




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

JUL 16 2007

MEMORANDUM FOR: F/PR – James H. Lecky

FROM: F/PR1 – P. Michael Payne 

SUBJECT: Report on Application for Scientific Research Permit for research on northern fur seals (File No. 715-1883): Recommendation for Issuance

This memorandum summarizes pending processing and decision recommendations for one application submitted for a permit to capture, export to Canada, and conduct research on northern fur seals (*Callorhinus ursinus*). This application was processed concurrently with 12 other applications for research on northern fur seals and Steller sea lions (*Eumetopias jubatus*) including a batched Notice of Receipt in the *Federal Register*, and a batched decision memorandum signed on June 18, 2007 (attached), which contains all public and agency comments [including those from the Marine Mammal Commission, Humane Society of the United States, and National Marine Fisheries (NMFS) Service Alaska Region and Science Center] on this application; applicant and NMFS responses; and addresses National Environmental Policy Act, Marine Mammal Protection Act, Fur Seal Act, and Endangered Species Act requirements. This memorandum is an addendum to the original memorandum of decision signed on June 18, 2007, and summarizes outstanding issues related to comity and foreign facility comparable standards.

The North Pacific Universities Marine Mammal Research Consortium (NPUMMRC), University of British Columbia (Principal Investigator: Dr. Andrew Trites) requests a 5-year permit to conduct physiological studies on captive northern fur seals to test the hypothesis that changes in food supply or environmental conditions are inducing a state of nutritional stress that is causing changes in survival or reproductive success. Up to 32 fur seal pups from St. Paul Island, AK, would be captured, restrained, and gender determined. Of those 32, up to 16 female pups would have blood samples taken and a veterinary health exam performed. Of those 16, up to eight pups would be held in temporary enclosures for up to seven days for further health testing (blood sampling, physical exams). Of those eight, six female pups would be transported to the Vancouver Aquarium, Canada, for long-term physiological and nutritional research. During capture operations, up to 185 fur seals may be incidentally disturbed. The NPUMMRC requests up to one research-related mortality over the duration of the permit. While the actual captures will occur in a single year, the NPUMMRC has requested a 5-year permit to allow for flexibility in logistical coordination of the captures.

Chronology

December 1, 2006	Date of application
January 15, 2007	Application received complete
February 15, 2007	Application published in <i>Federal Register</i> (72 FR 7420)
February 15, 2007	Application distributed
March 21, 2007	Extension of comment period published in <i>Federal Register</i> (72 FR 13255)
April 30, 2007	Close of public comment period
May 1, 2007	The Humane Society of the United States comments received
May 2, 2007	Marine Mammal Commission comments received
May 4, 2007	Comments forwarded to applicant for response
May 17, 2007	Applicant response to comments received
May 30, 2007	Additional information requested
June 14, 2007	Information forwarded to USDA Animal & Plant Health Inspection Service (APHIS) for comparable standards determination
June 20, 2007	Response from APHIS received
June 25, 2007	Additional information requested
June 26, 2007	Response from applicant received

Marine Mammal Protection Act (MMPA) Requirements

In order for the National Marine Fisheries Service (NMFS) to make a determination that the receiving facility meet standards that are comparable to the requirements that a person in the U.S. must meet to receive a permit for conducting research on captive marine mammals [MMPA section 104(c)(9)], the applicant is required to submit to the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) documentation of the facility's standards for space, feeding, emergency contingency plans, personnel, water quality, animal separation and isolation, veterinary care, protection from elements, sanitation, transportation, handling, and interactive programs (if applicable). APHIS must provide confirmation to NMFS that the receiving facility meets Animal Welfare Act (AWA) requirements for marine mammals.

MMPA implementing regulations [50 CFR 216.33(b)] state that for applicants seeking to export living marine mammals from the wild, the application must include a certification from the foreign government that:

- 1) the information set forth in the application is accurate;
- 2) the laws and regulations of the foreign government involved allow enforcement of the terms and conditions of the permit, and that the foreign government will enforce all terms and conditions; and
- 3) the foreign government involved will afford comity to any permit amendment, modification, suspension, or revocation decision.

Comments

The Permits, Conservation and Education Division (PR1) and APHIS requested the applicant to submit information regarding the above-mentioned MMPA requirements.

Regarding comparable standards:

The applicant provided APHIS with the required documentation (attached) regarding the comparable standards evaluation criteria for the receiving facility, the Vancouver Aquarium. The Canadian Department of Fisheries and Oceans provided a letter certifying the accuracy of the information provided by the applicant. APHIS reviewed this material and provided confirmation to NMFS that the Vancouver Aquarium meets AWA requirements for holding six female northern fur seals, with two exceptions. One tank was determined to be adequate for short-term holding (e.g., 2 to 3 hours) or veterinary isolation only. PR1 has informed the applicant of this in the cover letter to the permit. APHIS requested confirmation that no other animals would be held concurrently with the fur seals, and indicated that if other species would be held with these subject fur seals, APHIS would need to recalculate the space requirements. PR1 requested that the applicant confirm that no other animals would be held with the fur seals and that if additional animals would be held concurrently, to provide an inventory of animals by species and sex. The applicant indicated that Tank No. 5 (6 foot diameter pool) is not a permanent housing pool; it is a temporary research pool. The northern fur seals will be held as a single species group in the pools designated for their use, typically two or three per system.

Regarding Comity:

The applicant provided the following information:

(1) The NPUMMRC is made up of four universities: The University of Alaska, the University of Washington, Oregon State University and the University of British Columbia (UBC). Through UBC, the NPUMMRC works very closely with the Vancouver Aquarium, and all captive studies proposed for this permit are undertaken at the Vancouver Aquarium where the animals will be housed. The care, training and upkeep of the animals fall under the jurisdiction of the Vancouver Aquarium. The use of animals by researchers at the University of British Columbia (UBC) for teaching, testing and research also fall under the UBC Committee on Animal Care (see <http://www.acc.ubc.ca/index.html>). Therefore, permits to undertake research have to be obtained from both UBC Animal Care and from the Vancouver Aquarium.

(2) The [Canadian Council on Animal Care \(CCAC\)](#), the national body which oversees the use of animals in teaching and research in Canadian institutions, is the driving force behind many of UBC's Animal Care policies. UBC is required to follow the policies promulgated by the CCAC so that they may remain in compliance. The CCAC regularly inspect the facilities where UBC animals are housed, including at the Vancouver Aquarium. In order to ensure that UBC remains in compliance, the UBC Animal Care Committee also make inspections to ensure that CCAC standards are being met.

(3) The Canadian Department of Fisheries and Oceans only requires a License to Transport Marine Mammals if the animals are entering Canada - as per the attached Permit MML-2007-17.

(4) The Vancouver Aquarium, where the fur seals will be housed, falls under the rules and regulations of the Association of Zoos and Aquariums. The Aquarium always meets the required standards.

Since Canada does not have a comparable law to the AWA, PR1 requested the applicant to obtain and submit a signed letter from the CCAC or Vancouver Aquarium providing assurance that standards comparable to those required by the AWA and APHIS will be upheld for the duration of the holding of these animals at the Vancouver Aquarium; and that the terms and conditions of the permit and any permit amendment, modification, suspension, or revocation decision will be upheld. The applicant submitted a signed letter from the Vancouver Aquarium (attached) as requested.

PR1 is satisfied that the MMPA comparable standards requirements have been met as confirmed by APHIS. In the absence of a letter of comity from the Canadian government, the Vancouver Aquarium has provided a letter of assurance which states that the Vancouver Aquarium will continue to meet AWA standards while these animals are maintained at their facility, and that the terms and conditions of the permit and any permit amendment, modification, suspension, or revocation decision will be upheld. In addition, PR1 is aware that the CCAC is in the process of developing care and maintenance guidelines for marine mammals held in captivity in Canada. Given this letter of assurance and the role of the CCAC in providing oversight over marine mammals held in captivity in Canada, we believe that the intent of the comity policy maintained by NMFS has been met in this case. This case is not precedent setting. In a previous authorization allowing the export of marine mammals from Sea World, Inc., to Marineland of Canada, Ontario, Canada for public display purposes, NMFS accepted a similar letter of assurance from Marineland of Canada (see NMFS authorization letter dated August 7, 2006). Therefore, we are satisfied that the planned export for purposes of scientific research complies with requirements of the MMPA.

Recommendation

PR1 has determined that the research is consistent with the purposes, policies, and applicable requirements of the MMPA, FSA, and NMFS regulations. NMFS issuance of the permit is consistent with the MMPA, NEPA, and the AWA. It is believed that the research will further a *bona fide* scientific purpose and does not involve unnecessary duplication. PR1 believes the research authorized by this permit would not likely have a significant adverse impact on marine mammal species or stocks provided the mitigation measures prescribed are followed. For these reasons, I recommend that you sign the permit.

COMPARABLE STANDARDS EVALUATION FOR FOREIGN FACILITIES

Under the Animal Welfare Act (AWA), regulations require compliance with standards for:

1.	Facilities: General, Indoor, Outdoor	§3.101-3.103
2.	Space	§3.104
3.	Feeding/ food handling	§3.105
4.	Emergency contingency plans	§3.101
5.	Adequate number of personnel	§3.108
6.	Adequate training of personnel	§3.108
7.	Water Quality	§3.106
8.	Separation and Isolation	§3.109,3.110
9.	Adequate veterinary care/ attending veterinarian	§2.40, 3.110
10.	Protection from elements	§3.103
11.	Sanitation	§3.107
12.	Transportation	§3.112-3.118
13.	Handling	§2.131
14.	Interactive Programs	§3.111

Additional information and documentation may be required by the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (F&WS), depending on species of marine mammals involved. This information may include verification of public access to the facility, documentation on the educational program(s) provided, inventory data needed, and CITES permit requirements. Please contact NMFS and/or F&WS directly for their requirements.

NMFS, Office of Protected Resources: (301) 713-2289
F&WS: (800) 358-2104

Documentation required by APHIS

For evaluation under the AWA:

1. Supply diagrams of all marine mammal enclosures with measurements. The measurements must include: pool dimensions (length, width, depth, diameter, etc.) including depth variations and any underwater or surface obstacles such as islands and platforms (be sure to show measure for narrowest part of all pools; for indoor facilities, include airspace above the pools; dry resting area measurements; for outdoor enclosures, provide description of measures taken to provide protection from elements (shade, temperature extremes, etc.). All pools for all marine mammals, including medical and isolation pools must be included.

All facilities are outdoors.

At this time the following facilities are available for the housing of the 6 fur seals.

Research Pool

Minimum Depth	10 feet
Minimum Horizontal Width	49 feet
Minimum Horizontal Length	51 feet

Total Saltwater Volume 215,000 US gallons

All pools utilize ambient, filtered sea water on a flow-through system. Water flow rate: 300 minute turnover at 1,200 gallons per minute. Water quality supported by 2 diatomaceous earth filters. Disinfection is accomplished by the use of ozone and chlorine as required for control of algae growth.

Dry-haul out space associated with research pool 200 ft²

Additional Holding facilities

The research area at the Vancouver Aquarium consists of five pools with the following dimensions. Haulout space is also listed. Additional runs and open space are also available for working with animals.

Tank 1:	8.5 ft x 16 ft.	Depth 6.5 ft.	Haulout space 65 ft ² .
Tank 2:	30 ft x 16.0 ft.	Depth 6.5 ft.	Haulout space 168 ft ² .
Tank 4:	13 ft x 16 ft.	Depth 6.5 ft.	Haulout space 88 ft ²
Tank 5:	6 ft diameter	Depth 7 ft	Haulout space 92 ft ²

Protection from the elements

The temperate climate of Vancouver permits the Vancouver Aquarium the use of outdoor pools, open to the elements. No provision is required to protect the animals from the elements. This is appropriate for all marine mammal species found in our coastal North Pacific waters.

We do however employ shade cloth suspended as horizontal curtains above the holding pen runs during the summer months.

Animals have constant access to water for thermoregulation.

Images/drawings sent as attachment

2. Inventory of all marine mammals, identifying each enclosure inventory with respect to species and sex. Designate what animals are currently held and what animals are being requested. Identify the proposed housing location for the requested animals.

Current inventory

The Aquarium does not currently hold Northern fur seals.

Animal requested

Six female northern fur seal pups.

Proposed housing

The Animals would be held in a variety of pool spaces according to research requirements.

3. Describe the feeding protocols and food handling protocols for the marine mammals, including method of storage once thawed and sanitation protocols.

Protocols below taken from Vancouver Aquarium Marine Mammal Resource Manual, revised 2002.

Marine Mammal Food Purchasing , Shipment, Delivery & Handling

The purchasing of food items is the responsibility of the Marine Mammal Coordinator within the Department with extensive knowledge and experience of the appropriate capture, storage and transportation of food items. The purchaser understands the specific dietary requirements of the marine mammal collection at the Aquarium, especially with respect to species and age.

The purchaser is responsible for ensuring that only the highest quality food items are fed to the marine mammals. All food items must be wholesome, palatable and free from contamination.

The bulk of food fish fed to the marine mammals at the Aquarium is Pacific Herring (*Clupea harengus pallasii*), with an annual consumption of approximately 73 metric tonnes. To ensure quantity and quality control the purchaser organizes one herring catch in local waters, in November, and regulates packaging and freezing. All other food items used for the marine mammals at the Aquarium are ordered from fish merchants.

Frozen food is transported under refrigeration to the off-site commercial cold storage and held in warehouses at -27°C.

Food is ordered weekly from cold storage and delivered directly to the Aquarium. Incoming seafood must be thoroughly inspected for carton damage and signs of temperature abuse. Thawed or partially thawed items are to be rejected and the supplier contacted.

The food, upon arrival, must be immediately transferred to the marine mammal freezer. The freezer is maintained at a maximum temperature of -18°C. (Freezer temperature is constantly monitored and alarmed).

Dates must be visible on each carton and item, to promote first in - first out stock rotation.

All seafood must be stored in plastic and boxed to prevent freezer burn and dehydration.

All cartons must be stacked on pallets off the floor and away from walls to allow good circulation of air. Care must be taken to stack cartons correctly to avoid tipping.

Do not leave freezer door open - only essential access is permitted.

The marine mammal freezer is for marine mammal food items only.

Food Preparation and Handling

All seafood must be maintained moist and cool, and be handled with care. All fish and shellfish have delicate flesh and are particularly susceptible to physical damage from improper handling and degradation due to chemical contamination, bacteria, enzymes, dehydration and oxidation.

- a. Fish House (FH) Daily Protocol (07:00 - 11:00)
 - Don appropriate clean slickers, rubber boots and gloves.
 - Fill footbath at entry to food room and add appropriate amount of disinfectant.
 - Hose down food room walls, floor and sinks.
 - Place grills and plugs in sinks.
 - Hose down hallway/ramp outside food room.
 - Remove food carts from walk-in refrigerator
 - Load squid into sink #1, remove plastic, and run cold water sprayer over squid.
 - Load herring into sinks #2 to #5, remove plastic, and run cold water sprayer over fish (Take care to separate and identify different herring batches if required).
 - Drain liquid from clam bags and then empty clam meat into large stainless steel buckets.
 - Rapidly sanitize and then rinse down, walk-in refrigerator and stainless food racks.
 - Place clams in walk-in refrigerator.
 - Gently break up partially frozen herring and stir.
 - Drain and bucket partially thawed squid taking care to sort for sub-standard produce (If in doubt - throw it out) and foreign bodies , transfer immediately to the refrigerator.
 - Sort and bucket partially thawed herring, taking care to sort for sub-standard produce (If in doubt - throw it out) and foreign bodies.
 - Drain all excess liquid from buckets.
 - Weigh out food for individual animals, bucket and refrigerate immediately.
 - Garburate all discarded seafood. Clean and sanitize garburator after use
 - Clean and sanitize all sinks, tables, walls, floor, weigh scale and utensils. Take care to remove all fish scales from all surfaces. Rinse thoroughly to remove all trace of cleaning and sanitizing agents.
 - Take all garbage, discarded food bags to refuse container. Sanitize garbage can.

- Wash slickers and gloves.
- Drain and refill footbath.

Sanitation Procedures

The program of sanitation is essential. Great care to detail is required to ensure a healthy environment in which to prepare the marine mammal diet.

Bacteria multiply rapidly under scales, in the blood, oils, slime and flesh of fish. All surfaces coming into contact with fish or fish by-products must be thoroughly sanitized and cleaned. Use hot water and the approved sanitizers and detergents provided. (All chemicals must be correctly labeled and stored away from food storage and food preparation areas).

- Delivery vans should be clean and food items should be loaded on pallets. Notify a supervisor if these conditions are not met.
- Footbaths must be used at all times. Footbaths must be filled according to posted instructions and must be refilled as often as necessary to maintain disinfectant effectiveness.
- Clean and sanitize carts, shelves, dollies and other containers used in transporting seafood after each use. Ensure such storage items and transportation is maintained in good repair.
- All food room sinks, tables, shelves and buckets shall be made of stainless steel and will be cleaned and sanitized after each use.
- All knives, cutting boards and other sundry equipment shall be cleaned and sanitized after every use.
- All surfaces and utensils that will come into contact with seafood must be thoroughly rinsed of all residual sanitizer and/or detergent.
- All floors and walls in the food room and walk in refrigerator will be cleaned and sanitized twice a day following FH and MC shifts.
- All employees must wash and dry hands before and after handling seafood. Employees that are sick should not handle seafood. Employees with cuts or sores on their hands must wear clean gloves whilst handling the food.
- All employees working in the food room must wear the appropriate clothing provided slickers, rubber boots and gloves.
- At the end of each day all leftover seafood is to be discarded
- All unacceptable, discarded and left over seafood must be garburated. The garburator must be cleaned and sanitized after each use.

Feeding Marine Mammals

Only marine mammal trainers or marine mammal assistants may feed the marine mammals. (Unless approved by the Curator and directly supervised by a marine mammal trainer).

Every trainer will be trained by a supervisor in the feeding of each individual marine mammal in the collection. In unsupervised situations, trainers may only feed the marine mammals for which they have already been approved.

All marine mammals are offered food a minimum of four times a day unless otherwise directed by the supervising veterinarian.

- All feeders must wash and dry hands before and after handling seafood.
- Food is removed from the walk-in refrigerator immediately before feeding. The food is carefully weighed for each individual animal.
- On warm days the food is covered with a layer of cubed ice.
- All the food is hand fed to each marine mammal.
- During long sessions or hot days the food buckets may be stored temporarily on ice in coolers.
- At the end of each session food is returned to the food room and weighed carefully to calculate each animal's food intake.
- All unused food must be discarded.
- Any food dropped anywhere must be immediately discarded.
- The veterinarian in consultation with the curator will set all food bases for every animal. Food bases will provide adequate variety and nutritional requirements to maintain the animals in excellent health.
- If any marine mammal refuses to eat at a session the direct supervisor must be informed.
- The veterinarian must be informed of repeated missed feedings and/or unusual eating practices.

4. Provide a written contingency plan, including description of emergency plans in case of loss of power and/or water, provisions for animal movement and care in the event of a natural disaster, and back-up systems.

Emergency – Loss of power

In the event of power loss the Aquarium's emergency generator automatically starts and handles all the essential life support functions of the Wild Coast exhibit. The power supply is alarmed and engineering staff is on call 24-hours a day to check that all life support systems are functioning correctly. The generator will run continuously for 24 hours. The Aquarium has standby fuel delivery guaranteed within two hours.

Emergency – Loss of water

The Aquarium draws its water directly from the adjacent Burrard Inlet. Redundancy is built into the delivery system having two delivery pipes and two delivery pumps. In addition the Aquarium maintains a standby supply of filtered ambient seawater in its emergency reservoirs.

Emergency – Natural Disaster

Should it become necessary for the Aquarium to move animals from the Wild Coast exhibit in the event of a natural disaster, capture nets and transport equipment are always available on site. Small cetaceans can be handled and moved easily in a stretcher by the trained staff available. The Aquarium has several pools available that could be used to house the animals on site under appropriate conditions. Alternatively, the Aquarium has access to its marine mammal rehabilitation centre located within twenty minutes of the Aquarium – both the Aquarium and the rehabilitation centre are accessible by boat. The rehabilitation site has an 8 feet deep and 30 feet diameter circular pool available to temporarily hold cetaceans.

Emergency Protocols

The Aquarium has an Emergency Protocol book posted in every office and room, as per AZA requirements, providing staff with detailed and clear instructions for dealing with both natural and man made emergencies that might take place at the Aquarium. The marine mammal staff has written detailed protocols readily available for handling all marine mammal emergencies. Emergency contact information is posted.

5. Provide resumes for all employees responsible for or involved in caring for the marine mammals.

Clint Wright

Senior Vice President Aquarium Operations and Facility Planning

Overview

Clint has over twenty hands-on years working in aquariums and joined the Vancouver Aquarium in 1990. He has extensive experience in aquatic animal management and facility design. He has been responsible for the development and implementation of marine mammal training, husbandry and management programs for both experienced and naïve animals, has overseen animal acquisition and transportation world wide from killer whales to salt water crocodiles, and has been part of on-going multi-season arctic field research into beluga migrations. He currently oversees and manages all aspects of animal management and welfare, physical building operation, life-support operation and maintenance, capital upgrades and security. He is responsible for guiding the implementation of departmental activities, and establishing priorities based on an analysis of the overall Aquarium objectives. As part of the senior management team he works collaboratively to manage and operate the Aquarium now reaching outside Vancouver with new operations, educational efforts, and major research/conservation programs.

Education

B.Sc.- (Honours) Biology, Portsmouth, England

Work Experience

2006 – Present	SVP Operations and Animal Management
1999 – 2006	VP Operations and Animal Management
1994 - 1999	Curator, Vancouver Aquarium Marine Science Centre
1990 - 1994	Senior Trainer, Vancouver Aquarium
1987 - 1990	Assistant Curator, Dolphin Services (Bloom UK), England
1986 - 1987	Sea lion consultant, Woburn Wild Animal Kingdom, England
1987 - 1990	Head Trainer, Dolphin Services (Bloom UK), England
1981 - 1985	Aquarist/Trainer Ocean World, Clacton Pier, England

Special Skills

Management of animal facilities

Animal facility design and maintenance

Staff development programs

Marine Mammal Management: Technical experience in training, transportation, facility design, rehabilitation, management

Project management

Species experience: Killer whales, belugas, Pacific white-sided dolphins, Atlantic bottle-nose dolphins, Steller sea lions, South American sea lions, California sea lions, South American fur seals, South African fur seals, Northern fur seals, Northern elephant seals, Harbour seals, Grey seals, sea otters.

MARTIN HAULENA - Veterinarian

EDUCATION

1993 - Doctor of Veterinary Medicine, Ontario Veterinary College, University of Guelph

1999 - Master of Science (Fish Pathology), University of Guelph

Thesis entitled: Plasma biochemical changes in response to transport, handling, and variation of water quality in sand tiger sharks

EMPLOYMENT HISTORY

2006 to present Staff Veterinarian, Vancouver aquarium

1997 to 2006 Staff Veterinarian, The Marine Mammal Center, Sausalito, CA

2004 to 2006 Relief Veterinarian, San Francisco Zoo, San Francisco, CA

1995 to 1996 Veterinary Intern, Mystic Aquarium, Mystic, CT

1993 to 1995 Associate Veterinarian, The Links Road Animal Clinic, Willowdale, Ont.

PUBLICATIONS

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PRESENTATIONS

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SEMINARS and WORKSHOPS

Haulena, M. 2001-present. Medical management of pinnipeds. Instructor “MARVET”. Sarasota, FL.

Haulena, M. 1998-present. Intake, assessment and treatment of oiled marine mammals. Contract Wildlife Veterinarian, California Department of Fish and Game, Oil Spill Prevention and Response. Various workshops throughout the State of California.

Haulena, M., L.J. Lowenstine and C. Driscoll. 1997. Marine mammal medicine and pathology workshop. Annual Conference of the American Association of Zoo Veterinarians. Houston, TX.

Haulena, M. 1997. Marine mammal natural history, physiology, diseases and medical management. Instructor “93-407: Diseases of non-domestic animals”. Ontario Veterinary College, University of Guelph, Guelph, Ont.

Haulena, M. 1996. Clinical assessment and medical management of diseases of captive and free-ranging marine mammals. Instructor “Aquavet I”. Woods Hole Oceanographic Institute, Woods Hole, MA

Brian Sheehan
Curator of Marine Mammals

Overview

Brian Sheehan has over 20 years experience working with marine mammals. His expertise lies in the development and implementation of marine mammal training, husbandry and management for both experienced and naïve animals.

He is experienced in training, and development of training programs, for show and natural history presentations, routine and novel medical procedures, husbandry, research, television, movies and public relations. He has been closely involved in the development and implementation of educational programs involving talks as well as close up encounter programs.

Brian is experienced in the movement and transportation of a wide variety of marine mammals. He has recently developed and implemented a program for the first consistent collection of urine from belugas in order to follow hormonal levels through non-invasive procedures.

Education

B.Sc.-Geology Brock University
B.Sc.- Biology Brock University

Work Experience

1999 - Present	Curator of Marine Mammals, Vancouver Aquarium
1994 - 1999	Training Supervisor, Vancouver Aquarium
1991 - 1994	Marine Mammal Trainer, Vancouver Aquarium
1985 - 1991	Marine Mammal Trainer, Marineland of Canada, Niagara Falls, Canada

Special Skills

Marine Mammal Management: extensive experience working with killer whales, bottlenose and Pacific white-sided dolphins, California and Steller sea lions, Grey and harbour seals, river and sea otter s in aquariums

Extensive show and water work experience

Facility design and maintenance

Staff development programs

John. F. Young
Water Quality Manager

Overview

Mr. Young over 20 years of marine animal care experience ranging from curatorial animal care to the strategic design, development, and management of aquariums and life support systems. He has developed extensive knowledge in animal management skills through his unique exposure to government, university, and private organizations. He continues to develop and implement new strategic concepts and technological applications to animal care (research, medical, management and transport) that improve standards in the Zoo and Aquaria Industry. Mr. Young has impressive experience in both the conceptual design and implementation of new aquaria and the refurbishing of existing ones. He has considerable field and captive research skills dealing with major socio-economic issues; such as, the seal-codworm crisis of the East Coast Fishery, and fertility control of marine mammals. He has had many years of direct marine mammal rehabilitation and release on both the East and West Coasts. He also has expertise in the hand-rearing of neonatal pinnipeds, otariids, cetaceans, birds, and sea otters.

During the past few years Mr. Young has guided the Vancouver Aquarium towards new and innovative animal care and monitoring strategies through the development of a computer animal record keeping, and new clinical techniques for animal husbandry.

Education

Diploma	Water Treatment Operator – California State University
B.Sc.	Biology/Sports Medicine - University of Victoria
Ph.D.	Marine Mammalogy, In Progress - Dalhousie University

Work Experience

2000- present	Water Quality Manager
1997- 2000	Registrar/Veterinary Research
1995- 1997	Operations Information Manager, Vancouver Aquarium
1993-1995	Veterinary Research Associate (Consultant), Vancouver Aquarium
1992-1993	Consultant for SeaWorld Corporation, Orlando Florida
1987-1991	Manager for Seal Worm Intervention Project (SWIP), Department of Fisheries & Oceans, National Sea Products, and Dalhousie University
1985-1987	Consultant for Sealand of the Pacific, Victoria, B.C.

Special Skills

Animal Care: management, nutrition, transport, rehabilitation
Reproductive Physiology: contraception, endocrinology, diagnostic ultrasound, etc.
Life Support Design and Monitoring: water quality control and evaluation
Animal Record Database: management of animal: health and care systems, habitats, and breeding

Adequate training personnel

Marine Mammal Training Staff

Brian Sheehan
22 years experience working with marine mammals
Marineland of Canada, Niagara Falls- 1985

Curator of Marine Mammals
Vancouver Aquarium 1991

Marcie Tarvid
Monterey Bay-7 years New England Aq. - 7 years

Marine Mammal Manager
Vancouver Aquarium 2003.

Sherri Refcio
8 years experience working with marine mammals.
Seaworld 7 years

Dolphin Coordinator
Vancouver Aquarium 2006

Indrajit Canagaratnam
31 years experience working with marine mammals.

Senior Trainer
Vancouver Aquarium 1976.

Billy Lasby
11 years experience working with marine mammals.

Steller Sea Lion Coordinator
Vancouver Aquarium 1996.

Vance Mercer B.Sc.
9 years experience working with marine mammals.

Open Water Steller Coordinator
Vancouver Aquarium 1998

Troy Neale
8 years experience working with marine mammals.

Senior Steller Trainer
Vancouver Aquarium 1999.

Sara Jossul
8 years experience working with marine mammals.

Beluga Coordinator
Vancouver Aquarium 1999.

Mark Thane
3 years experience working with marine mammals.

Avian Coordinator
Vancouver Aquarium 1999

Gwyneth Shepard AHT
12 years experience working with marine mammals.
Vancouver Aquarium; Fjord and Baelt Centre

Senior Trainer
Vancouver Aquarium 2003

Nigel Waller
6 years experience working with marine mammals.

Senior Steller Trainer
Vancouver Aquarium 2001

Leonora Marquez
4 years marine mammal experience

Trainer
Vancouver Aquarium 2005

Adria Young
5 years marine mammal experience
Dolphin Discovery, Dolphin Fantaseas

Trainer
Vancouver Aquarium 2005

Heidi Golob

Assistant Trainer
Vancouver Aquarium 2006

Justin Look

Assistant Trainer
Vancouver Aquarium 2006

6. Provide description of water quality monitoring protocols, including testing schedules for coliforms, pH, chlorine (if used), salinity, and any chemical added to the water. Provide protocols for dealing with high bacterial counts.

Water quality monitoring protocols

Testing schedule for coliforms:

Weekly sampling of the exhibit is conducted and monitored for total coliforms. Should our test results exceed 1000 cfu/100 ml MPN, two subsequent samples are required at 48-hour intervals and averaged with the first sample. If the average count does not fall below 1,000 MPN, then corrective action is initiated immediately.

Testing schedule for pH:

pH is taken daily from an on-line instrument. Weekly pH is conducted from a grab sample for corroboration.

Testing schedule for chlorine:

Continuous instrumentation on-line monitoring of chlorine is conducted. Both a daily grab sample test, and random checks corroborate this.

Testing schedule for salinity:

Salinity measurements are taken daily using a portable hand-held salinometer.

Testing schedule for ozone.

Twice daily redox potential measurements are conducted using an on-line ORP sensor on the main pool.

Protocols for dealing with a high bacterial count:

If the pool water exceeds 1000 cfu/100 ml MPN for total coliforms a protocol is in place to feed our auxiliary supply of ambient filtered seawater into the exhibit to dilute the pool volume. An immediate investigation and total life support system evaluation is initiated. Two subsequent samples will be taken at 24-hour intervals and averaged with the first sample. If such average count does not fall below 1,000 MPN, then continuous corrective action will be employed until the coliform level is brought within acceptable parameters.

Additional monitoring information:

We have a real-time scada system that monitors chlorine and pH concentrations 24 hours a day 7 days a week. This system permits us to forecast and trend optimal pool concentrations, plus interprets chemical pump and instrument perturbations.

7. Describe/diagram isolation and medical pool/enclosure facilities.

Isolation

Quarantine Protocols

"All AZA member zoological parks and aquariums should have a quarantine program for new marine mammals arriving at the institution. A facility should be available which can provide for the isolation of newly acquired marine mammals in such a manner as to prohibit cross-contamination resulting from physical contact, disease transmission, aerosol spread, waste drainage, or the reuse of untreated water. Ocean pens must be located in such a manner as to prevent the spread of diseases from animal to animal through natural water movement and at a distance from other animals deemed adequate by the supervising veterinarian. If a receiving institution does not have appropriate isolation facilities, the staff should arrange for quarantine at an acceptable alternate site or only receive animals, which do not require quarantine. More stringent local, state, or federal regulations relating to marine mammal quarantine take precedence over these recommendations.

Isolation practices should be instituted based on the prior medical history of the newly arrived animal. Those situations where isolation is recommended would have one or more of the following characteristics:

1. Recently collected (less than 30 days prior to arrival).
2. Recently exposed to a new arrival for which adequate medical history is not available (less than 30 days prior to arrival).
3. Lack of a documented medical history.
4. Apparent medical problems at the time of arrival.
5. At the direction of the supervising veterinarian.

Quarantine for all species should be under the supervision of a veterinarian and consist of a minimum of 30 days (unless otherwise directed by the veterinarian). If during the 30-day quarantine additional animals are introduced into the isolation facility, the 30-day period must begin again for all animals already in quarantine and exposed to the new arrivals.

Attendants should be designated to care only for quarantine animals or attend to quarantine animals only after fulfilling their responsibilities for resident species. Attendants provided with quarantine clothing and washing facilities designed to prevent disease transmission may be allowed to attend to non-quarantine animals after working with quarantined specimens if approved by supervising veterinarian. Equipment used to feed and clean animals in quarantine should be used only with those animals or should be thoroughly cleaned and disinfected, as designated by the supervising veterinarian, before use with post-quarantine animals.

Institutions must minimize the risk of exposure of animal personnel to zoonotic diseases that may be present in newly acquired animals if the attending veterinarian deems that such risks exist. These precautions should include using disinfectant footbaths, wearing appropriate protective clothing, and minimizing physical contact.

During the quarantine period, certain prophylactic measures should be instituted with some species. Individual faecal sample should be collected, if required, at least twice and examined for gastrointestinal parasites. When indicated, treatment should be prescribed by the attending veterinarian based on the potential for contagion. Where indicated, the animals should also be evaluated and treated for ectoparasites.

In those species for which vaccines are available and recommended, vaccinations should be given as appropriate for each species. If the animal arrives without a vaccination history, it should be treated as an immunologically naïve animal and given an appropriate series of vaccinations. Whenever possible, blood should be collected and sera banked. Either a -70 degree Celsius freezer or a -20 degree Celsius freezer that is not frost-free should be available to store sera. Such sera can provide an important resource for retrospective disease evaluation.

Where desirable, the quarantine period may present opportunities to permanently identify unmarked animals. A complete physical examination should be performed during entrance into and prior to exit from quarantine.

Complete animal records should be kept and available on all animals during the quarantine period. Animals that die during quarantine should have a necropsy performed on them under the supervision of a veterinarian, and representative tissues should be submitted for histopathologic examination.

Following are the recommendations and suggestions for appropriate medical procedures to be performed during or immediately prior to the quarantine period:

Required:

1. CBC / serum chemistry panel
2. Physical examination

Strongly recommended:

1. Direct and flotation faecal exam
2. Urinalysis
3. Morbillivirus titre
4. Leptospira titre
5. Heart worm test (If appropriate)
6. Stool culture and cytology.
7. Blood zinc levels

Vancouver Aquarium Quarantine Protocols

In addition to the AZA quarantine protocols listed above, the Vancouver Aquarium has specific protocols regarding sick or injured, stranded marine mammals.

- No sick or injured marine mammal shall enter any part of the Vancouver Aquarium in Stanley Park, unless specifically approved by the supervising veterinarian.
- All sick, injured and stranded marine mammals shall be referred to the Aquarium's Marine Mammal Rescue Centre, unless specifically approved by the supervising veterinarian.
- All persons contacting sick, injured and stranded marine mammals shall not enter any part of the Aquarium until all clothing is washed and disinfected, and person has showered. Unless specifically approved by the supervising veterinarian.

8. Provide justification for any marine mammal not housed with other (conspecific) animals, including attempts to locate a companion and plans for increased keeper interactions, if indicated.

All animals are normally housed with other (conspecific) animals.

Animals may be held alone for reasons of medical treatment at the order of the staff veterinarian.

Animals may be held alone to conduct experimental research. Research must be pre-approved by the Aquarium's Animal Care Committee (IACUC in the US). When the research is complete animals are returned and housed with other (conspecific) animals.

9. Describe your program of veterinary care. Provide assurance that individual animal records are kept. Outline frequency and protocol for examinations. Describe necropsy protocols.

Program of Veterinary Care

Dr. Martin Haulena is the full time staff veterinarian for the marine mammal collection at the Vancouver Aquarium. Dr. Haulena oversees the program of preventive medicine and clinical care, and supports all other programs to assure the health of the institutions' marine mammals. In addition Dr. Haulena is on call and available to provide medical emergency coverage for the collection on a 24-hour basis. A full-time animal health technician is available to assist the veterinarian.

The veterinary program abides by provincial laws governing veterinary practice.

a. Daily routine:

- Marine mammal managers communicate daily to discuss items for Dr. Haulena.
- Marine mammal Curator meets with Dr. Haulena at 08:30 on Wednesdays to discuss in detail daily agenda, review weekly records and prioritize schedule.
- An animal health record is maintained for each marine mammal is held in the Veterinarian's office in a fireproof, locked filing cabinet.
- A daily record on each marine mammal is maintained in the Marine Mammal Curator's office
- A copy of all records is held offsite in archival storage
- A full physical is conducted annually on all marine mammals.
- All the marine mammals are trained to perform routine medical procedures for their on going health: trained behaviours include, taking blood, morphometrics, breath sampling, mouth and rectal swabs, urine sampling, fecal sampling, heart rate monitoring, ultrasound, voluntary anesthesia (placing head in cone) and full body exam including eyes, and mouth.

Necropsy Protocols

The Vancouver Aquarium performs full necropsies on all marine mammals that die at the facility. We are in compliance with AZA Accreditation regulations. Upon certification of death by the attending veterinarian the animal's carcass is sent to the provincial government's Animal Health Centre, forty miles from Vancouver. There it is necropsied by their veterinary pathologist, The Aquarium's veterinarian is normally in attendance. Dissection and collection of applicable necropsy samples for testing and preservation is conducted. A comprehensive report is made available to Aquarium senior staff, board and should the animal be on breeding loan animal to the loaning facility.

10. Describe materials used in pool construction (sealing materials, paints, etc.), dry resting areas, holding pens, etc. Pictures of the enclosures, including fencing, doors, etc., would be very helpful.

The pools are built of reinforced concrete, painted with epoxy.

Dry resting areas are either epoxy coated reinforced concrete or sheets of fibre-glass reinforced plastic (FRP) decks above pool surfaces.

Runs are enclosed by vertical FRP rails that have been engineered to withstand direct impact by an adult Steller sea lion and the crushing force of an adult Steller sea lion bite. All hinges, locks and latches are non-corrosive and made of stainless steel.

Protection from the elements

The temperate climate of Vancouver permits the Vancouver Aquarium the use of outdoor pools, open to the elements. No provision is required to protect the animals from the elements. This is appropriate for all marine mammal species found in our coastal North Pacific waters.

We do however employ shade cloth suspended as horizontal curtains above the holding pen runs during the summer months.

Animals have constant access to water for thermoregulation.

11. Indicate perimeter and barrier fencing present, including placement and height. A perimeter fence is required if there are outdoor enclosures. Barrier fencing is required to keep the public away from direct contact with the animals.

The research pool area is enclosed on two sides by the Aquarium building minimum height 25 ft.

Animals are housed in pools or runs surrounded by fences 7 ft high.

The research pool area is enclosed on two sides by the Aquarium building minimum height 25 ft.

On the other two sides is an 8 ft perimeter wall.

This entire area is restricted with no access for public or unauthorized staff.

12. Provide a written protocol for sanitation procedures, including programs for enclosures, food storage, and food prep. Verify that there is an ongoing maintenance program for the facility.

Sanitation –Enclosure Protocols

Maintenance Checklist: Westcoast exhibit.

The maintenance of each enclosure is the responsibility of the training team working within that enclosure.

A checklist for maintenance of the areas is as follows:

- Daily check for debris and algae in habitats, including ledges, dock, and beaches.
- Daily hose down of above areas to clean off debris
- Pressure washing of above areas weekly or as needed to remove algae
- Check for debris in pool, morning, at every session and end of day. Skimming net used to remove surface debris, and long-pole net used to remove debris on habitat bottom. Animals to be stationed by appropriate trainers when needed.
- Dive clean of habitat or as needed. (see below)

The water quality is maintained as outlined in question 6. In addition during the summer months when algal blooms are more prevalent weekly cleaning dives are conducted under the direct supervision of the Marine Mammal Curator and the Aquarium's Diving Safety Officer, in consultation with the Aquarium's veterinarian.

Dive Cleaning Protocols - General

There are three types of cleaning dives:

- 1 Under-water Pool Scrubber
- 2 Trash Pump
- 3 Hand Scrub

Divers may not enter a pool with pinnipeds, while dive cleans occur..

The requirements for cleans include:

- Dive Equipment:
 - (a) Marine Mammal Department Equipment:
 1. BCD (Buoyancy control device) with Air II attached;
 2. Regulator, 1st stage, 2nd stage, dive computer, BCD whip, drysuit whip;
 3. Two sets mask and fins;
 4. Each diver responsible for obtaining departmental wetsuit or drysuit and boots;
 5. Two weight belts of appropriate weight for each diver
 - (b) Facility Dive Gear:
 1. All dive gear must be signed out at lockers.
 2. B.C.D. with air II or alternate air source on regulator.
 3. Regulator (1st stage, 2nd stage, air/depth/time gauge or computer, B.C.D. whip, alternative air source if no air II on

- B.C.D.).
 - 4. Two pairs of gloves, two hoods.
 - 5. Four aluminum, 80 lb, air tanks from dive room.
- Personnel:
 - (a) Dive Tender (Marine mammal staff member meeting VADSM criteria)
 1. Requires extensive knowledge of dive protocols for each habitat and ability to supervise compliance.
 2. Requires thorough working knowledge of Vancouver Aquarium Diving Safety Manual.
 3. Requires extensive knowledge of safety and animal care protocols for each habitat and ability to supervise compliance.
 4. First aid and oxygen administration knowledge.
 - (b) Two Divers (Marine mammal staff members or volunteers)
 1. Requires knowledge of dive protocols for each habitat.
 2. Requires thorough working knowledge of Vancouver Aquarium Diving Safety Manual.
 3. Requires knowledge of safety and animal care protocols for each habitat.
- Notification and Confirmation List:
 - (a) Marine Mammal Staff
 1. Training Supervisor.
 2. Curator (In absence of the above).
 - (b) Engineering Department
 1. Head Engineer
 2. Director of Life Support (In absence of the above)
 - (c) Special Events Staff
 1. Sleepover coordinator
 2. Programs coordinator
 - (d) Communications Staff
 1. Interpreters
 2. Media coordinator
 - (e) Diving Officer

Dive Cleaning Protocols - Under-Water Pool Scrubber Dive

- Cleaning Equipment Required
 - (a) Marine Mammal Department Equipment:
 1. Brush assembly (Machine, brush with four bolts/nuts/washers, low pressure hose to inflate buoyancy tube, male-male power washer adapter, cowling)
 2. Pressure washer with two hose lengths (Each 50 ft)
 3. Trash pump with ---ft flexible hose
 - (b) Engineering Equipment:
 1. Crescent wrench
 2. Open ended wrench (?mm)
 3. Slot end screwdriver
- Pool Scrubber Set-Up, Operation and maintenance.
 - (a) Set-Up
 1. Attach freshwater line to pressure washer intake.
 2. Attach two lengths of hose to power washer output
 3. Using male-male adapter attach hose to brush assembly intake on handle.

4. Attach brush head to brush assembly underside plate. Slide four bolts through plate assembly. Mount brush over bolts and tighten washer and nut on inside of brush.
5. Attach rigid hoses to trash pump outflow and run hoses to skimmer or to settling tank.
6. Divers enter habitat.
7. Turn on fresh water to power washer.
8. Lower "in-flow" hoses and brush assembly into habitat to expel air. Join hoses, 100ft. Connecting cowling to intake of trash pump with hose line.
9. Check oil and gas levels in power washer and top up if necessary.

(b) Operation - Starting Up.

1. Start power washer. (Choke at 3/4, gas - "on", power cut off turned to "on", pull starter cord). Adjust throttle to 1500 p.s.i.
2. Start trash pump
3. Attach inflator to tire tube inflator on brush assembly. Inflate to desired buoyancy.
4. Divers proceed to start point with brush assembly.
5. Place assembly on pool surface. Open valve on cowling to achieve trash pump suction. Depress start switch on handle of brush assembly.
6. Guide brush around habitat using handles.

(c) Operation - Shut Down.

1. To stop cleaning, depress start switch on handle of brush assembly to "off" position and slow trash pump suction with valve on cowling.
2. Turn trash pump off.
3. Disconnect suction hose from brush assembly cowling.
4. Remove brush assembly from water.
5. Turn power washer off.
6. Turn fresh water hose off.
7. Disconnect all hoses.
8. Remove all equipment and personnel from habitat.

(d) Maintenance and storage

1. Rinse all hoses and dive equipment in fresh water.
2. Rinse scrubber assembly thoroughly.
3. Dry scrubber by hand or place in furnace room.
4. Lubricate all moving parts of scrubber with WD-40
5. Store brushes face down.
6. Return all hoses and dive equipment.
7. Refill power washer and trash pump with gas and check oil levels.
8. Return power washer and trash pump.

Dive Cleaning Protocols - Trash Pump Dive

• Cleaning Equipment Required

(a) Marine Mammal Department Equipment:

1. Pressure washer with two hose lengths (Each 50 ft)
2. Trash pump with 100 ft flexible hose.

(b) Engineering Equipment:

1. Crescent wrench
2. Open ended wrench (?mm)
3. Slot end screwdriver

- Trash-Pump Set-Up, Operation and maintenance.
 - (a) Set-Up
 1. Confirm with engineers that water is set to waste.
 2. Attach freshwater line to pressure washer intake.
 3. Attach two lengths of hose to power washer output
 4. Turn on fresh water to power washer.
 5. Divers enter water.
 - 6. Attach outflow hose to top valve of trash-pump with opposite end going into skimmer.
 7. Attach flexible inflow hoses to side valve of trash-pump with excess of hose in water (50'-100'). Diver to carry hose to bottom of pool to fill with water and expel air. Join hoses.
 8. Connect cowling to intake of trash pump with hose line.
 - (b) Operation - Starting Up.
 1. Start power washer. (Choke at 3/4, gas - "on", power cut off turned to "on", pull starter cord). Adjust throttle to 1500 p.s.i.
 2. Prime pump by running hose with fresh water into reservoir (on top next to hose valve) while starting engine.
 3. When pump is running, fresh water hose can be removed and reservoir sealed.
 4. Diver to confirm with tender that pump is operating correctly.
 5. Cleaning can begin with diver at all times to keeping hands CLEAR of suction. Second diver is to watch animals if present and keep area around first diver clear.
 - (c) Operation - Shut Down.
 1. To stop cleaning, turn trash-pump and power washer off.
 2. Turn fresh water hose off.
 3. Disconnect all hoses.
 4. Remove all equipment and personnel from habitat.
 - (d) Maintenance and storage
 1. Rinse all hoses and dive equipment in fresh water.
 2. Return all hoses and dive equipment.
 3. Refill power washer and trash pump with gas and check oil levels.
 4. Return power washer and trash pump.

Dive Cleaning Protocols - Hand Scrub Dive

- Cleaning Equipment Required:
 1. White (fine) scrubbies
 2. Brown or black (coarse) scrubbies
 3. Brushes (optional)
 5. Suction Cups (optional)
- Cleaning Operation and Maintenance
 1. Divers to enter water (up to 8 divers in buddy pairs)
 2. Clean habitat using appropriate equipment
 3. ONLY white (fine) scrubbies are to be used to clean windows. Check that there is no debris on scrubbie before using on window
 4. Diver may use suction cup on window to station at one spot
 5. Coarse scrubbies or brushes may be used on rockwork and walls to clean algae
 6. After cleaning, divers to do a visual check of pool bottom and remove any debris
 7. Divers to exit habitat and rinse all gear, including cleaning equipment, with fresh water

Food Storage and Preparation Sanitation Procedures

The program of sanitation is essential. Great care to detail is required to ensure a healthy environment in which to prepare the marine mammal diet.

Bacteria multiply rapidly under scales, in the blood, oils, slime and flesh of fish. All surfaces coming into contact with fish or fish by-products must be thoroughly sanitized and cleaned. Use hot water and the approved sanitizers and detergents provided. (All chemicals must be correctly labeled and stored away from food storage and food preparation areas).

- Delivery vans should be clean and food items should be loaded on pallets. Notify a supervisor if these conditions are not met.
- Footbaths must be used at all times. Footbaths must be filled according to posted instructions and must be refilled as often as necessary to maintain disinfectant effectiveness.
- Clean and sanitize carts, shelves, dollies and other containers used in transporting seafood after each use. Ensure such storage items and transportation is maintained in good repair.
- All food room sinks, tables, shelves and buckets shall be made of stainless steel and will be cleaned and sanitized after each use.
- All knives, cutting boards and other sundry equipment shall be cleaned and sanitized after every use.
- All surfaces and utensils that will come into contact with seafood must be thoroughly rinsed of all residual sanitizer and/or detergent.
- All floors and walls in the food room and walk in refrigerator will be cleaned and sanitized twice a day following FH and MC shifts.
- All employees must wash and dry hands before and after handling seafood. Employees that are sick should not handle seafood. Employees with cuts or sores on their hands must wear clean gloves whilst handling the food.
- All employees working in the food room must wear the appropriate clothing provided slickers, rubber boots and gloves.
- At the end of each day all leftover seafood is to be discarded
- All unacceptable, discarded and left over seafood must be garburated. The garburator must be cleaned and sanitized after each use.

Maintenance Program

The Vancouver Aquarium has an aggressive maintenance program as verified by the AZA accreditation inspection conducted summer 2002.

13. Provide detailed description of transportation arrangements, including enclosures, mode of transport, attendants, time (duration) of transport, etc. Verify that Health certificates will be issued by the US attending veterinarian, and that copies of the medical records will accompany the animal to the importing facility. Certify that there is adequate lighting in the transport vehicle(s).

The 6 animals will receive a full health check by Dr. Chris Harvey-Clark (Director, UBC Animal Care) to ensure that the animals are fit to travel. International Health Certificates will be issued for each animal prior to commencement of transportation. A detailed written transport plan will be prepared ahead of the transportation. The health certificates, medical records, all applicable US and Canadian permits and transport plan will accompany the animals.

All vehicles used during the transport will have adequate lighting to ensure the appropriate care of the animals.

The animals that make the final selection and that have been approved fit for transport will be transported to the St. Paul airfield by truck, and then by chartered plane to Vancouver, B.C., accompanied by the veterinarian Dr. Chris Harvey-Clark and support staff. They will be transported in large (32" x 22" x 23") Vari-Kennel canine kennels (approved for airline transport, designed for maximum airflow and minimum transport myopathy) that are reinforced to prevent escape. The animals will not have been fed for at least 8 hr prior to transport (to minimize gut fill). The animals will be kept in close proximity to each other, as they are likely to have become socialized during their time in the beach enclosure. However, only one pup will be held in each kennel to avoid inadvertent injuries and overheating. Several additional precautions will be taken to minimize the risk of thermal stress during the entire transport; water misters, battery fans, ice, and shading prior to loading on the airplanes. Transportation will also be conducted by at least 3 additional veterinary and husbandry staff experienced in pinniped health and handling, supervised by Dr. Chris Harvey-Clark. Upon arrival in Vancouver the animals will be transported by truck to the Vancouver Aquarium Rehabilitation Center for a 30-day quarantine period.

14. Describe medical, feeding, behavioral, and water quality records.

Individual records are maintained for each animal.

Daily records

Daily records are completed for each animal. The daily records include information for each session with the animal care staff. Information recorded: Session type, food quantity, food type, appetite of the animal, energy level of the animal, behaviour of the animal. Detailed notes are recorded for each session including the staff person working with the animal, any training, research or medical procedure. Each day animal care staff carefully note down any physical changes to the animal health e.g. inappetance, any physical trauma (scrapes), eye appearance etc.

The records are reviewed at least daily by the curator and weekly by the veterinarian. If an animal has a health issue the animals are continuously monitored.

Each week the records are copied with one set being stored in a fire-proof cabinet. Periodically a copy of the records are sent to off-site storage.

Medical Records

All medical records are retained in the veterinary office in a fire-proof cabinet. Records are individualized and maintained for each of the animals. The veterinarian records all treatments and medical issues pertaining to each animal on its own medical record.

Periodically a copy of the records are sent to off-site storage.

For animals that die necropsy results are maintained with each animal record. All animal records are retained indefinitely and archived for future management requirements.

Periodically a copy of the records are sent to off-site storage.

Water Quality Records

All water quality records are retained in the water quality manager's office in a fire-proof cabinet.

All water tests are recorded permanently and individualized for each system.

Many of our water systems have automatic controls and these are maintained on electronic data bases to improve long-term trending analysis. All of the files on the PC systems are backed up every evening.

15. Provide the documentation required for a “swim-with” or interactive program as outlined in Section 3.111 of the regulations. Facilities must meet these requirements for interactive programs.

Not applicable. There are no swim with programs conducted at the Vancouver Aquarium.

In accordance with a request from the National Marine Fisheries Service, the following information is also requested:

16. Inventory information and necropsy reports on any marine mammal which has died at the facility within the previous five years.

Necropsy report attached for the only pinniped death, Steller sea lion, at the Vancouver Aquarium in the last 5-years

Additional documentation required:

17. A letter from the appropriate government official/department certifying that all submitted information is accurate.

******* AWA Regulations and Standards can be found on Internet at:
www.aphis.usda.gov/animal_welfare under "Regulations" and "Part 3".
Marine Mammal specific sections are §3.100-3.118
(<http://www.aphis.usda.gov/ac/publications/AWR/PART3.HTML>)**

or contact Animal Care office at address below or (301) 734-7833 *****

Inspection of a foreign facility by APHIS personnel, at the expense of the importer and/or exporter, may be an option for verifying comparable standards. For information on this option and its costs, please contact APHIS at

USDA, APHIS, Animal Care
4700 River Road, Unit 84
Riverdale, MD 20737-1234
(301) 734-7833

Please submit document package to Dr. Barbara Kohn at
USDA, APHIS, Animal Care
4700 River Road, Unit 84
Room 6D03.4
Riverdale, MD 20737-1234



Fisheries
and Oceans

Pacific Region
Suite 200 – 401 Burrard Street.
Vancouver, B.C.
V6C 3S4

Pêches
et Océans

Région du Pacifique
200 – 401 rue Burrard
Vancouver (C.-B.)
V6C 3S4

MML 2007-17

June 14, 2007

Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
SSMC3, F/PR1, Room 13730
Silver Spring, MD 20910

Dear Ms. Adams

**University Of British Columbia Application for the Import of Northern Fur Seals –
Permit #715-1883**

Please be advised that Fisheries and Oceans Canada (DFO) has received the proposal, including facility specifications, regarding The University of British Columbia's (UBC) plan to import and hold six northern fur seals at the Vancouver Aquarium. We have reviewed the material provided by UBC and the Vancouver Aquarium regarding their facilities and can confirm, to our ability, that it is accurate. DFO has partnered with the Vancouver Aquarium on various marine mammal rescue projects and our experience is that their staff are highly qualified and professional.

As these mammals are being transported from Alaska, Marine Mammal Licence #2007-17 has been issued. It is our understanding that these animals are for research purposes and will not be released into the marine environment.

If you have any questions, please do not hesitate to contact me at (604) 666-9965.

Yours sincerely,

Marilyn Joyce
Marine Mammal Coordinator
Fisheries Management - Pacific Region

cc: J. Ford
B. Kohn, U.S.D.A. Animal and Plant Health Inspection Service

Canada

Amy Sloan
Biologist, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
SSMC3, F/PR1, Room 13730
Silver Spring, MD 20910

25 June 2007

Re: Permit 715-1883.

**Letter to confirm future compliance of the Vancouver Aquarium
with U.S. Regulations**

Please accept this letter as confirmation that the Vancouver Aquarium will provide standards comparable to those required by the U.S. Animal Welfare Act and U.S. Department of Agriculture, Animal and Plant Health Inspection Service and that these will be upheld for the duration of the holding of these animals at the Vancouver Aquarium.

We also confirm that we will abide by the terms and conditions of the permit and that any permit amendment, modification, suspension, or revocation decision will be upheld.

The Vancouver Aquarium has been a *professionally accredited member* of the Association of Zoos and Aquarium (AZA) since 1975. As an accredited member we are inspected every 5 years to ensure that we maintain *professional standards including those established under the U.S. Animal Welfare Act and U.S. Department of Agriculture, Animal and Plant Health Inspection Service.*

Sincerely,



Clint Wright
Senior Vice President Aquarium Operations and Planning