pelage and integument. *Marine Mammal Science* 8(1), 1-18.

Williams, T.M. and R.W. Davis, eds. 1995. *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*. Fairbanks, AK: University of Alaska Press Fairbanks. 279p.

Williams, T.D. and D.C. Sawyer. 1995. Physical and chemical restraint. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*, T.M. Williams and R.W. Davis, eds., Fairbanks, AK: University of Alaska Press. pp. 39-43

Williams, T.D., J.F. McBain, P.A. Tuomi, and R.K. Wilson. 1995. Initial clinical evaluation, emergency treatments, and assessment of oil exposure. In *Emergency Care and Rehabilitation of Oiled Sea Otters: A Guide for Oil Spills Involving Fur-bearing Marine Mammals*. T.M. Williams and R.W. Davis, eds., Fairbanks, AK: University of Alaska Press. pp. 45-57.

Winchell, J.M. 1990. Field Manual for Phocid Mecropsies (specifically *Monachus schauinslandi*). U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-146, 55p.

Worthy, G.A. 2001. Nutrition and energetics. In *CRC Handbook of Marine Mammal Medicine*. L.A. Dierauf and F.M.D Gulland, eds., Boca Raton, FL: CRC Press, Inc. pp. 791-798

Yochem, P.K., R.C. Braun, B. Ryon, J.D. Baker, and G.A. Antonelis. 2004. Contingency Plan for Hawaiian Monk Seal Unusual Mortality Events. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TMNMFS-PIFSC-2, 297p.

Zitko, V., G. Stenson, and J. Hellou. 1998. Levels of organochlorine and polycyclic aromatic compounds in harp seal beaters (Phoca groenlandica). *Science of the Total Environment* 221, 11-29.

Appendices

1. Search Effort Log
2. LIVE Marine Mammal Data Log Form

2b. LIVE Marine Mammal Data Log Form, page 2

3. DEAD Marine Mammal Data Log Form

3b. DEAD Marine Mammal Data Log Form, page 2

4. Oiled Marine Mammal Intake Form
5. Oiled Marine Mammal Daily Progress Form
6. Oiled Marine Mammal Evidence Collection Protocol
7. Petroleum Hydrocarbon Tissue Sampling Protocol
8. Oil Spill Response Laboratories and Supplies
9. Oiled Marine Mammal Necropsy Form
10. Chain of Custody Form

10b. Chain of Custody Form, page 2

Search Effort Log

Please record all beaches searched *even if no animals are found.*

Spill Name: _____ **Date:** _____
Searchers: _____

Note: Time should include all time spent on the beach, even when backtracking. North and south endpoints should be GPS pts. If not, please provide a good description of the area covered. For collected animals, put GPS location here.

	Beach Name	**Start Time**	**End Time**	**North/West Extreme (Lat/Long)**	**South/East Extreme (Lat/Long)**	**Total Distance Searched**	**Method (foot, ATV, scan)**	**Mammals Collected Note: (live/ dead, GPS, ID #)**
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								

Oiled Marine Mammal Data Log: LIVE Animals

Oil Spill Name:				Facility:					
Intake Log Number (L-xxxx)	Date Collected (m/d/y)	Time Coll'ted (24 hr)	First Initial & Last Name of Collector	Beach Search Number	Collection Location (Beach Name)	GPS Coordinates (N) GPS Coordinates (W)	Field Tag #	Date Arrived (m/d/y)	Time Arrived (24 hr)

Front Side of Page _____ of _____

Appendix 2. Live Marine Mammal Data Log

Oiled Marine Mammal Data Log: LIVE Animals (continued from front side)

Oil Spill Name:				Facility:								
Intake Log Number	Date Processed (m/d/y)	Time Processed (24 hr)	First Initial & Last Name of Examiner	Species	Level A Field #	Tag Color/#	% Oiled	Sample/ Photo Taken? (Y/N)	Disposition Date (m/d/y)	Disposition Status (R,D,E,T)	Release Tag #	Morgue ID

Back Side of Page _____ of _____

Oiled Marine Mammal Data Log: DEAD Animals

Oil Spill Name:					Facility:								
Intake Log Number (D-xxxx)	Date Collected (m/d/y)	Time Coll'ted (24 hr)	First Initial & Last Name of Collector	Beach Search #	Collection Location (Beach Name)	GPS Coordinates (N) / (W)	Tag # (Field or Temp w/ Color)	Date Arrived (m/d/y)	Time Arrived (24 hr)	Date Proc'ed (m/d/y)	Time Proc'ed (24 hr)	Name of Processor	Species

Front Side of Page _____ of _____

Appendix 3. Dead Marine Mammal Data Log

Oiled Marine Mammal Data Log: DEAD Animals (continued from front side)

Oil Spill Name:							Facility:									
Intake Log Number (D-xxxx)	Condition	Scavenging	Oiling Signs	% Oiled	Depth Oiled	Sample/ Photo Taken? (Y/N)	Level A Field #	Tag #	Age	Sex	SL (cm)	AG (cm)	Morgue ID	Necropsy (Y/N)	Notes (any other observations, contamination by petroleum products such as plastic or another specimen)

Back Side of Page _____ of _____

Appendix 4. Oiled Marine Mammal Intake Form

Oiled Marine Mammal Intake Form

Spill Name:			Level A Field #:	Log Number:
CAPTURE	Capture Date/Time:		Capture Location:	
	Field Band:		Collector:	
PROCESSING	Intake Date/Time:		Species:	
	Tag Color/#:		Examiner's Signature:	
EXT. OIL ID	Signs of Oiling	Oil Visible Skin Burns Smell	Area Oiled	Head Body Multiple Entire
	Oil Color	Black Brown Clear Other	Depth of Oiling	Deep Moderate Surface
	% Oiled	<2% 2-25% 26-50% 51-75% 76-100%	Samples	Hair Swab Photo
PHYSICAL EXAM	Weight/Temp.	grams °F	Age	Pup Sub-adult Adult Unknown
	Std Length/Girth	cm cm	Sex	Male Female
	Heart Rate	WNL beats/min.	Body Condition	Normal Thin Emaciated
	Resp. Rate	WNL breaths/min.	Attitude	BAR QAR Nonresponsive Seizing
	Dehydration	None Mild Moderate Severe	CRT/mm color	Sec. / Pink Pale White Purple
	Human Interaction	☐ Yes ☐ No Type: Boat Collision, Shot, Fisheries, Other:		
	Neurologic	NSF Other:		
	Head/Mouth	NSF Other:		
	Eyes/Ears	NSF Other:		
	Heart/Lungs	NSF Other:		
	Gastrointestinal	NSF Other:		
	Musculo-skeletal	NSF Other:		
	Integument	NSF Other:		
	Comments			
TX-DX	Blood taken? HCT LTT RTT GTT	Toxiban: yes no time:		
	Pre-wash Exam: _____ Veterinarian Signature	Date Washed :	Weight:	Bloodwork Attached ☐
DISPOSITION	Disposition Exam: _____ Veterinarian Signature	Exam Date:	Weight:	Bloodwork Attached ☐
	Disposition Date:	Disposition Location:		
	Disposition Status: RELEASED DIED EUTHANIZED TRANSFERRED RETAINED	Necropsied by:		
	Flipper Tag No.:	Location: RF LF RH LH		

TAG #: _____ SPECIES: _____

Oiled Marine Mammal Daily Progress Form

SpillName_____ Log# _____ Tag Color/# _____ Species_____

Date	Treatment and Progress Notes	Init.

Appendix 6. Oiled Marine Mammal Evidence Collection Protocol

The photograph and oil sample are both considered to be legal evidence therefore it is important that the following procedures are followed closely.

Photograph Evidence

1. Use a Polaroid camera (if possible).
2. Photograph should include the entire animal, highlighting the oiled region, and if possible, the tag number.
3. Label the photograph with Spill Name, Date, Species, Log #, Capture Location, and Tag # and Color.

Sample Collection Techniques for Visible Oiling

1. Scrape visible oil from fur/skin with wooden spatula (tongue depressor).
2. Place oil covered spatula in solvent-rinsed glass jar with a Teflon-lined lid (e.g. I-Chem) and break off the remaining un-oiled portion, allowing the lid to close. If jar is not available, wrap sample in aluminum foil (dull side to sample).
   Note: Avoid touching /contaminating oil sample with your nitrile gloves.
3. Label the glass jar (use waterproof labels).
   Label must include: Spill Name, Log #, Species, Tag #, Arrival Date, Sampling Date, and Capture Location.
4. Fill out Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored.
6. Lock sample in a -20°C (or colder) freezer.

Sample Collection Techniques for No Visible Oiling

1. Rub an affected area with a 4x4 fiberglass or cotton cloth (or gauze) with sterile forceps or hemostats that have been cleaned with isopropyl alcohol.
   Note: Do not allow the nitrile gloves to touch the oiled area or the cloth.
2. Place the oiled covered cloth into a solvent-rinsed glass jar with a Teflon-lined lid.
3. Seal and fill out the information on the waterproof label (as above).
4. Fill out the Custody Seal and apply it across the lid of the jar and onto the sides of the glass.
5. Keep sample refrigerated or on ice until it can be stored
6. Lock sample in a -20°C (or colder) freezer.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are to be sent for analysis, a Chain of Custody Form is required.

Appendix 7. Petroleum Hydrocarbon Tissue Sampling Protocol

Supplies for sampling

All instruments used in handling (e.g. scalpels and forceps, cutting boards) or storing (e.g. jars, foil, sheets) samples must be made of a non-contaminating material consisting of stainless steel, glass, Teflon, or aluminum.

- Solvent-rinsed glass containers with Teflon-lined lids for tissues
- Solvent-rinsed Teflon sheets for tissues
- Aluminum foil (if Teflon sheets are not available) sample to the dull side
- Sterile syringes and needles
- Amber glass vials or glass vials covered with foil with Teflon lids (for bile, urine)
- Teflon screw top vials (for blood storage and urine)
- Stainless steel scalpels, knifes, forceps
- Isopropyl alcohol (99.9% pesticide free IPA) to rinse instrument
- Wooden tongue depressors (can be used to handle tissues if necessary)
- Whirl-pak bags or Zip-lock freezer bags
- 10% buffered formalin and appropriate containers for histopathology samples
- Permanent marker or pen
- Evidence/Custody tape and labels
- Sample Log/Chain of Custody forms

Sampling Protocol

Tissues to collect for petroleum hydrocarbon analysis in order of preference:

a. bile
b. urine
c. whole blood
d. stomach and intestinal contents
e. blubber/fat
f. liver
g. kidney
h. lung
i. intestine
j. brain
k. muscle

i. Samples taken for analysis should only be collected from **alive** or **freshly dead animals**. If a necropsy cannot be performed within 24 hrs after death, the carcass should be frozen for later examination.

ii. Recommended **minimum sample size** is **10-20 g of tissues** (approx. 1-2 tablespoons) and **5 ml for fluids** (blood, urine, bile, feces, stomach contents). However, analysis can be performed on as little as 100 μL of bile; therefore collect whatever amount is present.

iii. Fluids such as blood, urine, and bile should be collected using sterile syringes or pipettes and transferred to Teflon vials (blood) or amber glass vials (bile, urine).

iv. Use powder-free nitrile gloves. Vinyl gloves are an acceptable alternative. Avoid contact of gloves with samples.

v. Scalpels, knifes, and cutting tools used for tissue collection should be cleaned and rinsed with isopropyl alcohol between tissues. If heavily contaminated with oil, instruments can be cleaned with detergent (e.g. Dawn), rinsed with water, and then rinsed with alcohol.

vi. Samples are stored preferably in solvent-rinsed Teflon-lined glass jars, labeled, and secured with evidence tape/custody seal. If glass jars are not available, samples can be placed in Teflon sheets or aluminum foil (dull side to sample) and stored in whirl-paks/freezer bags.

vii. If samples/tissues have come in contact with a contaminating material (e.g. plastic bag), collect and store a representative example of that material (e.g. plastic bag) using the same method as for collecting tissues.

viii. Collect a representative sample of each tissue (< 1 cm thick) preserved in 10% buffered formalin for histopathology. Duplicate hydrocarbon and histology samples whenever possible.

ix. Each sample must be labeled with **Spill Name, Log #, Level A Field #, Species, Tag#, Arrival Date, Sampling Date, and Capture Location** and securely stored.

x. Samples for PAH analysis should be chilled immediately on ice/refrigeration and then frozen as soon as possible to -20ºC or colder in a locked freezer. Histopathology samples are stored at room temperature.

All evidence should be securely stored and refrigerated/frozen until the Wildlife Branch Director provides further instructions. If samples are transferred to a different location or sent for analysis, a Chain of Custody form is required. A Chain of Custody form can be found in this document, but are often provided by the laboratory.

Shipping:
Ship samples frozen on blue ice or with ~5 lbs dry ice according to laboratory specification using Federal Express (FedEx). FedEx follows IATA regulations for shipping hazardous materials and maintains chain of custody record by tracking packages.
Sampling supplies such as jars, label, and custody seals are often supplied by the analytical laboratory and are produced by:

I-Chem™ Brand, Certified 300 Series jars
Order: 1-800-451-4351, www.ichembrand.com

Appendix 8. Oil Spill Response Laboratories

Laboratories with tissue petroleum hydrocarbon analysis expertise

Northwest Fisheries Science Center 2725 Montlake Boulevard East Seattle, WA 98112-2097 Jon Buzitis, (206) 860-3309 Gina Ylitalo, (206) 860-3325	**Alaska Fisheries Science Center** Auke Bay Laboratory 11305 Glacier Highway Juneau, Alaska 99801-8626 Jeep Rice, (907) 789-6020
Petroleum Chemistry Laboratory Office of Spill Prevention and Response California Department of Fish and Game 1995 Nimbus Rd Rancho Cordova, CA 95670 (916) 358-2803	**TDI-Brooks International** 1902 Pinon College Station, TX 77845 (979) 693-3446 Thomas McDonald, (979) 220-3821
Alpha Woods Hole Laboratories 375 Paramount Drive Raynham, MA 02767 Peter Kane, (508) 822-9300	**Zymax Forensics** 71 Zaca Lane San Luis Obispo, CA 93401 (805) 544-4696 Alan Jeffrey, (805) 546-4693
Mote Marine Laboratory 1600 Ken Thompson Parkway Sarasota, Florida 34236 (941) 388-4312 Dana Wetzel, (941) 388-4441	**Geochemical & Environmental Research Group (GERG)** Texas A&M University 833 Graham Road College Station, Texas 77845 (979) 862-2323

The laboratory should be able to perform analysis of the 16 traditionally-studied, parent PAHs listed as priority pollutants by the Environmental Protection Agency (EPA) in addition to the 44 alkylated and heterocyclic PAHs.

Unified Command and Trustee Agencies will make final decision on laboratory use.

Appendix 9. Oiled Marine Mammal Necropsy Form

Oiled Marine Mammal

Gross Necropsy Report

Spill Name:			
Animal Log #			
Level A Field #	**Tag #**		
Species:			
Sex:	**Age:**		
Weight:	kg. (estimate/actual)		
SON:	emaciated 1 2 3 4 5 6 7 obese		
Measurements:		Blubber depth	mm
SL cm	AG cm	UG cm	XG cm

Form completed by:	Date:	
Enforcemnent Officer:		
Strand/Capture location:		
Collecters Name:		
Intake date:		Euthanasia
Death date:	Time:	☐ yes
Post mortem date:	Time:	☐ no
Carcass Classification:	**Frozen**: ☐ yes ☐ no	
2- fresh, 3-fair (organs intact), 4-poor, 5- mummified		
Photographs: ☐		
Radiographs: ☐		

Clinical signs/diagnosis	
Antibiotics given	
Pertinent lab results	

GROSS NECROPSY ABNORMALITIES:

HYDROCARBON ANALYSIS SAMPLES		
bile	kidney	blubber/fat
blood	muscle	other:
urine	lung	
liver	intestine	

MICROBIOLOGY	**SWABS: other**
Lung ☐	
Liver ☐	
other ☐	

HISTOLOGY SAMPLES

lung	thyroid	ileum	kidney	mammary gland	muscle
trachea	tonsil	colon	ureter	adrenal	gonad
heart	tongue	pancreas	urinary bladder	skin	prostate
aorta	esophagus	spleen	urethra	eye (L/R)	uterus
pulmonary artery	stomach	liver	blubber	fat--site:	vagina
thymus	duodenum	gall bladder	bone marrow		cervix
salivary gland	jejunum	brain	spinal cord	whole repro	penis
other:					

LYMPH NODES:	
colonic	gastric
sublumbar	hepatic
inguinal	mediastinal
axillary	submandibular
mesenteric	tracheobronchial

Cause of death (preliminary diagnosis):

Examiner: Examiner's signature: Date:

Appendix 10. Chain of Custody Form

CHAIN OF CUSTODY RECORD

Case Number:

DATE AND TIME OF SEIZURE:	DUTY STATION:	EVIDENCE/PROPERTY SEIZED BY:

SOURCE OF EVIDENCE/PROPERTY (person and/ or location) TAKEN FROM: RECEIVED FROM: FOUND AT:	DEFENDANT/COMPANY NAME AND REMARKS:

ITEM NO:	DESCRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag numbers and any serial numbers):

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	

ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE	RECEIPT DATE:	
ITEM NO:	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE:	DELIVERED VIA: FEDEX U.S. MAIL IN PERSON OTHER:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE:	

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APPENDIX M

SOCIOECONOMIC INFORMATION SUMMARY TABLES

Table 1: Summary of overall statewide information on veterinary services

State	Number of Establishments	Revenues and Receipts ($000's)	Annual Payroll ($000's)	Number of Paid Employees
Atlantic/Gulf of Mexico Region				
Alabama	470	215,658	66,007	3,647
Connecticut	308	278,984	101,581	3,555
Delaware	57	54,598	19,773	760
Florida	1,665	1,027,526	337,264	14,363
Georgia	721	456,376	157,582	7,242
Louisiana	393	191,983	58,361	3,231
Maine	149	96,997	34,837	1,298
Maryland	466	350,277	129,439	5,218
Massachusetts	448	374,325	145,196	5,371
Mississippi	238	104,586	31,209	1,642
New Hampshire	155	109,833	36,762	1,467
New Jersey	548	487,464	185,615	6,126
New York	1,130	934,481	321,104	12,124
North Carolina	720	510,742	180,959	8,000
Pennsylvania	940	618,142	205,655	8,884
Rhode Island	75	56,751	20,800	766
South Carolina	326	189,719	61,557	3,060
Texas	2,010	1,224,701	389,384	17,405
Virginia	684	503,041	191,682	8,221
Puerto Rico	85	23,846	4,257	302
Virgin Islands[1]	9	3,330	845	35
Pacific Region				
Alaska	60	40,411	15,051	621
California	2,445	1,948,390	660,464	24,733
Oregon	464	306,031	105,358	4,624
Washington	685	439,702	139,487	6,041
Pacific Islands Region				
Hawaii	77	51,308	16,447	656
Guam	4	2,078	595	37
American Samoa[1]	4	59	1	2
Commonwealth of the Northern Mariana Islands[1]	8	1,780	450	34

2002 Economic Census
North American Industry Classification System (NAICS) code 541940
[1] NAICS code 5419 which includes veterinary services as well as other sub-industries

Table 2: Summary of overall statewide information for all zoos, aquariums, and botanical gardens

State	Number of Establishments	Revenues and Receipts ($000's)	Annual Payroll ($000's)	Number of Paid Employees
Atlantic/Gulf of Mexico Region				
Alabama	6	9,815	4,884	257
Connecticut	7	28,102	9,156	346
Delaware	1	D	D	a
Florida	56	123,503	43,203	2,448
Georgia	16	45,331	16,489	692
Louisiana	13	D	D	f
Maine	8	3,965	1,548	44
Maryland	8	D	D	f
Massachusetts	17	55,603	18,742	776
Mississippi	2	D	D	b
New Hampshire	1	D	D	a
New Jersey	10	12,567	5,587	276
New York	48	266,257	83,410	2,457
North Carolina	13	7,992	2,409	95
Pennsylvania	26	98,672	32,665	1,365
Rhode Island	1	D	D	b
South Carolina	11	34,679	8,493	419
Texas	37	140,819	44,071	2,232
Virginia	11	8,584	4,438	247
Puerto Rico[2]	18	13,690	3,714	218
Virgin Islands[2]	5	3,583	973	48
Pacific Region				
Alaska	3	D	D	b
California	46	272,488	105,438	3,687
Oregon	11	15,067	6,075	255
Washington	16	29,801	5,670	204
Pacific Islands Region				
Hawaii	20	27,701	7,994	390
Guam	N/A	N/A	N/A	N/A
American Samoa	N/A	N/A	N/A	N/A
Commonwealth of the Northern Mariana Islands[2]	1	D	D	a

2002 Economic Census
NAICS code: 712130
D = Information withheld by Census to avoid disclosing data for individual companies
a = 0-19 employees
b = 20-99 employees
f =500-999 employees
[2] NAICS code 712 which designates museums, historical sites, and similar institutions. This category includes zoos and aquariums.

Table 3: Summary of statewide information on zoos, aquariums, and botanical gardens with federal tax-exempt status

State	Number of Establishments	Revenues and Receipts ($000's)	Annual Payroll ($000's)	Number of Paid Employees
Atlantic/Gulf of Mexico Region				
Alabama	6	9,815	4,884	257
Connecticut	6	D	D	e
Delaware	1	D	D	a
Florida	22	60,756	22,323	979
Georgia	11	D	D	f
Louisiana	6	D	D	f
Maine	6	D	D	b
Maryland	6	D	D	f
Massachusetts	13	50,387	17,125	676
Mississippi	2	D	D	b
New Jersey	7	D	D	e
New York	34	237,360	75,523	2,219
North Carolina	6	D	D	b
Pennsylvania	18	95,617	31,483	1,314
Rhode Island	1	D	D	b
South Carolina	5	10,703	3,793	165
Texas	22	131,268	41,775	2,102
Virginia	5	6,737	3,807	185
Puerto Rico	N/A	N/A	N/A	N/A
Virgin Islands	N/A	N/A	N/A	N/A
Pacific Region				
Alaska	2	D	D	b
California	32	268,086	104,104	3,622
Oregon	7	12,822	5,289	210
Washington	12	D	D	c
Pacific Islands Region				
Hawaii	12	D	D	c
Guam	N/A	N/A	N/A	N/A
American Samoa	N/A	N/A	N/A	N/A
Commonwealth of the Northern Mariana Islands	N/A	N/A	N/A	N/A

2002 Economic Census
NAICS code: 712130
D=Information withheld by Census to avoid disclosing data for individual companies
a= 0-19 employees
b= 20-99 employees
c=100-249 employees
e=250-499 employees
f=500-999 employees

Table 4: Summary of overall information on coastal food and lodging services

State	Number of Establishments	Revenues and Receipts ($000's)[1]	Annual Payroll ($000's)[1]	Number of Paid Employees[1]
Atlantic/Gulf of Mexico Region				
Alabama	956	713,581	202,919	18,299
Connecticut	4,502	4,979,638	1,454,704	80,017
Delaware	1,576	1,231,595	355,458	26,972
Florida	23,742	20,991,636	5,847,116	460,330
Georgia	1,113	1,040,073	300,917	24,583
Louisiana	3,384	3,408,930	972,762	76,709
Maine	2,446	1,346,224	393,600	25,814
Maryland	5,139	4,322,393	1,189,482	95,547
Massachusetts	8,572	7,172,834	2,103,016	139,707
Mississippi	723	1,701,789	472,684	27,523
North Carolina	1,626	997,181	277,497	26,059
New Hampshire	751	498,076	152,805	10,857
New Jersey	9,923	10,596,279	2,933,489	165,618
New York	22,802	19,302,622	5,535,678	309,156
Pennsylvania	4,045	2,742,606	734,949	54,681
Rhode Island	2,701	1,731,799	502,394	38,573
South Carolina	2,608	2,741,304	771,157	55,853
Texas	9,002	7,626,398	2,100,395	178,631
Virginia	2,695	2,125,937	556,374	52,167
Puerto Rico	4,133	3,360,226	732,147	63,810
Virgin Islands	313	331008	92,357	5,639
Region Total	112,752	98,962,129	27,681,900	1,936,545
Pacific Region				
Alaska	1,598	1,178,807	354,615	20,379
California	45,609	40,169,743	11,522,595	800,742
Oregon	1,909	1,058,286	305,453	25,221
Washington	9,212	6,275,983	1,874,094	139,301
Region Total	58,328	48,682,819	14,056,757	985,643
Pacific Islands Region				
Hawaii	3,138	5,551,380	1,604,706	85,641
Guam	392	629,672	168,623	11,199
American Samoa	99	21,335	3,598	536
Commonwealth of the Northern Mariana Islands	151	197,187	47,275	4,304
Region Total	3,780	6,399,574	1,824,202	101,680

2002 Economic Census

NAICS code: 72 (combined food and lodging industry category)

[1]The following coastal counties were excluded since information for these counties were withheld by the Census to avoid disclosing data for individual companies: Camden County, NC; Perquimans County, NC; Kenedy County, TX; Kleberg County, TX; Mathews County, VA; Surry County, VA; Aleutians East Borough, AK; Lake and Peninsula Borough, AK; Northwest Arctic Borough, AK; Wade Hampton Census Area, AK; and Kalawao County, HI.

APPENDIX N

DRAFT PEIS PUBLIC COMMENTS AND NMFS RESPONSES

UNIVERSITY OF HAWAI'I AT MĀNOA
Hawai'i Institute of Marine Biology

David Cottingham, Chief
Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
NOAA
1315 East-West Highway
Silver Spring, Maryland 20910

Dear Dr. Cottingham,

I am responding to the Draft Programmatic Environmental Impact Statement that I received for review on 19 March 2007 on the issuance of the "*Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation and Release*, and future biomonitoring and research activities". I think that the permit is a fine idea and I also believe that the research under that permit should be done correctly. I believe that the section under **APPENDIX H – General Descriptions of Research Methodologies Under the ESA/MMPA Permit** *requires* modification in its section **1.1.15 Auditory Brainstem Response/Auditory Evoked Potential.**

First of all, I believe that it is an error to not include the mysticete cetaceans in the research measuring hearing that can be measured using evoked potential procedures. There has been a previous Marine Mammal Permit issued to Dr. Sam Ridgway allowing Auditory Evoked Potentials to be measured on mysticete whales, and to exclude this sort of research now cuts off a very important and necessary source of information on this group of animals. There is no apparent justification for excluding this group of animals and they should be included in future efforts to measure the hearing of whales using auditory evoked potentials.

2. The first paragraph of 1.1.15 indicates that "sounds are presented through a jawphone attached to the lower jaw". That method of sound presentation is not the best method. While we are assured that bottlenosed dolphins hear well through their lower jaw, (Mohl et al 1999), many other species of odontocetes may not use this same pathway. One can be assured that sound is traveling through the best natural path, and that sound can be best measured in the free field, if it is presented in the water around the animal rather than through a jawphone. Sound presentation to all odontocetes in all Auditory Evoked Potential experiments for stranded animals should certainly not be limited to a "jawphone attached to the lower jaw". The lower jaw would also certainly not be the best place to present sounds to a mysticete.
3. The next sentence indicates that..."Recording, ground and reference suction cup electrodes are attached along the dorsal midline". That is also not necessary or required. Most animals held in water do not require a ground electrode. Only two electrodes are necessary. A suction cup electrode attached to the dorsal fin is certainly an excellent place to secure it with a suction cup. There is little myogenic electrical noise within the dorsal fin.
4. Many odontocetes that have been examined hear frequencies from 1 to 160 kHz. Some, like the harbour porpoise and the white beaked dolphin, hear as high as 180 kHz (Nachtigall et al, 2000). Some mysticetes, because of the frequency of their emitted signals, are thought to hear as low as 20 Hz. The written range of "Frequencies used for testing range from 5 to 120 kHz" written in section 1.1.15 severely, and unnecessarily, limits the hearing range tests of cetaceans.

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I believe that the Stranding Response Program should be permitting the testing of hearing of stranded cetaceans and other marine mammals by qualified and trained professionals. These tests both allow the measurement of new species and the diagnostic evaluation of the hearing of beached and stranded animals. This knowledge serves to benefit both the individual animals and their species. I do not believe that qualified scientists should be limited by the Auditory Evoked Potential guidelines currently presented in Section 1.1.15.

Sincerely,

Paul E. Nachtigall

References

Møhl, B., Au, W.W.L., Pawloski, J.L. and Nachtigall, P.E. (1999) Dolphin hearing: Relative sensitivity as a function of point of application of a contact sound source in the jaw and head region. *Journal of the Acoustical Society of America.* 105, 3421-3424

Nachtigall, P.E., Lemonds, D.W., and Roitblat, H. L. (2000) Psychoacoustic Studies of Whale and Dolphin Hearing. In: Au, W.W.L, Popper, A.N. and Fay R.J. (eds) Hearing By Whales, Springer-Verlag, New York pp. 330-364.

April 25, 2007

David Cottingham, Chief,
Marine Mammal and Sea Turtle Conservation Division, Office of Protected Resources,
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

RE: Environmental Impact Statement (EIS) on the Marine Mammal Health and Stranding Response Program (MMHSRP)

Dear Chief Cottingham,

I am strongly against the release of rehabilitated seals to the wild! I believe that the risks from virus' or diseases that released seals may have, and that may be transferred to the wild stocks, greatly outweighs the potential benefit, if any, of releasing a few individual animals.

Sincerely,

John Goodwin
Ice Seal Committee Member
Subsistence Hunter

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Native Village of Kotzebue
Kotzebue IRA

April 25, 2007

David Cottingham, Chief,
Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources, National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Knowledge of Language
Knowledge of Family Tree
Sharing
Humility
Respect for Others
Love for Children
Cooperation
Hard Work
Respect for Elders
Respect for Nature
Avoid Conflict
Family Roles
Humor
Spirituality
Domestic Skills
Hunter Success
Responsibility to Tribe

RE: Environmental Impact Statement (EIS) on the Marine Mammal Health and Stranding Response Program (MMHSRP)

Dear Chief Cottingham,

The Native Village of Kotzebue, a federally-recognized Tribe representing 3,000 persons living in northwest Alaska, would like to express serious concern on the specific issue of rehabilitation and release of pinnipeds into Alaska waters. The Inupiaq people continue to have strong cultural and utilitarian attachments to pinniped stocks in Alaska waters. The health of these stocks is of utmost importance and of late an increasing number of threats have come to the fore; climate change, persistent organic pollutants, large scale trawling operations, increased shipping, oil and gas exploration and development. In light of these, and other activities that currently pose risks to healthy populations of marine mammals, it would seem irresponsible to allow for the continuation of release of individual animals at the risk of entire populations. For coastal areas outside of Alaska, where the cultural context and the roles that marine mammals play in societal priorities and values may be able to accommodate the risks involved, such a policy may be tenable. However, even in those places, unless you are dealing with populations that are at low enough levels where the importance of each individual is magnified, the policy of release should also be called into question.

Specifically, for Alaska, we suggest that an alternative policy should be in place to recognize the different societal values at play and also the federal responsibility to Tribal peoples and their cultural prerogatives which are necessary to sustain their livelihoods. If the Office of Protected Resources wishes to continue the policy of releasing rehabilitated pinnipeds into Alaska waters we believe that they should have to justify their position in relation to the benefits accrued outweighing the risk potential. Considerations in such a cost benefit analysis should give significant weight to the trust responsibility the federal government has to indigenous peoples and their cultural economies and any policies the federal government may implement that endangers those economies.

We suggest creating a new alternative under the **Release of Rehabilitated Animals** section that would *prohibit release of rehabilitated pinnipeds into Alaska waters*.

Thank you for your consideration and we look forward to your response in the Final EIS.

Sincerely,

Linda Joule

Linda Joule
Executive Director

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April 26, 2007

David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
NMFS 1315 East-West Highway, Room 13635
Silver Spring, MD 20910-3226

Dear Mr. Cottingham,

This letter, submitted on behalf of the National Aquarium in Baltimore (NAIB), addresses proposed alternatives as outlined in the Programmatic Environmental Impact Statement (PEIS) on the Marine Mammal Health and Stranding Response Program (MMHSRP). The NAIB supports the decision of the National Marine Fisheries Service (NMFS) to standardize the MMHSRP through the issuance and implementation of the Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release guidelines. We believe that NMFS has not only a need, but also an obligation to develop and implement national standards for marine mammal stranding response, rehabilitation, release, and disentanglement activities. The MMHSRP provides a vital service by facilitating the response to stranded marine mammals, as well as the collection of samples and data essential for effective management and conservation of these species and their habitats.

Staff from the Marine Animal Rescue Program (MARP) of the National Aquarium in Baltimore had the privilege of attending the PEIS public hearing in Silver Spring, MD, on April 6, 2007, where the preferred alternatives were presented. Following are specific comments relating to each preferred alternative.

1. Stranding Agreements and Response Preferred Alternative (A4): *Under this alternative, NMFS would implement the final Stranding Agreement evaluation criteria. Stranding Agreements would be issued on a case-by-case basis to those entities meeting the criteria (including renewals and new applicants), utilizing the new template. New Stranding Agreements would include current and future stranding response activities.*

The NAIB supports the alternative for implementing a National Template for Marine Mammal Stranding Agreements. Our Marine Animal Rescue Program has always strived to maintain high standards and excellent written protocols, and we fully support measures that will further advance our own operations and Stranding Network goals. However, providing the scope and volume of information required in the General Evaluation Criteria for Stranding Agreement renewal will take many weeks of dedicated effort — a task that many organizations that rely on volunteer services, including ours, may

be unable to achieve in the foreseeable future. We urge NMFS to develop a simpler process, particularly for Stranding Agreement renewals. One possibility would be to reduce the written component and rely more on NMFS inspection teams to conduct onsite evaluations. It would be highly regrettable to implement a process so burdensome that it would impede the ability of network members in good standing to continue to participate in this important program.

2. Carcass Disposal Preferred Alternative (B3): *Under this alternative, NMFS would advocate the removal of chemically euthanized animal carcasses off-site for disposal by incineration, landfill, or other methods, such as composting. Animals that die naturally or are euthanized by other means may be disposed of by whatever means feasible and allowed.*

The NAIB understands the potential negative impacts that chemically-euthanized carcasses may have on the natural environment and other animals, and supports the alternative to transport these carcasses off-site for disposal when possible. The NAIB also understands that every situation involving chemically-euthanized carcasses is unique (site location, size of animal, proximity to other federally protected lands/species, etc.), and that relocation of these carcasses is not always feasible. Incidents involving large whales and mass strandings are particularly problematic: the volume of euthanized animals can be great and the costs of removal even greater. The costs related to carcass removal in such events should be shared by local landowners or local/state agencies. This would require advanced development of cost-sharing agreements with these parties, particularly in areas where strandings are common.

"Other methods" of disposal, as listed above, should be further defined and a list of specific, approved disposal methods should be listed in detail. There is the potential for individuals or facilities to loosely interpret "other methods" as a means of disposal; for example, "composting" could be interpreted as burial at the stranding site, which contradicts the intent of the recommendation. The NAIB also recognizes the need to identify alternative disposal methods for non-euthanized carcasses.

Guidelines are also needed for euthanasia, particularly of large whales. Research should be funded to identify or develop methods of euthanasia that are humane, efficient, and pose minimum risks to human safety and environmental health.

3. Rehabilitation Activities Preferred Alternative (C3): *Under this alternative, NMFS would continue the current rehabilitation activities of the stranding network, with the ability to designate new rehabilitation facilities and modify rehabilitation activities, if necessary. The final Rehabilitation Facility Standards would be implemented.*

The NAIB supports the Rehabilitation Facility Standards and agrees that guidelines for live animal response, rehabilitation, and release should be directed by NMFS with input from regional stranding coordinators and local Stranding Agreement holders.

Public display of animals in rehabilitation should be investigated and defined. The Marine Animal Rescue Program recognizes the value of public outreach on marine mammal health and stranding response. Our outreach efforts are more effective when the public can make a personal connection to an animal, especially one that strands due to a human-related injury (marine debris ingestion, boat strike injury, gunshot, etc.). We believe a middle ground can

be achieved, through technology and facility design, that will allow public viewing with no adverse effects on the animals. These opportunities increase public awareness and support for the stranding network and the MMHSRP.

Finally, financial assistance must be made available for rehabilitation facilities, and we strongly support the continuation of the John H. Prescott Marine Mammal Rescue Assistance Program. Priority funding should be awarded to organizations that seek to achieve or exceed minimum standards.

4. Release of Rehabilitated Animals Preferred Alternative (D3): *Under this alternative, NMFS would continue the current release activities of the stranding network, with the ability to modify release activities, when necessary. The final release criteria would be implemented.*

The NAIB supports the implementation of the Release Criteria. However, there are several topics that are not addressed in the current release guidelines. The criteria for immediate release, relocation and release, and post-rehabilitation release should be clarified, as each scenario requires a different type of health assessment. Also, post-release monitoring of animals should be encouraged or strongly recommended when appropriate, and funds to support these activities should be made available.

5. Disentanglement Activities Preferred Alternative (E3): *Under this alternative, NMFS would continue the current activities of the disentanglement network, with the ability to add new participants and modify disentanglement activities and technologies, when necessary. Current and future Stranding Agreements would continue to allow disentanglement of pinnipeds and small cetaceans. The new ESA/MMPA permit would be issued and would authorize the current and future disentanglement activities of ESA-listed species. The East Coast network would continue their current activities. Modifications would be made to the West Coast network to coordinate the structure and training with the East Coast network. The Disentanglement Guidelines and training prerequisites for network participants would be implemented nationwide.*

The NAIB supports the implementation of an effective and coordinated national disentanglement network. Good training is essential to improve human and animal safety. Stranding network participants should receive basic disentanglement training for response to local pinniped and small cetacean entanglements.

6. **Biomonitoring and Research Activities Preferred Alternative (F3):** *Under this alternative, NMFS Office of Protected Resources, Permits, Conservation and Education Division would issue the MMHSRP a new ESA/MMPA permit that would include the current and future biomonitoring and research activities.*

The NAIB supports the issuance of a new permit for current and new research projects. Stranded marine animals provide an excellent opportunity to monitor not only individual and species health, but ocean health in general.

In closing, we would like to thank the National Marine Fisheries Service for giving members of the stranding network and the public the opportunity to respond and comment on the preferred alternatives. We commend and applaud the efforts put forth by MMHSRP staff to draft the Programmatic Environmental Impact Statement and would like to thank you for the opportunity to participate in the EIS process. We have enjoyed being a member of the Northeast Region Stranding Network for nearly 16 years, and look forward to continuing our cooperative relationship with the network and NMFS.

Sincerely,

Brent R. Whitaker M.S., D.V.M.
Deputy Executive Director for Biological Programs
National Aquarium in Baltimore

Jennifer Dittmar
Stranding Coordinator
Marine Animal Rescue Program
National Aquarium in Baltimore

North Slope Borough

OFFICE OF THE MAYOR

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email: edward.itta@north-slope.org

Edward S. Itta, Mayor

April 26, 2007

David Cottingham
Chief
Marine Mammal & Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service, NOAA
1315 East-West Highway
Silver Spring, MD 20910

RE: Draft Programmatic Environmental Impact Statement for the Marine Mammal and Stranding Response Program

Dear Mr. Cottingham:

The North Slope Borough appreciates this opportunity to comment on the Draft Programmatic Environmental Impact Statement for the Marine Mammal and Stranding Response Program, specifically with respect to the sections pertaining to the release of rehabilitated animals. The borough's Department of Wildlife Management more detailed comments are provided in an attachment to this letter.

The North Slope Borough is in agreement with the Ice Seal Committee, the Alaska Nanuuq Commission and the Eskimo Walrus Commission in their opposition to activities that may be harmful to our residents or the subsistence wildlife on which we depend. The reintroduction of rehabilitated marine mammals into the waters surrounding the borough conveys risks to our subsistence species through the possible introduction of transmissible wildlife diseases. Additionally, our residents could potentially be at risk if these diseases were zoonotic.

We are highly dependent on our wildlife, both nutritionally and culturally. The positive effects of reintroducing one animal into our surrounding marine mammal populations are small to non-existent, while the risks are potentially very large.

04/30/2007 12:59PM

It is our desire that NOAA will address our concerns in its revised MMHSRP SEIS document. We would like NOAA to recognize these risks and make an exception to its reintroduction rule by prohibiting the reintroduction of rehabilitated marine mammals into subsistence populations of marine mammals.

Again, thank you for the opportunity to comment and we appreciate your consideration of our request. For further information, please feel free to contact our Department of Wildlife Department.

Sincerely,

Edward S. Itta

Edward S. Itta
Mayor

cc: Taqulik Hepa, Director NSB Department of Wildlife Management
Johnny Aiken, Director NSB Planning Department
Ice Seal Commission
Alaska Nanuuq Commission
Eskimo Walrus Commission

#5

NORTH SLOPE BOROUGH
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Taqulik R. Hepa, Director

April 27, 2007

David Cottingham
Chief
Marine Mammal & Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service, NOAA
1315 East-West Highway
Silver Spring, MD 20910

RE: Draft Programmatic Environmental Impact Statement for the Marine Mammal and Stranding Response Program

Dear Mr. Cottingham:

The North Slope Borough Department of Wildlife Management (NSB-DWM) wishes to comment on NOAA's Draft Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program, specifically with respect to the sections pertaining to the release of rehabilitated animals.

The North Slope Borough Department of Wildlife Management facilitates sustainable harvests and monitors populations of fish and wildlife species through research, leadership, and advocacy from local to international levels. We specifically focus on subsistence species, including marine and terrestrial mammals, birds and fish.

Subsistence species are critical to the residents of the NSB, both culturally and nutritionally. We do not feel that the full range of potential adverse effects related to release of rehabilitated animals into subsistence species populations has been adequately addressed in the EIS.

As noted in the EIS, there are potential adverse effects associated with the release of rehabilitated animals back into the wild. The specific danger noted is:

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"*Released animal could carry a zoonotic disease and infect wild population*" (ES-10).

This point needs to address subsistence concerns (as does the EIS in general). It also should be expanded to include both zoonotic and non-zoonotic diseases, as both could affect population status and the subsistence users that consume reintroduced subsistence species or animals that come in contact with them. This concern is specific to Alaska.

With respect to population effects: there are no known endangered pinniped populations along the coasts of the North Slope Borough. The situation is similar for small cetaceans. It is reasonable to say that the reintroduction of one or even several rehabilitated animals into this region is unlikely to have a positive effect on the population status of a given species. The point that we would like clarified in this document is that there are several potential *negative* effects that may occur.

Animals under rehabilitation are potentially exposed to pathogens (both common and novel) introduced into the facility by other sick animals from different geographic areas/species groups. Regardless of the amount of care taken to avoid this by the rehabilitation facility, the possibility exists. In addition, animals admitted to these facilities are generally ill and are subsequently subjected to the additional stress of capture, transport and captivity. These additional stressors are likely to be immunosuppressive and therefore make the animal more susceptible to pathogens that it has previously been exposed to or carries, as well as pathogens it is "naïve" to. Stress-induced, sub-clinical activation of pathogens may also occur. Latent pathogens may pose an important infectious disease risk to marine mammals involved in rehabilitation. The risk likely increases as the rehabilitation duration increases. Risks associated with most bacterial, fungal, viral, and parasitic pathogens can potentially be *reduced* by a suitable quarantine period before release and by appropriate medical care. However, latent viruses are unaffected by such actions. Immune stress resulting from captivity/transport/handling may allow increased reactivation of viruses and may increase the incidence and duration of viral shedding. Such a result may increase the concentration of viruses in the rehabilitation facility environment, increasing the odds of transmission.

Increased susceptibility to disease may have several consequences for the residents of the NSB. The subsistence culture is dependent upon these species for survival. Any pathogen that directly threatens or affects the population health of a given subsistence species, in turn, affects the subsistence user. Population decline leading to decreased hunting success may be the most direct effect. Diseased or undesirable subsistence hunted animals unfit for consumption are other potential outcomes. Additionally, the species affected may not be the one reintroduced into the environment. A rehabilitated animal exposed to a pathogen (i.e., a viral disease), latent or non-latent, may function normally or adequately enough to allow for release. This pathogen may not affect this species directly, but may be transmitted to and have devastating effects on other species that share habitat with this animal.

#6

Of utmost concern are the potential effects of the introduction of a zoonotic disease into populations of any subsistence species, directly or indirectly. The real or perceived infection of subsistence species with a disease transmissible to humans would be disastrous to the communities of the NSB. We have already dealt with this on a smaller scale with respect to avian influenza (AI): after the large amount of media attention given to AI last spring, many residents of the NSB were reluctant to hunt waterfowl, even though the highly pathogenic strain of the disease had not been found in Alaska. The consequences of a confirmed zoonotic disease in a marine mammal population are likely to be much more serious, from economic, cultural and nutritional perspectives.

The average income of NSB residents is $20,540 and 12 % of NSB residents live at a living standard below poverty level. The vast majority of residents depend upon subsistence resources for a large proportion of their food. This is of economic significance, as store-bought food alternatives are very expensive in the NSB. It is also important nutritionally, as the Inupiat diet has been subsistence-based for thousands of years and this is what this culture is adapted to consuming. It has been shown in several different studies that store-bought, Western foods are detrimental to the health of the Inupiat, therefore, any threat that renders subsistence foods undesirable to eat or less/un-available is a direct threat to this culture.

Thus, in keeping with resolutions passed by the Ice Seal Committee, Alaska Nanuuq Commission and the Eskimo Walrus Commission, we oppose the reintroduction of rehabilitated animals into waters that are habitat for subsistence species. We urge NOAA to add these subsistence concerns into this EIS and to recognize these risks by prohibiting the reintroduction of rehabilitated marine mammals into subsistence populations of marine mammals.

We thank you for this opportunity to comment on these issues that are so important to the residents of the North Slope Borough. We are happy to provide any additional clarification that may be needed.

Sincerely,

Taqulik Hepa

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Provincetown Center for Coastal Studies
30 years of discovery and commitment

David Cottingham, Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

April 30, 2007

Dear Mr. Cottingham:

Re: Draft Programmatic Environmental Impact Statement on the Marine Mammal Health and Stranding Program

The Provincetown Center for Coastal Studies (PCCS) supports all the preferred alternatives proposed for Marine Mammal Health and Stranding Response Program (MMHSRP) in the Draft Programmatic Environmental Impact Statement (DPEIS). The MMHSRP is a vital program that enhances conservation of marine mammals. We are encouraged by the steps taken toward consolidating and strengthening national standards and guidelines in these fields. PCCS would particularly like to express strong support of alternative E3 relating to disentanglement activities conducted under the MMHSRP and also offer comments specifically addressing aspects of the DPEIS related to disentanglement of large cetaceans which PCCS has considerable experience with over the past 23 years.

Evaluation of the need for disentanglement response alternative E3

In the 1994 reauthorization of the Marine Mammal Protection Act (MMPA) of 1972, Congress and the President charged the National Marine Fisheries Service with the task of reducing the serious injury and mortality of all marine mammals to "insignificant numbers approaching zero" by April 30, 2001. We are now almost six years beyond the Zero Mortality Rate Goal deadline of the MMPA and the large whale entanglement rate has shown no signs of abatement. Endangered whales continue to die in unsustainable numbers from entanglement in commercial fishing gear regulated by U.S. and Canadian law.

Most large whale entanglements are an unintended consequence of commercial fishing operations that are regulated by state and federal governments. Whales become entangled in every part of fixed fishing gear systems, such as is found in trap/pot fisheries and gillnets fisheries. Entanglements in both derelict and mobile gear are also reported. So while it is correct to call entanglements "incidental" it is incorrect to refer to them as

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"accidental." Entanglements will kill and injure large whales as long as we continue to fish with current techniques – it is no accident.

Entangled whales, even when they survive the initial risk of drowning, often succumb to complications from their injuries or to starvation over time. These whales may travel thousands of miles dragging gear with them and death can occur months or even years after becoming entangled. Emaciated whales sink quickly upon death. As a result, most large whale entanglement deaths go unreported and no reliable mortality statistics exist. The most credible estimates of large whale entanglement rates come from photographic analysis of the scars on whales that survive. Approximately 3 out of every 4 North Atlantic right whales and at least 1 out of every 2 humpback whales in the Gulf of Maine population bear scars from becoming entangled in fishing gear. At least 10% of both these populations will acquire new entanglement scars each year. Although the entanglement problem may be best documented along the Atlantic coast of North America, it is a world wide problem with numerous documented cases in U. S. Pacific waters of Hawaii, Alaska, and the continental states.

Under the auspices of the MMHSRP, the Provincetown Center for Coastal Studies coordinates the emergency responses conducted by the Atlantic Large Whale Disentanglement Network (Network) that benefit the welfare of individual whales in distress from entanglement and collects scientific information about the causes and effects of entanglement. For populations or species with extremely low numbers of individuals, such as the North Atlantic right whale, saving any females may help tip the balance toward survival rather than extinction. The Network disentangles ~72% of the entangled whales that well-trained and equipped disentanglement teams can actually get to on the water, giving those whales a better chance to heal, recover, and hopefully reproduce. Disentanglement activities conducted under the MMHSRP improve the scientific understanding of entanglement by providing opportunities to collect critical data from affected animals.

Despite any benefits for individuals, disentanglement efforts should not be regarded as a long term conservation strategy to save endangered whale populations. It is important to understand that disentanglement cannot reverse injuries whales sustain during entanglement. These injuries are "takes" under the MMPA and may have health and reproductive consequences for the whales. Furthermore, more than two decades of experience suggests that only a small fraction of whales that become entangled will be reported. This is because reports of entangled whales depend largely on seasonal research survey efforts and opportunistic sightings. Even when an entangled whale is seen and reported, it is sometimes impossible for disentanglement teams to respond because of the distance, weather, time of day, or other factors. The greatest benefits for whale populations will ultimately rely on applying information gathered during disentanglement activities to designing and implementing effective regulations that prevent entanglements.

Until adequate take reduction measures are in place to achieve the Zero Mortality Rate Goal of the MMPA, disentanglement activities will remain an essential

method to respond to animals in distress and to collect detailed documentation of all aspects of whale entanglements and the health of animals involved. Disentanglement activities will continue to be needed to document that any take reduction measures enacted are actually having the desired effect. Setting national standards and guidelines for disentangling large whales and for collecting quality data is a critical step in ensuring that disentanglements are carried out as safely as possible and the necessary data are consistently gathered.

In that regard alternative E3 is a step in the right direction. This alternative allows for adding new disentanglement responders, and could benefit human safety by setting national standards for training in proven techniques and encouraging development of new disentanglement techniques as needed. Better and more uniform training across the nation will help all responders understand the need and reasons for documenting entanglements. Furthermore, implementing a network structure for disentanglement activities in all U. S. waters similar to that now utilized in Atlantic waters off the East coast will help ensure operational efficiency, maximizing the benefits of these opportunistic events and making the best use of limited resources for response.

Specific Comments

We cannot emphasize enough that disentangling large whales is very dangerous. The fact that PCCS has not had an injury during 23 years of disentanglement activity is testimony to the development of safety protocols and extensive training of Network members. The definitions, responsibilities, and training criteria used by PCCS have been the foundation on which the Network protocols and safety record have been built. A copy of current definitions of key disentanglement roles and training levels used by PCCS is attached for consideration.

PCCS has some concerns about the "Draft NMFS criteria for disentanglement roles and training levels" contained in the Interim Policies and Best Practices for Marine Mammal Response, Rehabilitation and Release section at the end of Appendix C. We realize that setting and implementing national standards takes time and this draft is to be used as a set of "Interim Disentanglement Guidelines". We believe there is room for improvement in the criteria and training levels set forth in this document.

The definitions, responsibilities, and criteria should be realistic if they are to be realized. The definition of Primary Disentanglers states that they "must have the experience, training, support and proper equipment at the time of the event to conduct a full disentanglement with a high likelihood of success." The "likelihood of success" for any given disentanglement event depends on a combination of many variables, such as the nature of the entanglement, whale behavior, and weather conditions, that are beyond the control of a Primary Disentangler. The fact that "Primary Disentanglers must have the experience, training, support and proper equipment at the time of the event to conduct a full disentanglement" is sufficient. We recommend that the words "with a high likelihood of success" be deleted.

There is no substitute for the give and take interactions that live training opportunities provide. PCCS encourages that two certified national training centers, one on the Atlantic coast and one on the Pacific coast, be established to accomplish the goal of implementing the national standards and guidelines. Having clearly designated certified training centers will greatly facilitate implementation of standardized training so that the full benefits to human safety of Alternative E3 can be realized. Training would not occur exclusively at these training centers; rather those conducting disentanglement training would come from the certified training centers. This model has proven to be very effective on the Atlantic coast where PCCS has hosted trainees in an apprenticeship program and also sent staff to train Network members at various locations.

The training video referred to in Level 1 and 2 criteria was created by PCCS specifically for distribution to U. S. Coast Guard stations to present Level 1 information to Coast Guard personnel. While much of the information is still relevant and accurate, the video is somewhat dated. Viewing this video is not a substitute for on-water experience or training and should be deleted as an "or" criteria listed for Level 2 certification.

Definition of criteria for certification should be improved. Requiring completion of Level 1, Level 2, and Level 3 classroom or on-water training without some indication of the objectives of the training is vague. It should also be recognized that some people have extensive skills and experience that is applicable. We suggest the following objectives be incorporated to help clarify the criteria:

Level 1

- Level 1 classroom training covers definition of entanglement with examples, information on species usually involved, need for standby, documentation, overview of basic assessment and disentanglement objectives and techniques.

Level 2

- Documented whale experience or at-sea training, including species and individual ID, visual tracking (standing-by), disentanglement operation protocols, basic understanding of equipment (including telemetry), and disentanglement strategy.

Level 3

- Demonstrated understanding of Network protocols and authorizations.
- Demonstrated understanding of, and ability to use specialized tools including telemetry equipment.
- Demonstrated understanding of disentanglement strategies, planning, and techniques.

There are inconsistencies between the responsibilities and certification criteria for some of the Levels. For example, Level 2 personnel are tasked to "provide a thorough assessment of the nature of the entanglement and the species, condition and behavior of the whale", but specific knowledge of species ID and behavior is not required until Level 3 certification. The Level 2 criteria suggested above should help rectify this discrepancy. Level 3 personnel are critical to the success of Network response. In some areas they are the only Primary First Responders available. The stated objectives of training above will

help ensure that Level 3 personnel will be able to safely fulfill the responsibilities listed, especially disentanglement operations.

Level 3 responders may be authorized to disentangle whales under supervision. We suggest striking the words "a minor entanglement with potential to adversely affect" in the last bullet point under responsibilities for Level 3 responders. The bullet point would then read:

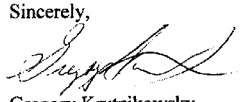
- May be asked (depending on experience) to disentangle any whale other than right whales under the supervision/authorization of Level 4 or 5 network members. Authorization and supervision may be given over the phone or radio depending on the circumstances and level of experience.

In our experience the severity and complexity of the entanglement does not correlate with the difficulty and dangers involved in disentanglement. A "minor entanglement with potential to adversely affect" a whale may be far more difficult and dangerous to disentangle, from a human safety aspect, than a severe entanglement deemed to be life-threatening to the whale. The suggested change will allow greater flexibility to take into account the specifics of the situation and personnel involved. PCCS has used the criteria "to prevent the imminent death of the whale or when it is determined that waiting for a Primary Disentanglement Team is unnecessary and/or tagging is a poor option" with Level 3 responders. We rely heavily on the assessment of the specific situation by the team on scene, take their experience into consideration and define the "circumstances" as being "relatively low risk to personnel with a high likelihood of success".

Finally, while listing the Primary First Responders (Level 3-5) in Appendix F is useful, listing Level 2 Network members may not be necessary. Level 2 is a large category and the associated responsibilities under the permit are far more limited. The list of active Level 2 Network members changes continually as new people are trained and trained people move, change jobs or move on to other endeavors. It also appears that the list of Level 2 personnel in Appendix F may be more complete for some regions than for others. Less than 5% of the Level 2 personnel in the NMFS Northeast and Southeast regions are listed. We can provide a more complete list if needed.

Thank you for the opportunity to comment on the DPEIS for the MMHSP. We believe that incorporating the recommendations made here will benefit operational efficiency, data quality, and human safety.

Sincerely,



Gregory Krutzikowsky
Director, Large Whale Disentanglement Program
Provincetown Center for Coastal Studies
5 Holway Ave.
Provincetown, MA 02657

DEFINITIONS OF KEY DISENTANGLEMENT ROLES AND TRAINING LEVELS

Provincetown Center for Coastal Studies

What follows is a set of definitions and guidelines for Network members that are applicable to the entire U.S. Atlantic Large Whale Disentanglement Network. Specific training curricula are not presented here.

Levels of Participation in the Disentanglement Network - Definitions

First Responder is a general term that is used to describe anyone in the Network with any level of training who may respond to an entanglement report under Network protocols and authorization. At a minimum a First Responder will voluntarily attempt to **standby** with an entangled whale and, depending on training, experience, authorization, and equipment available, may also **assess** and perhaps **tag** the whale. In certain cases individuals with higher Network responsibilities (Levels Three, Four, and Five) will serve as **Primary First Responders** in local areas. Primary First Responders are the principal local contacts for the Network. They typically organize efforts locally, have access to vessels and specialized equipment, and are on call full-time (may be seasonal). Primary First Responders may attempt disentanglements during first response only under certain conditions and authorization (described below).

Any **First Responder's** anticipated range of tasks is generally dependent upon Network classification. Member classifications are determined on an individual basis using a variety and combination of factors including, but not limited to:

- Preexisting experience and skills
- Training
- Opportunity and available resources
- Location
- Commitment and ability to respond as appropriate.

Primary Disentanglers are individuals who can perform all of the responsibilities of a first responder, but who also meet the criteria used by NMFS for selecting individuals who may undertake the very dangerous activity of disentangling (i.e. attaching to an entanglement, stopping, and cutting a whale free). Primary Disentanglers must have the experience, training, support and proper equipment to conduct a full disentanglement with a high likelihood of success. **Primary Disentanglers are those rated at Level Four and Five in the network.**

Authorization note
Only PCCS holds blanket standing authority to conduct disentanglement activities along the U.S. Atlantic coastline under federal authorization; no blanket authority is granted to individual Network members. Therefore all activities that may require federal authorization must be done under the supervision and permission of the Provincetown Center for Coastal Studies.

Personal risk
All responders are responsible for making their own judgment in regard to personal risk and must always work within their level of confidence regardless of its bearing on a mission's outcome.

Network Training and Response Levels

All training and authorization is limited to those with prerequisite professional marine experience - (i.e. fishermen, whale watchers, Marine Patrol Officers, marine scientists)

LEVEL 1

Responsibilities
Report, standby, assess (within experience)

- Rapidly alert Network with first-hand and/or second-hand knowledge of local entanglements
- If possible, initiate contact with vessel reporting an entanglement and the Coast Guard with offer to stand by entangled whale, as needed

Level 1 training criteria

- Preexisting skills and experience (this could come from professional fishing, field biology, marine law enforcement, whale watching, etc.)
- Completed Level 1 classroom training and provided contact information

LEVEL 2

Level 2 responsibilities

- All Level 1 responsibilities
- A higher expectation of commitment and participation
- Dedicated response for confirmation and stand-by, if requested
- Coordinate or assist the local management of first response (crowd control, contact info, etc.)
- Provide local knowledge, transportation, and assistance to Primary First Responders, as needed, on a voluntary basis
- On call, as available, to assist in planned disentanglement operations on telemetry tagged whales

Level 2 training requirements

- Level 1 qualification
- Documented whale experience or at-sea training, including species and individual ID, visual tracking (standing by), disentanglement operation protocols, basic understanding of equipment (including telemetry), and disentanglement strategy.

LEVEL 3

Level 3 responsibilities

- All Level 1 and Level 2 responsibilities
- Responsible for local readiness
- On call - must be reachable and prepared to respond if conditions allow
- Initiate and maintain preparedness with local fishing industry, Coast Guard, and other resources.
- Prepare local disentanglement preparedness plan (first response).
- Provide entanglement assessment, documentation, recommendations during first response
- Attach telemetry equipment to whale if needed and authorized
- Disentangle any whale, <u>except right whales</u>, under supervision (phone or radio) of PCCS and only to prevent the imminent death of the whale or when it is determined that waiting for a Primary Disentanglement Team is unnecessary and tagging is a poor option (low risk, high likelihood of success)

- Directly assist primary disentanglers aboard inflatable during disentanglement operations if requested

Level 3 requirements

- Level 2 qualification
- Demonstrated understanding of Network protocols and authorizations
- Demonstrated understanding of, and ability to use, specialized tools, including telemetry equipment
- Demonstrated understanding of disentanglement strategy, planning, and technique
- Direct experience in disentanglement under Network protocols (assisting, documenting, etc.)
- Rapid access to tools and vessels, as available
- Strategic location
- Willing and committed to providing full-time on-call service (coverage may be shared among other local Level 3 members)
- Determination of qualification by PCCS and NMFS based on, but not limited to, assessment of all of the above criteria
- Insurance required, preferably through member's organization

LEVEL 4

Level 4 responsibilities

- Report, stand by, assess, document, attach a telemetry buoy, consult on an action plan
- Direct on-site disentanglement operations of any whale, <u>except right whales</u>.
- Commitment to Consultation to include:
  - Immediate Consultation: when possible, use satellite/cell phones to bring in additional expert ideas/experience while on scene with an entangled whale
- On a case by case basis after consultation certain cuts on entangled right whales may be permitted at level 4 ***if the proposed action is first approved by a Level 5 member and NMFS authority (Rowles).***

Level 4 requirements
All Level 3 qualifications plus advanced experience and proven competence

- Determination of qualification by PCCS and NMFS based on assessment of, but not limited to, all of the above criteria
- Positive evaluation from NMFS using information provided by PCCS/Network Coordinators and documentation (e.g. video)

LEVEL 5

Targeted Individuals: Level 4 Responders

Level 5 responsibilities

- All Level 4 responsibilities in response to all species including North Atlantic right whales
- Commitment to Consultation to include:
  - Immediate Consultation: when possible, use satellite/cell phones to bring in additional expert ideas/experience while on scene with an entangled right whale
- Action Plan consultation participant for active entangled whale cases along with NMFS managers and other disentanglement, and whale experts.

Level 5 Requirements

- Extensive large whale disentanglement experience under Network strategies and protocols
- Extensive experience operating vessels around right whales
- Documented participation in a right whale disentanglement

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David Cottingham, Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

May 9, 2007

Re: Draft Programmatic Environmental Impact Statement on the Marine MammalHealth and Stranding Program

Dear Mr. Cottingham:

Many of our comments have come up in the process; however, we have several additional minor comments/ recommendations to submit.

First, under Appendix F, we see no need to list level 2 or lower level responders under the Marine Mammal Disentanglement Network table. While it is important to have a list of the different responders and their levels, for the sake of standardization (mirror the listing for the Northeast Region), only level 3 and higher should be listed in this particular table within Appendix F.

It has been noted by several people involved in the Marine Mammal Disentanglement Network that the level designation should be reversed to coincide with designations standard in the Incident Command System structure (lower numbers actually represent the higher risk, greater experience roles). This is a minor point that might help integrate disentanglement response with other agencies' ICS response efforts.

Also under Appendix F, we noticed that the following responders, along with their level designations, were missing from the Alaska Region:

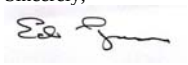
Steve Lewis, Tenekee Springs, AK – level 3 *
Chris Gabriele, Nat. Park Service, Glacier Bay National Park, Gustavus, AK – level 4 *
Pieter Folkens, Alaska Whale Foundation, Petersburg, AK – level 3 *
Sean Hanser, Alaska Whale Foundation, Petersburg, AK – level 3 *
Sara Graef, Alaska Whale Foundation, Petersburg, AK – level 3 *
Jan Straley, University of Alaska, Sitka, AK – level 4
Fred Sharp, Alaska Whale Foundation, Petersburg, AK – level 4
Dan Vos, Anchorage, AK - level 3

* Have been listed under other regions.

Within Appendix H, on page 6 (H-4) a description of the general disentanglement procedures for large whales should include at least the use of sea anchors and perhaps the drag of small boats, in addition to floats to slow, provide some control, and maintain at surface large whales during disentanglement efforts. This would better mirror what is written within the body of the DPEIS.

The DPEIS has strong ramifications regarding marine mammal response efforts of the MMHSRP, and we appreciate the opportunity to comment.

Sincerely,



Edward Lyman
Marine Mammal Response Manager
Hawaiian Islands Humpback Whale National Marine Sanctuary
726 S. Kihei Rd
Kihei, HI 96753

Cc: David Mattila, Research and Rescue Coordinator for HIHWNMS

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Mr. David Cottingham, Chief
Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Md. 20910

24 May 2007

Re: Draft Programmatic Environmental Impact Statement on the Marine Mammal Stranding and Health Response Program (MMSHRP)

Dear Mr. Cottingham, David

On behalf of the more than 9 million members and constituents of The Humane Society of the United States (The HSUS), I am writing to comment on the Draft Programmatic Environmental Impact Statement on the Marine Mammal Stranding and Health Response Program (the DEIS). We appreciate the National Marine Fisheries Service's (NMFS) effort to evaluate the impacts of response to strandings of marine mammals and evaluation of information that leads to a better understanding of their health and that of the environment in which they live. I am, not only a former member of a stranding network, but also an emeritus member of the Working Group on Marine Mammal Unusual Mortality Events (WGMMUME). I know first hand of the effort and expense involved in stranding response and health assessments and the critical nature of coordination and support from the NMFS.

The HSUS has no overarching concern with the sufficiency of the DEIS, and we find that it takes a much more thorough and appropriately systematic and in-depth look at the program than did another recent Draft Programmatic Environmental Impact Statement for Research on Steller sea lion and Northern fur seal research. These two DEIS's stand in stark contrast to one another. This DEIS provides a more appropriate specificity and acknowledgement of what is known and unknown, with a more appropriate evaluation of impacts. Further, this DEIS more appropriately provided a number of options for various aspects of the program (e.g., stranding agreements, carcass disposal, rehabilitation activities, etc) whereas the Steller sea lion DEIS did not allow for disparities in species status and greater need for conservatism in choice of alternatives for some species. The approach taken in the Stranding DEIS allows for different alternatives to address disparate aspects of the program. This is a helpful approach.

Promoting the protection of all animals
2100 L Street, NW, Washington, DC 20037 ▪ 202-452-1100 ▪ Fax: 202-778-6132 ▪ www.hsus.org

General Comments

The HSUS has a number of specific comments on chapters and appendices but we wish to raise some general concerns that are overarching across many sections before providing comments on particular chapters and appendices.

There is research proposed under this DEIS. We have noted previously in our comments on the Steller sea lion EIS, that the NMFS does not have an Institutional Animal Care and Use Committee (IACUC) for its own researchers. We also note that it is not a signatory/ subscriber to standards published under the Interagency Review Animal Committee (IRAC), although other government agencies are (e.g. Department of Interior). It is imperative that research undertaken or funded by the federal government adhere to standards of the Animal Welfare Act and that government agencies uphold the same standards required of other institutions engaged in research (i.e., IACUC oversight and adherence to IRAC principles). The DEIS should contain an explanation of whether and how the federal government is complying with these standards and if its research does not have this type of oversight and adherence to standards, why not.

We are gratified that the NMFS has taken the step of putting guidance into writing, but these are only guidelines, not regulations. It would seem important to consider providing regulations with additional minimal facility standards, personnel qualifications, staffing patterns and other aspects of facility-based rehabilitation to assure that animals are properly cared for and that the care is uniform nationally and not variable depending on where the animal has the misfortune to strand. Regulations also facilitate enforcement of standards of care.

We are concerned that the stranding response program should make every effort to facilitate beach release of newly stranded animals. While we understand the desire to, and need for the ability to, test animals on the beach; taking time to gather blood samples and do extensive monitoring should not detract from the mission of getting animals back into the water in the case of mass strandings of small cetaceans (e.g. dolphins, pilot whales). We have seen instances in which beach coordinators specifically instruct responders not to return small cetaceans to the water until all biological sampling that can be done is completed. This delay in returning them to the water may compromise the animal's condition. Releases in other countries (e.g., New Zealand) are usually accomplished expeditiously and they should be here as well, since most studies have indicated that mass stranded animals are generally healthy. It is not clear from the protocols described in the DEIS that this is the goal or priority. It should be.

Further, we believe that animals should not be taken into rehabilitation facilities if they are poor candidates for release. This has happened with some regularity with small cetaceans (i.e., neonates being taken in, animals missing or with necrotic body parts, seriously ill animals). It is also not clear that the protocol described in the DEIS and its appendices will prevent this current problem from occurring in the future.

The DEIS does not discuss in any detail what investigation should be undertaken determine whether human interaction has occurred nor how best to document it in dead animals. Increasingly take reduction teams mandated by the Marine Mammal Protection Act (MMPA) are relying on stranding data to provide evidence of interactions that may be occurring in times, areas or fisheries that are not monitored by observer coverage aboard fishing vessels. Further, the only evidence of large cetacean interactions with ships and commercial fishing gear comes from thorough necropsy. Some specificity might be provided with regard to standards for accurate determination and documentation of human interaction.

Finally, we are concerned with unfunded mandates. The NMFS must assure that it requests adequate funding to ensure that the standards of stranding response and rehabilitation are uniform and sufficient to the important task laid out in portions of the DEIS.

Chapter 3 The Affected Environment

Section 3.2.2.6 discusses impacts of the MMSHRP on marine mammals. Clearly, stranding response is intended to have a positive impact on marine mammals. There is a statement made on page 3-13 that "[o]f the live-stranded small cetaceans, few are taken into a rehabilitation facility and very few are released." The wording in this sentence should be clarified. It is not clear whether this sentence means to inform readers that, of the animals taken into rehabilitation facilities, very few are released; or whether it is stating that few are taken into rehabilitation facilities and, of the remainder who are not, "very few" stranded small cetaceans are released alive from the beach where they stranded. Each of these quite different interpretations has implications that should be addressed in different ways by NMFS.

If "very few" of those taken into facilities are released, then the NMFS program should address the reasons for this (e.g., are poor candidates being chosen, are facilities unable to cope with needs of wild caught animals, etc.) and remedy them. If it is the latter scenario (that very few are released from the beach and die or are euthanized if not taken into rehabilitation facilities) then we believe that this too should be addressed. If the low release rate is because most are single-stranded and likely ill animals, then this would make sense. If most strandings of small cetaceans are mass strandings, then it is not clear why "very few" are successfully returned to the ocean. Other countries (e.g., Australia and New Zealand) have had an historically good success rate of beach releases of mass stranded animals. The reason for this discrepancy in successful beach releases should require further investigation to improve the successful beach release rate for stranded animals in the U.S. One would hope that this is not simply due to a different philosophical approach to stranded animals (i.e., "an animal on the beach should be presumed unlikely to survive even if released from the beach in short order" versus "an animal on the beach should be presumed to survive if released expeditiously").

We would have appreciated a brief discussion of the likely reason for discrepancies in release of animals shown in charts depicting the fate of stranded pinnipeds and cetaceans shown in figures 3-2 and 3-3 of this chapter and in regional sections such as 3-4 and 3-5. There are virtually no releases of cetaceans shown. If this means that virtually all stranded animals are euthanized, we question this approach. If the "released" portion of each column only refers to animals taken into facilities for rehabilitation and subsequently released, this should be made clear. Similarly, if the "yellow" portion of the bar showing "alive" stranded animals includes animals that were returned to the water from the beach and thus not counted as "released," then it should be so noted, with percentages provided in a separate color to help readers better determine a success rate for stranded animals. As noted in our comments above, if the tiny rate of "released" animals is in fact an indication that live stranded cetaceans are almost always euthanized, then is not the case elsewhere in the world at least for mass stranded animals. A discussion of the reason behind this phenomenon would be helpful and the guidelines presented in the appendix might provide guidance for improving this rate.

Chapter 5

Page 2 discusses procedures and safeguards for use of euthanasia including referring to the AVMA guidance. However, determining whether or not an animal should be euthanized becomes and individual decision. This decision can be guided by a philosophical underpinning which the NMFS needs to provide. For example, NMFS should provide general guidance on situations or types of animals who are clearly not good candidates for release and should be considered for euthanasia and/or when animals might be released from the beach rather than euthanizing them. This sort of guidance has been lacking and has led to situations in which animals that were clearly poor candidates for release were taken into rehabilitation facilities, necessitating the expenditure of resources for their ultimately unsuccessful care or to find placement for non-releasable animals. Contrarily, if most mass stranded small cetaceans are euthanized, as appears to be the case in the previous chapter, then the NMFS should give guidance as to when to give animals the "benefit of the doubt" prior to considering euthanizing them. It would be helpful if NMFS provided guidelines to this end (e.g., in the draft appendices) or provided directed training to holders of letters of authorization.

Mitigation for tagging, described under this chapter's alternatives, as well as in the permit in Appendix G and H should include a stipulation that the tags being used should be the smallest and least intrusive available that has been proven effective to meet the purpose. Further, there should be a stipulation that if any death occurs during capture or tagging of animals, research should be halted pending review by experts as to the reason for the mortality and to recommend means of avoiding additional mortality.

Chapter 6 Cumulative Impacts

Section 6.1.1 and Table 6.1 discuss the possibility of amending regulations under the MMPA to allow public viewing of animals being rehabilitated. Although we understand

the utility of raising this possibility in the DEIS, we would strongly oppose such a measure if it is raised in the future, as it has been in the past. Because captive display is a lucrative industry, allowing animals to be viewed by the public for a fee simply encourages facilities to retain animals for the public to view even if an animal may be ready for release. Further, even if no fee is charged, it is difficult to completely isolate the public from animals. This exposes animals to noise, stress, habituation to excessive human presence and risk of disease transmission. Animals should only be viewed if seen from closed circuit TV. This also allows facilities to play tapes of previously rehabilitated animals when none are in residence.

Comments on Appendices

Appendix C. National Template for Best Policies and Practices

Again, we wish to emphasize our hope that this document will address in some manner that the goal of stranding response is to return animals to their natural habitat if at all possible. This should be done to the greatest extent possible from the stranding site (or nearby), but if taken into captivity, then as soon as possible after rehabilitation.

Page 13, Article IV, has a typo. It says under "B. 1. c" [acronym] shall tag any animals that are immediately release to their natural habitat using..." should say "released."

Article V. A. (page 16) states that "live stranded marine mammals" may be taken for "rehabilitation and release which specifically includes the following activities: 1. Transferring marine mammals to another NMFS approved rehabilitation facility with the [region] for a. release back to the wild, b. temporary placement in a scientific research facility holding [NMFS and APHIS permits], c. for permanent disposition at an authorized facility (i.e., holds and APHIS "exhibitors" license after consultation with NMFS." This language concerns us.

Transferring an animal for "permanent disposition at an authorized facility" does not meet the purpose of this paragraph, which was stated to relate to "rehabilitation and release." Permanent display is not release as we understand the concept of release (and the term is not defined in the glossary) which implies release back to the wild. We are also concerned that this language in a section on the appropriate disposition of stranded animals may encourage animals to be taken from the beach for display rather than releasing them to the wild, particularly if they are from a species that is novel or otherwise desirable to a captive display facility. Clause "c" should be omitted from the section dealing with "release" and the possibility of keeping stranded animals for permanent display should be considered elsewhere.

Page ES-1 says one of the categories is "conditionally non-releasable" (manatees only). The definition of this term does not occur until page 5-22. Nowhere is it explained why this term applies only to manatees. It appears unnecessary or else this category should

apply to other species as well. The discussion in section 5 simply states that it's applicable when the animal has a condition that would threaten the well-being of the animal or wild populations, but may change over time. Why is this term not used for cetaceans and/or pinnipeds? Why only manatees. The DEIS should explain the unique circumstances that require this extra category here and in section 5.

Page 2-2 and others have a discussion regarding determinations of suitability for release of animals in rehabilitation facilities. This page requests forwarding dissenting opinions of assessment team members for animals deemed "conditionally releasable." This does not address the concern about facilities taking into rehabilitation animals with a very poor prognosis for release. Although page ES-3 discusses what to do with non-releasable animals (i.e. euthanize or send to public display) there is no discussion of how to prevent this outcome by choosing animals that are good candidates for rehabilitation. As we noted above, the NMFS should provide clearer guidance.

Page 2-9 and following pages provide questions to guide the decision regarding suitability of animals for release. Similar questions should be provided elsewhere to guide a determination of the suitability of an animal for transfer from the beach to a rehabilitation facility (versus either euthanasia or beach release). This can prevent situations that have arisen in the past with animals who are marginal or poor candidates being taken into facilities for rehabilitation. Similarly section 3 provides very specific guidance for evaluating the releasability of animals. There should be similar specificity as to what makes an animal a good candidate for removal to a rehabilitation facility (particularly in the case of small cetaceans).

Page 5-2 defines "conditionally non-releasable as it applies to manatees. As we note above, there should be a discussion of why this category is unique to manatees and not appropriate for other species.

Appendix H. General Description of Research Methodologies

As we noted above in our comments on Chapter 5, conditions of the permit and mitigation measures should include a stipulation that tags should not be experimental in design, and should be of a design that is the smallest and least intrusive available that has been proven successful to achieve the purpose of the tagging. There should also be a stipulation that the death of any animal during capture and/or tagging should result in immediate halt to the activity pending review by experts and possible modification of procedures to prevent future mortality.

Section 2.1.3 states that use of auditory evoked potential (AEP) studies on mysticetes is not permitted at this time. But it also states that "if mysticete procedures are approved within the timeframe of the permit (five years), the MMHSRP would use these to conduct research. All protocols would be provided to NMFS PR1 for approval prior to any

research activity." The meaning of this is not entirely clear, but allowing the permit to be used to conduct auditory evoked potential studies on mysticetes should be considered a major amendment of the permit and require publication of the intent to amend the permit in the Federal Register with an opportunity for the public to comment on the methodology and magnitude of the research.

Section 2.1.4 states that the section on vaccination is not completed. The National Environmental Policy Act requires that reviewers be allowed to review and comment on all aspects prior to approval of any procedure.

Appendix I. Required Take Tables for the ESA/MMPA Permit Application

We do not see tables describing impacts of stranding response, other than the very general mention of Project 1, which we assume to be emergency stranding response. All impacts from all possible activities are lumped together. We would expect to see greater detail for stranding response that included, for example, estimates of the number of animals taken by intentional lethal take (i.e., euthanasia) and numbers of animals projected to be taken into/transferred to permanent captive display.

With regard to the tables for the NMFS permit, we note in the tables provided that 50 small cetaceans animals would be subject to study with a requested mortality of up to 3 animals per year. This is 6% mortality for cetaceans, which seems high based on capture and study-related mortality observed in studies by Mote Marine Lab in Sarasota. Further 100 pinnipeds would be taken with a requested mortality of 3. This represents a mortality rate much higher than the rates projected for mortality under the Steller sea lion EIS and in other permits for study of pinnipeds. These mortality rates should be explained. If they are accurate, then NMFS should reconsider the mortality rate allowed to other permit holders and/or question the accuracy of their reporting of mortality.

Conclusion

This DEIS is very thorough, though we would like to see it supplemented in the sections we have identified above. We wish to stress, as stated in our general comments at the beginning, that we believe additional regulations will be necessary to ensure parity in facility standards, personnel qualifications and treatment of animals. We also believe that the NMFS must adhere to the same standards for research as non-governmental entities such as having an IACUC in place. It should also join other government agencies in subscribing to IRAC principles. We also believe that the Stranding Response portion of the program should emphasize the imperative of returning mass stranded animals to the water expeditiously. Further, the NMFS should provide more specific guidance as to which animals make the best candidates for facility-based rehabilitation to prevent on-going problems of animals being taken in who are poor candidates for release (e.g. infant cetaceans, animals with severe damage or fulminating disease processes)

Thank you for the opportunity to comment of the Draft Programmatic Environmental Impact Statement for this very important NMFS program.

Sincerely,

Sharon B. Young
Marine Issues Field Director

STATE OF ALASKA

SARAH PALIN, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF WILDLIFE CONSERVATION

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May 25, 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Room 13635
Silver Spring, MD 20910

ATTN: MMHSRP PEIS

I appreciate the opportunity to comment on the Draft Programmatic Environmental Impact Statement (DPEIS) titled "Rehabilitation and Release of Marine Mammals" on behalf of the Alaska Department of Fish and Game (ADF&G).

The State of Alaska has the longest coastline of any state and is surrounded by four oceans that provide habitat for eight species of pinnipeds, 17 species of cetaceans, as well as sea otters and polar bears. Many of these species are important to coastal Alaska Natives for food, clothing, boat skins, and material for cultural and art objects. Although the State of Alaska has no formal responsibility for the harvest management of marine mammals it does have an obligation to the residents of Alaska to keep marine mammal populations and their ecosystems healthy.

The following are the ADF&G comments on the DPEIS addressing the activities of the Marine Mammal Health and Stranding Response Program (MMHSRP), which includes: the National Marine Mammal Stranding Network, the Marine Mammal Disentanglement Program, the Marine Mammal Unusual Mortality Event and Emergency Response Program, the Marine Mammal Biomonitoring and Research Program, the John H. Prescott Marine Mammal Rescue Assistance Grant Program, the National Marine Mammal Tissue and Serum Bank, and the MMHSRP Information Management Program. Our comments pertain specifically to the release of rehabilitated marine mammals.

As stated on page 4-17 of the DEIS (lines 7–11) "Any pathogen with a rehabilitation "hospital" setting has the potential to mutate or evolve into a novel organism (including those with drug resistant properties), creating a new (or drug resistant) disease which could then be introduced into the naïve wild population upon the release of an infected animal following rehabilitation, particularly if the animal is not thoroughly evaluated prior to release." Although the DEIS specifies (pg 4-23, lines 8–12) that release criteria would include a "medical assessment with a hands-on physical examination and a review of the animal's complete history, diagnostic test results, and medical and husbandry records," these precautions can only minimize the risk, not eliminate it. Testing is not possible for new diseases as tests are not developed until the disease is known. Many

tests used for marine mammals are developed for domestic animal use and the effectiveness for marine mammals is not known. False negatives from theses tests are common.

In considering the effects of the release of rehabilitated marine mammals on cultural resources (Section 4.4.4.3, pg 4-47) we believe you need to consider that the ability to obtain marine mammals for food, boat covers, rope, clothing, artwork, and cultural objects could be severely affected by the release of a rehabilitated marine mammal that carries an undetected disease or parasite that infects wild populations.

In considering socioeconomics (Section 4.6.4.3, pg 4-61) we believe you need to consider the cost to families in coastal Alaska if they cannot obtain food from the marine mammal resources and must purchase it in local stores. Food costs are extremely high in remote villages due to fuel costs for air transportation.

The benefit to releasing a small number of rehabilitated marine mammals into healthy Alaskan populations does not come close to outweighing the risk to Alaskans dependent on marine mammal resources. Due to the importance of marine mammals to residents of Alaska and the risk to the wild populations, we recommend that the release of any translocated marine mammal (i.e., one that has been transported and placed into captivity for any length of time) into marine waters adjacent to Alaska be prohibited. To the extent that marine mammals can be rehabilitated or assisted in situ and released, we have no objection.

Please contact Dr. Robert Small (907-465-6167), ADF&G's marine mammal program leader, if you require further clarification.

Sincerely,

Matt Robus
Director

cc: R. Small – ADF&G Division of Wildlife Conservation

Subject: WA McLellan comments on MMHSRP Draft
Date: Tue, 29 May 2007 16:26:27 -0400
From: "McLellan, William" <mclellanw@uncw.edu>
To: mmhsrpeis.comments@noaa.gov
CC: "McLellan, William" <mclellanw@uncw.edu>, "Pabst, D. Ann" <pabsta@uncw.edu>

29 May 2007

Dr David Cottingham

Chief, Marine Mammal and Sea Turtle Conservation Division

Attn: MMHSRP DPEIS

Office of Protected Resources

National Marine Fisheries Service

1315 East-West Highway

Silver Spring, MD 20910

Dear Dr. Cottingham.

Please find below a series of comments, or suggestions for the MMHSR document.

In general, I agree with all of the preferred options identified by NMFS in this document. I am sorry that I was not able to clean up these comments and form a more complete document, but even with the extension of deadline, time has a habit of disappearing. Should you require any clarification or additional comments, please do not hesitate to contact me.

Should the $4 million specific figure be dropped from the text. I wouldn't want it to look like that is the final figure and can never go up (or down).

3-20 Add striped dolphins to the list of mass strandings in the SER.

I question the comment on page 3-21 that right whales and humpback strandings occur during the winter "migratory period from Nov – Apr". To begin that period described is six months long and therefore describes

half of the year. Additionally, there is evidence from a number of aerial survey efforts off the mid-Atlantic and SE Atlantic Bight (reference documents as contract reports to the SER) of right whales and especially young humpbacks in the region from Sept to June. I would suggest some language like "southern component of their home range".

Why is there a specific section on "marine mammal population change" only for the Alaska region?

4-8 Direct cardiac injection of euthanasia solution on sedated animals has proven to be effective and relatively safe fro the responding team.

4-13 It is worth mentioning that euthanised animals generally concentrate fluids in the heart, brain and liver (?). These organs could be removed and dealt with separately while the remainder of the carcass was then safe to burry.

4-25 I would like to commend the statement regarding potential injury to entangled animals may be intentional by responders. I believe strongly that we need to be developing more invasive techniques for working with life threatening entanglements. A small injury to the animal, say a quick tissue cut, should not stop teams from going in and actually cutting heavily entangled animals. The faster gear can be cut loose, the better the potential outcome for the animal.

Sincerely

WAM

William McLellan

Biology and Marine Biology

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David Cottingham
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Silver Spring, MD 20910-3226

mmhsrpeis.comments@noaa.gov (MMHSRP EIS)

Re: Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program (MMHSRP).

29 May 2007

Dear Dr. Cottingham:

On behalf of the Whale and Dolphin Conservation Society- North America (WDCS-NA), I would like to offer the following comments regarding the Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program (MMHSRP).

WDCS appreciates the efforts by the NMFS to pursue, standardize and implement standards for the stranding response programs. We believe the stranding and disentanglement response programs are essential to the continued protection and conservation of marine mammals and recognize the need for standardized practices throughout these programs. We also believe there is a need, and there should be mandated requirement, for the continued collection and assessment of data and development of innovative, noninvasive response, rescue and research techniques.

Stranding Agreement and Response Alternatives

While WDCS supports the need for standardizing the program and issuing Stranding Agreements (SA) on a case-by-case basis, we believe that the Preferred Alternative (A4) must be stronger than is currently proposed.

The Preferred Alternative, as written, does not specify the need to respond to floating carcasses. As stated in our previous comments [submitted on February 28, 2006 regarding Docket No. [I.D. 120805B]) on the Notice of Intent to Prepare an EIS for the stranding program, the MMPA includes, in its definition of "stranded" as any marine mammal floating in waters under U.S. jurisdiction. Both humpback and right whales takes are known to exceed the designated Potential Biological Removal rate (PBR) for

Whale and Dolphin Conservation Society

these species yet floating carcasses of these species are not always retrieved for necropsy. Carcasses of other species of large whales are even less likely to be retrieved and necropsied resulting in limited information on the causes of death of these species.

We believe that NMFS must respond to reports of all floating large whales, regardless of whether external signs of human interaction are noted on the carcass, but having due regard to the operational conditions that may be limit or constrain such attempts. Vessel strikes are frequently determined by necropsy, and not by external signs of trauma and, according to Moore et al. 2004, post mortem examinations are necessary to ensure better understanding of mortalities that are due to human interaction. We believe that floating large whales should be retrieved and thoroughly necropsied with a draft necropsy report made available within 14 [working] days of when the carcass is examined.

Because there are areas where beaching a carcass for necropsy is difficult, we recommend NMFS funds the research, design and construction of a number of mobile necropsy stations or barges. These would be located along the length of the east coast, with sufficient funding available to allow for the stations or barges to be utilized thus ensuring these data are collected in all US waters and our knowledge increased.

Carcass Disposal Alternatives:

We support Alternative B3 recommending that chemically euthanized carcasses are transported offsite. While this Alternative alleviates many of the concerns of bioaccumulation resulting from scavengers preying on carcasses, we also believe that NMFS must support research into methods of euthanasia which are both humane and environmentally safe.

Rehabilitation Activities Alternatives:

We generally support Alternative C3 which would implement improved Rehabilitation Facility Standards, but we also strongly believe that the NMFS must be clear that the primary objective of the SA holder is to release or refloat an animal immediately from the stranding site and moving a stranded animal into a rehabilitation facility is a last resort.

We are concerned that animals may be taken into rehabilitation with the express intent of supplying a captive facility. Data presented by NMFS in this document appear to substantiate these concerns. For instance, section 3.2.2.6 states that "up to 50% of the rehabilitated seals and sea lions are released back into the environment" and "of the live-stranded small cetaceans, few are taken into a rehabilitation facility and very few are released". It is unclear as to what happens to the other 50% of pinnipeds that are not released- are they retained as captive animals, euthanized or die in rehab? Similarly, for cetaceans, it is unclear as to why "very few" are released. Figure 3-3, Cetacean Strandings Nationwide appears to demonstrate that there is a substantially higher number of cetaceans taken into rehab versus the number released. The document offers no

explanation for the discrepancy nor does it indicate what is the fate of those that are not released.

Furthermore, while we acknowledge that, as stated in 4.6.3.3, the cost to facilities resulting from upgrades necessary to meet new standards may be significant, we do not support the proposition that these additional funds can be raised by allowing these facilities to charge visitors to view animals in rehabilitation.

Disentanglement Alternatives

We fully support Alternative E3 which would require the West Coast Disentanglement Network to adhere to the training standards and techniques currently employed by the East Coast Network. This would include the on-going monitoring of animals through scar analyses.

We are concerned, however, that in section 4.2.5, NMFS indicates that "North Atlantic right whales would be greatly affected if disentanglement efforts ceased, as entanglements are known to be a significant source of mortality". While we support the disentanglement program, we do not support the notion that this is an appropriate solution for right whale entanglements. Disentanglement is, at best, a stop-gap measure and should not be viewed as responsible or appropriate mitigation when other risk mitigation measures have already been held up for a number of years.

Biomonitoring and Research Activities Alternatives

While the Preferred Alternative F3, appears the most appropriate, we believe that the number of take permits on wild populations should be minimized and suggest that NMFS establish a sampling archive bank for unused portions of tissue, fecal matter, exhalation, fluids, etc. obtained by stranding networks. Future permit requests requiring these types of samples should be required to utilize archived materials prior to authorization of additional takes from the wild.

We also believe that while all species should be checked for signs of human interaction, it is particularly critical that strategic and/or depleted stocks be thoroughly examined for signs of human interaction (a.g. necropsy rather than external examination only).

General Comments regarding the PEIS

In section 3.3.2.6, subsection, Northeast Region- Human Interaction, the PEIS notes ship strikes to right whales but not to other species. While the issue of ship strikes is a significant contributing factor to the potential demise of the critically endangered North Atlantic right whales, all large whale species are at risk.

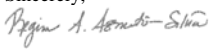
In the subsection, Northeast Region- Temporal Changes, it states that "ship strikes and entanglements are frequent in summer". While we do not dispute the accuracy of this statement, we do question why documented entanglements and ship strikes that occur outside of summer are not considered, and have been excluded. Documenting human interaction throughout the year is critical in determining whether seasonal exemptions, as proposed in management schemes, are sufficient or appropriate.

Conclusion

We appreciate efforts by NMFS to increase standards throughout the Marine Mammal Health and Stranding Response Program. While we largely support the Proposed Alternatives within the PEIS, we believe that the document does not sufficiently consider response to reported individual animals from strategic/depleted stocks. Additionally it must increase mandates for thorough examination of carcasses for human interaction.

We thank you for the opportunity to comment and for your time and consideration.

Sincerely,



Regina A. Asmutis-Silvia
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regina.asmutis-silvia@wdcs.org

Moore, MJ, AR Knowlton, SD Kraus, WA McLellan, and RK Bonde. 2004. Morphomentry, gross morphology and available histopathology in North Atlantic right whale (Eubalaena glacialis) mortalities (1970-2002). J. Cetacean Res. Manage. 6(3):199-214.

Subject: ATTN: MMHSRP PEIS
Date: Tue, 29 May 2007 15:25:43 -0400
From: "Shilling, Lauren" <LShilling@dnr.state.md.us>
To: mmhsrpeis.comments@noaa.gov

To whom it may concern:

The Maryland Department of Natural Resources (MD DNR) is authorized to respond to all dead stranded marine mammals under 109(h) of the Marine Mammal Protection Act. MD DNR's Marine Mammal and Sea Turtle Stranding Network have been responsible for stranding response efforts since 1990 and is located at the Cooperative Oxford Laboratory and will be hereinafter COL Network. The purpose of this letter is to comment upon the Draft Programmatic Environmental Impact Statement (DPEIS) on the activities of the Marine Mammal Health and Stranding Response Program.

After reviewing the proposed document, MD DNR has the following comments.

1. National Template, Article II, section c, part 4: While the participant organization is responsible for most costs incurred during a stranding event, this responsibility is unfair and impractical in the case of an Unusual Mortality Event. Sampling protocols are extensive during a UME and shipping costs to diagnostic labs can be an encumbrance to an organization. NMFS **must**, not may, support costs associated with UMEs, particularly supplies and shipping and diagnostic costs. A pot of money should be set aside to provide monetary support for UMEs around the country. It is unlikely that a Prescott grant could cover additional costs associated with a UME.
2. National Template, Article III, section B, part 1 a: If NMFS is going to implement the ICS structure in certain circumstances and expect the responding stranding organization to follow that structure, then NMFS needs to provide ICS training to all participants.
3. National Template,Article III, section B, part 2 a: The need for completed data such as Level A form is imperative, however, having a set schedule for when the data are due is a cause for concern. A set schedule suggests rigidity and does not allow for flexibility for organizations that have limited available personal or mitigating circumstances. It is a concern that organizations will be penalized if this inflexible schedule is not met.
4. Article III, section B, part 2 c: The ability to contact NMFS [Region] Regional Stranding Coordinator when there is a possible or confirmed human interactions, suspected unusual mortalities, extralimital or out of habitat situations, mass strandings, mass mortalities, large whale strandings, and any other involving endangered or threatened species of concern within 24 hours seems to be very time constraining. Many facilities within the region get several hundred stranded animals a year; it would be a huge additional time commitment to those facilities to report each of the scenarios listed above, particularly human interaction cases, within 24 hours. A larger time interval for this information should be taken into consideration as well as the importance of this information (does NMFS need to know about every human interaction case when that information will be submitted through the National Database via the Level A form?). This information will be entered in Level A data forms and other stranding/necropsy data sheets, so the need to also separately report this information seems to be double duty for the responder(s).
5. Article III, section B, part 2 d: To require additional information, expedited reports (written and or verbal) of Level B and C data such as analytical results and necropsy reports within 24 hours is also another time restrictive issue. It is not feasible to ask organizations to turn over completed reports and analytical data within 24 hours of the stranding(s). The need to have this information within 24 hours of a stranding is a concern especially for smaller organizations that have limited staff and resources or for organizations that are inclined to have several animals strand simultaneously including mass strandings. It often takes weeks, if not months, to get analytical results, therefore a 24 hour frame is impractical.
6. Article III, section B, part 3 a: The retention or transfer of any parts of marine mammals is filled out under the “Specimen Disposition” section on the Level A data sheet. It is redundant to also have to report this information to the NMFS Regional Stranding Coordinator within 30 days of the stranding(s)
7. Interim: Policies and Best Practices, section 3.1, part 2: Is NFMS going to provide required equipment lists that outline what they feel is necessary to collect Level A data? It is a concern that facilities may be penalized for not meeting the required equipment list. Throughout the NER facilities and organizations differ in size, number of staff and geographic area as well as in the quantity and variety of species of animals that strand. As a result the equipment needed to respond to strandings in one area may differ from another.

On behalf of MD DNR, thank you for the opportunity to comment on this document. If you have any questions or need clarification about any of the comments provided above, please contact Lauren Shilling at lshilling@dnr.state.md.us or Tricia Kimmel at tkimmel@dnr.state.md.us. We can also be reached at 410-226-5193.

Sincerely,

Lauren Shilling and Tricia Kimmel

Lauren N. Shilling

Marine Mammal and Sea Turtle Stranding Coordinator

Cooperative Oxford Lab

904 South Morris St.

Oxford, MD 21654

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P.O. Box 1329, Seward, AK 99664
Fax (907) 224-6360
Telephone 1-800-224-2525 OR (907) 224-6300

Alaska SeaLife Center

Fax

To: NMFS

Attn: MMHSRP PEIS **From:** Annie Madsen, Husbandry Assistant

Fax: 301-427-2584 **Phone:** 907.224.6358

Phone: **Pages:** 10

Re: EIS for MMHSRP Comments

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

• **Comments:**

Please contact Carrie Goertz at 907-224-6326 or Lee Kellar at 907-224-6364 if you have questions or require further information.

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windows to the sea

May 30, 2007

David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Mr. Cottingham,

Thank you very much for the opportunity to comment on the Environmental Impact Statement (EIS) on the Marine Mammal Health and Stranding Response Program (MMHSRP). Attached, please find a list of comments.

If you have questions regarding this document, please contact Carrie Goertz, Associate Veterinarian and Stranding Program Manager or myself at 907-224-6364.

Sincerely,

R. Lee Kellar
Husbandry Director

Attachment: 1

301 Railway Avenue • P.O. Box 1329 • Seward, Alaska 99664
Phone (907) 224-6300 • Fax (907) 224-6320
www.alaskasealife.org

#14

Environmental Impact Statement (EIS) on the Marine Mammal Health and Stranding Response Program (MMHSRP) Comments

National Template Comments:

Page 1

Having an stranding agreement number would make it easier to reference, or please specify how this agreement should be referenced.

Having an abbreviated (1 page) version to present when transporting animals would be helpful.

Page 5, Section B.

Additional bullet for NMFS responsibility to read: 9. Coordinate regional activities to ensure appropriate division of responsibilities based on geography as well as institutional responsibilities.

Page 5, Section C.

What should an organization do if financial constraints require limiting its efforts? Financial difficulties can come up quite suddenly and may not permit the requested notification time for changing the agreement.

Is an organization still allowed to request payment for reasonable recovery costs for samples transferred to authorized persons or labs?

Page 10, Section B., Number 2, Bullet (e.)

In regards to bullet point (e.), forms or instructions should be provided by the NMFS office.

Page 11, Section A., Number 1, Bullet (b.) & (c.)

In regards to bullet point (b.), it is recommended that AVID chips and satellite tags be added to this list.

In regards to bullet point (c.), there is a formatting problem within the paragraph.

Page 13, Section B., Number 1, Bullet (c.)

In regards to bullet point (c.), it is recommended that AVID chips and satellite tags be added to this list.

Page 16, Section A., Number 3

In regards to number 3, it is recommended that AVID chips and satellite tags be added to this list.

Page 18, Section B., Number 1, Bullet (f.)

In regards to bullet point (f.), we object to a blanket prohibition as public display is possible without impacting the rehabilitation of these animals. Language used in another document concerning distance viewing with no impact is preferred.

Page 18, Section B., Number 2, Bullet (a.)

In regards to bullet point (a.), professional Husbandry staff is in a better position to assess the behavioral readiness and should either also sign or coordinate with the release determination paperwork.

Evaluation Criteria Comments:

Word choice sometimes implies requirements for 'new' applicants only, but doesn't always specify. Please clarify differences between new and existing organizations throughout the document.

Page 2-1, Section 2.1, Number 2.

Organizations will need time to develop the documentation described in 2.1 2. It would be best if the agency would provide examples or templates to work off of. Alternatively, could the organizational summary used for Prescott Grant applications suffice? Perhaps the requirements for both this document and the organizational summary for Prescott grants application be unified.

Page 2-1, Section 2.1, Number 3., Bullet (a.) & (b.)

Bullet (a.) should read: Brief summary of the existing or proposed scope of the stranding program (e.g., all species of cetaceans, pinnipeds), and whether the request is for response to dead animals only, live and dead animals, and/or rehabilitation.

Bullet (b.) should read: Justification and description of the existing or proposed geographic area of coverage and why the area of response is appropriate for the organization (e.g., the amount of personnel/volunteers and resources available, relative to shoreline covered,

Page 2-2, Section 2.1, Number 5.

It would be helpful if NMFS could generate a complete list of items and the level of detail ("102 1" x 19G needles" or "a supply of various sized needles" or even just misc. sampling supplies) they are interested in. Otherwise, organizations may not cover what the agency is looking for. Again, an example or template would help.

Page 2-3, Section 2.1, Number 8. & 9.

In regards to number 8, resumes are also required under 2.1 4. b. Pick one place to cover this requirement.

In regards to number 9, this should apply to new Stranding Agreements only.

Page 2-3, Section 2.2

The first paragraph should read: NMFS will evaluate existing and prospective participants based on their demonstrated track record and their capabilities in the following areas as described in their request.

Page 3-1, Section 3.1, Number 1.

In regards to number 1, what is the difference between representative and responder?

Page 4-2, Section 4.2, Number 3.

The paragraph should read: The prospective Participant should demonstrate knowledge of national, state, and local laws relating to live animal response.

Page 5-1, Section 5.1, Number 1.,Bullet (a.), Sub-bullet (iii.)

The maximum holding capacity depends upon the species. For facilities that receive a number of different species and have flexible holding options, how would the agency determine max capacity? For example, a facility might have a pool that can hold several small animals (i.e. harbor seals) but only a couple large animals (i.e. Steller sea lions). Also, some organizations are limited more by staff and not space, how will NMFS take this into account?

Page 5-1, Section 5.1, Number 1.,Bullet (b.), Sub-bullet (ii.)

The sentence should read: Human health and safety throughout the rehabilitation facility.

Page 6-1, Section 6

What is the policy for when the agency is proposing a designee for an existing organization?

Standards for Rehabilitation Facilities Comments:

Page 2-1, Section 2.1, Paragraph 4

The last sentence reads: Pinnipeds with evidence of infectious disease must be quarantined (See Sections 2.4 Quarantine).

Does this mean that Pinnipeds with infectious diseases should be quarantines from other rehabilitating animals? How many isolation areas is expected?

Page 2-3, Section 2.1.2, 3rd Bullet Point

Sentence should read: The facility must have a plan to manage adult males.

Page 2-4, Section 2.1.5

Paragraph should read: Animals housed at rehabilitation facilities must be provided with shelter to provide refuge from extreme heat or cold. Pinnipeds held in rehabilitation facilities may not have normal activity levels and thin animals may be unable to thermoregulate properly. These animals may require shade structures to protect them from direct sunlight and extreme heat, or shelter to protect them from cold temperatures or inclement weather. Animals held in indoor facilities should be provided with appropriate light and dark photoperiods which mimic actual seasonal conditions. Except during the pre-release conditioning phase, ensure adequate refuge from extremes.

Page 2-5, Section 2.1.7, 4th Bullet Point

Is the structure referenced in the paragraph meant to be a separate building? Or can it be separate rooms/holding areas that prevent exchange of water and bodily fluids as well as prevent 'nose-to-nose' contact with other animals?

This requirement is stricter than the requirement listed on page 2-15.

Page 2-7, Section 2.1.10, 1st Bullet Point

Addition of the following sentence: Dependant pups are more labor intensive and require more staffing.

Page 2-10, Section 2.2.1, 2nd Bullet Point

Sentence should read: Drain water from pools as often as necessary to keep the pool water quality within acceptable limits.

Page 2-12, Section 2.3.2, 1st Bullet Point

Sentence reads: Measure water temperature, pH, salinity (if applicable), chemical additives (if applicable) daily in all pools.

Does this apply to open flow through systems with natural sea water?

Page 2-15, Section 2.4.1, 1st Bullet Point & 5th Bullet Point

In regards to the 1st bullet point, the use of dividers, tarps, or physical space is very different from the structurally separate facility referenced on page 2-5. The description listed here is much more reasonable.

In regards to the 5th bullet point, the sentence should read: Maintain equipment and tools strictly dedicated to the quarantine areas or thorough disinfection.

Page 2-21, Section 2.6.1, 3rd Bullet Point

In regards to the 3rd bullet point, it is excessive for a public display aquarium to have a nutritionist on staff.

Page 2-23, Section 2.7.1, 8th Bullet Point

Sentence reads: Have contingency plan for veterinary backup.

This should be the responsibility of the facility and not the veterinarian who may be a volunteer

Page 2-25, Section 2.7.2, 6th Bullet Point & Reports Bullets

It is not appropriate to assign human health plans to the veterinarian. A human health plan should be developed by the Human Resource personnel with the help of a human medical professional. This should be the responsibility of the facility, not the veterinarian.

The following reports should be the responsibility of the facility and not the veterinarian:

Health and Safety Plan reviews
Animal acquisitions and dispositions
NOAA Form 89864, OMB#0648-0178 (Level A data)
NOAA Form 89878, OMB#0648-0178 (Marine Mammal Rehabilitation Disposition Report)

Page 2-26, Section 2.8, 10th Bullet Point

Sentence reads: Serological assays may only go to labs that have validated tests approved by NMFS, especially for release decisions or determinations.

What does validation constitute? What labs are these? Will NMFS keep up with validations?

Page 2-30, Section 2.13

The verbiage in this paragraph differs from what is in the Stranding Agreement Template. This is a better version.

Standards for Release Comments:

NMFS & USFWS should take into account the recommendations of the stranding facility and the AZA Taxon Advisor or Studbook Keeper for the species before making a decision as to placement.

Page 2-9, Section 2.4, Number 1

When taking an animals history, does mouthing qualify as a bite or does the word bite pertain to an animal breaking the skin of a human?

Page 2-12, Section 2.4, Number 4, 5th Paragraph

The third sentence of this paragraph refers to microbial culture. Other than the obvious wounds, what would the 'routine' samples come from? Fecal? Nasal?

Page 2-13, Section 2.4, Number 5., Bullet (a.)

The paragraph should read:

Required Identification Prior to Release. Marine mammals must be marked prior to release for individual identification in the wild (see 50 CER Sec 216.27 (a)(5) for species under NMFS jurisdiction). Examples of pre-approved identification systems include flipper roto tags, flipper All-Flex tags, Flipper Temple tags, passive integrated transponder tags (PIT tags) radio tags, and freeze branding (Geraci and Loundsbury 2005). **(Satellite tags should be included in this list.)** Invasive procedures such as…should be done under the direct supervision of the attending veterinarian and will need prior approval from NMFS and FWS and may require a monitoring period following the procedure. Proper photo identification can also be considered part of this protocol. Standard indentification protocols exist for various groups of marine mammals that detail the methods and procedures for marking for future identification in the wild, and are included in the appropriate section for each taxonomic group. Contact the Agency stranding coordinator for more direction on tagging.

Page 2-14, Section 2.4, Number 5., Bullet (b.)

First preference is releasing the animal in the same general/geographical area where the animal was stranded. The second choice, especially if the animal was stranded outside of its normal range, is to release the animal closer to or within its normal range. This is implied later but should probably also be referenced here.

NOTE: Section 4.3 beginning on page 4-4 is formatted differently than 4.4, 4.5 and 4.6, using the number subsections that more or less correspond to the checklist. 4.5's Behavioral subsections are given paragraph numbers. Recommend you standardize the style.

The organization for section 4.3 should mesh with the checklist presented later in the document. Each point on the checklist should be described here and each point here should have a corresponding question on the checklist.

Page 4-5, Number 4.

The last sentence should read: Consultation with NMFS or FWS is thus required for pinnipeds that have a known history of exposure to terrestrial animals.

Note: You can never know for sure what happened before an animal was reported and brought in.

Page 4-5, Number 5.

In regards to the first sentence, you might want to more precisely define bite to specify breaking of skin. "Bites" may occur without a breach of protective gear. Also, when tubing an animal," bites" may occur without breach of protective gear.

In regards to rabies among pinnipeds, there is only one documented case.

Page 4-5, Number 6.

This sentence is confusing. Perhaps more detail can be added.

Page 4-5, Number 7.

We assume that just because an animal was at 2 places, does not mean it isn't releasable.

Page 4-9, Section 4.6, 2nd Paragraph

In the first sentence, list desired parameters. What does Chem-12 include? Also in the first sentence, delete blow hole as a sampling site for pinnipeds.

In the third sentence, 3ml of Serum is recommended but another document recommends **1ml** per draw. Please clarify.

Page 4-10, Section 4.7

Recommend structuring this checklist as a stand alone document for greater usability. Recommend keeping it < 2 pages and reduce font size as needed.

Page 4-11, Section 4.7

New Point, History: The environmental conditions are considered acceptable (e.g. prey available, no lingering contamination).

7. Please define "bite" somewhere.

17. Is this the release determination exam? Don't you have to submit release paperwork 2 weeks prior?

19. Is this the exam to be done within 72 hours of release? 17 and 19 seem to overlap.

22. Change visual to in vision.

25. 3ml total or each? Note, elsewhere this document mentions 1ml per blood draw and that only 2 blood draws are required.

New Point, Medical Clearance: The veterinarian has received and reviewed all records on this animal from other facilities that held this animal.

Appendix E

Explain how the agency will keep this list and testing requirements up to date so that facilities can easily stay informed.

Appendix G

Some formatting issues took place after Appendix G. Unclear of the titles of some pages.

Appendix H

This appendix could use an up front description/summary of how this information should be used in the stranding context (verses the research context).

At points this document seems to refer only to one taxon or species in many places without specifying which and then does not discuss the other taxa/species. Bottom-line, it is not always clear what species is being included and if all other species are excluded.

Appendix H, page H-1, Section 1.1.2 & 1.1.3

Sections 1.1.2 and 1.1.3 are not typical activities for a stranding organization.

Appendix H, page H-2, Section 1.1.4

The first sentence reads:

Capture of marine mammals may be necessary during research activities to collect specimens, perform an examination, or attach tags or scientific instruments.

This appendix should address stranding scenarios, not research, or there should be a pre-amble to discuss how it applies in stranding situations

Appendix H, page H-4, Section 1.1.4

Chemical restraint should require veterinary input.

Appendix H, page H-5, Section 1.1.5

Sedation of large pinnipeds should require veterinary input.

Appendix H, page H-7, Section 1.1.6

Instruments should be attached to the coat of an animal, not to the skin.

Appendix H, page H-8, Section 1.1.7

Restrictions concerning hot branding should be specifically addressed.

Appendix H, page H-10, Section 1.1.9

The second paragraph refers to dolphin biopsy sites. What about other cetaceans and pinnipeds?

Appendix H, page H-10, Section 1.1.10

Some folks prefer 19G or even 20G, some prefer butterflies to straight needles. A4cm needle is longer that needed for some sites/animals and maybe too short in some cases. Recommend this be changed to read 'of appropriate size.'

Appendix H, page H-11, Section 1.1.10

Again, I would leave the precise needle size up to the discretion of the veterinarian. The extradural vessel is not a sampling site in otariids. Otariids and some phocids can be sampled from flipper web veins.

Appendix H, page H-12, Section 1.1.13

The second paragraph refers to extracting the #15 tooth of the lower jaw. What species is this for? Pre-molars are extracted in pinnipeds.

Appendix H, page H-13, Section 1.1.13

Catheterization is also possible in pinnipeds.

The fourth paragraphs last sentence reads: The samples are sent to a diagnostic laboratory for culturing and species identification.

Does species refer to the parasite species? Prey analysis?

Appendix H, page H-14, Section 1.1.13

Please site the source of the thermal probes. There are other deep rectal probes available.

In the last paragraph of Section 1.1.13, change brevetoxin to any toxin.

Appendix H, page H-14, Section 1.1.14

Veterinarian involvement should be required.

MARINE MAMMAL COMMISSION
4340 EAST-WEST HWY., RM. 905
BETHESDA, MD 20814

Telephone: (301) 504-0087
Facsimile: (301) 504-0099

FACSIMILE TRANSMISSION

Date: 30 May 2007

Total pages including cover 7

To: David Cottingham

Facsimile Phone #: 301-427-2584

Telephone #: 301-713-2322

From: Jeannie Stevenson

Subject: MMHSRP DEIS

Comments: See MMC letter, attached. Second transmission - please ignore earlier version sent 17:44.

05/30/2007 6:47PM

MARINE MAMMAL COMMISSION
4340 EAST-WEST HIGHWAY, ROOM 905
BETHESDA, MD 20814-4447

30 May 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle
Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Dear Mr. ~~Cottingham~~ David:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Draft Programmatic Environmental Impact Statement (DPEIS) on the National Oceanic and Atmospheric Administration's Marine Mammal Health and Stranding Response Program (MMHSRP) with regard to the goals, policies, and requirements of the Marine Mammal Protection Act and the National Environmental Policy Act. We offer the following comments and recommendations.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service revise the DPEIS to—

- provide an update on the status of final reports of unusual mortality events, explore ways to promote completion and circulation of final reports more promptly, and identify actions that the Service can take to improve the synthesis and use of data from unusual mortality events;
- discuss the criteria that the Service intends to use in its review and approval or disapproval of recommended releases of marine mammals, and plans for such releases, by rehabilitation facilities;
- identify the types of information that would be included in protocols for monitoring released animals;
- specify actions that the Service plans to take to ensure that rehabilitation facilities are in compliance with the Interim Standards for Rehabilitation Facilities;
- elaborate on the Service's plans for developing draft guidelines to govern when public display of marine mammals undergoing rehabilitation will be authorized, including opportunities for the Commission, the affected facilities, and the public to review the draft guidelines before their adoption; and
- discuss alternatives for addressing overcrowding at rehabilitation facilities, issues associated with the placement of non-releasable marine mammals in public display facilities, and criteria for making on-site evaluations of the likelihood that a stranded marine mammal can be successfully rehabilitated and released.

#15

RATIONALE

The MMHSRP has been instrumental in coordinating responses to stranding events nationwide, providing care for stranded marine mammals, and examining carcasses and tissue samples to collect background information on the possible causes of morbidity and mortality. The Marine Mammal Commission commends the Service and stranding network participants for these efforts. The Commission also commends the Service for its efforts in developing the DPEIS, which we generally believe provides a thorough analysis of the relevant issues. There are, however, certain areas where we think that the discussion in the DPEIS needs to be expanded or clarified or where additional issues need to be considered. We offer the following comments and recommendations to assist the Service in improving the stranding response program and the DPEIS.

Collection and Synthesis of Data from Unusual Mortality Events

As indicated in the DPEIS, Title IV of the Marine Mammal Protection Act requires, among other things, that the MMHSRP "facilitate the collection and dissemination of reference data on the health of marine mammals and health trends of marine mammal populations in the wild" and "correlate the health of marine mammals and marine mammal populations, in the wild, with available data on physical, chemical, and biological environmental parameters." The National Template Marine Mammal Stranding Agreement (p. 4) states that one of the Service's responsibilities, pursuant to section 402 of the Marine Mammal Protection Act, is to "collect and update periodically and make available to stranding network participants and other qualified scientists, existing information on…strandings by region to monitor species, numbers, conditions, and causes of illness and death in stranded marine mammals." The Commission notes, however, that of the 26 unusual mortality events that were officially declared by the Working Group on Marine Mammal Unusual Mortality Events between 1991 and the end of 2005,[1] final reports have been completed for only six events. Draft reports have been prepared on three other unusual mortality events and papers have been published on seven additional events. This means that the circumstances and consequences of 10 events have not been reported. Such reports are of potential value to stranding network participants and to researchers who are responding to and seeking to understand such events. The Commission believes that it is important that these reports be completed in a timely fashion. The Marine Mammal Commission therefore recommends that the Service (1) provide an update on the status of final reports of unusual mortality events and (2) explore ways to complete and circulate final reports more promptly. In this regard, the Commission points to and endorses the recommendations made in Gulland (2006) (enclosed; see pages 23 and 24), which identified several actions that the Service could take to improve the utility of data collected during unusual mortality events.

Those recommended actions are consistent with the Service's mandate under Title IV and would enhance the Service's Marine Mammal Unusual Mortality Event Response Program. The

[1] See Gulland 2006. Dr. Gulland noted that there have been 29 unusual mortality events since 1992. We included only 26 in our discussion because the other events are currently ongoing or were closed only recently.

Marine Mammal Commission therefore recommends that the Service revise the DPEIS to discuss actions the Service has taken or plans to take to improve the synthesis and use of data collected during unusual mortality events.

Interim Standards for Release

The Interim Standards for Release appended to the DPEIS include several safeguards for ensuring that marine mammals are not released prematurely or in situations where they might pose a threat to wild populations. For example, the interim standards require that stranding network participants prepare "release determination recommendations" and release plans and to obtain the Service's concurrence prior to release. These requirements recognize that facilities may have incentives to promote inadvisable releases. The interim standards do not, however, recognize that, for some species, there may be a countervailing incentive to retain marine mammals for long-term maintenance in captivity and, perhaps, eventual placement at a public display facility. For such circumstances, protocols need to be established to ensure that the rehabilitation of animals and their preparation for eventual release to the wild are pursued diligently and with suitable agency oversight.

The Commission notes that incentives to retain stranded animals for long-term captive maintenance likely are greatest for species with commercial value, such as bottlenose dolphins, or for depleted species for which public display permits are not available. With only a few exceptions, these are species listed under the Endangered Species Act as threatened or endangered. Thus, this may be an issue best addressed in the context of the new MMPA/ESA permit being contemplated in the DPEIS.

Page 2-2 of the Interim Standards for Release states that "[t]he Regional Administrator (i.e., NMFS staff) will review the recommendation and release plan [submitted by a stranding facility] and provide a signed written notification to the Stranding Network participant indicating concurrence and authorization to release or direct an alternate disposition…." The DPEIS does not, but should, discuss the criteria that the Service will use to review and approve or disapprove the recommendations and plans. The Commission's concern is underscored by the Service's Southeast Regional Office's authorization in August 2003 of the release of five pilot whales, despite objections from experts in the fields of cetacean biology, behavior, and veterinary medicine and contrary to the Service's own release guidelines. The animals in question included a dependent calf and a juvenile animal exhibiting aberrant behavior, prompting the outside experts to conclude that release of these animals would be inhumane. Under the Service's own guidelines, the release of dependent calves and animals exhibiting aberrant behavior is precluded. Nine days after the animals' release, scientists tracking the whales observed sharks attacking the calf, and the fate of two other animals was unknown. In that case, the Service chose not to follow its draft release criteria and the advice of the majority of experts it consulted—with adverse consequences. The Marine Mammal Commission therefore recommends that the Service clarify the procedures and substantive criteria, other than those that facilities would need to consider under the Interim Standards for Release, that it will follow in reviewing and approving or disapproving a stranding network participant's recommendation and release plans.

The Interim Standards for Release (pages 3-12 and 4-14) note that "[p]ost-release monitoring provides essential information to develop and refine marine mammal rehabilitation and release practices." On page 2-14 it states that standardization of data collection protocols for monitoring released animals may be helpful in comparing individual cases, and that the Service "will provide the stranding network with the desired format for receipt of tracking data in reports." However, the Service does not elaborate on what that format might be. We concur that standardized data collection protocols would be useful, and the Marine Mammal Commission recommends that the DPEIS be revised to identify the types of information that would be included in protocols for monitoring released animals.

Interim Standards for Rehabilitation Facilities

The introduction to this section (page iv) notes that the Interim Standards for Rehabilitation Facilities establish minimum standards for the temporary care of animals undergoing rehabilitation and that it is the Service's intent to provide a reasonable process for facilities to be upgraded to meet or exceed those standards. However, there is no indication of what the Service intends to do to ensure that rehabilitation facilities are, in fact, meeting the minimum standards (e.g., whether inspections will be conducted, how often, and by whom). The Marine Mammal Commission recommends that this information be provided.

Pages 1-4 and 2-4 state that shade structures or shelters must be provided when local climatic conditions could otherwise compromise the health of the animal. This standard is subjective and allows for broad interpretation. The Service should better define the conditions under which shade must be provided to animals that are undergoing rehabilitation, recognizing that, if such animals are unable to thermoregulate or swim and dive normally, protection from the sun is essential.

Public Viewing of Marine Mammals Undergoing Rehabilitation

Page 6-3 of the DPEIS states that "[c]urrently, public viewing of animals in rehabilitation is not allowed under MMPA regulations…." The discussion goes on to indicate that the MMHSRP "would like to establish guidelines to allow public viewing that would protect the animals as well as the general public…."

Contrary to the statement in the DPEIS, the cited regulation (50 C.F.R. § 216.27(c)(5)) does not establish a complete prohibition on the public display of marine mammals undergoing rehabilitation. Rather, such displays are not allowed unless the Regional Director or the Director of the Office of Protected Resources has specifically authorized them and unless they are conducted in a manner consistent with the requirements applicable to public display. This being the case, regulatory changes are not needed.

The Commission concurs that establishing guidelines for when and under what conditions public display should be allowed is a good idea. However, the DPEIS does not sufficiently describe the types of guidelines being contemplated by the Service, except to note that those guidelines

would be designed to protect the animals and the general public, including animal and human health. It would be helpful if the final EIS expanded on the Service's plans for developing the guidelines and identified other factors that need to be considered before public display of animals in rehabilitation facilities is authorized. For example, public display should only be allowed in situations and in ways in which it would not interfere with the MMHSRP's goal of eventually returning rehabilitated marine mammals to the wild (e.g., precautions should be taken to ensure that viewing opportunities do not acclimate animals to the presence of humans). The Marine Mammal Commission therefore recommends that the DPEIS be revised to elaborate on the Service's plans for developing draft guidelines to govern when public display of marine mammals undergoing rehabilitation will be authorized, including opportunities for the Commission, the affected facilities, and the public to review the draft guidelines prior to their adoption.

A possible complicating issue is whether placing marine mammals undergoing rehabilitation on public display triggers Animal Welfare Act care and maintenance standards that might not otherwise be applicable. Compliance with these standards might place additional financial burdens on rehabilitation facilities and could deflect attention away from achieving the rehabilitation goals of the Marine Mammal Protection Act. The Marine Mammal Commission therefore urges the National Marine Fisheries Service to work closely with the Animal and Plant Health Inspection Service in developing the guidelines for public viewing to ensure that the requirements of the two statutes are met and that the potential for successful rehabilitation is not compromised.

Stranding Network Issues

Over the years, three separate stranding-related issues have generated ongoing concern: insufficient space at rehabilitation facilities, particularly in light of the potential for increased numbers of strandings in the future as a result of climate-related changes; difficulties associated with placing non-releasable marine mammals (particularly pinnipeds, neonates, and animals with chronic health problems [e.g., neurological problems and skin conditions]) in public display facilities; and criteria for determining when stranded marine mammals should be removed from the wild for treatment and rehabilitation (i.e., making on-scene evaluations of the likelihood of a stranded marine mammal being successfully rehabilitated and released). Clear and specific standards also are needed for determining when euthanasia of a stranded animal is appropriate. We understand that this and related issues are discussed in depth by Moore et al. (in press) and suggest that the Service contact the authors for a copy of that paper if it does not already have one. The Commission believes that an in-depth examination of these problems and of potential solutions is warranted. The Marine Mammal Commission recommends that the National Marine Fisheries Service revise the DPEIS to discuss these issues and possible strategies for addressing them.

Please contact me if you have any questions concerning the Commission's comments and recommendations.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

Enclosure

References:

Gulland, F. M. D. 2006. Review of the Marine Mammal Unusual Mortality Event Response Program of the National Marine Fisheries Service. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-OPR-35, 32 pp.

Moore, M., G. Early, K. Touhey, S. Barco, F. Gulland, and R. Wells. In press. Marine mammal rehabilitation and release in the United States, costs and benefits. Marine Mammal Science.

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Subject: comments
From: Charles Johnson <CJ.AKNanuuq@alaska.com>
Date: Wed, 30 May 2007 16:06:33 -0800
To: mmhsrpeis@noaa.gov

301 427 2584

David,

The Ice Seal Committee at its annual meeting of Oct, 06 passed a resolution against the reintroduction of rehab seal into the wild, feeling the potential risks of introduced pathogens far outweigh the benefits of a few reintroduced animals to populations that are healthy. Attached are the fminutes and the resolution. The Alaska Nanuuq Commission at its Dec, 05 annual meeting also passed a resolution against the reintroduction of rehab seals.

Charles Johnson, Executive Director
Alaska Nanuuq Commission

the emails keep coming back

Charles

See p 5 of [illegible]

May 1, 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle Division (F/PR2)
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Charles D.N. Brower
Chairman, Ice Seal Committee
PO Box 946
Nome, Alaska 99762

Subject: Rehabilitation and Release of Arctic Ice Seals

Dear Mr. Cottingham,

The Ice Seal Committee is opposed to the release of rehabilitated ice seals in the Arctic back to the wild due to the threat of spread of disease. Current regulations and policy require the release of marine mammals that are deemed healthy to return back to the wild. We wish to have this practice stopped for ice seals. We have passed resolution, as have the Eskimo Walrus Commission and the Alaska Nanuuq Commission to oppose the release practices for ice seals.

We are willing to work with the National Marine Fisheries Service and other partner organizations to find ways to address the laws, regulations, and policies regarding this issue. We hope to have and exemption for the release of Alaska Arctic ice seals that requires the release stipulations. We do not intend to affect other species within United States jurisdiction.

Sincerely,

Charles D.N. Brower
Chairman, Ice Seal Committee

Minutes of the

Ice Seal Committee

Alaska Nanuuq Commission

24-25 October 2006
Meeting
Captain Cook Hotel, Anchorage, Alaska

List of Participants:

Name	Organization	Contact
Members		
Charles D.N.	Brower North Slope Borough	CBrower@Ukpik.com
Molly Chythlook	Bristol Bay Native Assosication	mchythlook@bbna.com
Austin Ahmasuk	Kawerak Inc./Bering Straights	sub.rec@kawerak.org
Jennifer Hooper	Assoc. of Village Council Presidents	jhooper@avcp.org
John Goodwin	Maniilaq	JGoodwin@otz.net
Staff		
Rex Snyder	Alaska Nanuuq Commission	harpoon907@yahoo.com
Charles Johnson	Alaska Nanuuq Commission	cj.aknanuuq@alaska.com
Federal Agency		
Peter Boveng	National Marine Mammal Lab	peter.boveng@noaa.gov
Michael Cameron	National Marine Mammal Lab	Michael.comeron@noaa.gov
Barbara Mahoney	National Marine Fisheries Service	Barbara.mahoney@noaa.gov
Guest Presenters		
Brendan Kelly	University of Alaska Southeast	brendan.kelly@uas.alaska.edu
Lori Quakenbush	Alaska Department of Fish & Game	lori_quakenbush@fishgame.state.ak.us
Bob Small	Alaska Department of Fish & Game	bob_small@fishgame.state.ak.us
Paul Stang	Minerals Management Service	paul.stang@mms.gov
Lee Kellar	Alaska SeaLife Center	lee.kellar@alaskasealife.org
Carrie Goertz	Alaska SeaLife Center	
Monica Riedel	Indigenous Peoples' Council Marine Mamls	monicariedel@gci.net
Other Guests		
John Reynolds	Marine Mammal Commission	
Cheryl Rosa	North Slope Borough	
Tim Liebling	Alaska SeaLife Center	
Ann Hoover-Miller	Alaska SeaLife Center	
Pam Tuomi	Alaska SeaLife Center	
Mitch Simionoff	Alaska Native Harbor Seal Commission	
Vera Metcalf	Eskimo Walrus Commission	
Chris Perkins	Eskimo Walrus Commission	
Donna Willoya	Alaska Sea Otter and Sea Lion Commission	
Chandra Meek	University of Alaska Fairbanks, Student	

Call to Order: Chairman Charles Brower called the meeting of the Ice Seal Committee (ISC) to order at 8:43am.

Roll Call: Rex Snyder recognized present Charles Brower, Austin Ahmasuk, Jennifer Hooper, John Goodwin, and Molly Chythlook. Quorum Established.

Approval of Agenda: *Motion to approve agenda by Jennifer Hooper, 2nd Molly Chythlook, passed unanimously.*

Approval of Minutes: *Motion to approve January 2006 and February 06 Meetings minutes by Austin Ahmasuk, 2nd by John Goodwin, passed unanimously.*

Charlie Johnson suggested that in order for the ISC to be consistent with other commissions it should change its bylaws to be representatives from tribal entities not tribal governments.

John Goodwin mentioned that he does not work for Maniilaq but went to the board and asked them to appoint him because he was a seal hunter. He did not want to send an interior person to be on the ISC and they appointed him.

Charlie Brower suggested that an amendment to the bylaws be put forth at the next meeting and he would discuss the issue with Inupiat Community of the Arctic Slope.

Regional Reports:

North Slope: Charles Brower- good hunting in all villages this summer. Mr. Brower personally had an excellent harvest. Lost much dried seal meat from seagulls. Some seals unhealthy and unedible but not a bad season.

Maniilaq: John Goodwin- a good harvest season. Stated that his region is losing old hunters. Subsistence Coordinator for Maniilaq region connects families in need with hunters. A warm fall season. While out tagging ugruchaq noticed more ringed seals this year. The ringed seals were fatter and healthier looking too. Harvested ugruk were not as fat this year. Usually it is the bigger ugruks with rusty faces but some of the young ones had it too. John wants to know more about the red faces and what causes it.

Kawerak Inc./Bering Straits: Austin Ahmasuk reported on comprehensive survey that included questions on seal harvest. Survey is in cooperation with ADFG and North Pacific Research Board funding and is 80% complete. Official report should be available soon. Ice conditions were very good – though trend in weather has been generally warm. Have not heard much in terms of diseases or unhealthy seals. Salmon on increase with record runs – will help spotted seals mostly. A 2002 survey will compliment the 2005 survey. Harvest seems normal from informal discussions. This fall is warm and seems a bit behind in freeze-up; a little late.

Association of Village Council Presidents: Jennifer Hooper reported on not hearing any village concerns. Late Spring break-up with grey summer and fall. Freeze-up is late. AVCP-IUM submitted a joint request for funding with other Indigenous Peoples' Council on Marine Mammals

for line item funding. Jennifer was approached by a museum wanting an ugruk specimen for display. She was uneasy about asking a hunter to catch food to send out and fill with plastic for display. However, request was retracted due to expense of such a display.

Bristol Bay Native Association: Molly Chythlook has replaced Ralph Andersen as the ISC representative. Molly Chythlook described her affiliation with harbor seal surveys with Alaska Native Harbor Seal Commisison and ADFG in 13 communities. Numbers of sea lions harvested declined as numbers of animals declined. Bearded seals are less numerous and timid. Mukluk seal's oil is yellow and must not get warm because it spoils easily. Togiak and Twin Hills reported skinny seals. Lot of sea ice this year making open water skiff use difficult. Ice departed in time for normal herring harvest date. Raining and unpredictable summer weather made hunting difficult such as Round Island walrus hunt. February – April is the peak seal harvest and the harvest stops after the salmon come in because the seals taste too fishy then. Hunting starts again in October. Conditions of skins seems to be degrading – cutting through skin easier when flensing blubber.

Austin Ahmasuk said he has heard of thinner skins too. As a trapper he knows it could be a difference in the timing of the harvest because skins are thinner at certain times of year. Skins may be thinner when seals are molting too.

Indigenous Peoples' Council on Marine Mammals
Monica Riedel gave an update and provided a handout titled "Alaska Native Co-Management and Consolidation of IPCoMM" dated 18 October 2006. She said that the document was the result of meetings and discussion and was initiated by IPCoMM members. She urged support from the Marine Mammal Commission and acknowledged support from others. She asked for a resolution of support and letters to Senators and the President. John Reynolds from the Marine Mammal Commission said that she should discuss her request with Tim Ragen, the new Executive Director, but that the MMC planned a fall 2007 Co-management workshop, which may help.

Monica said that IPCoMM's message has already been delivered to Congress but no commitments have been received. They are still optimistic because the 07 spending bill has not been signed. She gave a copy of IPCoMM's agenda for next meeting to Rex.

Staff Reports

Rex Snyder gave an update on activities, funding requests, and ice seal sampling efforts in North Slope villages. Rex Snyder handed out a copy of an Arctic Sounder Article about seal hunting and emphasized the use of Alaska newspapers to get information out to communities. He also passed out an organizational chart for the ISC. Rex also made a plea for a better process for getting money from NMFS for ISC operations. He has been turning in receipts for reimbursement but often he has no money to work with. NMFS responded that they could assist with that.

Charles Johnson, Executive Director of the Alaska Nanuuq Commission (ANC) presented a report on activities of ANC. The primary focus has been the treaty with Russia and the Administrations hesitation to support congressional enactment due to language mandating the assignment of joint commission members as "Alaska Native"; that the President may assign anyone he or she pleases. Highlighted other projects ANC is involved with: Chukotka Traditional Knowledge Study, Annotated Bibliography of Russian research, Treaty enactment, FWS research on population and polar bear village patrols.

BREAK

Unfinished Business:

National Marine Mammal Lab (NMML)- Peter Boveng and Mike Cameron with Polar Ecosystems reported on seal capture and satellite tracking project from the *Thomas Thompson* research cruise vessel at the leading edge of pack- ice in the Bering Sea during April. John Goodwin and Charles Saccheus also participated and felt that having Alaska Natives as research team members was vital and made for a very successful and advantageous for the program. NMML also gave an update on the Kotzebue satellite tagging project.

LUNCH

Unfinished Business Continued:

Austin Ahmasuk gave a presentation on draft results from a Kawerak Inc. ballistics project on the effectiveness of .17 cal. and .22 cal. for seal hunting. Project provides information for hunters and could be transformed into a handbook or other useful tool.

Dr. Kelly gave an update on ringed seal population movements and genetics that are useful for understanding population structure. Warm weather is affecting seal habitat with reduced ice and snow cover as well as limited denning seasons for pups. So far 338 ringed seal DNA samples are being analyzed so far from known breeding sites.

Lori Quakenbush gave and update on ice seal biomonitoring in villages – working with hunters and users to get full suite of tissue samples and information. Program has sampled 1,102 seals. Alaska ice seal contaminant loads appear nearly 10 times lower than the average of three sites in Canada. She also introduced Mark Nelson, ADFG, and a newly funded effort to collect ice seal harvest information. The funding includes money for workshops and meetings to determine the best way to collect the information. The harvest calendars will also be a focus.

Paul Stang with the Minerals Management Service provided information on Outer Continental Shelf oil and gas lease programs. Mr. Stang informed Committee on MMS's Five Year Lease Program for Beaufort and Chukchi sea lease sales. Chairman Brower suggested more wildlife monitors on board seismic vessels.

New Business:

Alaska SeaLife Center (ASLC), National Marine Fisheries, and Ice Seal Committee discussed strengths and weaknesses of rehabilitation and release of arctic seals. Charlie Brower referred to the Resolutions passed by several ANOs, including ISC, but releases are still continuing. ISC members reiterated concerns about introduction of parasites and diseases to the wild population and that the benefit of release of a few seals does not out weigh the huge potential risk.

Lee Keller of the ASLC explained that their stranding agreement with NMFS requires the ASLC to release rehabilitated seals meeting the release criteria. The current stranding agreement and policies between NMFS and ASLC require release of seals that meet requirements. ASLC gave a review of their rehabilitation program and what types of things they can learn from live but sick animals. ASLC doesn't know how to honor the stranding agreement with NMFS and ISC resolutions. The short-term solution appears to be for ISC to continue to promote local actions as laid out by the posters and pursue a long-term solution such as an exemption in the MMPA for release of ice seals in Alaska.

Motion by Austin Ahmasuk to make exemption for Alaska under the MMPA to the release requirements of stranded and rehabilitated ice seals, 2nd by Molly Chythlook. Discussion: wording must be clear and strong for exemption. Passed unanimously.

October 25, 9:10am

Co-management Agreement discussion on any additions or missing elements. Rex Snyder recommended the agreement address some enforcement issues, especially the concerns with border crossings wearing traditional marine mammal clothing. Barbara Mahoney suggested the ISC approach the Custom Agents for their next meeting. NOAA Enforcement would also be able to attend the next ISC meeting to answer questions on ice seal enforcement issues. No changes to Agreement.

Motion by Austin Ahmasuk to sign Agreement, 2nd by Jennifer Hooper. passed unanimously. Signed by Charles Brower and Barbara Mahoney. Members of Co-management Committee appointed are: All 5 members of Ice Seal Committee and Peter Boveng, Barbara Mahoney, and Kaja Brix.

Back to Unfinished Business:

Technical Committee: Peter Boveng took lead on discussion to review and update Ice Seal Research Plan as a guide and tool for fiscal proposals to Congress and reviewing ice seal work. Discussion on introduction to reflect emphasis on promoting needs for funding – with a clearer voice for broad audience. Charles Johnson will be in D.C. in mid November and would like updated introduction of the research plan for his trip.

Motion by Austin Ahmasuk to table elections for next meeting, 2nd by John Goodwin, passed unanimously.

Adjournment: Next meeting at the call of the Chair. *Motion to adjourn by Austin Ahmasuk, 2nd by John Goodwin, passed unanimously.*

Resolution Against the Release of Rehabilitated Seals to the Wild

Ice Seal Committee Resolution # 01-2006

WHEREAS	a stated purpose of the Ice Seal Committee is to preserve and enhance the marine resources of ice seals (ringed, bearded, spotted, and ribbon), and
WHEREAS	healthy ice seal populations are important for the subsistence of coastal Alaska Native people of the Bering, Chukchi, and Beaufort Seas, and
WHEREAS	the practice of transporting a sick ice seal from its Arctic environment (Bering, Chukchi, or Beaufort Sea), nursing it back to health in waters from the Gulf of Alaska, and releasing it back into the Arctic creates great potential risk of introducing diseases and/or parasites into the wild ice seal populations, and
WHEREAS	there is no population crisis for any of the ice seal species that would justify the potential risk of releasing a few individuals back to the wild, then
BE IT RESOLVED	that the Ice Seal Committee is opposed to this practice and will act locally to prevent sick ice seals from being transported for the purposes of rehabilitation and release.

31 January 2006
Date

_____
Charles D. N. Brower

Sarasota Dolphin Research Program
A Collaborative Effort of the
Chicago Zoological Society and Mote Marine Laboratory
c/o Mote Marine Laboratory
1600 Ken Thompson Parkway Phone: (941) 388-2705
Sarasota, Florida 34236 USA Fax: (941) 388-4223
www.sarasotadolphin.org

30 May 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division,
Office of Protected Resources,
National Marine Fisheries Service,
1315 East-West Highway, Room 13635,
Silver Spring, MD 20910 mmhsrpeis.comments@noaa.gov

Re: MMHSRP PEIS

Dear David,

Thank you for the opportunity to comment on the MMHSRP PEIS. My familiarity with the issues addressed in this document come from many years of experience as a member and now chair of the Working Group on Marine Mammal Unusual Mortality Events, a long-time participant in stranding response and cetacean rehabilitation along the Florida and central California coasts, a principal investigator for long-term bottlenose dolphin health assessment research, a researcher responsible for follow-up monitoring of released rehabilitated cetaceans, and a member and past-chair of the Atlantic Scientific Review Group. The views expressed in the following comments are strictly my own, however, and do not necessarily reflect those of any organization or group with which I work.

The activities of the Marine Mammal Health and Stranding Response Program should be considered essential to responsible management of marine mammals in the United States. I am continually impressed by the dedication and productivity of the members of this small team of experts, and by the vision of their leader, Dr. Teri Rowles. In spite of: 1) the small size of the program in terms of staffing, 2) ongoing resource limitations, and 3) expectations that they "fight fires" as they occur unexpectedly, program staff members have been able to accomplish a great deal. If the "preferred alternatives" identified in the PEIS (and listed below) are realized, then the program should be able to operate even more effectively and efficiently. I support the implementation of the preferred alternatives.

Stranding Agreements and Response
Alternative A4 (Preferred) Final SA criteria would be implemented, new SA template would be utilized, current and future activities included.

The national stranding network is far too valuable a resource to allow to disintegrate or to not be coordinated in such a fashion as to optimize its information potential. There needs to be greater consistency across regions in terms of how stranding network participation is managed, and the

expectations for participant involvement. Many stranding-related issues cross regional boundaries (e.g., Unusual Mortality Events), and lack of consistency in terms of stranding response, data collection, and data access detracts from our ability to understand the causes of strandings, and potentially the expeditious detection of UMEs. More centralized oversight and management of national stranding response, through Headquarters, would be beneficial.

Carcass Disposal
Alternative B3 (Preferred) Recommendation to transport chemically euthanized animal carcasses off-site.

Carcass disposal has been an ongoing issue with stranding response, especially with large whales and with Unusual Mortality Events. It is important that chemically-euthanized animals not remain in areas where the chemicals can be released to the marine environment as the animals decompose.

Rehabilitation Activities
Alternative C3 (Preferred) New SAs would be issued, rehabilitation activities continue. Final Rehabilitation Facility Standards would be implemented.

While there is increasing recognition that many stranded animals may not be appropriate candidates for rehabilitation (Moore *et al*., in press), there currently is public pressure for rehabilitation of at least some stranded marine mammals. In addition, rehabilitation of endangered species has the potential to provide conservation benefits that are more difficult to identify with non-endangered species. Currently, rehabilitation efforts are performed by facilities with very diverse physical capabilities and husbandry programs. Implementing a minimum set of standards would help to improve care for the animals, and would improve the knowledge base for treatments.

Release of Rehabilitated Animals
Alternative D3 (Preferred) New SAs would be issued, release activities continue. Final Release criteria would be implemented.

Recognizing the risks posed to wild populations by the release of marine mammals from rehabilitation facilities, stringent criteria are needed for deciding which animals are appropriate release candidates. Obligatory follow-up monitoring, with timely dissemination of results, is needed to learn which rehab efforts are useful, and to explore the impacts of released animals on wild populations (e.g., Wells *et al*. 1999; in review a, in review b). Sample sizes from releases to date are generally too small to be conclusive.

Disentanglement Activities
Alternative E3 (Preferred) Disentanglement network would continue current activities on East Coast with modifications to West Coast network. The Disentanglement Guidelines and training prerequisites would be implemented.

The Disentanglement Network has played an important role with large whales, especially in the case of northern right whales, where each individual is critical to the continuation of the species.

#17

This is a highly visible and dangerous activity. Every effort should be made to ensure proper training and maintenance of standards for operations.

Biomonitoring and Research Activities
Alternative F3 (Preferred) New ESA/MMPA permit would be issued to include current and future biomonitoring and research activities.

Biomonitoring and research activities are crucial for identifying current and emerging threats to marine mammal populations, and for placing strandings into appropriate perspective (e.g., Wells *et al.* 2004). Methods have been developed to accomplish many of these research activities safely and effectively, with minimal risk to the animals, but with tremendous returns in terms of data that can not be obtained in any other way. Focused hypothesis-driven research, as well as research for establishing health baselines, should aid future investigations of Unusual Mortality Events. In order to optimize the value of this research, it is important that a set of standardized diagnostic laboratories be identified or established that will allow for consistent sample analyses, and will be able to expeditiously handle the large number of samples that may result from a research program or Unusual Mortality Event investigation, for example.

I am very supportive of the development and implementation of the "Policies and Best Practices Manual" as described, including:

- Evaluation Criteria for a Marine Mammal SA (New Applicants and Renewals)
- National Template for Marine Mammal SAs
- Standards for Marine Mammal Rehabilitation Facilities (a.k.a. Rehabilitation Facility Standards)
- Standards for the Release of Rehabilitated Marine Mammals (a.k.a. release criteria)
- Marine Mammal Disentanglement Guidelines

Such a package of standardized policies and practices will help to elevate the quality of efforts of the entire network, will increase the value of the information resulting from these activities, and will improve the return on investment the Prescott Grants Program, for example. The Prescott Grants Program has accomplished a great deal to date, and its continuation is crucial to the continuation and improvement of national stranding response.

I would be happy to discuss any of these points in greater detail with you at your convenience. Staff should be commended for the work they put into this lengthy document.

Sincerely,

Randall S. Wells, PhD

P.S. In Section 3-20, line 24, sperm whales should be moved from the list of mysticetes.

Literature Cited

Moore, M.M, G. Early, K. Touhey, S. Barco, F. Gulland, and R.S. Wells. In press. Rehabilitation of marine mammals in the United States: Risks and benefits. Marine Mammal Science.

Wells, R. S., H. L. Rhinehart, P. Cunningham, J. Whaley, M. Baran, C. Koberna and D. P. Costa. 1999. Long-distance offshore movements of bottlenose dolphins. Marine Mammal Science. 15:1098-1114.

Wells, R.S., H.L. Rhinehart, L.J. Hansen, J.C. Sweeney, F.I. Townsend, R. Stone, D. Casper, M.D. Scott, A.A. Hohn, and T.K. Rowles. 2004. Bottlenose dolphins as marine ecosystem sentinels: Developing a health monitoring system. EcoHealth 1:246-254.

Wells, R.S., G.A. Early, J.G. Gannon, R.G. Lingenfelser, and P. Sweeney. In review a. Tagging and tracking of rough-toothed dolphins (*Steno bredanensis*) from the March 2005 mass stranding in the Florida Keys. NOAA Tech. Memo.

Wells, R.S., C.A. Manire, D. Smith, J.G. Gannon, D. Fauquier, and K.D. Mullin. In review b. First records of movements and dive patterns of a Risso's dolphin, *Grampus griseus*, in the Gulf of Mexico and Atlantic Ocean.

Subject: Attn: MMHSRP PEIS
Date: Wed, 30 May 2007 08:37:01 -0400
From: Tech Desk <mmsc@verizon.net>
Organization: Marine Mammal Stranding Center
To: mmhsrpeis.comments@noaa.gov

Dear Mr. Cottingham,

The efforts of NMFS to standardize the care among stranding response organizations is welcome and all of your work is greatly appreciated. The following are some suggestions regarding the "Policies and Best Practices: Marine Mammal Stranding and Response, Rehabilitation and Release standards for Rehabilitation Facilities" specifically as it pertains to pinniped rehabilitation facilities and their pool requirements.

In Section 2.1.1 the recommended standard for pools is for them to meet USDA, APHIS regulations. These standards are based on the adult length of the largest species housed in that pool and were developed for permanent display facilities. These standards would not be very practical for rehabilitation facilities like ours who handle primarily pups and juveniles of various species that can grow to be quite large and rarely, if ever, strand in our area of response as adults. Also, it is not very clear whether these standards would apply to all pools used for rehabilitation or only those used for holding animals in the final stage of care prior to their release.

I appreciate the opportunity to comment and thank you for your time and consideration.

Robert C. Schoelkopf

Director

Marine Mammal Stranding Center

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NATIONAL MARINE LIFE CENTER
Caring for Stranded Marine Animals

30 May 2007

Mr. David Cottingham, Chief
Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources, National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Mr. Cottingham,

Thank you for the opportunity to comment on the Marine Mammal Health and Stranding Response Program Draft Programmatic Environmental Impact Statement. The document is thorough and thoughtful, and clearly represents a great deal of positive effort on the part of MMHSRP program staff to support and improve the stranding network.

I fully support adoption of the preferred alternatives.
* Alternative A4 – to implement final Stranding Agreement criteria, use a new SA template, and include current and future activities.
* Alternative B3 – to transport chemically euthanized carcasses offsite when possible and practical.
* Alternative C3 – to issue new Stranding Agreements, continue rehabilitation activities, and implement Rehabilitation Facility Standards.
* Alternative D3 – to issue new Stranding Agreements, continue release activities, and implement Release Criteria.
* Alternative E3 – to continue current activities of the Disentanglement Network on the east coast, to continue with modifications the Disentanglement Network on the west coast, and to implement Disentanglement Guidelines and training prerequisites.
* Alternative F3 – to issue a new ESA/MMPA permit to include current and future biomonitoring and research activities.

In order to facilitate organizations meeting and maintaining Rehabilitation Facility Standards and all other standards and activities recommended in the preferred alternatives, I urge NOAA to continue and expand the John H. Prescott Rescue Assistance Grant Program. The Prescott Grant Program has been responsible for many improvements in marine mammal stranding response, rehabilitation, and release. Additionally, the Prescott Grant Program is responsible for significant advances in science that continue to improve our knowledge of marine wildlife health and how that relates to oceans and human health.

Thank you for considering these comments.

Sincerely,

Kathryn Zagzebski

Kathryn A. Zagzebski
President & Executive Director
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New England Aquarium

May 30, 2007

David Cottingham, Chief
Marine Mammal and Sea Turtle Division
NMFS 1315 East-West Highway
Silver Spring, MD 20910-3226

Dear Mr. Cottingham,

I am writing on behalf of the New England Aquarium, a stranding agreement holder in the Northeast region, to provide feedback on the Draft Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program. We support NOAA in your efforts to develop standards for the national marine mammal stranding and disentanglement networks. We appreciate the effort that has gone into these documents and are grateful for the opportunity to provide comments.

Of great significance are Section 2.1.1.3 Stranding Agreement and Response Alternatives. We reject Alternative A1 and A5 primarily because the risk to public safety is too great. If trained authorized personnel do not respond to injured or distressed marine mammals the public will take matters into their own hands as we have seen in the past. We also reject Alternative A3 and A2 on the grounds that they lack standardization and guidelines for the national network. We endorse Alternative A4 and support NOAA in their goal to offer guidelines, minimum criteria and standardization for network participants.

Although we support NOAA's development of a Policies and Best Practices Manual, we are concerned that there are countless items throughout that add new or increased responsibilities onto stranding organizations. We are very supportive of the cooperative relationship that we have enjoyed for years with NOAA, but the constant addition of new requirements in reporting, inspection, training, etc. add additional strain to organizations that have minimal staff, funding, and time and that cover a huge area of coastline and a large number of stranding responses each year.

<u>Specific Comments on the draft National Stranding Agreement Template</u>

1. *Article III section B & C.* The language in the NOAA deliverables section is quite different from the language used in the Stranding Agreement Participant section. The NOAA deliverables section includes the phrase "as needed and as available," while in the Participant deliverables section the wording changes dramatically to the participant "shall bear all expenses." While it is appropriate to clarify the financial liability, we believe NOAA should cover the cost, if one exists, of all Level B or C data they request.

Alternatively, the language could be changed to closely match the NOAA section; for example: "as needed and as funds are available".

2. *Article II section B* lists the NMFS responsibilities. It would be helpful to the Stranding Agreement Participants to understand the experience level and qualifications of the NOAA employees in its region. Stranding Participants are all required to provide such information and it seems prudent the NOAA agree to do the same.

3. *Article II, section C, part 4* states that the stranding participant shall bear any and all expenses incurred with the taking, collection, or other activities pursuant to this agreement. NMFS may be able to support costs associated with specific analysis and additional requests as funds are available and authorized.

   This section should clarify that these activities do not include the towing of large whales. We also suggest that the language reflect the fact that activities will be based on the financial resources of the Stranding Participant. If the Stranding Participant does not have the resources available then the samples cannot be collected, shipped, or analyzed. Language used in the NMFS responsibility section such as "as resources are available" would be appropriate here.

4. *Article V, section B1, part f* states that the stranding participants "shall prohibit the public display and training for the performance of stranded rehabilitating marine mammals as required by 50 CFR 216.27 (c) (5). This includes any aspect of a program involving interaction with the public."

   We feel that the sentence, "This includes any aspect of a program involving interaction with the public" should be clarified and the terms defined. As it stands this would eliminate many highly effective yet non-detrimental education programs currently in progress. It would significantly impact many facilities that have free visitation programs to their rehabilitation centers.

<u>Specific Comments on the Evaluation Criteria for a Marine Mammal Stranding Agreement (New Applicants and Renewals)</u>

1. *Section 2.1 General Evaluation Criteria for Articles III, IV, and V Authorization section 10.* This section states that a prospective SA must apprentice under a SA holder for a minimum of three years. We suggest that NOAA assign a number of rehabilitation cases to meet the minimum requirements rather then length of time.

2. *Section 3.2* states that key personnel are required to have necropsy experience, but this seems unnecessary if level B and C data is only collected "if possible" as is stated in this section. If necropsies are not required, why is necropsy experience for staff?

3. *Section 4.2 Qualifications for Article IV Authorization section f.* Although it states that this qualification is "preferred but not required" it should be removed

since mass strandings are limited to only a few geographical locations throughout the nation.

4. *Section 5.2 Qualifications for Article V Authorization section 1 c.* "Experience in a supervisory role" should be defined. Does this mean supervising volunteers and interns during husbandry care or supervising the rehabilitation case?

Specific Comments on Standards for Cetacean Rehabilitation Facilities

1. *Section 1.1 Facilities, Housing and Space*
In the paragraph on unweaned neonate cetaceans, if the rehabilitation facility is considering permanent care, they should also provide an updated staffing plan to NOAA since an unweaned cetacean would likely require 24-hour care for weeks or months.

2. *Section 1.6.1 Diets and Food Preparation*. Bullet three states, "Diets reviewed by a nutritionist and the attending veterinarian." This request seems excessive. Most facilities do not have a nutritionist on staff, even the large facilities like the New England Aquarium. It should be enough that the attending veterinarian and the biologists evaluate and calculate the diets. Requiring that a nutritionist review all the diets may prove to be prohibitively costly for the majority of the rehabilitation centers when the husbandry and veterinary staff can manage this.

3. *Section 1.6.6. Feed Records, Minimum Standard* bullet three states that a girth measurement must be obtained weekly on cetacean rehabilitation candidates. While this may be okay in the beginning stages of rehabilitation, weekly captures in later stages are excessive. Every other week would be more appropriate with cetaceans in the later stages of rehabilitation.

4. *Section 1.7.1 Veterinary Experience* states that veterinarians be available to assess animals during mass stranding events. This should be clarified. In many smaller events veterinarians are often not on site but consulting via phone. We acknowledge that in some regions Participants often act on their own accord with limited or in the absence of veterinary oversight. Wording needs to provide direct guidance for these groups but should also not cripple more responsible mass stranding responders who work consistently under the direction of veterinarians. Under *RECOMMENDED* for that section is states the vet be a full time employee or contracted veterinarian of record at facilities managing ten or more cetacean cases per year. This does not clarify if that included live and dead animals or just live? If the latter then this requirement could prove prohibitive for smaller facilities with traditionally low cetacean numbers. ***Section 2.7.1 in the Pinniped section*** also recommends that the vet consult with the vet on record at facilities managing over 50 pinniped cases per year. Does this included dead animals? If not this seems to go against NMFS new direction of making difficult decisions.

5. *Section 1.7.2 Veterinary Program section, Minimum Standards.* This section taxes the veterinarians with a lot of paperwork that seems excessive, particularly bullet two, which requires a review of Standard Operating Procedures every six months. One time per year is sufficient. Smaller facilities or those not associated with a larger park or Zoo have contracted veterinarians who have another full time job in private practice. While we strongly support veterinary oversight we also think the demands on the veterinarian's time should be reasonable and focused on animal health and direct animal care. Non-veterinarians can perform some of the tasks listed here.

6. *Section 1.9.1 Record Keeping:* Bullet 13 states that medical records should be available for NMFS review upon request. It should be clarified that this statement does not mean that NMFS is able to retain copies of the medical files or diagnostic results, because these are level B and C data and are owned by the Participant. This should be modeled after the AFIS regulations where regular inspections and reviews take place but AFIS does not retain copies. An agent visits the facility and reviews the documents in house. **Bullet 14** states that medical records must be kept on site for a minimum of 15 years. It should be clarified if this means hard copies or computer copies. Computer copies can be kept more easily, whereas hard copy storage may be problematic. If this refers to hard copies then ten years on site or fifteen years at a secured storage area should be sufficient. (This is restated in the Pinniped section).

7. *Section 1.14 Training and Deconditioning Behaviors* states the staff veterinarian should evaluate the benefits of training. We recommend that a person with at least three years of operant conditioning with cetaceans be consulted regarding the training plan and the plan for deconditioning. Phone consult would be sufficient before, during and prior to the deconditioning. Many marine mammal trainers will provide support free of charge.

Specific Comments on Release Criteria

8. Section 3.8 Marking for Individual Identification of Cetaceans prior to Release. This section suggests three forms of identification prior to release. One of these is non-invasive while the other two are invasive. We are concerned about freeze branding and whether this is really necessary with a dorsal or satellite tag in place?

Subject: **ATTN: MMHSRP PEIS**
Date: Wed, 30 May 2007 20:05:37 -0400
From: Rob DiGiovanni <rdigiovanni@riverheadfoundation.org>
To: mmhsrpeis.comments@noaa.gov
CC: rdigiovanni@riverheadfoundation.org

Dear Mr. Cottingham,

I would like to thank you for the opportunity to comment on the draft EIS statement. These comments refer to the Interim policies and best practices, Marine Mammal Stranding Response, Rehabilitation and Release.

I feel that the guidelines outlined in this document are acceptable as long as they remain guidelines and do not become regulations. The major issues I have are the discrepancies between the minimum and recommended standards. I do not understand how they relate and how they would be weighted if they became regulations. I feel most facilities will aspire to meet the minimum standards and improve their facilities. However, if the recommended guidelines become regulations this would require an additional upgrade coupled with an increase the cost of conducting rehabilitation. These upgrades would require and additional source of funding not able to be covered under the current John H. Prescott Rescue Assistance Grant Program. Currently the only way to fund moderate upgrades is through this grant program. Unfortunately if these funds are diverted from general operational support our programs will not be able to meet our obligations operationally. As the cap for funding is $100,000 (and we currently do not have enough funding to support the existing program proposals) when the burden of upgrade is added, funding will fall short.

A couple of examples of where costs of general operations will increase without any increase in animals recovered are as follows. By increasing the coliform sampling regime for rehabilitation tanks to a weekly cycle lab costs for facilities that maintain individual pools for each animal would rise to $70,000 a year at current prices. When looking at staffing requirements under the proposed guidelines, if we were to maintain 24-hour care, staffing costs would more than double at the current rate. The doubling in staff cost would not be able to be absorbed if Prescott Grant Funding is not increased significantly.
Another concern is that over the year's marine mammal stranding facilities have seen major changes and shifts in numbers and species composition of stranded animals. This would require our facility and many others to make changes in the life support system and staffing levels in addition to our five-year upgrade plan. For example, our facility does not currently rehabilitate pups but if pupping starts occurring in our region there would be a costs associated with modifying the facility to comply with the new regulations. Although we do meet the guidelines set forth to deal with current strandings it is the increase in strandings and rare occurrences that cause concerns. Another general comment is that all references to tank diameters and dimensions should be based on actual animal size being rehabilitated in that tank and not the average adult length. These changes assume that animals will not be in the facilities during construction and operations will be conducted offsite. Another problem associated with these upgrades is related to the continuous operations of the rescue program. If facility upgrades cannot be timed to coincide with a decrease in the number of animals, alternate housing would need to be secured. It would be helpful to have NMFS facilitate a coordinated plan, based on their need assessment throughout each region, to upgrade facilities so as not to create a response void.

Section 1.1 Facilities, housing and space
The statement "prior to receiving an unweaned cetacean calf for rehabilitation, facility personnel must submit a plan to the NMFS regional coordinator which will include options and timeline for decisions regarding disposition" should be clarified whether that means receiving from another facility or picking it up from the beach, as most assessment would be done

upon arrival at the facility. It should be modified to "shortly after receiving an unweaned cetacean calf for rehabilitation, facility personnel must submit a plan to the NMFS regional coordinator which will include options and timeline for decisions regarding disposition"

Section 1.1.1 Space requirements for pool, bay, or ocean pens
The statement "pools shall have a minimum horizontal dimension of 9.75 meters (32 feet) or two times the average adult length of the largest species in the pool, whichever is greater" should be changed to "pools shall have a minimum horizontal dimension of 9.14 meters (30 feet) or two times the actual length of the largest species in the pool, whichever is greater"

Section 1.1.4 Critical Care Animals and Calves
The statement "control air temperature above the pool between 50 – 80°F when appropriate to facilitate recovery" should refer to the environmental parameters encountered by the species undergoing rehabilitation.

Section 1.3.2. Frequency of testing in closed, semi-open or open systems
The statement "maintain records for tests with time, level and results – reviewed and signed monthly by the attending veterinarian" should add "or a husbandry care specialist"

Section 1.6.1 Diets and Food Preparation
The statement "diets reviewed by a nutritionist and the attending veterinarian" should be altered to "diets reviewed by a nutritionist, attending veterinarian or animal care specialist"

Section 2.1.1 Pool requirements
The statement "facilities where numerous pinnipeds are rehabilitated consistently each year should be equipped with at last one pool and haul-out area that meets APHIS standards for at least one adult of that species where one or more per year strands as adults" should be altered to "facilities where numerous pinnipeds are rehabilitated consistently each year should be equipped with at last one pool and haul-out area that meets APHIS standards for at least one adult of the species when the average of occurrence increases to one or more per year.

Thank you for you consideration in this matter.

Robert A. DiGiovanni Jr.

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BRISTOL BAY NATIVE ASSOCIATION

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May 31, 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Mammal Fisheries Service
1315 East-West Highway
Room 13635
Silver Spring, MD 20910

ATTN: MMHSRP PEIS

On behalf of the Qayassiq Walrus Commission, and the Bristol Bay Marine Mammal Council, we thank you for the opportunity to comment on the Draft Programmatic Environmental Impact Statement (DPEIS) on the 'Rehabilitation and Release of Marine Mammals.' I also work for the Bristol Bay Native Association's Marine Mammal Program which serves thirty (30) federally recognized tribal/village councils from Togiak to the Nushagak Bay and Nushagak River watershed communities, the Lake Iliamna sub-region, the Naknek area, and the Alaska Peninsula Region to Ivanoff Bay area.

The Bristol Bay and the Alaska Peninsula coastal and inland communities totally rely heavily on Alaska Native traditional harvest of the food resources which include marine mammals (bearded seals, ringed seals, spotted seals, harbor seals, beluga whales, Steller sea lions, Northern sea otters, and walrus). The marine mammals are an integral part of the culture and economy in Native communities and have been since time immemorial. Traditionally, Native hunters have never looked to just one of these species for sustenance and still do not today. Native communities depend on everything the marine ecosystem can provide including seabirds, waterfowl, salmon, herring, clams, and other shellfish species found in the marine environment. The Alaska Native way of life consists of a year-round cycle in harvesting the marine mammals, seabirds, waterfowl eggs, salmon, herring, smelts, hooligans, Northern pike, whitefish, Dolly varden, trout, Arctic char, blackfish, tomcod fish, herring eggs, clams and other shellfish. Hunting for large land animals, trapping for furbearing animals, and gathering edible berries, plants, and medicinal plants is part of the Native way of life. There are oral traditional Native customs, values, and ways the hunters and gatherers adhere to continue to be provided by Mother Nature. For example, Alaska Native people were taught by their ancestors to treat the land and the sea they harvested from with respect; to get only what they needed and leaving

enough eggs, fish, and animals behind so more will be available next season. This is still a part of conserving the natural resources by the Alaska Native people. The Alaska Native people were taught not to leave the place where they harvested traditional foods disturbed and messy. They were taught to properly dispose of unedible animal parts either to designated land and sea areas. Today, hunt captains have a process they go by in screening their hunt crew to ensure a successful harvest by abiding by the Alaska Native traditions. One of the practices, the Alaska Native's was taught was not to play or treat animals disrespectfully. This is one of the reasons, the majority of Alaska Native communities do not support some of the Western scientists, and institutions research projects. The animals are not to be touched or played with was one of the traditional Alaska Native customs, otherwise if the hunter hunted, slowly, the animals or game he hunted will eventually become scarce. These very important Alaska Native traditions or customs need to be respected by researchers. Cooperatively working with the respected communities of any proposed projects need to be presented to the village council's for their approval. One of Bristol Bay Native Association's goals is to build local capacity. One information and or way of doing this is to hire local people to provide expertise in a project because they are knowledgeable about their environment and their traditional hunting areas. A simple courtesy can go a long ways.

The main concerns I would like to address include release of marine mammals after they have been rehabilitated; freeze branding or marking marine mammals for research purposes; and prescribing medicines to marine mammals. My other comment will be recommendations of this Program to conduct statewide/regional marine mammal stranding workshops in coastal Alaskan sub-regional hub communities in the Bristol Bay, and the Alaska Peninsula.

Release of Marine Mammals After Rehabilitation

We do not support releasing marine mammals after they have been rehabilitated to a different area than from where they originally came from. One of the Bristol Bay Marine Mammals concern is if the Alaska SeaLife Center or agencies rehabilitating a marine mammal, and releases it to a different location than where it originally came from, various diseases, parasites, and new illnesses can be spread to the marine mammals and other marine resources. The recommended process for agencies that rehabilitate marine mammals from communities is to work with the local village council where the call originated from. The Alaska Native traditions is if a baby marine mammal is observed, do not touch it thinking it is orphaned, because usually the mother is nearby feeding and sometimes they feed up to a day. The majority of coastal communities recommend leaving the orphaned baby animal alone, and let nature take care of it. An educational flyer needs to be made about observing marine mammals that may be orphaned, stranded or ill and be sent to all Alaskan coastal communities. I have received some calls from Bristol Bay communities of marine mammals thinking they were orphaned, and they went ahead and called, for example, the Alaska SeaLife Center, or the local National Wildlife Refuge offices without contacting the local village or traditional councils. The recommended procedure is if a call is made to, for example, the Alaska SeaLife Cent to rehabilitate a baby animal, contact the village council. Find out who the Village Council President or Vice-President is and follow their recommendations. If they approve to have the animal rehabilitated, then the person can also contact their regional Native Association marine mammal program, the Refuge, and Fish & Game offices to cooperatively rehabilitate the animal upon approval of the Council. These types

of protocols need to be developed.

Freeze Branding or Marking of Marine Mammals

Another procedure that researchers, federal and state agencies have conducted is branding/marking marine mammal's skin and hides for research tracking purposes. This was a revocation of the federal trust responsibility between the Alaska Natives and the Federal Government. The main Federal Trust Responsibility between the Federal Government and the Alaska Natives is to protect their traditional way of life to ensure it will continue on into the millenium and beyond. This includes harvesting marine mammals for food, to use the fur for parkas, hats, and hide for footwear or for covering the traditional *qayaq* or boat. These so called freezed branding or marking of Sea lions was done without the permission of the local coastal Alaska Native people that traditionally harvest seals. There have been studies done by so Western science 'experts' including marine mammal population trends, genetic research and collecting skin samples. These are good as long as the marine mammal is not 'played' with meaning, treating the animal disrespectfully. Some of the marine mammal studies have concluded a decline in various species. One of the reason is Alaska Native traditional customs are not being adhered to which includes 'freeze branding or marking *any* animals in the sea, the land, and any location they haulout at. Thus, a population of an animal can misteriously decline, or in the Alaska Native culture, an animal can become scarce for an unknown reason. These are important Native traditional advice to consider before Western scientists touch the animals eaten. Just like the beef rib-eye steaks eaten in the lower '48 and relished by a majority of Americans, coastal Alaska Natives relish and cherish their seal oil, dried seal meat, and traditional delicacies that cannot be replaced by damaged or spoiled goods. Therefore, we do not support any freeze branding or marking of any marine mammals in coastal Alaskan waters. It would be beneficial for researchers and scientists to contact local Alaska Native Organizations or Village Councils or Traditional Councils or IRA's to present them with any proposed research projects including marking, tagging, sampling of any animals.

Prescribing and/or Injecting Medicines to Marine Mammals

Another concern of the Bristol Bay Marine Mammal Council, the Qayassiq Walrus Commission, and Bristol Bay communities is researchers prescribing or injecting medication to marine mammals while in the field. The hunters want to ensure the marine mammals they harvest are healthy and drug free, as well as disease free. They understand and trust agencies which get samples of marine mammals in their area, that the animals will be analyzed and results will be send back to their communities in a timely manner. Due to the high cost of fuel, and oil, the majority of the hunters are staying out longer until they harvest marine mammals. For example, for the Dillingham walrus hunt, it costs approximately $ 6,000 to traditionally harvest walrus at Round Island. The hunt captain and crew will try to get their quota of four walrus. The walrus will be brought back to Dillingham and will be shared with the surrounding Nushagak Bay communities. The value of hunting a healthy animal is essential for the survival of several communities in Bristol Bay. We want to continue to hunt and harvest healthy marine mammals and know they are drug free.

Other Recommendations

I am enclosing the Bristol Bay Native Association's Policy Guidelines for Research In Bristol Bay, Alaska adoped by the BBNA Board of Directors for your information.

For further information on the communities served by the Bristol Bay Native Association, you may connect to the following BBNA web link site at: http://www.bbna.com/who.htm.

Thank you for considering our public programmatic EIS comments and we look forward in working with you in the future.

Sincerely,

Bristol Bay Native Association

Helen M. Chythlook
Marine Mammal Coordinator

Enclosure: Bristol Bay Native Association Policy Guidelines for Research in Bristol Bay

BRISTOL BAY NATIVE ASSOCIATION
POLICY GUIDELINES FOR RESEARCH IN BRISTOL BAY

The following principles, adopted by the BBNA Board of Directors, are consistent with those adopted by the Alaska Federation of Natives in May of 1993 and shall serve as guidelines for scientific research in the Bristol Bay region.

Alaska Natives in Bristol Bay share with the scientific community an interest in learning more about the history and culture of our societies. The best scientific and ethical standards are obtained when Alaska Natives are directly involved in research conducted in our communities and in studies where the findings have a direct impact on Native populations.

BBNA recommends to public and private institutions that conduct or support research among Alaska Natives in Bristol Bay that they include a standard category of funding in their projects to ensure Native participation. BBNA recommends all scientists and researchers who plan to conduct studies among Alaska Natives in Bristol Bay to comply with the following principles:

Advise Native people who are to be affected by the study of the purpose, goals and timeframe of the research, the data-gathering techniques, and the positive and negative implications of the research.

Obtain the informed consent of the appropriate governing body, village or tribal council through a letter of support or the resolution process.

Hire and train Native people to assist in the study with the intent to building capacity for Native-led research.

Guarantee confidentiality of surveys and sensitive material.

Honor the contributions of Native participants by compensating them for their time, intellectual property and involvement.

Respect the culture and traditions of affected communities.

Use Native language in communities where English is the second language.

Provide the affected Native communities with the opportunity to comment on research reports before a final draft is released.

Include Native viewpoints and acknowledge the contributions of Native resources and people in final publications.

Inform affected parties and villages in a summary and in non-technical language of the major findings of the study.

Provide copies of studies to the local library, villages, agencies and other affected organizations.

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Subject: Comments on draft rehab standards
Date: Thu, 31 May 2007 09:39:12 -0700
From: "Dr. Felicia B. Nutter" <felicia_nutter@hotmail.com>
To: mmhsrpeis.comments@noaa.gov

Comments on Interim Policies and Best Practices Marine Mammal Stranding Response, Rehabilitation, and Release: Standards for Rehabilitation Facilities<?xml:namespace prefix = o ns = "urn:schemas-microsoft-com:office:office" />

Chapter 2 – Standards for Pinniped Rehabilitation Facilities

Throughout this document, suggest that "at the discretion of the attending veterinarian" be applied to many if not all of the minimum standards. Many situations arise during medical treatment and rehabilitation of stranded marine mammals where it might actually be detrimental to their recovery to follow the standards. For example, activity and access to water may need to be severely limited for animals with fractures.

1.0 Facilities, housing, and space

Due to variations amongst the most commonly rehabilitated species, their growth rates, and varying sizes at different life stages and age classes, standards for space requirements should be based on the individual animal housed at any given time, and not generalized on measurements of adults of the same species.

p 26, line 5: Suggest that the temperature range of 60-80F is too narrow and unrealistic. The range should be the same as pinniped species are exposed to in the wild, with protection from extremes of heat and cold.

1.1 Pool requirements and 1.2 Dry resting area

As stated in 9CFR3.110 (revised January 1, 2005), Sec 3.110(b)

Holding facilities used only for medical treatment and medical training need not meet the minimum space requirements as outlined in Sec 3.104. Holding of a marine mammal in a medical treatment or medical training enclosure that does not meet minimum space requirements for periods longer than 2 weeks must be noted in the animal's medical record and the attending veterinarian must provide justification in the animal's medical record. If holding in such enclosures for medical treatment and/or medical training is to last longer than 2 weeks, such extension must be justified in writing by the attending veterinarian on a weekly basis.

Since the USDA-APHIS standards make a specific exception for medical treatment, and since rehabilitation facilities are by definition providing medical treatment, there should be no requirement for rehabilitation facilities to meet the same USDA-APHIS standards for marine mammal housing for long-term/display facilities. The exception for medical treatment should remain.

To reduce paperwork, particularly in high-volume rehabilitation centers, we suggest that an exception be made to the required weekly written justification for holding animals under medical treatment. Holding in appropriate facilities for medical care should be permitted until the rehabilitated animals are deemed healthy for release by the attending veterinarian.

Veterinary discretion should apply to all pool dimensions, not just surface area of the pool, as written in the recommended standards.

1.2 **Dry Resting Area**

The description of how to calculate dry resting area is confusing to read. We suggest that a table be prepared, based on body length, for the required surface area. This table could be similar to the one for cetaceans in 9CFR3.104, which is based on body length and not on species.

1.6 **Air Temperature**

Please clarify whether the proposed minimum standard applies to indoor facilities only. For outdoor rehabilitation facilities, there is no practical way to control ambient air temperature.

Suggest that if protection from extremes of heat and cold are provided, such as access to heating pads, shelters, shade, water spray, etc., the holding of animals in such areas should be at the discretion of the attending veterinarian.

1.7 **Housing for Critical Care Animals**

The language in section 1.7 is more generally appropriate for ambient conditions: *provide shelter from extremes of heat or cold, and provide heat as appropriate for animals held in cold climates*.

Please clarify what "appropriate in size" means for individual dry haul out space or individual enclosures.

Providing a structurally separate quarantine facility for all incoming animals in not necessarily appropriate or feasible. If there is adequate separation between portions of a structure and between animals, that should

suffice.

1.8 Housing of Pups

Housing arrangements should be at the discretion of the attending veterinarian and/or trained husbandry staff. In many situations, paired or group housing of young animals helps to decrease stress.

Raised platforms (in both section 1.8 and 1.9) are not appropriate, as animals in the wild often haul out and sleep on hard, cold surfaces. Dry resting areas may be appropriate and necessary for critically ill animals, but should be at the discretion of the attending veterinarian.

1.11 Housekeeping

Requiring enrichment items to be non-porous and cleanable excludes most if not all natural items, such as kelp, driftwood, etc. Suggest that if items are not porous and easily cleaned, that they be disposable and not shared between pens or pools, e.g. used for only one animal or group of animals.

1.12 <?xml:namespace prefix = st1 ns = "urn:schemas-microsoft-com:office:smarttags" />Pest Control

Preventing contact between rehabilitating animals and all wild animals (i.e. birds, small rodents, insects) is not feasible, particularly for outdoor facilities. Control is appropriate.

2.7 Water Temperature

Holding water temperature within the normal habitat range is not feasible, nor is it necessary for short-term rehabilitation. Suggest that this be changed to “protect from extremes of heat and cold,” as in other sections.

3.1 Prevention of Animal to Animal Disease Transmission

Individual quarantine of all animals is not necessary or appropriate. Please insert language indicating that batch quarantine is permitted and appropriate, as animals are often admitted in groups during seasons.

Eye shields or safety glasses are not necessary or appropriate. Suggest changing this to the provision of eye-wash stations, and the option for personnel to wear shields or glasses at their discretion.

3.3 Prevention of wild animal to marine mammal transmission of disease

It is not practical to build perimeter fencing that will prevent all wildlife from entering the premises. Suggest deter instead of prevent.

Similarly, it is not practical or even desirable to build net pens that will keep all wildlife (i.e. fish) from coming into contact with rehab animals.

3.6 Methods to reduce spread of disease from animals housed in open sea/bay pen systems

Placing a second set of perimeter nets 30 feet from the pens is not practical nor always desirable.

We suggest that placing pens 1000 m from storm drains is not practical (i.e. run-off from building roofs, etc., can be considered storm drains). Limit this requirement to sewage outfall.

Daily coliform testing for net pens is not practical. Pens may be located in remote areas where testing cannot be carried out, and it is also not feasible to control the coliform count in open water areas.

3.7 Evaluation requirements before placing marine mammals together

Obtaining full bloodwork, cultures, etc., is neither practical nor appropriate in all cases. For example, diseases such as leptospirosis, which is endemic in certain wild populations, can be presumed present in certain groups of animals, and they can be housed together appropriately without extensive preliminary testing.

Please clarify the meaning of contingeny plan. Is this a treatment plan for the various conditions listed? Housing plan? Please also clarify which diseases are reportable for marine mammals, and to which agency. CDC? WHO? OIE? USDA? Suggest that a table would be helpful.

3.8 Zoonotic considerations

This section is very vague. All pinniped handling may result in exposure to potentially zoonotic pathogens. So does all handling, including beach rescues, require full protective gear?

5.0 Food, Handling, and Preparation

Suggest check of wild pinniped foraging literature, as there are many reports that pinnipeds will forage and then haul out for several days.

5.1 Food Storage and Thawing

If daily food intake is recorded per animal or per group, then kCals consumed can be calculated if/when necessary from the medical records. Requiring daily calculation is adding unnecessary work.

Suggest that the composition of each diet routinely used be calculated.

Fish supplies maintain composition analysis records for each batch. It is not necessary for each facility to replicate that work.

5.6 Feed records

Daily feed records cannot be maintained for individuals when they are housed in groups. Group records can be maintained, and together with daily husbandry notes and weekly records of weight provide sufficient indication of individual animal consumption.

Please indicate that food can be weighed before and after feeding to individuals or groups.

6.1 Veterinary Experience

It is not possible for an attending veterinarian to certify that animals are likely to survive, or that they are free from known communicable diseases. We do not test for all known communicable diseases, so we cannot certify that animals are free from them. For example, *E. coli* is a potentially communicable pathogen, and all animals certainly have *E.coli*. Suggest that a more appropriate standard is that animals must be free from clinical signs of disease, able to swim and dive, and free feed.

6.2 Veterinary Program

Suggest that annual review of SOPs is sufficient.

Please clarify what constitutes a health and safety plan. Is a preventative health program required for all staff/personnel?

7.0 Laboaratory Tests and Frequency of Testing

Suggest that one blood sample and CBC/serum chemistry is sufficient, as admit and release exams may be the

same in many cases. Additional testing should be at the discretion of the attending veterinarian.

Measuring girth is not practical in all cases, for example when manual restraint of large animals is used for exams. Most formulas are based on length and weight, so standard length and weekly weights should be sufficient. Suggest that girth measurements be recommended but not required.

Suggest that complete necropsies performed within 72 hours are sufficient, and that 24 hours is not practical.

Suggest that histopathology on select tissues is at the discretion of the attending veterinarian, as for cultures and other diagnostic sampling.

Please clarify which disease are reportable for marine mammals (see notes above), and also which disease require notification to NMFS.

Release should be at the discretion of the attending veterinarian. Advance notice to NMFS is not always practical nor in the best interest of the animal, e.g. animals very stressed by captivity.

For recommended standards, frequency of blood sampling beyond the single collection should be at the discretion of the attending veterinarian.

Please explain the utility of banking the buffy coat. Suggest that it be performed on selected animals only subject to utility.

8.1 Record Keeping

Under recommended record keeping:

Please define the set of standard morphometric measurements that should be collected and include a suggested recording format.

Suggest that obtaining photographic documentation of all animals is not practical and of questionable utility. Animals with distinguishing markings, or other unusual features could be documented.

Please see the previous comments on determining the daily caloric intake for each animal. This is not practical and of questionable utility, particularly in high volume centers. If caloric value of commonly used diets is calculated, and then minimum intakes are set based on weight, that should be sufficient. Additional calculations should be at the discretion of the attending veterinarian.

Daily weighing of pups is too stressful and results in too much handling. Suggest that weekly weight be required, more frequently at the discretion of the attending veterinarian.

8.2 Data Collection

Please define “real time accessible compiled comparative data.”

Felicia B. Nutter, DVM, PhD
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Draft rehab standards response.doc	**Name:** Draft rehab standards response.doc **Type:** WINWORD File (application/msword) **Encoding:** base64 **Download Status:** Not downloaded with message

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

TAKE PRIDE IN AMERICA

JUN 13 2007

In Reply Refer To:
ER 07/332

Dr. David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Attn: MMHSRP DPEIS
Office of Protected Resources National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910

Dear Dr. Cottingham:

The Department of the Interior has reviewed the Draft Programmatic Environmental Impact Statement (EIS) for the Marine Mammal Health and Stranding Response Program (MMHSRP). The notice of availability for this Draft Programmatic EIS was published by the Environmental Protection Agency in the *Federal Register* on March 16, 2007 (72 FR 12611).

The Department has received comments from the Fish and Wildlife Service (FWS) in response to our review request. With the exception of section 408, the MMHSRP is a program created and implemented, as authorized under the Marine Mammal Protection Act, by the Secretary of Commerce. Therefore, for the most part, this Draft Programmatic EIS refers to management of marine mammals under the jurisdiction of the National Marine Fisheries Service, i.e., cetaceans and pinnipeds (except the walrus). Accordingly, the Department's comments are limited to those involving marine mammals under the management jurisdiction of the Secretary of the Interior, i.e., manatees, sea otters, walruses, and polar bears and, those actions that overlap with the FWS management regimes. Our comments are provided in the enclosure.

We appreciate the opportunity to provide these comments and hope that they prove to be useful. If you have any questions regarding specific technical issues in these comments, please direct them to the Fish and Wildlife Service's Martin Kodis, Chief, Branch of Resource Management Support, at (703) 358-2161. For all other questions, you may contact Ken Havran in the Office of Environmental Policy and Compliance at (202) 208-7116.

Sincerely,

Willie R. Taylor
Director
Office of Environmental Policy
and Compliance

Enclosure

Enclosure

Department of the Interior's Comments on the Draft Programmatic EIS for the Marine Mammal Health and Stranding Response Program

Chapter 1. Purpose and Need for the Proposed Action. To be all inclusive, the Department recommends the following additions to the second full paragraph on page 1-10 concerning permits under the Convention on International Trade in Endangered Species of Wild Fauna and Flora:

"For import and export of marine mammal specimens, the MMHSRP may be required to have import and export permits, if the species is listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix I, II, or III. The CITES permits for import and export are issued by the FWS and are required to import and export samples, parts, carcasses, or live animal species (for treatment or release) listed in the CITES Appendices. Species listed on CITES Appendix I require both an import permit and an export permit be issued for international shipments. Species listed on CITES Appendix II only require an export permit, unless the importing country has stricter measures than CITES. The only marine mammal listed under Appendix III is the walrus, *Obobenus rosmarus*; either an export permit or a certificate of origin is required for each international shipment of walrus specimens."

Chapter 3. Affected Environment.

On page 3-24, the paragraph titled UMEs identifies several unusual mortality events that have occurred over the years. We note that a UME was declared for southern sea otters in 2003. Unless this event is being lumped with the "Multi-species UME" for 2003, the 2003 southern sea otter UME should be included in this paragraph.

On page 3-28, first line, including the polar bear, there are twenty-nine marine mammal species that have the potential to occur in the Alaska Region. This change also needs to be made to Table E-18 in Appendix E (see below).

Also on page 3-28, insert the following sentence on line 4 before the sentence beginning with "Endangered species include . . . ": "On January 9, 2007, the polar bear was proposed for listing as a threatened species throughout its range (72 FR 1064-1099); a final determination will be made following the ESA review process."

On page 3-29, at the end of the first paragraph, Mass Strandings, add the following sentences: "There were six polar bear mortalities in 2006. Mass walrus mortalities are occasionally reported at Alaska terrestrial haul-outs. In 2005, about 30 walruses died from terrain falls at Cape Pierce in the Togiak National Wildlife Refuge. Trampling deaths have been reported in the Punuk Islands near St. Lawrence Island."

Also on page 3-29, in the second paragraph under Human Interactions, add the following sentences: "From 1996-2000, the estimated mean mortality of walruses from fisheries activities was 1.2 walruses per year. Most human induced mortality on the Pacific walruses is presently from legal subsistence hunting in Alaska and the Russian Federation (Chukotka). In 2005, the estimated total hunting removal of walruses from the population was 5,276 animals."

#24

On page 3-29, line 13, Temporal Changes, add the following sentences: "Polar bear and Pacific walrus strandings would be most likely attributed to changing sea ice habitat and could occur year round although the most critical times for polar bears would probably be the spring soon after cubs are born through the fall. For Pacific walrus the critical time for young animals and calves would be during the late spring-early summer when the females and calves follow the ice pack north."

Also, on page 3-29, line 21, Marine Mammal Population Changes, add the following sentences: "The size and trend of the Pacific walrus population are currently unknown. Population point estimates from1975-1990 ranged between 202,039 to 246,360 walruses, but were not precise enough to accurately reflect trend. The Southern Beaufort Sea Population and Chukchi/Bering Seas populations of Polar bear are thought to be declining."

On page 3-30, ensure that Figure 3-12, Alaska Region Pinniped Strandings 2001-2004, includes the strandings of Pacific walrus.

Appendix C-Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release. The NMFS coordinated with the FWS to compile the Standards for Release Guidelines that are a part of these policies and practices. The FWS provided comments throughout the development of these Guidelines and we appreciate that they have been incorporated in the January 2007 version. No further comment is necessary at this time; however, we do have some editorial suggestions:

On page 2-1, under 2.1.1 NMFS Policies, last sentence, delete "with" so the sentence reads: "However, authorization to take ESA listed species by the Stranding Network is currently provided under *MMPA/ESA permit #932-1489-01* as amended and requires authorization and direction from ~~with~~ NMFS Regional Stranding Coordinator in the event of a stranding involving a threatened or endangered marine mammal."

On page 2-3, a facility may also request permanent placement under Section 104(c)(3) if an ESA-listed marine mammal is determined unreleasable. Please edit the last paragraph on this page to reflect such:

> "For FWS species, LOA and permit holders provide recommendations to the FWS Field Offices for decisions regarding releasability of rehabilitated marine mammals (see Appendix H for contact information). The FWS retains the authority to make the final determination on the disposition of these animals. If FWS determines that a marine mammal is non-releasable, the holding facility may request a permit for permanent placement in captivity as prescribed in Section 104(c)(7) of the MMPA for non-depleted species, or Section 104(c)(3) or 104(c)(4) and Section 10(a)(1)(A) of the ESA for depleted species."

On page 5-1, under Guidelines for Release of Rehabilitated Manatees: Introduction, second paragraph, the third and fourth sentence should read: "All rescue-related communications and the day to day decision making process in the field are generally handled by the local field

Stations of the Florida Fish and Wildlife Conservation Commission (FFWCC) in conjunction with reports from the public using the 1-888-404-FWCC hotline. All activities related to verification of a report of a manatee in trouble, subsequent rescue, and transport to rehabilitation facilities are communicated through the FFWCC Field Stations, according to established protocols."

Appendix E-Biological Resources Tables. In Table E-17, Marine Mammals Common in the NMFS Northwest Region, the northern sea otter is identified as "threatened" under the U.S. Endangered Species Act (ESA). However, the northern sea otter stock that occurs in this area, i.e., Washington State, is not listed as endangered or threatened under the ESA.

In Table E-18, page E-30, Marine Mammals Common in the NMFS Alaska Region, the distribution for the Pacific walrus should read: "Found in shallow water areas, close to ice or land; geographic range is mainly in the Bering Sea and Chukchi Sea ice pack."

In addition, on page E-31, the northern sea otter is identified as "threatened" under the ESA. Although this is correct for the southwest Alaska distinct population segment, neither the southcentral nor the southeast DPS is listed under the ESA.

Also, under Table E-18, we recommend including the Polar bear (*Ursus maritimus)*as a year round resident of the Arctic Circle.

Appendix L-Marine Mammal Oil Spill Response Guidelines. On page 4 under Trustee Organizations, the fifth sentence reads:

"The Marine Mammal Protection Act (MMPA) prohibits the "take" of sea otters, seals, sea lions, walruses, whales, dolphins, and porpoises, which includes harassing or disturbing these animals as well as actual harming or killing . . ." To avoid potential misunderstandings, we suggest including manatees and polar bears in the list of marine mammals for which the MMPA prohibits take.

MS. HOWLETT: Sure.

(Recess taken.)

MS. HOWLETT: Our court reporter will be recording your comments. Also, your written comments are also welcome today. You can hand them in today. We also have comment sheets up front that you can write on, or you can submit them to us by mail or e-mail. I believe we have on the handouts -- we also have our information for you to send them to. We just ask for written and verbal comments, that you bring very specific concerns regarding the content of the draft document. And please suggest civic changes to alternative environmental consequences that NMFS should consider.

MR. FOLKENS: You want a written response in addition to the oral?

MS. HOWLETT: No. If you just want to give oral, that's fine. If you think of something that you didn't give us, you can feel free to write it down. Just to let you know that additional information is also

available via public libraries, and it's available on our NMFS web page. If you comment today, you will get a copy of the final document. But if you're not commenting and you want a copy, please feel free to check up on our sign-in sheet if you would like one. We can begin.

MR. FOLKENS: This is Peter Folkens from the Alaska Whale Foundation. I have four specific items to

raise.

First one pertains to the recognition of stranding agreements across regions. Due to an ongoing research affiliation at University of California, Davis, a number of Alaska Whale Foundation personnel went over into the San Francisco Bay Area from October to May.

We keep two of our six boats here as well. They are assigned at the moment to Contra Costa County Search and Rescue team. In southeast Alaska, we now see more whale entanglements in one season than the southeast region has experienced in a decade.

The Alaska Whale Foundation boat, disentanglement equipment, and expertise can be put to good use in Northern California. However, in a recent Alaska stranding network meeting in Anchorage, it was pointed out that stranding agreements are not recognized across regions.

Under the notion of best practices, we recommend that the National Marine Mammal Health and Stranding network implements a policy and procedure to either recognize stranding agreements across regions or issue additional stranding agreements to singular organizations that typically cross multiple jurisdictions.

Item 2. Since the 9/11 and Katrina disasters, the federal government has implemented policies and procedures for the standardization of roles and training levels of responders. This has taken the form of the

ICS 100 and NMFS 200 response management protocols for all types of official responses. I understand the National Marine Fisheries Service employees are trained to these standards.

At a recent Alaska Marine Mammal Disentanglement Network meeting in Anchorage, the question was raised about ICS training. It turns out that everyone in attendance except one has had ICS 100 training. It was also mentioned by Robert Mahoney from the NMFS office in Anchorage that the disentanglement network follows a de facto NMFS kind of structure. It's my suggestion that an ICS 100 structure be officially part of the entanglement responses across regions.

Item 3. In a related issue, responder typing

at the federal and state levels is a 1 to 4 hierarchy with 1 being the highest certification. However, the National Marine Fisheries Service disentanglement response training typing is backwards with 1 being the lowest level of training. Since such responses often include the U.S. Coast Guard and other official government entities that follow the other ICS and NMFS typing protocols, I recommend that National Marine Fisheries Service flips its type numbering so that 1 is at the highest level with perhaps a 1A designation for specific right whale responders.

Item 4. For many years, the standard training response data form was one from the Smithsonian Institution designed by comparative anatomists. As the

Marine Mammal Protection Act and National Fisheries Office of Protective Resources began to play a bigger role in such events, the response data forms became heavily focused on soft tissue sampling, probably largely due to expertise of the veterinarians that were taking major positions at the federal level.

Unfortunately, this was at a near-complete disregard for anatomical and morphological data. Here I requested the National Marine Fisheries Service incorporates more anatomical data on its Level A data form. Towards that end, I have offered a couple of

solutions that meet the needs of both the soft tissue collectors and the comparative anatomists. I have copies here that I've given to a few people and I can give for the official record.

To give you an example of a real world situation in which a better data form would have saved literally hundreds of thousands of dollars for the government, I was involved as an expert witness in a ship strike event in which if the original stranding data were taken better and with a more forensic line and morphological and anatomical data, it is unlikely that there would have been litigation over that event, saving literally hundreds of thousands of dollars both for the government and the private sector.

So I feel very strongly that the Level A data form needs to include more forensic, morphological information. Are there any questions?

Written Comment Form

Draft Programmatic Environmental Impact Statement (DPEIS) for the Marine Mammal Health and Stranding Response Program

Your input is important to us. Please feel free to use additional comment sheets if more space is needed. To ensure that your comments are considered in the Final PEIS, we must receive them by April 30, 2007.

Carcass disposal - We will need assistance with determining appropriate burial if other disposal is not possible. We also request assistance in ranking chemicals for toxicity levels if chemical euthanasia is sited and in working w/ VA $200/equation groups in developing non-chemical, humane & less friendly ways to euthanize

We support an article addition to the S.A. on small cetacean & pinniped disentanglement.

We support close coordination between HQ & regions when dialoging SA's, Rehab centers & releases. There should be cross regional consistency whenever possible

We suggest that 109h holders be held to similar criteria as SA holders are.

Your Name & Email Address: Sue Barco sabarco@virginiaaquarium.com
Mailing Address: 717 General Booth Blvd
City, State, Zip Code: VA Beach, VA 23451

This form can be submitted to:

David Cottingham
Chief, Marine Mammal and Sea Turtle
Conservation Division
Office of Protected Resources,
NMFS 1315 East-West Highway. Room 13635
Silver Spring, MD 20910-3226
Email: mmhsrpeis.comments@noaa.gov
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Subject: mmhsrp eis
From: Caleb Pungowiyi <caleb.pungowiyi@maniilaq.org>
Date: Fri, 27 Apr 2007 14:06:05 -0800
To: mmhsrpeis.comments@noaa.gov
CC: jgoodwin@otz.net, lori_quakenbush@fishgame.state.ak.us

Mr. David Cottingham, Chief
Marine Mammal & Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13635
Silver Springs, MD 20910

Dear Mr. Cottingham;

We strongly recommend that any marine mammal that may be in distress or out of its natural habitat not be disturbed and no attempts be made to pick up or rescue the animal unless and until appropriated approvals have been received or given by the proper authorities. It is unlawful for any citizen of United States to touch or attempt to rescue any marine mammal without proper authorization. This wording should be boldly highlighted in the EIS. We also strongly opposed any release of any marine mammals that have been rehabilitated into the wild. There is too much risk that such released animals will introduce viruses or diseases that the animals in the wild have no immunity to. Regulations must be adopted that prohibits release of rehabilitated marine mammals into the wild.

Sincerely,

Caleb Pungowiyi
Coordinator, Natural Resources
Maniilaq Association

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Subject: public comment on peis for marine mammal stranding program of 3/07 deis
From: Bk1492@aol.com
Date: Sun, 08 Apr 2007 18:11:44 -0400 (EDT)
To: mmhsrpeis.comments@noaa.gov, americanvoices@mail.house.gov

attention david cottingham mmhsrp dpeis nmfs silver spring md

15 years to come up with this plan - isnt that a little bit tardy and not protecting resources for far too long a time in this eat em up world. Congress decided l5 years ago to have a good plan in place to protect marine mammals in distress.

I dont think the us dept of commerce should have jurisdiction over any animals since it is so focused on business and commerce and certainly not interested at all in the welfare of any animal. Profiteers and businessmen rule this dept and the animals get unprotected and abused in this department. Overfishing is rampant in this commerce filled dept, concerned only about more and more and more and with no conception of saving or protecting.

i have comments on the pages below:
1-8 future generations are being robbed blind by mgt policies of this agency. virtually every species is overfished courtesy of this agency.

1-11 Prescott grant program accomplishes imporant work. its spending should be closely audited to eliminate all graft and corruption but more of nmfs budget should to to helping mammals in trouble. right now graft and corruption gets too much ot tax dollars.

1-13 - asking usda to participate (as anti animal a dept as can be imagined in our wildest nightmares) is no help at all in protecting marine mammals. also what does geological survey have to do with marine mammals? this is a very strange choice of participating agencies. meanwhile animal protection groups are blacklisted and kept out of the loop - shows how democracy is not working in corrupt washington dc bureaucracy.

3-5 - public notice and public comment re authorization of "incidental" killing and murder - the public comment is given short shrift if it comes in saying protect the marine mammals. these permits to kill are approved l00% of the time. such a l00% system is a scam on the public. it is pro forma.

3-18 - 61% of right whales show entanglement in fishing nets. this must be stopped now. negligence of this agency in regard to this killing and injury is horrendous.

3-31 - the reporting of marine mammals entangled in fishing gears is NEVER truthfully reported by the commercial fish profiteers. commercial fish profiteers instead carry guns to kill all marine mammals. we need satellite records of all that goes on on commercial fish boats.

3-33 under the bush atmospheric deposition has gotten much dirtier and unhealthful. water quality has also been destroyed by policies of corrupt washington.

3-34 - l00% of esturarine area in n ortheast is polluted - not 27%. Sediment contamination in this area is poor - not fair. why isn't this agency testifying against allowing the contamination that has gone on for the past sixty years? this agency is instead silent and doing NOTHING for a clean environment.

3-35- to say Gulf of Mexico with its dead zone the size of NJ is in "fair condition" seems like a ludicrous overstatement.

3-39 NMFS enters into co op agreements with alaska native organizations to kill marine mammals NOT TO CO MANAGE THEM.this is a lie and a use of deceptive words so americans dont understand exactly what your are doing.

4-4 - NMFS/noaa already allows the spread of fish practices that are harmful to marine mammals - that is already here. i do not think the stranding network does enough to act as a "surveillance" network.

4-6 tags do caues pain and infection and use of them should be severely restricted. that is not happening.

4-10 - absolutely periodic review should be made to stay in the stranding network.

4-13 - public continually wanred about pathogens. no appendix was affixed showing any such issue exists or has existed in last ten years. please advise why you are claiming.

4-14 - this doesnt have to be a 300 pg book. there is far far too much repetition in writing this book.

4-19 - dont touch the animal unles syou intend to help it. otherwise leave it alone.

4-24 - it is illustrative that 300 right whales are such a small population. their efforts at reproduction will probably NOT be successful and this species will probably go extinct like so many many others. it is clear that allowng commercial fish profiteers to use whale life threatening gear is ludicrous and should be stopped now.

4-26 educated people on the west coast certainly can follow guidelines on how to disentangle a whale without "training".

4-30 tags on marine animals severely disrupt their lives. the use of tags should be banned just about totally.

4-32 - inescapable that critter cams represent severe drain on a creature's energy causing injury and possible death. how would you like to drag 30 to 50 lbs weight with YOU every day of your life? the cruel abuse of these animals by alleged "researchers" is far too frequent and given much too liberablly.

4-33 using bleach to mark an animal - what crazy insane researcher is on the loose with that insane idea? if there is no evidence of infection from being hit by a blowgun - i think the research is not satisfactory here and believe infection can and does result. this old research from l992 seems wrong.

the research from l993 on effects on mammal of biopsy should be redone by researcher accompanied by animal protection person. some statements saying animal is "unconcerned" seem like self serving statements of the researcher hoping it is so. so researchers can then continue their assault on these animals.. self serving statements.

4-36 the stupid negligent diversion of all animal life into usda, fws, dot, noaa is far too divisive. there should be ONE AGENCY DEALING WITH ALL ANIMALS LIVING IN USA, STAFFED BY ANIMAL PROTECTIONISTS, NOT STAFFED BY ANIMAL USERS AND ABUSERS.

4-37 - FESS UP - WHAT DISEASES HAS THIS DEPT INITIATED WHICH RAN RAMPANT BASED ON VACCINES INJECTED INTO PERFECTLY HEALTHY MAMMALS.
B. SACHAU
15 ELM ST
FLORHAM PARK NJ07932

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Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
Specific comments on PEIS sections				
12	N/A	Entire document	While we largely support the Proposed Alternatives within the PEIS, we believe that the document does not sufficiently consider response to reported individual animals from strategic/depleted stocks. Additionally it must increase mandates for thorough examination of carcasses for human interaction.	Response activities are the same for all animals, including those from strategic/depleted stocks. Extra efforts may be made for those species that are threatened or endangered. Information on human interaction documentation were also added to the final PEIS in Section 2.1.1.1. The human interaction handbook and data sheet developed by the Cape Cod Stranding Network and the Virginia Aquarium was also added as Appendix M.
11	Page 1-5	Section 1.2.2	Should the $4 million specific figure be dropped from the text? I wouldn't want it to look like that is the final figure and can never go up (or down).	On page 1-5, lines 15-19, text was revised to state: "NMFS was authorized to disburse funds to eligible members of the National Stranding Network for: the recovery or treatment of marine mammals; the collection of data from living or dead stranded marine mammals for scientific marine mammal health research; and facility operation costs. Since 2001, Congress has annually appropriated $4.0 million to the Program, and 187 awards totaling over $16.5 million have been disbursed to stranding network members." More information on the Prescott Grant Program is provided in Section 1.3.2.4, which does state that the grant program is subject to annual Congressional appropriation. On page 1-5, line 21, the following text was added : "Additional information on the Prescott Grant Program is presented in Section 1.3.2.4."

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
24	Page 1-10, lines 17-22	Section 1.3.2.2	To be all inclusive, the Department recommends the following additions..."For import and export of marine mammal specimens, the MMHSRP may be required to have import and export permits, if the species is listed on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix I, II, or III. The CITES permits for import and export are issued by the FWS and are required to import and export samples, parts, carcasses, or live animal species (for treatment or release) listed in the CITES Appendices. Species listed on the CITES Appendix I require both an import permit and an export permit be issued for international shipments. Species listed on CITES Appendix II only require an export permit, unless the importing country has stricter mesaures than CITES. The only marine mammal listed under Appendix III is the walrus, *Odobenus rosmarus*; either an import permit or a certificate of origin is required for each international shipment of walrus specimens."	Text revised per comment.
19	Pages 1-11 to 1-12	Section 1.3.2.4	In order to facilitate organizations meeting and maintaining Rehabilitation Facility Standards and all other standards and activities recommended in the preferred alternatives, I urge NOAA to continue and expand the John H. Prescott Rescue Assistance Grant Program.	Acknowledged
17	Pages 1-11 to 1-12	Section 1.3.2.4	The Prescott Grants Program has accomplished a great deal to date, and its continuation is crucial to the continuation and improvement of national stranding response.	Acknowledged
19	N/A	Section 2	I fully support adoption of the preferred alternatives.	Acknowledged
17	N/A	Section 2	I support the implementation of the preferred alternatives.	Acknowledged

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
25	Pages 2-3 to 2-4	Section 2.1.1.3	Under the notion of best practices, we recommend that the National Marine Mammal Health and Stranding network implements a policy and procedure to either recognize stranding agreements across regions or issue addtional stranding agreements to singular organizations that typically cross multiple jurisdictions.	Stranding Agreements are tied to a geographic area in one NMFS region. Stranding Agreements will not be recognized across regions. Article I of the Stranding Agreement states that, if requested by NMFS, people authorized under a Stranding Agreement "may assist in the stranding response outside of their assigned response area or in another Region as coordinated with the appropriate regional NMFS Marine Mammal Stranding Coordinator (s)."
20	Pages 2-3 to 2-4	Section 2.1.1.3	Of great significance are Section 2.1.1.3 Stranding Agreement and Response Alternatives. We reject Alternative A1 and A5 primarily because the risk to public safety is too great. If trained authorized personnel do not respond to injured or distressed marine mammals the public will take matters into their own hands as we have seen in the past. We also reject Alternative A3 and A2 on the grounds that they lack standardization and guidelines for the national network. We endorse Alternative A4 and support NOAA in their goal to offer guidelines, minimum criteria and standardization for network participants.	Acknowledged
12	Pages 2-3 to 2-4	Section 2.1.1.3	We believe that NMFS must respond to reports of all floating large whales, regardless of whether external signs of human interaction are noted on the carcass, but having due regard to the operational conditions that may limit or constrain such attempts. Vessel strikes are frequently determined by necropsy, and not by external signs of trauma and, according to Moore et al. 2004, post mortem examinations are necessary to ensure better understanding of mortalities that are due to human interaction. We believe that floating large whales should be retrieved and thoroughly necropsied with a draft necropsy report made available within 14 [working] days of when the carcass is examined.	NMFS attempts to respond to all floating large whale carcasses. However, response activities may be hampered due to available resources (personnel, money, etc.), weather conditions, and location of the carcass. The condition of the carcass is also a factor in the response. If a carcass is severely decomposed and untowable, a necropsy will not occur. Samples may be taken of ropes or line to identify the source of gear (if possible) and other samples may be taken of the animal for genetics or other scientific analyses.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
12	Pages 2-3 to 2-4	Section 2.1.1.3	Because there are areas where beaching a carcass for necropsy is difficult, we recommend NMFS funds the research, design, and construction of a number of mobile necropsy stations or barges. These would be located along the length of the east coast, with sufficient funding available to allow for the stations or barges to be utilized thus ensuring these data are collected in all US waters and our knowledge increased.	We have significant logistical concerns about this plan regarding the number of barges/stations that would be required to cover all of the geographic areas where floating carcasses may be reported, given the limited geographical range and slow cruising speeds of barges. In addition, NMFS believes we are currently making all logistically feasible attempts to land and necropsy all floating carcasses.
17	Pages 2-3 to 2-4	Section 2.1.1.3	More centralized oversight and management of national stranding response, through Headquarters, would be beneficial.	Acknowledged
12	Page 2-5	Section 2.1.2.2	We support Alternative B3 recommending that chemically euthanized carcasses are transported offsite. While this Alternative alleviates many of the concerns of bioaccumulation resulting from scavengers preying on carcasses, we also believe that NMFS must support research into methods of euthanasia which are both humane and environmentally safe.	NMFS has funded research on various methods of chemical euthanasia and the environmental impacts of these methods (see Appendix J). NMFS acknowledges that there is still much to learn regarding the fate of chemical euthanasia solutions in the environment. Section 6 has been updated to include continuation of research in the area of humane euthanasia, which includes research regarding the environmental impcats of chemical euthanasia solutions.
25	Page 2-6	Section 2.1.2.3	We will need assistance with determining appropriate burial if other disposal is not possible. We also request assistance in ranking chemicals for toxicity levels if chemical euthanasia is used and in working with vet and zoo/aquarium groups in developing non-chemical, humane and user friendly ways to euthanize.	NMFS has funded research on environmental impacts of various methods of chemical euthanasia, but acknowledges that there is much still to learn. Section 6 has been updated to include continuation of research in the area of humane euthanasia.
4	Page 2-5	Section 2.1.2.2	Guidelines are also needed for euthanasia, particularly of large whales. Research should be funded to identify or develop methods of euthanasia that are humane, efficient, and pose minimum risks to human safety and environmental health.	NMFS will work with stranding network members to ensure carcasses are disposed of in compliance with local, state, and Federal regulations.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
4	Page 2-5	Section 2.1.2.1	"Other methods" of disposal, as listed above, should be further defined and a list of specific, approved disposal methods should be listed in detail. There is the potential for individuals or facilities to loosely interpret "other methods" as a means of disposal; for example, "composting" could be interpreted as burial at the stranding site, which contradicts the intent of the recommendation. The NAIB also recognizes the need to identify alternative disposal methods for non-euthanized carcasses.	Added text to clarify composting: "Composting is an alternative method of carcass disposal involving transporting carcasses to a composting facility." The methods identified in Section 2.1.2.1 are those methods that have been utilized by stranding networks nationwide (incineration, rendering, composting, burial, towing to sea, leaving onsite).
17	Page 2-5	Section 2.1.2.2	It is important that chemically-euthanized animals not remain in areas where the chemicals can be released to the marine environment as the animals decompose.	NMFS concurs with this statement.
9	Page 2-6	Section 2.1.3.1	Further, we believe that animals should not be taken into rehabilitation facilities if they are poor candidates for release. This has happened with some regularity with small cetaceans (i.e., neonates being taken in, animals missing or with necrotic body parts, seriously ill animals). It is also not clear that the protocol described in the DEIS and its appendices will prevent this current problem from occurring in the future.	NMFS agrees that there is a need for better decisionmaking regarding rehabilitation candidates. NMFS is planning to hold a workshop to develop guidelines for making decisions during response activities (see Section 6).
4	Page 2-7	Section 2.1.3.3	Public display of animals in rehabilitation should be investigated and defined.	See Section 6, Cumulative Impacts, for a discussion on public viewing of animals in rehabilitation.
4	Page 2-7	Section 2.1.3.3	Priority funding should be awarded to organizations that seek to achieve or exceed minimum standards.	Stranding network organizations may receive funding through NMFS via the competitive Prescott Grant Program. The priorities of the Grant Program change yearly, but coming into compliance with rehab facility standards has been and will continue to be a priority for funding.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
12	Page 2-7	Section 2.1.3.3	We generally support Alternative C3 which would implement improved Rehabilitation Facility Standards, but we also strongly believe that NMFS must be clear that the primary objective of the SA holder is to release or refloat an animal immediately from the stranding site and moving a stranded animal into a rehabilitation facility is a last resort.	For single strandings, it is general practice to not refloat an animal as it has likely stranded because it is unhealthy. Unhealthy animals that are refloated would likely restrand. Single animals that strand are either euthanized or taken to a rehabilitation facility. For mass strandings, typically most animals are healthy and may be refloated. All strandings are handled on a case-by-case basis, and the onsite responder is responsible for making an assessment of each animals' health.
17	Page 2-7	Section 2.1.3.3	Implementing a minimum set of standards would help to improve care for the animals, and would improve the knowledge base for treatments.	NMFS concurs with this statement.
9	Page 2-8 to 2-9	Section 2.1.4.1	We are concerned that the stranding response program should make every effort to facilitate beach release of newly stranded animals. We have seen instances in which beach coordinators specifically instruct responders not to return small cetaceans to the water until all biological sampling that can be done is completed. This delay is returning them to the water may compromise the animal's condition. Releases in other countries (e.g., New Zealand) are usually accomplished expeditiously and they should be here as well, since most studies have indicated that mass stranded animals are generally healthy. It is not clear from the protocols described in the DEIS that this is the goal or priority. It should be.	For single strandings, it is general practice to not refloat an animal as it has likely stranded because it is unhealthy. Unhealthy animals that are refloated would likely restrand. For single animal strandings, animals are either euthanized or taken to a rehabilitation facility. For mass strandings, typically most animals are healthy and may be refloated. All strandings are handled on a case-by-case basis, and the onsite responder is responsible for making an assessment of the animal's health. The goal for all stranding response activities is to make an expeditious assessment of the animal. To make this assessment, biological samples may be necessary. Also, any animal refloated would receive some form of identification (tag) in case it restrands.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
2, 3, 5, 8, 10, 16, 22, 27	Page 2-8 to 2-9	Section 2.1.4.1	Eight commenters opposed any release of any marine mammals that have been rehabilitated into the wild in Alaska.	Text has been revised in Section 5 (Mitigation), page 5-7, lines 10-18, to state: "Additional measures to minimize the potential for disease transmission from rehabilitated ice seals (bearded, ringed, ribbon, and spotted seals) would be implemented in the Alaska Region. NMFS would not authorize responders to transport stranded ice seals beyond the geographic areas where they strand for the purposes of rehabilitation and release back to the wild. NMFS would review the following situations on a case-by-case basis: 1) an ice seal out-of-habitat; 2) ice seals as part of an official UME; and 3) stranded spotted seals in Bristol Bay, AK. NMFS would work with Alaska Native organizations (co-managers of these species) to determine the best possible solution for those ice seals. After consultation with these organizations, NMFS may re-evaluate this policy at anytime, particularly with regard to changes in the status of ice seal populations and their habitat." The text is taken from a letter written from NMFS to John Goodwin (Chairman, Ice Seal Committee). The letter can be found in Appendix N of the Final PEIS.
17	Page 2-10	Section 2.1.4.3	Obligatory follow-up monitoring, with timely dissemination of results, is needed to learn which rehab efforts are useful, and to explore the impacts of released animals on wild populations (e.g., Wells *et al.* 1999; in review a, in review b). Sample sizes from releases to date are generally to small to be conclusive.	Stranding network organizations may receive funding through NMFS via the competitive Prescott Grant Program. The priorities of the Grant Program change yearly, but telemetry studies to monitor released, rehabilitated animals has been and will continue to be a priority. Collaborative studies between multiple stranding network organizations to increase sample sizes are particularly important.
26	Page 2-10	Section 2.1.5.1	We support an article addition to the SA on small cetacean and pinniped disentanglement.	Acknowledged

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
25	Page 2-10	Section 2.1.5.1	It's my suggestion that an ICS 100 structure be officially part of the entanglement responses across regions.	NMFS agrees and is working on ways to best incorporate the Incident Command System (ICS) structure into disentanglement responses. NMFS has offered ICS 100 training at a variety of regional and national stranding network meetings and will continue to do so.
25	Page 2-10	Section 2.1.5.1	Since such responses [disentanglement] often include the U.S. Coast Guard and other official government entities that follow the other ICS and NMFS typing protocols, I recommend that National Marine Fisheries Service flips its type of numbering so that 1 is at the highest level with perhaps a 1A designation for specific right whale responders.	NMFS is considering this recommendation. NMFS will determine if this type of change would introduce confusion among disentanglement responders since the ranking criteria has been in place for numerous years.
8	Page 2-10	Section 2.1.5.1	The level designation for responders (Levels 1-5) should be reversed to coincide with designations standard in the Incident Command System Structure (lower numbers respresent the higher risk/greater experience roles). This is a minor point that might help integrate disentanglement response with other agencies' ICS response efforts.	NMFS is considering this recommendation. NMFS will determine if this type of change would introduce confusion among disentanglement responders since the ranking criteria has been in place for numerous years.
12	Page 2-12	Section 2.1.5.3	We fully support Alternative E3 which would require the West Coast Disentanglement Network to adhere to the training standards and techniques currently employed by the East Coast Network.	Acknowledged
17	Page 2-12	Section 2.1.5.3	Every effort should be made to ensure proper training and maintenance of standards for operations.	Acknowledged
9	Page 2-12	Section 2.1.6.1	It is imperative that research undertaken or funded by the federal government adhere to standards of the Animal Welfare Act and that government agencies uphold the same standards required of other institutions engaged in research (i.e., IACUC oversight and adherence to IRAC principles). The DEIS should contain an explanation of whether and how the federal government is complying with these standards and if its research does not have this type of oversight and adherence to standards, why not.	NOAA-wide policy for the review of animal care and use during scientific research is currently in development. Once the NOAA policy is in place, the research conducted under the MMHSRP will be reviewed and approved by the animal care and use committee.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
12	Pages 2-12 to 2-13	Section 2.1.6.2	While the Preferred Alternative F3 appears the most appropriate, we believe that the number of take permits on wild populations should be minimized and suggest that NMFS establish a sampling archive bank for unused protion of tissue, fecal matter, exhalation, fluids, etc. obtained by stranding networks. Future permit requests requiring these types of samples should be required to utilize archived materials prior to authorization of additional takes from the wild.	The NMFS Office of Protected Resources Permits, Conservation and Education Division authorizes takes on wild populations of marine mammals throught the issuance of permits. The MMHSRP currently has a tissue bank for toxicology samples and is starting to bank serum. Individual facilities often archive their own samples taken from stranded animals. The MMHSRP will encourage the Permits Division to inform researchers of these resources for their activities.
17	Page 2-13	Section 2.1.6.2	In order to optimize the value of this research, it is important that a set of standardized diagnostic laboratories be identified or established that will allow for consistent sample analyses, and will be able to expeditiously handle the large number of samples that may result from a research program of Unusual Mortality Event investigation, for example.	NMFS acknowledges that it would be ideal to have a set of standardized diagnostic laboratories. However, there currently are no standard commercial laboratories available for marine mammal diagnostic tests in the U.S. Other logistical challenges make this difficult at the present time.
9	Page 3-13	Section 3.2.2.6	There is a statement made on page 3-13 that "[o]f the live-stranded small cetaceans, few are taken into a rehabilitation facility and very few are released." The wording in this sentence should clarified. It is not clear whether this sentence means to inform readers that, of the animals taken into rehabilitation facilities, very few are released; or whether it is stating that few are taken into rehabilitation facilities and, of the remainder who are not, "very few" stranded small cetaceans are released alive from the beach where they stranded. Each of these quite different interpretations has implications that should be addressed in different ways by NMFS. If "very few" of those taken into facilities are released, then the NMFS program should address the reasons for this (e.g., are poor candidates being chosen, are facilites unable to cope with needs of wild caught animals, etc.) and remedy them. If it is the latter scenario (that very few are released from the beach and die or are euthanized if not taken into rehabilitation facilities) then we believe that this too should be addressed.	Text revised per comment.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
12	Pages 3-13 to 3-21	Section 3.2.2.6	We are concerned that animals may be taken into rehabilitation with the express intent of supplying a captive facility. Data presented by NMFS in this document appear to substantiate these concerns. For instance, section 3.2.2.6 states that "up to 50% of the rehabilitated seals and sea lions are released back into the environment" and "of the live-stranded small cetaceans, few are taken into a rehabilitation facility and very few are released." It is unclear as to what happens to the othe 50% of pinnipeds that are not released-are they retained as captive animals, euthanized or die in reahb? Similarly for cetaceans, it is unclear why "very few" are released. Figure 3-3, Cetacean Strandings Nationwide appears to demonstrate that there is a substantially higher number of cetaceans taken into rehab versus the number released. The document offers	Text revised per comment.
9	Pages 3-13 to 3-21	Section 3.2.2.6	We would have appreciated a brief discussion of the likely reason for discrepancies in release of animals shown in charts depicting the fate of stranded pinnipeds and cetaceans shown in figures 3-2 and 3-3 of this chapter and in regional sections such as 3-4 and 3-5. There are virtually no releases of cetaceans shown. If this means that virtually all stranded animals are euthanized, we question this approach. If the "released" portion of each column only refers to animals taken into facilities for rehabilitation and subsequently released, this should be made clear. Simliarly, if the "yellow" portion of the bar showing "alive" stranded animals includes animals that were returned to the water from the beach and thus not counted as "released," then it should be so noted, with	Text revised per comment.
12	Pages 3-17 to 3-18	Section 3.2.2.6	In section 3.2.2.6, subsection , Northeast Region- Human Interaction, the PEIS notes ship strikes to right whales but not to other species. While the issue of ship strikes is a significant contributing facto to the potential demise of the critically endangered North Atlantic right whales, all large whale species are at risk.	The following text was added: "Six confirmed ship strikes of Gulf of Maine humpback whales and eight confirmed ship strikes of Western North Atlantic fin whales occurred from 2001 to 2005 in the Northeast Region (Nelson *et al.* 2007). Ship strikes have also been documented for sperm, sei, blue, and minke whales (Jensen and Silber 2003)."

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
12	Pages 3-18	Section 3.2.2.6	In the subsection, Northeast Region-Temporal Changes, it states that "ship strikes and entanglements are frequent in summer." While we do not dispute the accuracy of this statement, we do question why documented entanglements and ship strikes that occur outside of summer are not considered, and have been excluded. Documenting human interaction throughout the year is critical in determining whether seasonal exemptions, as proposed in management schemes, are sufficient or appropriate.	Documented entanglements and ship strikes have not been excluded. This section states when entanglements and ship strikes seem to be more common in the NMFS Northeast Region. Entanglements and ship strikes are documented whenever they occur/reported.
11	Page 3-20, line 29	Section 3.2.2.6	Add striped dolphins to the list of mass strandings in the SER.	Text revised per comment.
11	Page 3-21, lines 13-14	Section 3.2.2.6	I question the comment on page 3-21 that right whales and humpback strandings occur during the winter "migratory period from Nov-Apr." To begin that period described is six months long and therefore describes half of the year. Additionally, there is evidence from a number of aerial survey efforts off the mid-Atlantic and SE Atlantic Bight (reference documents as contract reports to the SER) of right whales and especially young humpbacks in the region from Sept to June. I would suggest some language like "southern component of their home range."	Text revised per comment.
24	Page 3-24, lines 5-9	Section 3.2.2.6	We note that a UME was delared for southern sea otters in 2003. Unless this event is being lumped with the "Multi-species UME" for 2003, the 2003 southern sea otter UME should be included in this paragraph.	Text revised per comment.
24	Page 3-28, line 1	Section 3.2.2.6	...including the polar bear, there are twenty-nine marine mammal species that have the potential to occur in the Alaska Region.	Text revised per comment.
24	Page 3-28, line 4	Section 3.2.2.6	...insert the following sentence on line 4 before the sentence beginning with "Endangered species include...": "On January 9, 2007, the polar bear was proposed for listing as a threatened species throughout its range (72 FR 1064-1099); a final determination will be made following the ESA review process."	Text revised per comment.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
24	Page 3-29, line 3	Section 3.2.2.6	...add the following sentences: "There were six polar bear mortalities in 2006. Mass walrus mortalities are occasionally reported at Alaska terrestrial haul-outs. In 2005, about 30 walruses died from terrain falls at Cape Pierce in the Togiak National Wildlife Refuge. Trampling deaths have been reported in the Punuk Islands near St. Lawrence Island."	Text revised per comment.
24	Page 3-29, line 11	Section 3.2.2.6	...add the following sentences: "From 1996-2000, the estimated mean mortality of walruses from fisheries activities was 1.2 walrus per year. Most human induced mortality on the Pacific walruses is presently from legal subsistence hunting in Alaska and the Russian Federation (Chukotka). In 2005, the estimated total hunting removal of walruses from the population was 5,276 animals."	Text revised to include: "From 1996-2000, the estimated mean mortality of walruses from fisheries activities was 1.2 walrus per year." The rest of the information was not added because the section is only about human interactions that are not legally authorized to occur.
24	Page 3-29, line 13	Section 3.2.2.6	...add the following sentences: "Polar bear and Pacific walrus strandings would be most likely attributed to changing sea ice habitat and could occur year round although the most critical times for polar bears would probably be the spring soon after cubs are born through the fall. For Pacific walrus the critical time for young animals and calves would be during the late spring-early summer when the females and calves follow the ice pack north."	Text revised per comment.
11	Page 3-29, lines 14-21	Section 3.2.2.6	Why is there a specific section on "marine mammal population change" only for the Alaska region?	Marine mammal population change sections were added for each of the NMFS regions.
24	Page 3-29, line 21	Section 3.2.2.6	...add the following sentences: "The size and trend of the Pacific walrus population are currently unknown. Population point estimates from 1975-1990 ranged between 202,039 to 246,360 walruses, but were not precise enough to accurately reflect trend. The Southern Beaufort Sea Population and Chukchi/Bering Seas populations of Polar bear are thought to be declining."	Text revised per comment.
24	Page 3-30	Section 3.2.2.6	...ensure that Figure 3-12, Alaska Region Pinniped Strandings 2001-2004, includes strandings of Pacific walrus.	Stranding information listed in the Figure is only for NMFS pinniped species. Text has been revised on page 3-29, lines 22-26 to state that pinniped stranding information excludes walrus.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
11	Page 4-8	Section 4.2.1.2	Direct cardiac injection of euthanasia solution on sedated animals has proven to be effective and relatively safe for the responding team.	Acknowledged
11	Page 4-23, lines 8-12	Section 4.2.4.3	Although the DEIS specifies (pg 4-23, lines 8-12) that release criteria would include a "medical assessment with a a hands-on physical examination and a review of the animal's complete history, diagnostic test results, and medical and husbandry records," these precautions can only minimize the risk, not eliminate it. Testing is not possible for new diseases as tests are not developed until the disease is known. Many tests used for marine mammals are developed for domestic animal use and the effectiveness for marine mammals is not known. False negatives from these tests are common.	NMFS acknowledges that there will still be a risk from releasing animals. However, the release criteria will minimize this risk. The document does state that the criteria will not eliminate the risks to releasing rehabilitated animals.
12	Page 4-24	Section 4.2.5.1	We are concerned, however, that in Section 4.2.5, NMFS indicates that "North Atlantic right whales would be greatly affected if disentanglement efforts ceased, as entanglements are know to be a significant source of mortality." While we support the disentanglement program, we do not support the notion that this is an appropriate solution for right whale entanglements. Disentanglement is, at best, a stop-gap measure and should not be viewed as responsible or appropriate mitigation when other risk mitigation measures have already been held up for a number of years.	NMFS agrees that disentanglement activities are not the solution to reduce large whale entanglements. However, measures to reduce entanglements do not fall under the activities of the MMHSRP.
11	Page 4-25	Section 4.2.5.2	I would like to commend the statement regarding potential injury to entangled animals may be intentional by responders. I believe strongly that we need to be developing more invasive techniques for working with life threatening entanglements. A small injury to the animal, say a quick tissue cut, should not stop teams from going in and actually cutting heavily entangled animals. The faster gear can be cut loose, the better the potential outcome for the animal.	NMFS concurs with this statement.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
10	Page 4-47	Section 4.4.4.3	In considering the effects of the release of rehabilitated marine mammals on cultural resources (Section 4.4.4.3, pg 4-47) we believe you need to consider the ability to obtain marine mammals for food, boat covers, rope, clothing, artwork, and cultural objects could be severely affected by the release of a rehabilitated marine mammal that carries an undetected disease or parasite that infects wild populations.	NMFS believes that this scenario would be highly unlikely to occur given the current mitigation measures (the Release Criteria) and it would be an indirect impact of releasing the animal.
12	Page 4-60	Section 4.6.3.3	Furthermore, while we acknowledge that, as stated in 4.6.3.3, the cost to facilities resulting from upgrades necessary to meet new standards may be significant, we do not support the proposition that these additional funds can be raised by allowing these facilities to charge visitors to view animals in rehabilitation.	Nowhere in the draft PEIS does NMFS suggest that funds for upgrades could be achieved by allowing, and charging for, public viewing of animals in rehabilitation. The document specifically states that currently Prescott Grant funds are the main means to address the costs of upgrading rehabilitation facilities (Section 5.6.3). The document does mention the potential for public viewing as a future activity in Section 6.1. However, an additional assessment of environmental impacts would occur before a decision would be made to continue with this activity.
10	Page 4-61	Section 4.6.4.3	In considering socioeconomics (Section 4.6.4.3, pg 4-61) we believe you need to consider the cost to families in coastal Alaska if they cannot obtain food from the marine mammal resources and must purchase it in local stores. Food costs are extremely high in remote villages due to fuel costs for air transportation.	NMFS believes that this scenario would be highly unlikely to occur given the current mitigation measures (the Release Criteria) and it would be an indirect impact of releasing the animal.
9	Page 5-2	Section 5.2.1	...NMFS should provide general guidance on situations or types of animals who are clearly not good candidates for release and should be considered for euthanasia and/or when animals might be released from the beach rather than euthanizing them. This sort of guidance has been lacking and has led to situations in which animals that were clearly poor candidates for release were taken into rehabilitation facilities, necessitating the expenditure of resources for their ultimately unsuccessful care or to find placement for non-releasable animals.	NMFS agrees that there is a need for better decisionmaking regarding rehabilitation candidates. NMFS is planning to hold a workshop to develop guidelines for making decisions during response activities (see Section 6).

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
9	Page 5-2	Section 5.2.1	Mitigation for tagging, described under this chapter's alternatives, as well as in the permit in Appendix G and H should include a stipulation that the tags being used should be the smallest and least intrusive available that has been proven effective to meet the purpose.	Any mitigation for tagging would be issued by the NMFS Permits, Conservation and Education Division as part of the new ESA/MMPA permit.
9	Page 5-11 to 5-12	Section 5.2.6.2	Further, there should be a stipulation that if any death occurs during capture or tagging of animals, research should be halted pending review by experts as to the reason for the mortality and to recommend means of avoiding additional mortality.	Any mitigation for capture and tagging, including halting research activities, would be issued by the NMFS Permits, Conservation and Education Division as part of the new ESA/MMPA permit.
9	Page 6-1	Section 6.1.1	Section 6.1.1 and Table 6.1 discuss the possibility of amending regulations under the MMPA to allow public viewing of animals being rehabilitated. Although we understand the utility of raising this possibility in the DEIS, we would strongly oppose such a measure if it is raised in the future.	NMFS published an Advanced Notice of Proposed Rulemaking (January 31, 2008) to solicit comments on the need for modifications to the regulations.
15	Page 6-3	Section 6.1.1	Contrary to the statement in the DPEIS, the cited regulation (50 CFR 216.27(c)(5)) does not establish a complete prohibition on the public display of marine mammals undergoing rehabilitation. Rather, such displays are not allowed unless the Regional Director or the Director of the Office of Protected Resources has specifically authorized them and unless they are conducted in a manner consistent with the requirements applicable to public display. This being the case, regulatory changes are not needed.	Text revised per comment

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
15	Page 6-3	Section 6.1.1	Elaborate on the Service's plans for developing draft guidelines to govern when public display of marine mammals undergoing rehabilitation will be authorized, including opportunities for the Commission, the affected facilities, and the public to review the draft guidelines before their adoption.	Text revised as to state: "NMFS would establish guidelines that govern when public viewing of rehabilitating marine mammals would be authorized. NMFS would work with APHIS to develop public viewing guidelines that ensure the requirements of the MMPA and the Animal Welfare Act are met. The guidelines would be designed to protect animal health and to ensure that the potential for a successful rehabilitation would not be compromised. At a minimum, an EA would be prepared to assess any impacts associated with the proposed guidelines. The guidelines would be available for review by the MMC, current rehabilitation facilities, and the public."
15	Page 6-3	Section 6.1.1	The Marine Mammal Commission therefore urges the National Marine Fisheries Service to work closely with the Animal and Plant Health Inspection Service in developing the guidelines for public viewing to ensure that the requirements of the two statutes are met and that the potential for successful rehabilitation is not compromised.	Text revised as follows: "NMFS would work with APHIS to develop public viewing guidelines that ensure the requirements of the MMPA and the Animal Welfare Act are met. The guidelines would be designed to protect animal health and to ensure that the potential for a successful rehabilitation would not be compromised."
Miscellaneous Comments				
26	Response, Rehabilitation, and Release		We support close coordination between HQ and the regions when evaluating SAs, rehab centers, and releases. There should be cross regional consistency whenever possible.	Acknowledged
15	Response, Rehabilitation, and Release		Discuss alternatives for addressing overcrowding at rehabilitation facilities, issues associated with the placement of non-releasable marine mammals in public display facilities, and criteria for making on-site evaluations of the likelihood that a stranded marine mammal can be successfully rehabilitated and released.	Rehabilitation facilities must submit the maximum holding capacity for their facility, based upon the minimum space requirements listed in the Rehabilitation Facility Standards. If facilities are being overcrowded, animals may be tranferred to other facilities within their region. Overcrowding of pinnipeds at facilities has been reduced by watching animals to determine if they are truly stranded before picking them up. The MMHSRP is working with the Permits, Conservation and Education Division to streamline and improve the placement of non-releasable marine mammals. Section 6 describes NMFS' plan to hold a workshop to discuss and outline the process to decide if an animal is a good rehabilitation

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
15	Euthanasia		Clear and specific standards also are needed for determining when euthanasia of a stranded animal is appropriate.	The attending veterinarian is ultimately responsible for determining when euthanasia of a stranded animal is appropriate and the most appropriate method to use.
26	109h		We suggest that 109h holders be held to similar criteria as SA holders are.	Acknowledged
25	Level A form		Here I request the National Marine Fisheries Service incorporates more anatomical data on its Level A data form. Towards that end, I have offered a couple of solutions that meet the needs of both the soft tissues collectors and the comparative anatomists. (See copy of form).	This data is Level B or C data, not Level A. NMFS may develop a standard form to include this data and/or may allow it to be entered into the marine mammal stranding database.
12	Human Interaction		We also believe that while all species should be checked for signs of human interaction, it is particularly critical that strategic and/or depleted stocks be thoroughly examined for signs of human interaction (e.g. necropsy rather than external examination only).	Information on human interaction documentation was added to the final PEIS in Section 2.1.1.1. The human interaction handbook and data sheet developed by the Cape Cod Stranding Network and the Virginia Aquarium was also added as Appendix M. Necropsies may not be conducted on animals when/where it is not logistically feasible, however, every effort is made to recover photographs and samples from these carcasses. Animals are examined for signs of human interactions, regardless of the status of their stock.
9	Human Interaction		The DEIS does not discuss in detail what investigation should be undertaken to determine whether human interaction has occurred nor how best to document it in dead animals....Some specificity might be provided with regard to standards for accurate determination and documentation of human interaction.	Information on human interaction documentation was added to the final PEIS in Section 2.1.1.1. Information was also added to Section 6.1.1 regarding a human interaction handbook and data sheet that will be implemented.
9	Funding		Finally, we are concerned with unfunded mandates. The NMFS must assure that it requests adequate funding to ensure that the standards of stranding response and rehabilitation are uniform and sufficient to the important task laid out in portions of the DEIS.	The Office of Management and Budget submits budget requests to Congress for all parts of the Administration, including NMFS.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
15	Unusual Mortality Events		Revise the DPEIS to provide an update on the status of final reports of unusual mortality events, explore ways to promote completion and circulation of final reports more promptly, and identify actions that the Service can take to improve the synthesis and use of data from unusual mortality events.	Additional information on UMEs has been added to the final PEIS (including numbers of animals and the cause, if determined). However, the final PEIS is not the appropriate place to discuss the circulation of final reports or how to improve the synthesis and use of data from UMEs. This is an administrative task that can be accomplished outside of the NEPA process.
Comments on Appendices				
17	Appendix C	Entire document	I am very supportive of the development and implementation of the "Policies and Best Practices Manual" as described...Such a package of standardized policies and practices will help to elevate the quality of efforts of the entire network, will increase the value of the information resulting from these activities, and will improve the return on investment [of] the Prescott Grants Program, for example.	Acknowledged
7	Appendix C-Disentanglement		PCCS encourages that two certified national training centers, one on the Atlantic coast and one on the Pacific coast, be established to accomplish the goal of implementing the national standards and guidelines. Having clearly designated certified training centers will greatly facilitate implementation of standardized training so that the full benefits to human safety of Alternative E3 can be realized. Training would not occur exclusively at these training centers; rather those conducting disentanglement training would come from the certified training centers. This model has proven to be very effective on the Atlantic coast where PCCS has hosted trainees in an apprenticeship program and also sent staff to train Network members at various locations.	NMFS is looking for ways to expand disentanglement training.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
7	Appendix C- Disentanglement		The training video referred to in Level 1 and 2 criteria was created by PCCS specifically for distribution to U.S. Coast Guard stations to present Level 1 information to Coast Guard personnel. While much of the information is still relevant and accurate, the video is somewhat dated. Viewing this video is not a substitute for on-water experience or training and should be deleted as an "or" criteria listed for Level 2 certification.	NMFS agrees that the video is not a suitable substitute for on-water training. This video is just one component of the training tools and is one appropriate method for qualifying Level 1 and 2 responders. As budget allows, NMFS will work on updating the video.
7	Appendix C- Disentanglement		Definition of criteria for certification should be improved. Requiring completion of Level 1, Level 2, and Level 3 classroom or on-water training without some indication of the objectives of the training is vague. It should also be recognized that some people have extensive skills and experience that is applicable. We suggest the following objectives be incorporated to help clarify the criteria: Level 1- Level 1 classroom training covers definition of entanglement with examples, information on species usually involved, need for standby, documentation, overview of basic assessment and disentanglement objectives and techniques. Level 2- Documented whale experience or at-sea training, including species and individual ID, visual tracking (standing-by), disentanglement operation protocols, basic understanding of equipment (including telemetry, and disentanglement strategy. Level 3- Demonstrated understanding of Network protocols and authorizations. Demonstrated understanding of, and ability to use, specialized tools including telemetry equipment. Demonstrated understanding of disentanglement strategies, planning, and techniques.	NMFS appreciates these comments and will consider incorporating the suggested changes into the criteria.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
7	Appendix C-Disentanglement		There are inconsistencies between the responsibilities and certification criteria for some of the Levels. For example, Level 2 personnel are tasked to "provide a thorough assessment of the nature of the entanglement and the species, condition and behavior of the whale," but specific knowledge of species ID and behavior is not required until Level 3 certification. The Level 2 criteria suggested above should help rectify this discrepancy.	NMFS appreciates these comments and will consider incorporating the suggested changes into the criteria.
7	Appendix C-Disentanglement		Level 3 responders may be authorized to disentangle whales under supervision. We suggest striking the words "a minor entanglement with potential to adversely affect" in the last bullet point under responsibilities for Level 3 responders. The bullet point would then read: May be asked (depending on experience) to disentangle any whale other than right whales under the supervision/authorization of Level 4 or 5 network members. Authorization and supervision may be given over the phone or radio depending on the circumstances and level of experience.	NMFS appreciates these comments and will consider the recommendation.
24	Appendix E, page E-29	Table E-17	...the northern sea otter is identified as "threatened" under the U.S. Endangered Species Act (ESA). However, the northern sea otter stock that occurs in this area, i.e., Washington State, is not listed as endangered or threatened under the ESA.	Text revised per comment.
24	Appendix E, page E-30	Table E-18	...the distribution for the Pacific walrus should read: "Found in shallow water areas, close to ice or land; geographic range is mainly in the Bering Sea and Chukchi Sea ice pack."	Text revised per comment.
24	Appendix E, page E-31	Table E-18	...the northern sea otter is identified as "threatened" under the ESA. Although this is correct for the southwest Alaska distinct population segment, neither the southcentral nor the southeast DPS is listed under the ESA.	Text revised per comment.
24	Appendix E, page E-31	Table E-18	...we recommend including the Polar bear (*Ursus maritimus*) as a year round resident of the Arctic Circle.	Text revised per comment.
7, 8, 25	Appendix F - Disentanglement		No need to list names of Level 1 and 2 responders	Text revised per comment.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Appendix H	Entire document	This appendix could use an up front description/summary of how this information should be used in the stranding context (versus the research context).	Appendix H is a description of the general research methodologies used by Co-Investigators under the ESA/MMPA permit. While it also includes emergency response activities for ESA-listed species, it does not cover basic methods used during stranding response.
14	Appendix H	Entire document	At points, this document seems to refer only to one taxon or species in many places without specifying which and then does not discuss the other taxa/species. Bottom-line, it is not always clear what species is being included and if all other species are excluded.	Information throughtout the Appendix was clarified to specify if it refers to cetaceans and/or pinnipeds.
14	Appendix H, Page H-1	Section 1.1.2 and Section 1.1.3	Sections 1.1.2 and 1.1.3 are not typical activities for a stranding organization.	Appendix H is a description of the general research methodologies used by Co-Investigators under the ESA/MMPA permit. Activities listed in Sections 1.1.2 and 1.1.3 are used by these Co-Investigators and they have been used during stranding response.
14	Appendix H, Page H-2	Section 1.1.4	The first sentence reads: Capture of marine mammals may be necessary during research activities to collect specimens, perform an examination, or attach tags or scientific instruments. This appendix should address stranding scenarios, not research, or there should be a pre-amble to discuss how it applies in stranding situations.	Appendix H is a description of the general research methodologies used by Co-Investigators under the ESA/MMPA permit. While it also includes emergency response activities for ESA-listed species, it does not cover basic methods used during stranding response.
14	Appendix H, Page H-4	Section 1.1.4	Chemical restraint should require veterinary input.	Text added in first paragraph to state: "These procedures would be performed or directly supervised by qualified personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and sedatives."
14	Appendix H, Page H-5	Section 1.1.5	Sedation of large pinnipeds should require veterinary input.	Text added to state: "Sedation of large pinnipeds would be performed or directly supervised by qualified personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of sedatives."

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Appendix H, Page H-7	Section 1.1.6	Instruments should be attached to the coat of the animal, not to the skin.	Text revised to clarify that instruments will not be attached to the skin : "A fast drying epoxy adhesive is used to glue scientific instruments to the hair of pinnipeds. "
14	Appendix H, Page H-8	Section 1.1.7	Restrictions concerning hot branding should be specifically addressed.	Text revised to state: "Hot branding of pinnipeds will not be conducted during the MMHSRP's permit activities. "
22	Appendix H, Page H-8	Section 1.1.7	Therefore, we do not support any freeze branding or marking of any marine mammals in coastal Alaskan waters.	NMFS encourages the use of satellite tags (which are generally non-invasive and are attached externally using an adhesive) for post-release monitoring of animals. In Alaska, freeze branding has not been used to mark rehabilitated animals released by the Alaska Sea Life Center. Satellite tags and flipper tags are currently used by the Center for post-release monitoring. Current Co-Investigators listed under the MMHSRP ESA/MMPA permit do not engage in live-animal research.
14	Appendix H, Page H-10	Section 1.1.9	The second paragraph refers to dolphin biopsy sites. What about other cetaceans and pinnipeds?	Additional information was provided regarding biopsy sampling of cetaceans and pinnipeds.
14	Appendix H, Page H-10	Section 1.1.10	Some folks prefer 19G or even 20G, some prefer butterflies to straight needles. A 4cm needle is longer than needed for some sites/animals and may be too short in some cases. Recommend this be changed to read "of appropriate size."	Text revised to state: "Needle length and gauge for sampling is dependent on the size of the animal."
14	Appendix H, Page H-11	Section 1.1.10	Again, I would leave the precise needle size up to the discretion of the veterinarian. The extradural vessel is not a sampling site in otariids. Otariids and some phocids can be sampled from flipper web veins.	According to Geraci and Lounsbury (2005) the extradural vessel is a sampling site for otariids. Text revised to include flipper web veins as a sampling site for otariids and phocids.
14	Appendix H, Page H-12	Section 1.1.13	The second paragraph refers to extracting the #15 tooth of the lower jaw. What species is this for? Pre-molars are extracted in pinnipeds.	The tooth sampling methods described here refered only to small cetacean health assessment studies. Tooth sampling methods for pinnipeds were added.
14	Appendix H, Page H-13	Section 1.1.13	Catheterization is also possible in pinnipeds.	Text was revised to include catheterization in pinnipeds.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Appendix H, Page H-13	Section 1.1.13	The fourth paragraph's last sentence reads: The samples are sent to a diagnostic laboratory for culturing and species identification. Does species refer to the parasite species? Prey analysis?	For health assessment studies, feces samples are sent to diagnostic laboratories for parasite analysis.
14	Appendix H, Page H-14	Section 1.1.13	Please site the source of the thermal probes. There are other deep rectal probes available.	The thermal probes described here are only an example of probes that may be used during research activities.
14	Appendix H, Page H-14	Section 1.1.13	In the last paragraph of Section 1.1.13, change brevetoxin to any toxin	Text revised per comment.
14	Appendix H, Page H-14	Section 1.1.14	Veterinarian involvement should be required.	Text added in first paragraph to state: "These procedures would be performed or directly supervised by qualified personnel and, if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and sedatives."
22	Appendix H, Pages H-14 to H-15	Section 1.1.14	Another concern of the Bristol Bay Marine Mammal Council, the Qayassiq Walrus Commission, and Bristol Bay communities is researchers prescribing or injecting medication to marine mammals while in the field.	Animals in the wild may be sedated during response activities, but would not be injected with antibiotics. Animals in rehabilitation are taken off antibiotics so that they clear out of their system before the animals are released.
1	Appendix H	Section 1.1.15	First of all, I believe that it is an error to not include the mysticete cetaceans in the research measuring hearing that can be measured using evoked potential procedures. There has been a previous Marine Mammal Permit issued to Dr. Sam Ridgway allowing Auditory Evoked Potentials to be measured on mysticete whales, and to exclude this sort of research now cuts off a very important and necessary source of information on this group of animals. There is no apparent justification for excluding this group of animals and they should be included in future efforts to measure the hearing of whales using auditory evoked potentials.	Currently NMFS Permits, Conservation and Education Division does not have a policy regarding the use of AEP procedures on mysticetes. However, procedures will not be used on mysticetes until a successful methodology is developed. Text has been revised to state: " AEP procedures would not be conducted on mysticetes as there is no documentation on methodology that is likely to be successful in applying audiometric procedures on mysticetes. AEP experiments with animals of this size are inherently difficult for a number of reasons and mysticete anatomy presents additional challenges."

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
1	Appendix H	Section 1.1.15	The first paragraph of 1.1.15 indicates that "sounds are presented through a jawphone attached to the lower jaw". That method of sound presentation is not the best method. While we are assured that bottlenosed dolphins hear well through their lower jaw, (Mohl et al 1999), many other species of odontocetes may not use this same pathway. One can be assured that sound is traveling through the best natural path, and that sound can be best measured in the free field, if it is presented in the water around the animal rather than through a jawphone. Sound presentation to all odontocetes in all Auditory Evoked Potential experiments for stranded animals should certainly not be limited to a "jawphone attached to the lower jaw". The lower jaw would also certainly not be the best place to present sounds to a mysticete.	Text has been revised to include this method of AEP procedures on odontocetes. No methods on mysticetes have been added, as no AEP procedures will be used on them at this time.
1	Appendix H	Section 1.1.15	The next sentence indicates that…"Recording, ground and reference suction cup electrodes are attached along the dorsal midline". That is also not necessary or required. Most animals held in water do not require a ground electrode. Only two electrodes are necessary. A suction cup electrode attached to the dorsal fin is certainly an excellent place to secure it with a suction cup. There is little myogenic electrical noise within the dorsal fin.	Text revised per comment.
1	Appendix H	Section 1.1.15	Many odontocetes that have been examined hear frequencies from 1 to 160 kHz. Some, like the harbour porpoise and the white beaked dolphin, hear as high as 180 kHz (Nachtigall et al, 2000). Some mysticetes, because of the frequency of their emitted signals, are thought to hear as low as 20 Hz. The written range of "Frequencies used for testing range from 5 to 120 kHz" written in section 1.1.15 severely, and unnecessarily, limits the hearing range tests of cetaceans.	Text revised per comment. Information on mysticetes was not added, as testing on mysticetes will not occur at this time under the ESA/MMPA permit.
1	Appendix H	Section 1.1.15	I do not believe that qualified scientists should be limited by the Auditory Evoked Potential guidelines currently presented in Section 1.1.15.	The guidelines presented in Section 1.1.15 are apply only to researchers listed as Co-Investigators under NMFS ESA/MMPA Permit No. 932-1489-09 (as amended).

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
9	Appendix H, H-18	Section 2.1.3	The meaning of this is not entirely clear, but allowing the permit to be used to conduct auditory evoked potential studies on mysticetes should be considered a major amendment of the permit and require publication of the intent to amend the permit in the Federal Register with an opportunity for the public to comment on the methodology and magnitude of the research.	Conducting auditory evoked potential studies on mysticetes would be considered a major amendment to the permit. PR1 would publish the intended amendment in the Federal Register for a 30-day public comment period. Section 7 consultation may be required or reinitiated if activities would be conducted on endangered species.
9	Appendix H, H-18	Section 2.1.4	Section 2.1.4 states that the section on vaccination is not completed. The National Environmental Policy Act requires that reviewers be allowed to review and comment on all aspects prior to approval of any procedure.	Section 2.1.4 was complete when the draft PEIS was published. The "[Section not completed]" was left in by mistake. This section and all information regarding vaccination have been removed from the PEIS.
9	Appendix I		We do not see tables describing impacts of stranding response, other than the very general mention of Project I, which we assume to be emergency stranding response. All impact from possible activities are lumped together. We would expect to see greater detail for stranding response that included, for example, estimates of the number of animals taken by intentional lethal take (i.e., euthanasia) and numbers of animals projected to be taken into/transferred to permanent captive display.	The information in the take tables for emergency response is only for ESA listed species, as these actions are covered under the permit. Takes of non-ESA species are not covered under the permit (they are authorized under Stranding Agreements). These tables were part of the permit application submitted to the NMFS Permits Division (PR1). The tables have been revised according to input from PR1. This new information will be available when PR1 publishes a Notice of Receipt in the Federal Register, which initiates a 30-day public comment period.
9	Appendix I		With regard to the tables for the NMFS permit, we note in the table provided that 50 small cetacean animals would be subject to study with a requested mortality of up to 3 animals per year. This is 6% mortality for cetaceans, which seems high based on capture and study [release?]-related mortality observed in studies by Mote Marine Lab in Sarasota. Further 100 pinnipeds would be taken with a requested mortality of 3. This represents a mortality rate much higher than the rates projected for mortality under the Steller sea lion EIS and in other permits for study of pinnipeds. These mortality rates should be explained.	These tables were part of the permit application submitted to the NMFS Permits Division (PR1). The tables have been revised according to input from PR1. This new information will be available when PR1 publishes a Notice of Receipt in the Federal Register, which initiates a 30-day public comment period. Takes of 300 pinnipeds (annually) during health assessment studies were requested with a requested mortality of 3 animals per year. Takes of 200 small cetaceans were requested, with a requested mortality of 3 animals per year. These take numbers are for assessment studies conducted on any pinniped. small cetaceans species throughout the U.S.

Comments on the PEIS and Appendices

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
24	Appendix L, page 4		...under Trustee Organizations, the fifth sentence reads: "The Marine Mammal Protection Act (MMPA) prohibits the "take" of sea otters, seals, sea lions, walruses, whales, dolphins, and porpoises, which includes harassing or disturbing these animals as well as actual harm or killing..." To avoid potential misunderstandings, we suggest including manatees and polar bears in the list of marine mammals for which the MMPA	This comment was passed on to the authors of the Marine Mammal Oil Spill Response Guidelines.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 1		Having a stranding agreement number would make it easier to reference, or please specify how this agreement should be referenced.	The Stranding Agreement template has been revised to include a header on each page containing the information that should be used to reference the agreement: the region, the participant organizations name, and the period of effectiveness of the Agreement.
14	Page 1		Having an abbreviated (1page) version to present when transporting animals would be helpful.	The signature page of the template has been modified to include a list of those articles authorized. Along with the signature and effective dates listed on this page, it can be taken into the field as a one page summary of the Stranding Agreement.
20	Page 3	Article II, section B	Article II section B lists the NMFS responsibilities. It would be helpful to the Stranding Agreement Participants to understand the experience level and qualifications of the NOAA employees in its region. Stranding Participants are all required to provide such information and it seems prudent the NOAA agree to do the same.	In the revised document, NMFS responsibilities are found in Article II section C. NMFS considers the experience required to implement the MMPA both when hiring and contracting employees, and when designating agents outside the agency.
14	Page 5	Article II, section B	Additional bullet for NMFS responsibility to read: 9. Coordinate regional activities to ensure appropriate division of responsibilities based on geography as well as institutional responsibilities.	Text has been inserted as responsibility number 11 in Article II section C.
14	Page 5	Article II, section C	What should an organization do if financial constraints require limiting its efforts? Financial difficulties can come up quite suddenly and may not permit the requested notification time for changing the agreement.	In the revised version, Participant responsibilities are found in Article II Section D. Stranding Agreement participants should contact their Regional Stranding Coordinator if they are unable to respond to strandings for any reason, including financial reasons. The Regional Stranding Coordinator will request assistance from other network participants when practicable and necessary (see NMFS responsibility Article II C. number 10). NMFS and the Participant can work together to determine whether changes in the stranding participant's situation is temporary, or merits a modification of the stranding agreement.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 5	Article II, section C, part 4	Is an organization still allowed to request payment for reasonable recovery costs for samples transferred to authorized persons or labs?	(Article II Section D, part 4 in revision). Yes. Stranding participants may be reimbursed for shipping and other costs by researchers or labs authorized to receive samples collected from stranded marine mammals (marine mammal parts may not be bought or sold). NMFS is considering changes to the regulations (for possible publication in 2008) that may clarify the language regarding reimbursement from recipients for services and transportation costs associated with transferring stranded animal samples or parts.
13	Page 5	Article II, section C, part 4	While the participant organization is responsible for most costs incurred during a stranding event, this responsibility is unfair and impractical in the case of an Unusual Mortality Event. Sampling protocols are extensive during a UME and shipping costs to diagnostic labs can be an encumbrance to an organization. NMFS must, not may, support costs associated with UMEs, particularly supplies and shipping and diagnostic costs. A pot of money should be set aside to provide monetary support for UMEs around the country. It is unlikely that a Prescott grant could cover additional costs associated with a UME.	(Article II Section D, part 4 in revision). When funds are available and authorized, NMFS will continue to support costs associated with specific analyses and additional requests associated with Unusual Mortality Events (in accordance with MMPA section 405-Unusual Mortality Event National Contingency Fund). Additionally, a portion of funds is reserved from the annual Prescott Program appropriation to make emergency assistance available for catastrophic stranding events throughout the year on an as-needed basis. Responders to such stranding events should immediately contact their Regional Office. Because both of these funding sources are dependant upon annual Congressional appropriations, they cannot be guaranteed.
20	Page 5	Article II, section C, part 4	Article II, section C, part 4 states that the stranding participant shall bear any and all expenses incurred with the taking, collection, or other activities pursuant to this agreement. NMFS may be able to support costs associated with specific analysis and additional requests as funds are available and authorized. This section should clarify that these activities do not include the towing of large whales. We also suggest that the language reflect the fact that activities will be based on the financial resources of the Stranding Participant. If the Stranding Participant does not have the resources available then the samples cannot be collected, shipped, or analyzed. Language used in the NMFS responsibility section such as “as resources are available” would be appropriate here.	On occasion, NMFS has financially assisted in the towing of large whale carcasses (particularly North Atlantic right whales). The language in Article II, C 4 (Article II, D.4. in revised version) has been modified to state that the Participant will manage the costs of the response, rather than bear the cost of the response. Costs that cannot be managed by the Participant should not be incurred. The data collection responsibility for level B and C data collection (Article III B. 2. b.) has been modified to include the "as resources are available" language.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
13	Page 8	Article III, section B, part 1a	If NMFS is going to implement the ICS structure in certain circumstances and expect the responding stranding organization to follow that structure, then NMFS needs to provide ICS training to all participants.	Regional stranding coordinators will be able to provide guidance and information regarding ICS training opportunities to Participants that have not received specialized training. There are also numerous websites with online training for ICS (e.g., FEMA training website: http://training.fema.gov/IS/)
13	Page 9	Article III, section B, 2 a	The need for completed data such as Level A form is imperative, however, having a set schedule for when the data are due is a cause for concern. A set schedule suggests rigidity and does not allow for flexibility for organizations that have limited available personal or mitigating circumstances. It is a concern that organizations will be penalized if this inflexible schedule is not met.	Implementation of the MMHSRP requires timely receipt of Level A data. Title IV of the MMPA, for example, requires NMFS to coordinate effective response to Unusual Mortality Events (UMEs). UMEs occurring in multiple stranding response areas might not be detected rapidly without timely reporting, precluding an effective response. Most participants are able to provide reports within 30 days. Many have received Prescott funds to improve their data collection and reporting abilities. NMFS personnel have been working with stranding participants that periodically have trouble meeting data submission deadlines.
13	Page 9	Article III, section B, part 2 c	The ability to contact NMFS [Region] Regional Stranding Coordinator when there is a possible or confirmed human interactions, suspected unusual mortalities, extralimital or out of habitat situations, mass strandings, mass mortalities, large whale strandings, and any other involving endangered or threatened species of concern within 24 hours seems to be very time constraining. Many facilities within the region get several hundred stranded animals a year; it would be a huge additional time commitment to those facilities to report each of the scenarios listed above, particularly human interaction cases, within 24 hours. A larger time interval for this information should be taken into consideration as well as the importance of this information (does NMFS need to know about every human interaction case when that information will be submitted through the National Database via the Level A form?). This information will be entered in Level A data forms and other stranding/necropsy data sheets, so the need to also separately report this information seems to be double duty for the responder(s).	Many stranding network members already contact NMFS within 24 hours of these events, since they may precipitate enforcement action, require assistance from the stranding coordinator, or heightened vigilance in neighboring stranding response areas. Some regions provide a 24 hour hotline to facilitate rapid notice. Network members that are unable to provide notice within 24 hours when human interactions, unusual mortalities, potential military associated standings, out of habitat situations, mass strandings or large whale and listed species strandings occur should work with their Regional Stranding Coordinator to establish a mutually acceptable reporting program and periodically update the list of reporting expectations.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
13	Page 9	Article III, section B, part 2 d	To require additional information, expedited reports (written and or verbal) of Level B and C data such as analytical results and necropsy reports within 24 hours is also another time restrictive issue. It is not feasible to ask organizations to turn over completed reports and analytical data within 24 hours of the stranding(s). The need to have this information within 24 hours of a stranding is a concern especially for smaller organizations that have limited staff and resources or for organizations that are inclined to have several animals strand simultaneously including mass strandings. It often takes weeks, if not months, to get analytical results, therefore a 24 hour frame is impractical.	Generally, the NMFS Regional Stranding Coordinator is requesting this information over telephone calls, and the need for information is discussed and coordinated with the stranding network participant. The phrase "as available" has been inserted to clarify that this is a request for information that is available within 24 hours.
14	Page 10	Article III, section B, part 2 e	In regards to bullet point (e.), forms or instructions should be provided by the NMFS office.	Network members who have not been trained in chain-of-custody procedures will be instructed by NMFS Regional Stranding Coordinators or NMFS Office of Law Enforcement personnel regarding procedures to follow and forms to complete at the time of the event.
13		Article III, section B, part 3 a	The retention or transfer of any parts of marine mammals is filled out under the “Specimen Disposition” section on the Level A data sheet. It is redundant to also have to report this information to the NMFS Regional Stranding Coordinator within 30 days of the stranding(s)	Currently, parts retained from stranded marine mammals are sometimes transferred well after a stranding event occurs. The regulations implementing the MMPA require notification of the Regional Administrator within 30 days of transfer of any parts. However, if the transfer occurs immediately and is noted on the Level A data report form submitted within 30 days of the stranding, no additional reporting is required. Proposed changes to the regulations are being considered (for possible publication in 2008) that may clarify the language regarding the transfer of stranded animal samples or parts.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
20		Article III, section B and C	The language in the NOAA deliverables section is quite different from the language used in the Stranding Agreement Participant section. The NOAA deliverables section includes the phrase “as needed and as available,” while in the Participant deliverables section the wording changes dramatically to the participant “shall bear all expenses.” While it is appropriate to clarify the financial liability, we believe NOAA should cover the cost, if one exists, of all Level B or C data they request. Alternatively, the language could be changed to closely match the NOAA section; for example: “as needed and as funds are available”.	NMFS and Participant Responsibilities are found in Article II Section C and D in the revised version. To ensure that the purposes of the stranding network are clearly identified and the partnership required to implement Title IV and other provisions of the MMPA related to stranding network activities are adequately represented by the Stranding Agreement, the section on joint responsibilities (Article II Section D. in original) has been moved to Article II Section B, before the sections on NMFS and the network participant's responsibilities. Additionally, the language in the particpant responsibility section has been slightly modified to say Level B and C data should be collected "as resources are available" (Article III Section B.2.b), and provided upon request within 24 hours "if available" (Article III Section B.2.d). Many stranding agreement participants currently collect and provide this information to NMFS within 24 hours of unusual strandings, particularly strandings with severe signs of human interactions, military activity, or emergent diseases.
				Additionally, Prescott funds have been made available to enhance the data collection abilities of stranding organizations to further the purposes of the MMPA. However, this requirement is not intended to cause participants to incur costs that they would not incur in the normal course of their response.
14	Page 11, 13, 16	Article IV, section A, part 1 b	In regards to bullet point (b.), it is recommended that AVID chips and satellite tags be added to this list.	AVID chips and satellite tags were not added to the list. As discussed in the NMFS Policies and Best Practices: Standards for Release, the NMFS Regional Administrator must receive advance notification of and approve the application of alternative marking techniques.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
9	Page 16	Article V, section A, part 1	Transferring an animal for "permanent disposition at an authorized facility" does not meet the purpose of this paragraph, which was stated to relate to "rehabiliation and release." Permanent display is not release as we understand the concept of release (and the term is not defined in the glossary) which implies release back to the wild. We are also concerned that this language in a section on the appropriate disposition of stranded animals may encourage animals to be taken from the beach for display rather than releasing them to the wild, particularly if they are from a specie sthat is novel or otherwise desirable to a captive display facility. Clause "c" should be omitted from the section dealing with "release" and the possibility of keeping stranded animals for permanent display should be considered elsewhere.	The title of this section has been revised to: "Live Animal Response: Rehabilitation and Final Disposition," replacing "Release" with "Final Disposition." NMFS regulations implementing the MMPA include a provision to require the use of a rehabilitated animal in lieu of animals taken from the wild for public display (50 CFR 216.27(b)(4)).
20	Page 18	Article V, section B, part 1 f	Article V, section B1, part f states that the stranding participants “shall prohibit the public display and training for the performance of stranded rehabilitating marine mammals as required by 50 CFR 216.27 (c) (5). This includes any aspect of a program involving interaction with the public.” We feel that the sentence, “This includes any aspect of a program involving interaction with the public” should be clarified and the terms defined. As it stands this would eliminate many highly effective yet non-detrimental education programs currently in progress. It would significantly impact many facilities that have free visitation programs to their rehabilitation centers.	Proposed changes to the regulations are being considered (for possible publication in 2008) to clarify/define public viewing of animals undergoing rehabilitation.
14	Page 18	Article V, section B, part 1 f	In regards to bullet point (f.), we object to a blanket prohibition as public display is possible without impacting the rehabilitation of these animals. Language used in another document concerning distance viewing with no impact is preferred.	NMFS published an Advanced Notice of Proposed Rulemaking (January 31, 2008) to solicit comments on the need for modifications to the regulations regarding public viewing of animals in rehabilitation.

Comments on the Stranding Agreement Template

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 18	Article V, section B, part 2 a	In regards to bullet point (a.), professional Husbandry staff is in a better position to assess the behavioral readiness and should either also sign or coordinate with the release determination paperwork.	As stated in the NMFS Policies and Best Practices: Standards for Release, the release determination recommendation should include a signed statement from the attending veterinarian, in consultation with the Assessment Team, stating that the marine mammal is medically and behaviorally suitable for release in accordance with the release criteria (i.e., similar to a health certificate) and include a written release plan and timeline. NMFS may also require a concurrence signature from the "Authorized Representative" or Signatory of the Stranding Agreement. The Assessment Team can consist of other specialized veterinarians, lead animal care supervisor, and consulting biologist with knowledge of species behavior and life history.

Comments on the Stranding Agreement Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14		Entire document	Word choice sometimes implies requirements for "new" applicants only, but doesn't always specify. Please clarify differences between new and existing organizations throughout the document.	As stated in the NMFS Policies and Best Practices Evaluation Criteria for a Marine Mammal Stranding Agreement, the intent of this document is for both renewals and new applicants. Every Article is footnoted. To renew an existing Stranding Agreement, the applicant must demonstrate past compliance with the terms and responsibilities of their Stranding Agreement, including reporting requirements and deadlines." This point has been clarified in the document.
4		Entire document	However, providing the scope and volume of information required in the General Evaluation Criteria for Stranding Agreement renewal will take many weeks of dedicated effort- a task that many organizations that rely on volunteer services, including ours, may be unable to achieve in the foreseeable future. We urge NMFS to develop a simpler process, particularly for Stranding Agreement renewals. One possibility would be to reduce the written component and rely more on NMFS inspection teams to conduct onsite evaluations.	NMFS intends to request a comprehensive package with these types of documents as part of the initial review for new applicants and once for exisitng stranding participants. At the time of reviews, organizations will only have to provide updates to the documents. Most exisiting organizations already have these types of documents that can easily be shared with NMFS.
20	Page 2-1	Section 2.1	This section states that a prospective SA must apprentice under a SA holder for a minimum of three years. We suggest that NOAA assign a number of rehabilitation cases to meet the minimum requirements rather then length of time.	Text revised to state "9. For prospective Participants, demonstrate experience working under the direct supervision of an existing Stranding Network Participant in good standing or NMFS for at least three years or equivalent case load."
14	Page 2-1	Section 2.1, number 2	Organizations will need time to develop the documentation described in 2.1.2. It would be best if the agency would provide examples or templates to work off of. Alternatively, could the organizational summary used for Prescott Grant applications suffice? Perhaps the requirements for both this document and the organizational summary fo rthe Prescott grant application be unified.	Much of the information requested for applications for the Prescott Grant Program can also be used to fulfill the document requests for a new or renewal of stranding agreement. However, there is more information that is required including specific protocols.
14	Page 2-1	Section 2.1, number 3	Bullet (a.) should read: Brief summary of the existing or proposed scope of the stranding program (e.g., all species of cetaceans, pinnipeds), and whether the request is for response to dead animals only, live and dead animals, and/or rehabilitation.	Text revised per comment.

Comments on the Stranding Agreement Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 2-1	Section 2.1, number 3	Bullet (b.) should read: Justification and description of the existing or proposed geographic area of coverage and why the area of response is appropriate for the organization (e.g., the amount of personnel/volunteers and resources available, relative to shoreline covered.	Text revised per comment.
14	Page 2-2	Section 2.1, number 5	It would be helpful if NMFS could generate a complete list of items and the level of detail ("102 1" x 19G needles" or "a supply of various sized needles" or even just misc. sampling supplies) they are interested in. Otherwise, organizations may not cover what the agency is looking for. Again, an example or template would help.	NMFS suggests referring to existing lliterature resources for a list of equipment, such as Marine Mammals Ashore, the CRC Handbook of Marine Mammal Medicine, and the Woods Hole Oceanographic Institution's Necropsy Techniques for Biologists.
14	Page 2-3	Section 2.1, number 8	In regards to number 8, resumes are also required under 2.1.4b. Pick one place to cover this requirement.	Text for 2.1.4b. revised to state: "Brief summary of relevant training, experience, and qualifications for key stranding response personnel, including primary responders, veterinarians and volunteers as appropriate."
14	Page 2-3	Section 2.1, number 9	In regards to number 9, this should apply to new Stranding Agreements only.	This requirement is for new applicants only and this point has been clarified.
14	Page 2-3	Section 2.2	The first paragraph should read: NMFS will evaluate existing and prospective participants based on their demonstrated track record and their capabilities in the following areas as described in their request.	Text revised per comment.
14	Page 3-1	Section 3.1, number 1	In regards to number 1, what is the difference between representative and responder?	The following roles were clarified: The **Authorized Representative** is the individual with signatory authority for the stranding organization. This individual may be the signatory of the stranding agreement (e.g., Executive Director, President, CEO, etc.). The **Primary Responder** is who will be on-site or supervising when dead or live animals are being examined or handled and is responsible for the day to day operations (i.e., paid and unpaid staff).

Comments on the Stranding Agreement Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
13	Page 3-1	Section 3.1	Is NMFS going to provide required equipment lists that outline what they feel is necessary to collect Level A data? It is a concern that facilities may be penalized for not meeting the required equipment list. Throughout the NER facilities and organizations differ in size, number of staff and geographic area as well as in the quantity and variety of species of animals that strand. As a result the equipment needed to respond to strandings in one area may differ from another.	NMFS suggests referring to existing literature resources for a list of equipment, such as Marine Mammals Ashore, the CRC Handbook of Marine Mammal Medicine, and the Woods Hole Oceanographic Institution's Necropsy Techniques for Biologists. Another use of the equipment list is for NMFS to obtain information on current equipment caches that could be utilized in a large emergency response.
20	Page 3-1	Section 3.2	Section 3.2 states that key personnel are required to have necropsy experience, but this seems unnecessary if level B and C data is only collected “if possible” as is stated in this section. If necropsies are not required, why is necropsy experience for staff?	NMFS believes that conducting necropsies on every carcass is important, but it may not always be possible. For example, when logisitcs prevent retrieval of a carcass. It is important that the key personnel know how to conduct some level of necrospy and sampling.
20	Page 4-1	Section 4.2, section f	Although it states that this qualification is “preferred but not required” it should be removed since mass strandings are limited to only a few geographical locations throughout the nation.	Mass strandings have been reported in every region of the coastal United States. Mass strandings could be two or more ceteaceans, excluding cow-calf pairs.
14	Page 4-2	Section 4.2, number 3	There paragraph should read: The prospective Participant should demonstrate knowledge of national, state, and local laws relating to live animal response.	Text revised per comment.
14	Page 5-1	Section 5.1, number 1	Bullet (a.), Sub-bullet (iii.). The maximum holding capacity depends upon the species. For facilities that receive a number of different species and have flexible holding options, how would the agency determine max capacity? For example, a facility might have a pool that can hold several small animals (i.e. harbor seals) but only a couple large animals (i.e. Steller sea lions). Also, some organizations are limited more by staff and not space, now will NMFs take this into account?	Maximum capacity is determined prior to a stranding event and communicated to NMFS. As stated in the National Stranding Agreement Template, the Participant shall not exceed their maximum holding capacity for cetaceans and pinnipeds based on the minimum standard space requirements, the number of animals housed in each holding area, and the availability of qualified personnel as described in the NMFS Policies and Best Practices Standards for Rehabilitation Facilities. A written waiver from the NMFS Regional Administrator is required prior to the Participant exceeding the maximum holding capacity. Other considerations for determining maximum holding capacity include on-site veterinary care, adequate volunteer support, experienced staff, adequate food and medical supplies, medical test capabilities, adequate isolation capability, adequate water quality, limited public access, and the ability to maintain current, accurate and thorough records.

Comments on the Stranding Agreement Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 5-1	Section 5.1, number 1	Bullet (b.), Sub-bullet (ii.). The sentence should read: Human health and safety throughout the rehabilitation facility.	Text revised per comment.
20	Page 5-3	Section 5.2, section 1 c	"Experience in a supervisory role" should be defined. Does this mean supervising volunteers and interns during husbandry care or supervising the rehabilitation case?	**The Animal Care Supervisor** is responsible for overseeing prescribed treatments, maintaining hospital equipment, and controlling drug supplies. The person should be adequately trained to deal with emergencies until the veterinarian arrives, be able to direct the restraint of the animals, be responsible for administration of post-surgical care, and be skilled in maintaining appropriate medical records. It is important that the animal care supervisor should communicate frequently and directly with the attending veterinarian to ensure that there is a timely transfer of accurate information about medical issues. Ideally, this individual should be a licensed veterinary technician or an animal health technician who reports to, or is responsible to, the attending veterinarian.
14	Page 6-1	Section 6	What is the policy for when the agency is proposing a designee for an existing organization?	As stated in the National Stranding Agreement Template, a Stranding Agreement Holder (Participant) can designate an organization or institution to act on behalf of the Participant. It is up to the Participant to agree to this arrangement. The initial request can come from the Participant or NMFS, but the agreement must be mutual.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
15	N/A	N/A	Specify actions that the Service plans to take to ensure that rehabiliation facilities are in compliance with the Interim Standards for Rehabilitation Facilities.	NMFS will send a qualified individual to each institution to document existing facilities, and to advise each facility of their areas of weakness. Once the Standards have been approved, inspections will be carried out on a rotating 1-3 year interval to ensure complliance.
21	N/A	Entire document	I feel that the guidelines outlined in this document are acceptable as long as they remain guidelines and do not become regulations. The major issues I have are the discrepancies between the minimum and recommended standards. I do not understand how they relate and how they would be weighted if they became regulations. I feel most facilities will aspire to meet the minimum standards and improve their facilities. However, if the recommended guidelines become regulations this would require an additional upgrade coupled with an increase the cost of conducting rehabilitation. These upgrades would require and additional source of funding not able to be covered under the current John H. Prescott Rescue Assistance Grant Program. Currently the only way to fund moderate upgrades is through this grant program. Unfortunately if these funds are diverted from general operational support our programs will not be able to meet our obligations operationally. As the cap for funding is $100,000 (and we currently do not have enough funding to support the existing program proposals) when the b	Minimal Standards will be enforced. Recommended Standards will not be enforced nor are they intended to become regulations, but will help to establish desired guidelines to try to achieve using Prescott Grant money or other forms of funding. Recommended Standards may be used as a means of obtaining funding.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
9	N/A	Entire document	It would seem important to consider providing regulations with additional minimal facility standards, personnel qualifications, staffing patterns, and other aspects of facility-based rehabilitation to assure that animals are properly cared for and that the care is uniform nationally and not variable depending on where the animal has the misfortune to strand. Regulations also faciliate enforcement of standards of care.	Acknowledged
21	N/A	Entire document	Another general comment is that all references to tank diameters and dimensions should be based on actual animal size being rehabilitated in that tank and not the average adult length.	The standards ARE based on the actual animal size. They may reflect the largest animal in the pen/pool.
21	N/A	Entire document	These changes assume that animals will not be in the facilities during construction and operations will be conducted offsite. Another problem associated with these upgrades is related to the continuous operations of the rescue program. If facility upgrades cannot be timed to coincide with a decrease in the number of animals, alternate housing would need to be secured. It would be helpful to have NMFS facilitate a coordinated plan, based on their need assessment throughout each region, to upgrade facilities so as not to create a response void.	Facilities should have approximately 3 years to bring their facility into compliance. Very few facilities operate at full capacity year-around. The improvements should be made when it is optimal for each facility. Communication and team work between facilities would be preferable to a NMFS mandated upgrade schedule.
20	Page 1-2	Section 1.1	In the paragraph on unweaned neonate cetaceans, if the rehabilitation facility is considering permanent care, they should also provide an updated staffing plan to NOAA since an unweaned cetacean would likely require 24-hour care for weeks or months.	Any rehabilitation facility considering rehabilitating unweaned cetaceans must submit a plan of disposition and additional care information to NMFS approval BEFORE such an animal requires rehabilitation. Text revised per comment. See response to comment below.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
21	Page 1-2	Section 1.1	The statement "prior to receiving an unweaned cetacean calf for rehabilitation, facility personnel must submit a plan to the NMFS regional coordinator which will include options and timeline for decisions regarding disposition" should be clarified whether that means receiving from another facility or picking it up from the beach, as most assessment would be done upon arrival at the facility. It should be modified to "shortly after receiving an unweaned cetacean calf for rehabilitation, facility personnel must submit a plan to the NMFS regional coordinator which will include options and a timeline for decisions regarding disposition."	Text clarified per comment. A rehabilitation facility needs to thoughtfully consider these types of cases when developing overall facility goals and objectives. If the facility aims to rehabilitate neonatal and/or unweaned calves, then they need to discuss and seek concurrence with NMFS options for final disposition since most of these cases will be nonreleasable. These issues need to be researched, outlined and NMFS approved prior to admitting any cases.
21	Page 1-3	Section 1.1.1	The statement “pools shall have a minimum horizontal dimension of 9.75 meters (32 feet) or two times the average adult length of the largest species in the pool, whichever is greater” should be changed to “pools shall have a minimum horizontal dimension of 9.14 meters (30 feet) or two times the actual length of the largest species in the pool, whichever is greater”	Text revised per comment.
15	Page 1-4 and 2-4	Section 1.1.3 and 2.1.3	Pages 1-4 and 2-4 state that shade structures or shelters must be provided when local climatic conditions could otherwise compromise the health of the animal. This standard is subjective and allows for broad interpretation. The Service should better define the conditions under which shade must be provided to animals that are undergoing rehabilitation, recognizing that, if such animals are unable to thermoregulate or swim and dive normally, protection from the sun is essential.	Text clarified per comment: "Shade structures or shelters must be provided to animals when local climatic conditions could compromise the health of the animal noting that some cetaceans undergoing rehabilitation may be unable to swim, dive, or thermoregulate, thus requiring either shelter from the elements or shade."
21	Page 1-5	Section 1.1.4	The statement “control air temperature above the pool between 50 – 80°F when appropriate to facilitate recovery” should refer to the environmental parameters encountered by the species undergoing rehabilitation.	It is beyond the scope of the document to mention each and every species. The phrase "when appropriate" should allow appropriate interpretation.
21	Page 1-12	Section 1.3.2	The statement “maintain records for tests with time, level and results – reviewed and signed monthly by the attending veterinarian” should add “or a husbandry care specialist”	Text clarified per comment: "Maintain records for tests with time, level and results – reviewed and signed monthly by the attending veterinarian or the animal care supervisor."

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
20	Page 1-20	Section 1.6.1	Bullet three states, “Diets reviewed by a nutritionist and the attending veterinarian.” This request seems excessive. Most facilities do not have a nutritionist on staff, even the large facilities like the New England Aquarium. It should be enough that the attending veterinarian and the biologists evaluate and calculate the diets. Requiring that a nutritionist review all the diets may prove to be prohibitively costly for the majority of the rehabilitation centers when the husbandry and veterinary staff can manage this.	Text clarified per comment: "Diets reviewed by a nutritionist, attending veterinarian, or the animal care supervisor."
21	Page 1-20	Section 1.6.1	The statement “diets reviewed by a nutritionist and the attending veterinarian” should be altered to “diets reviewed by a nutritionist, attending veterinarian or animal care specialist”	Text clarified per comment: "Diets reviewed by a nutritionist, attending veterinarian, or the animal care supervisor."
20	Page 1-22	Section 1.6.6	*Feed Records, Minimum Standard* bullet three states that a girth measurement must be obtained weekly on cetacean rehabilitation candidates. While this may be okay in the beginning stages of rehabilitation, weekly captures in later stages are excessive. Every other week would be more appropriate with cetaceans in the later stages of rehabilitation.	Bullet 4 text revised to state: "Obtain body weight or girth measurements at least weekly from debilitated easily-handled animals. Girth measurements are taken at the level of the axilla and the anterior insertion of the dorsal fin. Girth measurements are generally less stressful to obtain than weighing the animal." Bullet 5 text revised to state: "Girth measurements or body weight should be obtained as often as practical in the later stages of rehabilitation without causing undue stress to the animal."
20	Page 1-23	Section 1.7.1	*Veterinary Experience* states that veterinarians be available to assess animals during mass stranding events. This should be clarified. In many smaller events veterinarians are often not on site but consulting via phone. We acknowledge that in some regions Participants often act on their own accord with limited or in the absence of veterinary oversight. Wording needs to provide direct guidance for these groups but should also not cripple more responsible mass stranding responders who work consistently under the direction of veterinarians.	Text changed per comment: "The attending veterinarian be available to assess animals during a mass stranding directly or indirectly through trained and qualified primary responders.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
20	Page 1-24	Section 1.7.1	Under *Recommended* for that section is states the vet be a full time employee or contracted veterinarian of record at facilities managing ten or more cetacean cases per year. This does not clarify if that included live and dead animals or just live? If the latter then this requirement could prove prohibitive for smaller facilities with traditionally low cetacean numbers.	A veterinarian experienced in cetacean medicine should be available to consult on cetacean cases at facilities that regularly rehabilitate cetaceans on an annual basis. This is Recommended and not required. Text revised to state: "Be full time employees or contracted veterinarian experienced in cetacean medicine at facilities managing an average of 5 live cetacean cases per year."
20	Page 1-24	Section 1.7.2	*Minimum Standards.* This section taxes the veterinarians with a lot of paperwork that seems excessive, particularly bullet two, which requires a review of Standard Operating Procedures every six months. One time per year is sufficient. Smaller facilities or those not associated with a larger park or Zoo have contracted veterinarians who have another full time job in private practice. While we strongly support veterinary oversight we also think the demands on the veterinarian's time should be reasonable and focused on animal health and direct animal care. Non-veterinarians can perform some of the tasks listed here.	Bullet 2 text revised to state: "Standard operating procedures should be reviewed and initialed by the attending veterinarian or the animal care supervisor annually and/or whenever the document is changed or updated. This document may be reviewed by NMFS as part of the NMFS Stranding Agreement or as part of inspections."
20	Page 1-28	Section 1.9.1	Bullet 13 states that medical records should be available for NMFS review upon request. It should be clarified that this statement does not mean that NMFS is able to retain copies of the medical files or diagnostic results, because these are level B and C data and are owned by the Participant. This should be modeled after the AFIS [APHIS] regulations where regular inspections and reviews take place but AFIS [APHIS] does not retain copies. An agent visits the facility and reviews the documents in house. **Bullet 14** states that medical records must be kept on site for a minimum of 15 years. It should be clarified if this means hard copies or computer copies. Computer copies can be kept more easily, whereas hard copy storage may be problematic. If this refers to hard copies then ten years on site or fifteen years at a secured storage area should be sufficient. (This is restated in the Pinniped section).	Medical records should be available for review. This statement is straightforward and does not need clarification. Medical records may be kept in any format that is easily retrieved.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
20	Page 1-31	Section 1.14	*Training and Deconditioning Behaviors* states the staff veterinarian should evaluate the benefits of training. We recommend that a person with at least three years of operant conditioning with cetaceans be consulted regarding the training plan and the plan for deconditioning. Phone consult would be sufficient before, during and prior to the deconditioning. Many marine mammal trainers will provide support free of charge.	Text clarified per comment: "In some cases, extensive contact with humans, including training, may benefit resolution of the medical case by providing mental stimulation and behavioral enrichment, and may facilitate medical procedures. The relative costs and benefits of training should be evaluated by the attending veterinarian and animal care supervisor and the likelihood of contact with humans following release should be considered. Seeking advice from a qualified cetacean behaviorist (with at least 3 years of experience) may be beneficial."
23	N/A	Section 2	Throughout this document, suggest that "at the discretion of the attending veterinarian" be applied to many if not all of the minimum standards. Many situations arise during medical treatment and rehabilitation of stranded marine mammals where it might actually be detrimental to their recovery to follow the standards. For example, activity and access to water may need to be severely limited for animals with fractures.	This is why most standards allow for deviation of the standard at the discretion of the attending veterinarian.
14	Page 2-1	Section 2.1	Paragraph 4. The last sentence reads: Pinnipeds with evidence of infectious disease must be quarantined (See Section 2.4 Quarantine). Does this mean that Pinnipeds with infectious diseases should be quarantined from other rehabilitating animals? How many isolation areas are expected?	Pinnipeds with evidence of infectious disease should be held in separate areas from other rehabilitating pinnipeds to prevent transmission of disease. Facilities should be prepared to isolate incoming animals with evidence of disease away from other animals utilizing methods to control aersol and water-bourne exposure. Text revised to state: " Pinnipeds with evidence of infectious disease must be held in separate areas from other rehabilitating animals to prevent transmission of disease. There should be sufficient isolation areas to accommodate incoming animals with evidence of disease utilizing methods to control aerosol and water-bourne exposure to other on-site animals (see Section 2.4 Quarantine)."

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-1	Section 2.1	Due to variations amongst the most commonly rehabilitated species, their growth rates, and varying sizes at different life stages and age classes, standards for space requirements should be based on the individual animal housed at any given time, and not generalized on measurements of adults of the same species.	We recommend that such information be included in the facility SOPs using this document as guidance.
18	Page 2-2	Section 2.1.1	In Section 2.1.1 the recommended standard for pools is for them to meet USDA, APHIS regulations. These standards are based on the adult length of the largest species housed in that pool and were developed for permanent display facilities. These standards would not be very practical for rehabilitation facilities like our who handle primarily pups and juveniles of various species that can grow to be quite large and rarely, if ever, strand in our area of response as adults. Also, it is not very clear whether these strandards would apply to all pool used for rehabilitation or only those used for holding animals in the final stage of care prior to their release.	Recommended Text revised to state: "The minimum surface area of the pool for non-critical animals shall be at least equal to the dry resting area required by USDA, APHIS AWA standards, but using the actual length of the largest animal in the enclosure instead of the average adult length."
21	Page 2-2	Section 2.1.1	The statement “facilities where numerous pinnipeds are rehabilitated consistently each year should be equipped with at last one pool and haul-out area that meets APHIS standards for at least one adult of that species where one or more per year strands as adults” should be altered to “facilities where numerous pinnipeds are rehabilitated consistently each year should be equipped with at last one pool and haul-out area that meets APHIS standards for at least one adult of the species when the average of occurrence increases to one or more per year.	Recommended Text revised per comment: " If adult pinnipeds are commonly rehabilitated, facilities should be designed to accommodate the average number of adult-sized animals that strand each year, and have at least one pool and haul-out area that meet USDA APHIS AWA standards."

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	not sure (p2-12?)		Suggest that the temperature range of 60-80F is too narrow and unrealistic. The range should be the same as pinniped species are exposed to in the wild, with protection from extremes of heat and cold.	Text clarified per comment: "Method to raise or lower air temperature, as appropriate to maintain proper body temperature should be available. Access to full shade, constant water sprays and fans may be used for animals that have no access to pools during times when the ambient temperature exceeds 85°F (29.4°C). Likewise radiant heating devices or waterproof heating pads may be utilized when ambient temperatures fall below the comfort level of the animal, which will be determined by the species, age, medical condition, and body condition of the animal. Animals should be able to move away from point source heaters. If animals are too debilitated to move, temperature of heaters can not exceed the safe range of 60-80oF at skin surface or animals must be monitored every 2 hours."
23	Page 2-2 to 2-3	Sections 2.1.1 and 2.1.2	As stated in 9CFR3.110 (revised January 1, 2005), Sec 3.110(b): "Holding facilities used only for medical treatment and medical training need not meet the minimum space requirements as outlined in Sec 3.104. Holding of a marine mammal in a medical treatment or medical training enclosure that does not meet minimum space requirements for periods longer than 2 weeks must be noted in the animal's medical record and the attending veterinarian must provide justification in the animal's medical record. If holding in such enclosures for medical treatment and/or medical training is to last longer than 2 weeks, such extension must be justified in writing by the attending veterinarian on a weekly basis." Since the USDA-APHIS standards make a specific exception for medical treatment, and since rehabilitation facilities are by definition providing medical treatment, there should be no requirement for rehabilitation facilities to meet the same USDA-APHIS standards for marine mammal housing for long-term/display facilities. The exception for medical treatment should remain.	Not all animals in rehab require medical treatment. NMFS oversees marine mammal rehabilitation faclilities and there is no mandate that these facilities also meet USDA standards as they were developed for permanent captive animals. In certain circumstances, we recommend USDA APHIS AWA standards as applicable.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-2 to 2-3	Sections 2.1.1 and 2.1.2	To reduce paperwork, particularly in high-volume rehabilitation centers, we suggest that an exception be made to the required weekly written justification for holding animals under medical treatment. Holding in appropriate facilities for medical care should be permitted until the rehabilitated animals are deemed healthy for release by the attending veterinarian.	NMFS does not require weekly justifications. Regulations that implement the MMPA for NMFS species (50 CFR Sec. 216.27(a)(1)) require that a marine mammal held for rehabilitation be released within six months unless "…the attending veterinarian determines that: (i) The marine mammal might adversely affect marine mammals in the wild (ii) Release of the marine mammal to the wild will not likely be successful given the physical condition and behavior of the marine mammal; or (iii) More time is needed to determine whether the release of the marine mammal in the wild will likely be successful…" and (b)(1) "The attending veterinarian shall provide the Regional Director or Office Director with a written report setting forth the basis of any determination."
23	Page 2-2 to 2-3	Sections 2.1.1 and 2.1.2	Veterinary discretion should apply to all pool dimensions, not just surface area of the pool, as written in the recommended standards.	Section 2.1.1, minimum standard, bullet 2 text revised to state: "Critically ill animals or young pups are to be housed appropriately, with the pool size and depth as well as the dry resting area determined by the discretion of the attending veterinarian." Section 2.1.2, minimum standard, bullet 4 text revised to state: "Animals may be temporarily housed in smaller areas at the discretion of the veterinarian. The attending veterinarian should determine the minimum space which will be most appropriate for the age or medical condition of the animal."
23	Page 2-3	Section 2.1.2	The description of how to calculate dry resting area is confusing to read. We suggest that a table be prepared, based on body length, for the required surface area. This table could be similar to the one for cetaceans in 9CFR3.104, which is based on body length and not on species.	Species specific tables are beyond the scope of this document. Each facility may prepare their own tables based on the sizes and species most commonly rehabilitated.
14	Page 2-3	Section 2.1.2	3rd bullet point. Sentence should read: The facility must have a plan to manage adult males.	Text revised per comment.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 2-4	Section 2.1.5	Paragraph should read: Animals housed at rehabilitation facilities must be provided with shelter to provide refuge from extreme heat or cold. Pinnipeds held in rehabilitation facilities may not have normal activitiy levels and thin animals may be unable to thermoregulate properly. These animals may require shade structures to protect them from direct sunlight and extreme heat, or shelter to protect them from cold temperatures or inclement weather. Animals held in indoor facilities should be provided with appropriate light and dark photoperiods which mimic actual seasonal conditions. Except during pre-release conditioning phase, ensure adequate refuge from extremes.	Text revised to state: "Animals housed at rehabilitation facilities must be provided with shelter to provide refuge from extreme heat or cold…At the discretion of the attending veterinarian an exception to refuge from extreme cold during the pre-release conditioning phase may be made. Pinnipeds should be protected at all times from extreme heat."
23	Page 2-4	Section 2.1.6	Please clarify whether the proposed minimum standard applies to indoor facilities only. For outdoor rehabilitation facilities, there is no practical way to control ambient air temperature.	Outdoor enclosures may employ heating pads, heat lamps, fans, etc. to help control ambient air temp.
23	Page 2-4	Section 2.1.6	Suggest that if protection from extremes of heat and cold are provided, such as access to heating pads, shelters, shade, water spray, etc., the holding of animals in such areas should be at the discretion of the attending veterinarian.	Acknowledged
23	Page 2-5	Section 2.1.7	The language in section [2.]1.7 is more generally appropriate for ambient conditions: provide shelter from extremes of heat or cold, and provide heat as appropriate for animals held in cold climates.	Acknowledged
23	Page 2-5	Section 2.1.7	Please clarify what "appropriate in size" means for individual dry haul out space or individual enclosures.	Text revised to state:"Individual dry haul out space or individual enclosures shall be large enough to accomodate the most common species of pinnipeds rehabilitated routinely at the facility."
23	Page 2-5	Section 2.1.7	Providing a structurally separate quarantine facility for all incoming animals in not necessarily appropriate or feasible. If there is adequate separation between portions of a structure and between animals, that should suffice.	Text clarified per comment: " Barriers sufficient to isolate incoming animals until the attending veterinarian determines them to be free from contagious disease (See Section 2.4 Quarantine)."

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 2-5	Section 2.1.7	4th bullet point. Is the structure referenced in the paragraph meant ot be a separate building? Or can it be separate rooms/holding areas that prevent exchange of water and bodily fluids as well as prevent 'nose-to-nose' contact with other animals? This requirement is stricter than the requirement listed on page 2-15.	Text revised to state: "Barriers sufficient to isolate incoming animals until the attending veterinarian determines them to be free from contagious disease (see Section 2.4 Quarantine)."
23	Page 2-6	Section 2.1.8	Housing arrangements should be at the discretion of the attending veterinarian and/or trained husbandry staff. In many situations, paired or group housing of young animals helps to decrease stress.	Text revised to state: "Access to raised platforms in dry resting areas for pups of all ages at the discretion of the veterinarian."
23	Page 2-6	Section 2.1.8	Raised platforms (in both section [2.]1.8 and [2.]1.9) are not appropriate, as animals in the wild often haul out and sleep on hard, cold surfaces. Dry resting areas may be appropriate and necessary for critically ill animals, but should be at the discretion of the attending veterinarian.	Text revised to state: "Critical or debilitated pups should not be required to lay on concrete or other hard/cold surfaces."
14	Page 2-7	Section 2.1.10	1st bullet point. Addition of the following sentence: Dependent pups are more labor intensive and require more staffing.	Text revised per comment.
23	Page 2-8	Section 2.1.11	Requiring enrichment items to be non-porous and cleanable excludes most if not all natural items, such as kelp, driftwood, etc. Suggest that if items are not porous and easily cleaned, that they be disposable and not shared between pens or pools, e.g. used for only one animal or group of animals.	Generally speaking, driftwood or kelp may be inappropriate in rehabilitation situations. The goal is not to mimick the wild exactly but to provide appropriate items that are non-porous and cleanable or disposable.
23	Page 2-8	Section 2.1.12	Preventing contact between rehabilitating animals and all wild animals (i.e. birds, small rodents, insects) is not feasible, particularly for outdoor facilities. Control is appropriate.	Contact is prevented by pest control measures. Bullet 1, text revised to state: "This should include physical barriers to help to prevent feral and/or wild animals from contact with the rehabilitating animals."
14	Page 2-10	Section 2.2.1	2nd bullet point. Sentence should read: Drain water from pools as often as necessary to keep the pool water quality within acceptable limits.	Text revised per comment.
14	Page 2-12	Section 2.3.2	1st bullet point. Sentence reads: Measure water temperature, pH, salinity (if applicable), chemical additives (if applicable) daily in all pools. Does this apply to open flow through systems with natural sea water?	Yes, this applies to open flow through systems, especially water temperature.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-14	Section 2.3.7	Holding water temperature within the normal habitat range is not feasible, nor is it necessary for short-term rehabilitation. Suggest that this be changed to "protect from extremes of heat and cold," as in other sections.	It is reasonable to hold water temperature within normal habitat range, which is generally pretty broad, as water temperature which exceeds that range may be considered an extreme of heat or cold.
23	Page 2-15	Section 2.4.1	Individual quarantine of all animals is not necessary or appropriate. Please insert language indicating that batch quarantine is permitted and appropriate, as animals are often admitted in groups during seasons.	Text added to bullet 1 to state: "Animals that are admitted in groups may be quarantined together."
23	Page 2-15	Section 2.4.1	Eye shields or safety glasses are not necessary or appropriate. Suggest changing this to the provision of eye-wash stations, and the option for personnel to wear shields or glasses at their discretion.	Text revised per comment.
14	Page 2-15	Section 2.4.1	In regards to the 1st bullet point, the use of dividers, tarps, or physical space is very different from the structurally separate facility referenced on page 2-5. The description listed here is much more reasonable.	Text on page 2-5 has been revised to match the description here. Revised text states: "Barriers sufficient to isolate incoming animals until the attending veterinarian determines them to be free from contagious disease (see Section 2.4 Quarantine)."
14	Page 2-15	Section 2.4.1	In regards to the 5th bullet point, the sentence should read: Maintain equipment and tools strictly dedicated to the quarantine areas or thorough disinfection.	Text revised per comment.
23	Page 2-16	Section 2.4.3	It is not practical to build perimeter fencing that will prevent all wildlife from entering the premises. Suggest deter instead of prevent.	Text clarified per comment: "Ensure perimeter fencing will deter wildlife from entering the rehabilitation premises."
23	Page 2-16	Section 2.4.3	Similarly, it is not practical or even desirable to build net pens that will keep all wildlife (i.e. fish) from coming into contact with rehab animals.	Bullet 3 text revised to state: "Ensure net pens and lagoon areas have sufficient secondary fencing to keep wild mammals from coming in direct contact with the animals housed in the net pens."
23	Page 2-17	Section 2.4.6	Placing a second set of perimeter nets 30 feet from the pens is not practical nor always desirable.	It is desirable to provide a buffer zone between the animals and other wild mammals and the general public.
23	Page 2-17	Section 2.4.6	We suggest that placing pens 1000 m from storm drains is not practical (i.e. run-off from building roofs, etc., can be considered storm drains). Limit this requirement to sewage outfall.	Text revised per comment.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-18	Section 2.4.6	Daily coliform testing for net pens is not practical. Pens may be located in remote areas where testing cannot be carried out, and it is also not feasible to control the coliform count in open water areas.	It is necessary to have some idea of the coliform counts in net pens, even if weekly. Water paddles may be employed to move water if coliforms tend to build up. Bullet 9 text revised to state: "Weekly coliform testing will determine if pathogen build-up exists. Water circulation may be enhanced using water paddles."
23	Page 2-18	Section 2.4.7	Obtaining full bloodwork, cultures, etc., is neither practical nor appropriate in all cases. For example, diseases such as leptospirosis, which is endemic in certain wild populations, can be presumed present in certain groups of animals, and they can be housed together appropriately without extensive preliminary testing.	Text Clarified per comment: " CBC/Chemistries, appropriate cultures, physical examination before moving animals out of quarantine area and at the discretion of the attending veterinarian."
23	Page 2-18	Section 2.4.7	Please clarify the meaning of contingency plan. Is this a treatment plan for the various conditions listed? Housing plan? Please also clarify which diseases are reportable for marine mammals, and to which agency. CDC? WHO? OIE? USDA? Suggest that a table would be helpful.	A contingency plan should be developed if there is an outbreak of highly infectious disease in the rehabilitation facility - the need to separate animals that are ready for release from those with highly contagious disease and this should include housing plans. Also, NMFS will provide future guidance regarding "reportable disease."
23	Page 2-18	Section 2.4.8	This section is very vague. All pinniped handling may result in exposure to potentially zoonotic pathogens. So does all handling, including beach rescues, require full protective gear?	Bullet 5 text revised to state: "Provide appropriate safety equipment, as reasonable, such as protective clothing, eye protection and face masks to all staff who may be exposed to zoonotic diseases (see *Occupational and Safety Information for Marine Mammal Workers* http://www.vetmed.ucdavis.edu/whc/mmz/)"
23	Page 2-20	Section 2.6	Suggest check of wild pinniped foraging literature, as there are many reports that pinnipeds will forage and then haul out for several days.	The biggest concern is with growing pups. Text revised to clariy this: "Feeding regimens should be tailored to enhance weight gain for underweight animals or growing pups, and should simulate natural patterns in terms of frequency and quantity to the extent possible while following a prescribed course of medical treatment."
14	Page 2-21	Section 2.6.1	In regards to the 3rd bullet point, it is excessive for a public display aquarium to have a nutritionist on staff.	A nutritionist need not be on staff but could consult. Bullet 3 text revised to state: " Diets reviewed by a nutritionist, attending veterinarian, or the animal care supervisor."

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-21	Section 2.6.2	If daily food intake is recorded per animal or per group, then kCals consumed can be calculated if/when necessary from the medical records. Requiring daily calculation is adding unnecessary work.	Some facilities have worked this daily calculation into their computer programs. The calculation is also listed as a recommended standard, not a minimum standard.
23	Page 2-21	Section 2.6.2	Suggest that the composition of each diet routinely used be calculated.	Text revised per comment.
23	Page 2-21	Section 2.6.2	Fish supplies maintain composition analysis records for each batch. It is not necessary for each facility to replicate that work.	Text added to bullet 2 to state: "Analysis from fish supplier may be used and a copy should be maintained on site."
23	Page 2-22	Section 2.6.6	Daily feed records cannot be maintained for individuals when they are housed in groups. Group records can be maintained, and together with daily husbandry notes and weekly records of weight provide sufficient indication of individual animal consumption.	Text added at bullet 2: "If animals are fed in groups then group feed records shall be maintained and together with daily husbandry notes and weekly weight records ensure evidence of sufficient feed intake."
23	Page 2-22	Section 2.6.6	Please indicate that food can be weighed before and after feeding to individuals or groups.	Text revised per comment.
23	Page 2-23	Section 2.7.1	It is not possible for an attending veterinarian to certify that animals are likely to survive, or that they are free from known communicable diseases. We do not test for all known communicable diseases, so we cannot certify that animals are free from them. For example, E. coli is a potentially communicable pathogen, and all animals certainly have E.coli. Suggest that a more appropriate standard is that animals must be free from clinical signs of disease, able to swim and dive, and free feed.	We agree and as mandated by Title IV Section 402 (a) of the Marine Mammal Protection Act, NMFS has developed guidance and criteria for release based on optimizing the chances for survival and minimizing the risk to wild populations (NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release). These facility standards have been developed to achieve the goals set forth by the Standards for Release.
20	Page 2-23	Section 2.7.1	Section 2.7.1 in the Pinniped section also recommends that the vet consult with the vet on record at facilities managing over 50 pinniped cases per year. Does this included dead animals? If not this seems to go against NMFS new direction of making difficult decisions.	The 50 cases included both live and dead.
14	Page 2-23	Section 2.7.1	8th bullet point. Sentence reads: Have contingency plan for veterinary backup. This should be the responsibility of the facility and not the veterinarian who may be a volunteer.	We agree and this point is also discussed in the NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release - Evaluation Criteria for a Marine Mammal Stranding Agreement
23	Page 2-25	Section 2.7.2	Suggest that annual review of SOPs is sufficient.	Text revised per comment.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-25	Section 2.7.2	Please clarify what constitutes a health and safety plan. Is a preventative health program required for all staff/personnel?	A health and safety plan for the staff shall be written and accessible at all times. It shall be reviewed by the attending veterinarian or the animal care supervisor annually or as prescribed by the NMFS Stranding Agreement. All animal care staff will be familiar with the plan. The plan should include protocols for managing bite wounds.
14	Page 2-25	Section 2.7.2	6th bullet point. It is not appropriate to assign human health plans to the veterinarian. A human health plan should be developed by the Human Resource personnel with the help of a human medical professional. This should be the responsibility of the facility, not the veterinarian.	Often the veterinarian is the only health care professional associated with a facility. We've inlcuded that it would be beneficial to consult with an occupational health medical professional when developing these plans.
14	Page 2-25	Section 2.7.2	The following reports should be the responsibility of the facility and not the veterinarian: Health and Safety Plan reviews; Animal acquisitions and dispositions; NOAA Form 89862, OMB#0648-0178 (Level A data); NOAA Form 89878, OMB#0648-0178 (Marine Mammal Rehabilitation Disposition Report).	In some instances the vet is the most qualified, however should allow for other qualified individuals to share the responsibility inlcuding the animal care supervisor and organization stranding coordinator.
23	Page 2-25	Section 2.8	Suggest that one blood sample and CBC/serum chemistry is sufficient, as admit and release exams may be the same in many cases. Additional testing should be at the discretion of the attending veterinarian.	Text clairfied per comment: "For most cases, all animals shall have a minimum of two blood samples drawn for CBC with differential and serum chemistry; upon admission and prior to release (see NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release). If duration of rehabilitation is shorter than a week, one blood workup may suffice and is at the attending veterinarian's discretion."
23	Page 2-25	Section 2.8	Measuring girth is not practical in all cases, for example when manual restraint of large animals is used for exams. Most formulas are based on length and weight, so standard length and weekly weights should be sufficient. Suggest that girth measurements be recommended but not required.	Text revised per comment.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-26	Section 2.8	Suggest that complete necropsies performed within 72 hours are sufficient, and that 24 hours is not practical.	Text clarified per comment: "The attending veterinarian or a trained staff member shall perform a necropsy on every animal that dies within 24 hours of death if feasible. If necropsy is to be performed at a later date (ideally no longer than 72 hours postmortem), the carcass should be stored appropriately to delay tissue decomposition."
23	Page 2-26	Section 2.8	Suggest that histopathology on select tissues is at the discretion of the attending veterinarian, as for cultures and other diagnostic sampling.	Text clarified per comment: "Specific requirements for tests will be issued by the NMFS stranding coordinator (or UME Onsite Coordinator) in each region as outlined in the Marine Mammal Health and Stranding Response Program for release determinations, surveillance programs and UME investigations. Routine diagnostic sampling and testing protocols will be determined by the attending veterinarian."
23	Page 2-26	Section 2.8	Please clarify which disease are reportable for marine mammals (see notes above), and also which disease require notification to NMFS.	NMFS, through the NMFS stranding coordinator, will provide future guidance regarding "reportable disease." NMFS defines Reportable Diseases as pathogens that pose a significant concern to public health, agriculture, and marine mammal populations and are required to be reported to NMFS and state agencies.
23	Page 2-26	Section 2.8	Release should be at the discretion of the attending veterinarian. Advance notice to NMFS is not always practical nor in the best interest of the animal, e.g. animals very stressed by captivity.	Text clarified per comment: "NMFS must be provided adequate time and information (including veterinary certificate of health) before the animal is released in all cases as directed in 50 CFR 216.27 (see NMFS Standards for Release). This information is required under 50 CFR 216.27(a) and must be submitted 15 days prior to release unless advanced notice is waived by the NMFS Regional Administrator. Guidance on the waivers is provided in the NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release." This regulatory requirement will not be considered for cetacean cases at this time.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 2-26	Section 2.8	10th bullet point. Sentence reads: Serological assays may only go to labs that have validated tests approved by NMFS, especially for release decisions or determinations. What does validation constitute? What labs are these? Will NMFS keep up with validations?	Text clarified per comment: " For cases involving release decisions, unusual mortality investigations, or surveillance programs, serologic assays may only go to labs that have validated tests approved by NMFS, especially for release decisions or determinations. Guidance will be provided by the NMFS Stranding Coordinators or UME Onsite Coordinator."
23	Page 2-26	Section 2.8	For recommended standards, frequency of blood sampling beyond the single collection should be at the discretion of the attending veterinarian.	For most cases, all animals shall have a minimum of two blood samples drawn for CBC with differential and serum chemistry; upon admission and prior to release (see NMFS/FWS BEST PRACTICES for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release). If duration of rehabilitation is shorter than a week, one blood workup may suffice and is at the attending veterinarian's discretion. Specific requirements for tests will be issued by the NMFS stranding coordinator (or UME Onsite Coordinator) in each region as outlined in the Marine Mammal Health and Stranding Response Program for release determinations, surveillance programs and UME investigations. Routine diagnostic sampling and testing protocols will be determined by the attending veterinarian.
23	Page 2-26	Section 2.8	Please explain the utility of banking the buffy coat. Suggest that it be performed on selected animals only subject to utility.	Text revised per comment.
23	Page 2-28	Section 2.9.1	Under recommended record keeping: Please define the set of standard morphometric measurements that should be collected and include a suggested recording format.	There are several good resources for collecting marine mammal morphometric data (e.g, Marine Mammal Ashore - A Field Guide for Strandings). We recommend consulting with other experts in the field and the literature when developing data collection protocols.
23	Page 2-28	Section 2.9.1	Under recommended record keeping: Suggest that obtaining photographic documentation of all animals is not practical and of questionable utility. Animals with distinguishing markings, or other unusual features could be documented.	This is a "Recommended" standard and could be feasible for facilities with a small to medium case load.

Comments on the Rehabilitation Facility Standards

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
23	Page 2-28	Section 2.9.1	Under recommended record keeping: Please see the previous comments on determining the daily caloric intake for each animal. This is not practical and of questionable utility, particularly in high volume centers. If caloric value of commonly used diets is calculated, and then minimum intakes are set based on weight, that should be sufficient. Additional calculations should be at the discretion of the attending veterinarian.	This is a "Recommended" standard and many institutions are capable of recording the caloric intake of each of the animals in their care, and it has proven to be a useful parameter to measure, and in some instances has aided in their rehabilitation efforts.
23	Page 2-28	Section 2.9.1	Under recommended record keeping: Daily weighing of pups is too stressful and results in too much handling. Suggest that weekly weight be required, more frequently at the discretion of the attending veterinarian.	This is a "Recommended" standard and daily weighing of underweight pups is beneficial. We realize larger pup species may be more difficult to weigh on a daily basis so implement at the discretion of the attending veterinarian.
23	Page 2-28	Section 2.9.2	Please define "real time accessible compiled comparative data."	This is a "Recommended" standard and suggests maintaining case data (Level B and C data) electronically that can be easily accessible if the need arises for such information. In other words, organize files and medical records in a usable and accessible manner so that the data can be compared to other data sets. This is important especially when an event is being considered by the Working Group of Mairne Mammal Unusual Mortality Events.
14	Page 2-30	Section 2.13	The verbage in this paragraph differs from what is in the Stranding Agreement Template. This is a better version.	Text clarified per comment: "NMFS Regulation, U.S.C. 50 CFR 216.2(c)(5) states that marine mammals undergoing rehabilitation shall not be subject to public display. The definition of public display under U.S.C. 50 CFR is “an activity that provides opportunity for the public to view living marine mammals at a facility holding marine mammals captive”. Only remote public viewing or distance viewing should be allowed and only when there is no possible impact of the public viewing on the animals being rehabilitated. There is a regulatory requirement for a variance or waiver by NMFS for facilities planning to offer public viewing of any marine mammal undergoing rehabilitation."

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
15	N/A	N/A	Discuss the criteria that the Service intends to use in its review and approval or disapproval of recommended releases of marine mammals, and plans for such releases, by rehabilitation facilities.	This document outlines the criteria that will be used to review recommended releases. For a list of the criteria by taxa, section 3 covers cetaceans, section 4 is pinnipeds, manatees is section 5, sea otters is section 6, and polar bears is in section 7. The decision tree that will be used to make the approval or disapproval determination is Figure 2.1, page 2-7.
15	N/A	N/A	The interim standards [for release] do not, however, recognize that, for some species, there may be a countervailing incentive to retain marine mammals for long-term maintenance in captivity and, perhaps, eventual placement at a public display facility. For such circumstances, protocols need to be established to ensure that the rehabilitation of animals and their preparation for eventual release to the wild are pursued diligently and with suitable agency oversight.	The decision to maintain a releaseable animal in captivity for either authorized scientific research or public display is addressed in NMFS regulations (50 CFR, section 216.27(b)(4)). This document does not preclude this decision, but it does not specifically cover the criteria by which this decision would be made .
15	N/A	N/A	Identify the types of information that would be included in protocols for monitoring released animals.	Section 3.9 was edited to include the sentence: "The post-release monitoring plan should include, at a minimum: the type of identification used (tag, brand, etc.); the frequency and method of making observations (both visual and indirect) post-release; the expected duration of the monitoring method; criteria or triggers for intervention; and how information regarding the animal will be disseminated to others who may observe it in the future. For individual animals, additional information may be required."
14	N/A	N/A	NMFS & USFWS should take into account the recommendations of the stranding facility and the AZA Taxon Advisor or Studbook Keeper for the species before making a decision as to placement.	NMFS has met with representatives from the AZA and AMMPA. We are finalizing the process by which we will coordinate placements of animals at member facilities of these organizations. This process will take into account the Taxon Advisor and Studbook Keeper. Additionally, all placement decisions are coordinated with APHIS. ANPR to address recommendations of stranding facility (not maintaining animal in permanent collection)

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
9	Page ES-1 and Page 5-2	Executive Summary and Section 5.2	Page ES-1 says one of the categories is "conditionally non-releasable (manatees only)." The definition of this term does not occur until page 5-22. Nowhere is it explained why this term applies only to manatees. It appears unnecessary or else this category should apply to other species as well...Why is this term not used for cetaceans and/or pinnipeds? Why only manatees? The DEIS should explain the unique circumstances that require this extra category here and in section 5.	The EIS does not include manatees. A discussion of the conditionally non-releasable category will not be added for cetaceans or pinnipeds within the EIS. As noted in NMFS' regulations, we presume that pinnipeds and cetaceans that have been held in rehabilitation for longer than 2 years will not survive upon release to the wild due to their health status, and additionally learned conditioned behaviors due to extended proximity to humans. Text has been added to Section 2.4 to state: " "Conditionally Non-releasable" is only a category for manatees because the FWS has had success releasing manatees that have been in captivity in excess of 20 years. NMFS species are deemed "Non-releasable" if they have been in captivity for over two years (see 50 CFR 216.27(a)(1)(iii)) and therefore a "Conditionally Non-releasable" category is not necessary.
24	Page 2-1	Section 2.1.1	...NMFS Policies, last sentence, delete "with" [before "NMFS Regional.."]	Text revised per comment.
9	Page 2-2	Section 2.2	Page 2-2 and others have a discussion regarding determinations of suitability for release of animals from rehabilitation facilities...This does not address the concern about facilities taking into rehabilitation animals with a very poor prognosis for release....As we noted above, the NMFS should provide clearer guidance.	In the Final PEIS, Section 6 describes NMFS' plan to hold a workshop to discuss and outline the process to decide if an animal is a good rehabilitation candidiate. Following this workshop, guidance and training will be planned and distributed.

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
24	Page 2-3	Section 2.2	...a facility may also request permanent placement under Section 104(c)(3) if an ESA-listed marine mammal is determined unreleasable. Please edit the last paragraph on this page to reflect such: " For FWS species, LOA and permit holders provide recommendations to the FWS Field Offices for decisions regarding releasability of rehabilitated marine mammals (see Appendix H for contact information). The FWS retains the authority to make the final determination on the disposition of these animals. If FWS determines that a marine mammal is non-releasable, the holding facility may request a permit for permanent placement in captivity as prescribed in Section 104(c)(7) of the MMPA for non-depleted species, or Section 104(c)(3) of 104(c)(4) and Section 10(a)(1)(A) of the ESA for depleted species."	Text revised per comment.
9	Page 2-9	Section 2.4	Similar questions should be provided elsewhere to guide a determination of the suitability of an animal for transfer from the beach to a rehabilitation facility (versus either euthanasia or beach release).	In the Final PEIS, Section 6 describes NMFS' plan to hold a workshop to discuss and outline the process to decide if an animal is a good rehabilitation candidiate. This workshop will aid in the development of similar questions/criteria to inform this decision.
14	Page 2-9	Section 2.4, number 1	When taking an animals history, does mouthing qualify as a bite or does the word bite pertain to an animal breaking the skin of a human?	Revised text to read "attacked and/or bitten (included mouthing of unprotected skin) a human while being handled". Also revised Section 4.3, number 5 with same text.
14	Page 2-12	Section 2.4, number 4	5th paragraph. The third sentence of this paragraph refers to microbial culture. Other than the obvious wounds, what would the 'routine' samples come from? Fecal? Nasal?	Routine samples for surveillance are taxa and situation specific, and could include fecal, wound, oral, nasal, ocular, and blood. Recommended sample collections are discussed further in the sections for each taxon. Questions about sample collection for routine surveillance are asked in the ANPR, and guidance will be forthcoming following the receipt of public comments and decision-making by NMFS.
14	Page 2-13	Section 2.4, number 5	Bullet (a.). Satellite tags should be added to list of pre-approved identification systems.	Satellite tags added to the list of examples in Section 2.4. However, please note that satellite tags are not considered pre-approved and require consultation with NMFS prior to their use.

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 2-13	Section 2.4, number 5	Bullet (a.). Sentence should read: Invasive procedures should be done under the direct supervision of the attending veterinarian and will need prior approval from NMFS and FWS **and may require a monitoring period following the procedure.**	Text revised per comment.
14	Page 2-14	Section 2.4, number 5	First preference is releasing the animal in the same general/geographical area where the animal was stranded. The second choice, especially if the animal was stranded outside of its normal range, it to release the animal closer to or within its normal range. This is implied later but should probably also be referenced here.	This is addressed more specifically, and more appropriately, by taxon in later sections. Also, the original stranding site of the animal should be only one consideration in determining a release site, as determination of an appropriate release site should be made using many factors, outlined in this section.
20		Section 3.8	Marking for Individual Identification of Cetaceans prior to Release. This section suggests three forms of identification prior to release. One of these is non-invasive while the other two are invasive. We are concerned about freeze branding and whether this is really necessary with a dorsal or satellite tag in place?	Freeze branding is viewed as the only feasible long-term method of identification. Photo-identification will vary over the life of the animal, and photo-id catalogues are localized, relatively rare, and only for certain species. Any external tag that is applied will fall, rip, or migrate out of the animal. Therefore, dorsal fin tags are only valid identification methods in the short-term (weeks to months, possibly years), whereas freeze brands will last for the life of the animal (with some fading). This section has been slightly revised for clarity; we are recommending that freeze brands be placed on the dorsal fin and/or on the side of the animal (on a case-specific basis).
14	Page 4-4	Section 4.3	Section 4.3 beginning on page 4-4 is formatted differently than 4.4, 4.5, and 4.6, using the number subsections that more or less correspond to the checklist. 4.5's Behavioral subsections are given paragraph numbers. Recommend you standardize the style.	Text revised per comment.
14	Page 4-4	Section 4.3	The organization for section 4.3 should mesh with the checklist presented later in the document. Each point on the checklist should be described here and each point here should have a corresponding question on the checklist.	Checklist in Section 4.7 was re-ordered to correspond with the text in Section 4.3.

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 4-5	Section 4.3, number 4	The last sentence should read: Consultation with NMFS or FWS is thus required for pinnipeds that have a known history of exposure to terrestrial animals. Note: You can never know for sure what happened before an animal was reported and brought in.	Revised text to read "pinnipeds that have a history of exposure (i.e., confirmed or suspected)."
14	Page 4-5	Section 4.3, number 5	In regards to the first sentence, you might want to more precisely define bite to specify breaking of skin. "Bites" may occur without a breach of protective gear. Also, when tubing an animal, "bites" may occur without breach of protective gear.	Included mouthing of unprotected skin.
14	Page 4-5	Section 4.3, number 5	In regards to rabies among pinnipeds, there is only one documented case.	Referenced publication; However, we note that though only one case has been published there are anecdotal reports, and there are likely other cases where the necessary diagnostic test was not performed.
14	Page 4-5	Section 4.3, number 6	This sentence is confusing. Perhaps more detail can be added.	Added text "as deemed by NOAA Office of Law Enforcement, U.S. Department of Justice, or other Federal, state or local authorities."
14	Page 4-5	Section 4.3, number 7	We assume that just because an animal was at 2 places, does not mean it isn't releasable.	Correct, it does not mean that the animal is non-releaseable. However, it is important to obtain the medical records from all facilities in order to fully evaluate the health records prior to a release determination.
14	Page 4-9	Section 4.6	2nd paragraph. In the first sentence, list desired parameters. What does Chem-12 include? Also in the first sentence, delete blow hole as a sampling site for pinnipeds.	"Blow hole" changed to "nasal." Edited to read "chemistry profile (including BUN and creatinine, enzymes and elecrolytes)"
14	Page 4-9	Section 4.6	2nd paragraph. In the third sentence, 3ml of Serum is recommended but another document recommends 1ml per draw. Please clarify.	Text standardized to read 3 mL, minimum, at admit and pre-release.
14	Page 4-10	Section 4.7	Recommend structuring this checklist as a stand alone document for greater usability. Recommend keeping it <2 pages and reduce font size as needed.	The checklist has been added as a separate document in Appendix J.
14	Page 4-11	Section 4.7	New Point, History: The environmental conditions are considered acceptable (e.g. prey available, no lingering contamination).	The considerations of a release site (including acceptable environmental conditions) will and should be addressed outside of the health certificate for the animal (which requires the veterinarian signature). The release site determination should be included in the documentation provided to NMFS.

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
14	Page 4-11	Section 4.7	7. Please define "bite" somewhere.	As stated elsewhere in the document, bite includes mouthing unprotected skin or breaking the skin. A definition of "bite" was added to the glossary.
14	Page 4-11	Section 4.7	17. Is this the release determination exam? Don't you have to submit release paperwork 2 weeks prior?	Modified form to have columns for both release determination (15 days in advance) and Pre-release (within 72 hours of release); Modified Section 4.6 to clarify
14	Page 4-11	Section 4.7	19. Is this the exam to be done within 72 hours of release? 17 and 19 seem to overlap.	Modified form to have columns for both release determination (15 days in advance) and Pre-release (within 72 hours of release); Modified Section 4.6 to clarify
14	Page 4-11	Section 4.7	22. Change visual to in vision.	Text revised per comment.
14	Page 4-11	Section 4.7	25. 3ml total or each? Note, elsewhere this document mentions 1ml per blood draw and that only 2 blood draws are required.	Text standardized to read 3 mL, minimum, at admit and pre-release.
14	Page 4-11	Section 4.7	New Point, Medical Clearance: The veterinarian has received and reviewed all records on this animal from other facilities that held this animal.	Text revised per comment.
24	Page 5-1	Section 5.1	...second paragraph, the third and fourth sentence should read: "All rescue-related communications and the day to day decision making process in the field are generally handled by the local Field Stations of the Florida Fish and Wildlife Conservation Commission (FFWCC) in conjunction with reports from the public using the 1-888-404-FWCC hotline. All activities related to verification of a report of a manatee in trouble, subsequent rescue, and transport to rehabilitation facilities are communicated throught the FFWCC Field Stations, according to established protocols."	Text revised per comment.
14		Appendix E	Explain how the agency will keep this list and testing requirements up to date so that facilities can easily stay informed.	NMFS will periodically review this information, with the assistance of outside experts such as the Working Group on Marine Mammal Unusual Mortality Events, and will publish any revisions on our website.
14		Appendix G	Some formatting issues took place after Appendix G. Unclear of the titles of some pages.	Formatting issues have been fixed.

Comments on the Release Criteria

Commenter Number	*Page/Line*	*Section*	*Comment*	*NMFS Response*
4			However, there are several topics that are not addressed in the current release guidelines. The criteria for immediate release, relocation and release, and post-rehabilitation release should be clarified, as each scenario requires a different type of health assessment. Also, post-release monitoring of animals should be encouraged or strongly recommended when appropriate, and funds to support these activities should be made available.	In the Final PEIS, Section 6 describes NMFS' plan to hold a workshop to discuss and outline the process to decide if an animal is a good rehabilitation candidiate, as well as address criteria for making immediate disposition determinations (such as beach release or relocation and release). Following this workshop, guidance and training will be planned and distributed. Post-release monitoring of released animals is strongly encouraged (see Sections 3.9, 4.9, 5.9, and 6.8). Funds to support these activities are available through the John H. Prescott Marine Mammal Rescue Assistance Grant Program.

EPA Comments

Section	*Comment*	*NMFS Response*
Water Quality	However, we suggest that care should [be] taken by response personnel to guard against any chemical/medical/fuel spills during the processing of stranded animals (e.g. euthanasia fluids) or their rehabilitation. With this in mind, the FPEIS should highlight that spill prevention best management practices should be established, monitored, and practiced.	Text added in Sections 5.2.1, 5.3.1, and 5.5.1 to state "NMFS would develop spill prevention best management practices for responders to use to reduce the incidence of spills from equipment, euthanasia solution, etc."
Carcass Disposal	Although the DPEIS indicates that in cases where a marine mammal carcass is determined to be "toxic" that the carcass may be removed to an approved incineration facility, the DPEIS does not address the sampling procedure to be followed on marine mammal carcasses to determine how the carcass would be considered "toxic". Accordingly, we recommend that the FPEIS indicate what measures will be used to determine the toxicity of the marine mammal carcass.	NMFS has funded, and will continue to fund, research on the toxicity of carcasses. Currently there is no method to immediately determine if a carcass is toxic. The report in Appendix J summarizes the reported information on the concentrations of Persistent Organic Pollutants (POPs) in marine mammals. NMFS would like use information on known concentrations of POPs to develop criteria that can be use to best estimate if a carcass may be toxic.
Cultural Resources	Although the DPEIS states that all work in the area will be halted in cases where undiscovered or unknown cultural resources are encountered, the FPEIS should clarify how this requirement will be communicated to the voluntary Stranding Network members. One consideration could be to have contacting the State Historic Preservation Officer or Tribal Historic Preservation Office be a requirement of the Stranding Agreements or part of annual training for the members of the Stranding Network. Further, the FPEIS should delineate how undiscovered or unknown Tribal Government cultural resources will be handled when discovered during marine mammal carcass burial operations.	NMFS will encourage stranding network members to be proactive and contact their state or tribal historic preservation officer or local authorities. In Section 5.4.2, the DPEIS states that if cultural resources are discovered during burial operations, all work would cease the State SHPO would be contacted. Any burial activities on Native American/Alaska Native lands would be coordinated with Native American tribes, Alaska Natives, or other aboriginal peoples. This would include contact with the Tribal Historic Preservation Officer.

EPA Comments

Section	*Comment*	*NMFS Response*
Cultural Resources	In a related matter, it may be prudent to discuss with the Advisory Council on Historic Preservation the possibility of developing a Programmatic Agreement under Section 106 of the National Historic Preservation Act. As the Stranding Network is a "volunteer" based organization, the process to follow in handling cultural resources may not be readily known. A PA would provide the agency with an appropriate process that Stranding Network members can follow to ensure compliance with Section 106.	NMFS agrees that a Programmatic Agreement would be useful to ensure that Stranding Network members are in compliance with Section 106. NMFS will pursue this in the near future.
Human Health and Safety	The DPEIS does not delineate to any great extent what should be the human health and safety guidelines and practices (especially related to zoonotic diseases communicable to humans: pg 1-7) to be followed for both on-site and off-site disposal of marine mammal carcasses. NMFS should more clearly delineate what the appropriate safety measures are for response personnel (given that some may be untrained volunteers).	In Section 5.5, protective measures for those individuals engaged in response and disposal activities are described. This includes volunteers. All SA holders would have a health and safety plan that is reviewed by NMFS. Responders would have adequate protection for the tasks they are undertaking.

Virginia CZM Comments

Section	*Comment*	*NMFS Response*
Rehabilitation	NMFS's program should include criteria that clearly identify high-priority species (such as threatened or endangered species, or species of high conservation concern) that quality [qualify?] for some measures of human intervention. The criteria should also address the sources of debilitation that are appropriate to treat (i.e. human-induced versus natural).	Acknowledged
Carcass Disposal	...we concur that the proposed program elements are consistent with the Virgina Coastal Resources Management Program, provided that NMFS complies with all applicable requirements, and that no effort is made to dispose of carcasses in wetlands.	Acknowledged. Text revised in Section 5, page 5-3 to state "Burial would not occur in wetland areas."
Response	The Marine Resources Commission requires a permit for any activities that encroach upon, or over, or take materials form the beds of the bays, ocean, rivers, streams, and creeks which are the property of the Commonwealth. If any such activities are contemplated, application for and issuance of a permit from the Commission will ensure that the permitted activity is consistent with the subaqueous lands management enforceable policy of the Virginia Coastal Resources Management Program.	Acknowledged
Response	However, should it be required, any land-disturbing activity should be minimized, and access through the Chesapeake Bay Preservation Areas should be restricted to one point.	Acknowledged