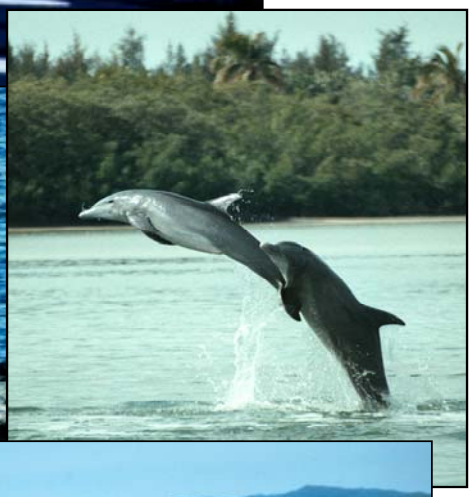
Viewing Marine Mammals in the Wild



A Workshop to Discuss Responsible Guidelines and Regulations for Minimizing Disturbance

Viewing Marine Mammals in the Wild: A Workshop to Discuss Responsible Guidelines and Regulations for Minimizing Disturbance

A Pre-Conference Workshop held before the
14th Biennial Conference on the Biology of Marine Mammals
Vancouver, British Columbia, Canada

Wednesday, November 28, 2001

8:00 am - 5:30 pm

Saturna Island Room
Fairmont Hotel Vancouver

Organized by:

Trevor R. Spradlin
Eugene T. Nitta
Jill K. Lewandowski
Lynne M. Barre
Kaja Brix
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Support for this workshop was provided in part by NOAA Fisheries.

Cover photo credits – *Killer whale:* Janice Waite, NOAA Fisheries' National Marine Mammal Laboratory; *Steller Sea Lion:* NOAA Fisheries File Photo; *Atlantic bottlenose dolphins:* Arden Arrington, Calusa Coast Outfitters Educational Tours; *Hawaiian monk seal:* Chad Yoshinaga, NOAA Fisheries; *Humpback whale*: Captain Budd Christman, NOAA Corps.

INTRODUCTION

In recent years, opportunities to view marine mammals in the wild have increased via commercial watching cruises, recreational boating, diving and swimming activities, and visiting sensitive habitat areas. Some marine mammal biologists, government wildlife officials and wildlife interest groups have become increasingly concerned that marine mammals are being harassed and placed at risk by viewing activities that encourage interactions with the animals and/or are conducted in contradiction to established wildlife viewing guidelines and regulations. This workshop seeks to bring together marine mammal experts from the scientific research community, government wildlife agencies, and commercial eco-tourism industry to discuss wildlife viewing practices and concerns about inappropriate interactions with wild animals. Specifically, we intend to address closely approaching, petting, teasing, feeding, or swimming with various species of marine mammals in the wild.

We recognize that the scope of the workshop is rather ambitious. It has been a challenge to incorporate a variety of species and issues of concern into a single day, and we have tried to balance spoken presentations to address different species, issues and geographic areas. To help achieve this, the workshop includes group discussions and space to share education and outreach materials. Most importantly, the workshop offers the opportunity to share ideas, successes and concerns, and take steps toward developing recommendations on marine mammal viewing practices that minimize disturbance and have a universal application.

This workshop report includes summaries of the spoken presentations as well as summaries of additional research and monitoring projects or education/outreach programs currently in progress[*]. The report is intended to provide a snapshot of projects and programs on various species around the globe, and some summaries provide useful references to articles on wildlife viewing. The report is by no means comprehensive and only includes summaries that were submitted to us by interested parties in response to our workshop announcement. There are undoubtedly many more individuals working to monitor viewing activities and improve conditions for the animals worldwide

Thank you for your interest in the workshop. We look forward to discussing ways to promote responsible wildlife viewing practices for marine mammals. We thank the Society for Marine Mammalogy for graciously assisting with the workshop logistics.

Trevor R. Spradlin
Eugene T. Nitta
Jill K. Lewandowski
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[*] *Please note that the summaries were edited for formatting purposes only (i.e., spacing, font type, font size, etc.). The content of the summaries was not altered or edited and appears exactly as submitted by the author(s). The individual summaries and this workshop report have not been peer reviewed.*

Viewing Marine Mammals in the Wild: A Workshop to Discuss Responsible Guidelines and Regulations for Minimizing Disturbance

Table of Contents

Viewing Marine Mammals in the Wild: A Workshop to Discuss Responsible Guidelines and Regulations for Minimizing Disturbance

14th Biennial Conference on the Biology of Marine Mammals, Vancouver, Canada
Wednesday, November 28, 2001, 8:00 am - 5:30 pm
Saturna Island Room, Fairmont Hotel Vancouver

Agenda

0800 **T.R. Spradlin, E.T. Nitta, J.K. Lewandowski, L.M. Barre, K. Brix and B. Norberg** – Welcome/Intro

0810 **Bob Garrison** – Marine Mammal Viewing – Asset or Liability?

0835 **R.S. Wells and S. Nowacek** – Human Interactions with Florida's Marine Mammals

0855 **P. Cunningham-Smith, D.E. Colbert, R.S. Wells and T. Speakman** – Human Interactions with Wild Atlantic Bottlenose Dolphins (*Tursiops truncatus*) near Sarasota Bay, Florida

0915 **P. Berggren** – Dolphin Tourism: A Tool to Conserve Threatened Marine Mammals and Critical Habitats in East Africa?

0935 **C. Scarpaci, P.J. Corkeron and D. Nugegoda** – Compliance with Regulations by "Swim-With-Dolphins" Operations in Port Phillip Bay, Victoria, Australia

0955 Coffee Break (15 min)

1010 **R. Constantine** – Boats, Swimmers, and Bottlenose Dolphins (*Tursiops truncatus*) in the Bay of Islands, New Zealand

1030 **F. O'Neill and D. Lee** – Dolphin Interaction: Tourism Management and Best Practice

1050 **S. Allen** – Marine Mammal Viewing in Port Stephens, NSW, Australia

1110 **L.J. Boren, N.J. Gemmell and K.J. Barton** – Assessing the Impacts of Tourism on New Zealand Fur Seals (*Arctocephalus forsteri*)

1130 **T.L. Johnson and G. Sheffield** – A Tale of Two Haulouts: Walrus Viewing in Western Alaska

1150 **L. Grella, J. Mortenson, M. Brown, J. Roletto, and L. Culp** – SEALS: Harbor Seal Protection and Disturbance study

1210 Lunch (60 min)

1310 **K. Brix and E.T. Nitta** – Whale Watching and Humpback Whale Protection in Hawaii and Alaska

1330 **C. Richter, S. Dawson and E. Slooten** – Sperm Whale Watching off Kaikoura, New Zealand: Current Research, Impacts and Education

1350 **D. Bain** – Noise-Base Guidelines for Killer Whale Watching

1410 **K.L. Koski, R.W. Osborne and R.E. Tallmon** – Community-Based Whale Watching Management in the U.S./Canadian Boundary Waters of Haro Strait

1430 **M. Pakenham and L. Fairley** – Marine Mammal Monitoring (M3) Project: A Stewardship and Outreach Partnership in BC/Washington Trans-Boundary Waters

1450 Coffee Break (15 min)

1505 **R.A. Asmutis-Silvia and S.L. Rocca**. – "See A Spout, Watch Out! Responsible Whale Watching": An Attempt to Educate Recreational Boaters Regarding Whale Watching Guidelines

1525 **M. Swingle and S. Barco** – "Boat Safely ~ Respect Wildlife": A Public Education and Outreach Program for Virginia Boaters

1545 **NOAA Fisheries** – The Value of Outreach Programs to Educate the Public About Responsible Marine Mammal Viewing Practices

1600 Group Discussion (90 min)

1730 Adjourn

Summaries from Spoken Presentations
(In Order of the Workshop Agenda)

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Too Close for Comfort: Concern About the Growing Trend in Public Interactions with Wild Marine Mammals

Trevor R. Spradlin, Lynne M. Barre, Jill K. Lewandowski and Eugene T. Nitta
Office of Protected Resources, NOAA/National Marine Fisheries Service

A recent study of whale watch activities worldwide has found that the business of viewing whales and dolphins in their natural habitat has grown rapidly over the past decade into a billion dollar ($US) industry involving over 80 countries and territories and over 9 million participants (Hoyt 2001). The popularity of marine mammal viewing activities can result in conservation and socioeconomic benefits for the animals and local communities alike *if* they are conducted responsibly and with care. However, if viewing activities are not conducted appropriately, they can place marine mammals at significant risk of harassment, injury or death.

In 1988, a workshop sponsored by the Center for Marine Conservation and the National Marine Fisheries Service (NMFS) was held in Monterey, California to review and evaluate whale watching programs and management needs (CMC and NMFS 1988). Workshop participants included representatives from Federal government agencies, the scientific research community, commercial industry and conservation groups. Several recommendations were made to address concerns about the harassment of marine mammals during wildlife viewing activities including the development of regulations to restrict operating thrill craft near cetaceans, swimming and diving with the animals, and feeding cetaceans in the wild.

During the 13 years following the workshop, progress has been made to implement the workshop recommendations and to address additional concerns about inappropriate viewing of small cetaceans and pinnipeds that result in harassment[1] of the animals. For example, in the U.S., NMFS published regulations under the Marine Mammal Protect Act that prohibit:

- the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in disturbing or molesting a marine mammal
- feeding or attempting to feed a marine mammal in the wild
- approaching humpback whales in Hawaii and Alaska waters closer than 100 yards (91.4 m)
- approaching North Atlantic right whales closer than 500 yards (457 m)

NMFS has also developed viewing guidelines and outreach materials to educate the public and commercial operators how to observe wild marine mammals without causing harassment.

[1]Under the U.S. Marine Mammal Protection Act (MMPA), it is illegal to "harass" marine mammals in U.S. waters. The MMPA defines the term "harassment" as: *"any act of pursuit, torment, or annoyance which – (1) has the potential to injure a marine mammal or marine mammal stock in the wild, (Level A harassment), or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment)."*

Nevertheless, over the past decade, there has been an alarming shift from passive viewing of marine mammals at a safe distance to a more close up and interactive approach. This shift has occurred worldwide with commercial operators as well as with the public at large. The Internet, print and broadcast media are flooded with advertisements and images of close interactions between humans and marine mammals. People are paying hundreds or thousands of dollars ($US) to swim with, touch or feed wild marine mammals.

Many of these activities are being conducted in important habitats that the animals use for resting, breeding, calving, nursing, feeding and/or for shelter. Some of the species that are the focus of these interactions are endangered or threatened. For example, commercial tours offer the public the chance to: swim with humpback whale cow/calf pairs in their breeding/nursery habitat in the Caribbean; pet gray whales in their breeding/nursery habitat in Baja, Mexico; pet and "cuddle" harp seal pups on ice flows in Canada; walk amongst seals or sea lions in their rookeries in California and the Galapagos Islands; swim with dolphins in their resting or feeding areas in Hawaii, Florida, New Zealand, the Bahamas and Japan; swim with manatees in Florida and Belize; and feed wild dolphins in Australia.

A growing number of marine mammal biologists, federal and state wildlife officials and wildlife interest groups have become increasingly concerned that marine mammals are being harassed and placed at risk by activities that encourage interactions with the animals and/or are conducted in contradiction to established responsible wildlife viewing guidelines and regulations. This has led to recent research efforts to monitor and evaluate the impacts of people closely approaching, swimming, touching and feeding marine mammals. Research conducted to date suggests that marine mammals are at risk of being disturbed ("harassed"), displaced and/or injured by such close interactions. Researchers are reporting boat strikes, disturbance of vital behaviors and social groups, separation of mothers and young, abandonment of resting areas, and habituation to humans (for some examples, please see Kovacs and Innes 1990, Kruse 1991, Wells and Scott 1997, Samuels and Bejder 1998, Bejder *et al.* 1999, Colborn 1999, Constantine 1999, Cope *et al.* 1999, Mann *et al.* 2000, Samuels *et al.* 2000, Boren *et al.* 2001, Constantine 2001, Nowacek *et al.* 2001).

There are also substantial public safety concerns regarding human interactions with marine mammals that cannot be ignored. Many people have been bitten or otherwise injured while trying to closely approach, feed, swim with, touch or interact with wild cetaceans or pinnipeds (see Webb 1978, NMFS 1994, Wilson 1994, Orams *et al.* 1996, Seideman 1997, Christie 1998, Samuels and Bejder 1998, Samuels *et al.* 2000). Many members of the Society are familiar with the now infamous incident whereby a woman was bitten and pulled underwater by a pilot whale when she closely approached and petted the animal (Shane *et al.* 1993). In another case, a dolphin killed a swimmer who was harassing the animal (Santos 1997). When wild marine mammals have injured people, they have been labeled "nuisance animals," and in some cases individuals have called for the animals to be removed from the wild or euthanized.

The growing body of evidence that close interactions are harmful is not surprising given that they are contrary to established wildlife viewing practices. For decades, our colleagues in the

terrestrial wildlife field have been successful in gaining public acceptance for common sense wildlife viewing practices, *i.e.*, look but don't touch or disturb wild animals; use binoculars or telephoto lenses for a close up view; never feed wildlife ("A fed animal is a dead animal" is a slogan used by Canada's National Park system); stay on the trails; leave habitat better than you found it (see Duda 1995, Oberbillig 2000). The marine mammal field is overdue in applying these same values to marine species and ecosystems.

As supporters of marine mammal conservation, we can and should promote better wildlife viewing practices. Scientists, in particular, are in a unique position to educate the public about these concerns because of their intimate knowledge of the animals. Those who work closely with live marine mammals should carefully explain the difference between their research activities and how the public should behave around the animals in the wild. For example, a field biologist who enters the water near cetaceans to identify individuals and determine gender should be cautious of how their research is conveyed to the public. When presenting data, working with a film crew, or talking to the media, the field biologist should ensure that their work does not inadvertently encourage the public to pursue similar interactions that can be harmful to the animals, especially when conducted by inexperienced people. In addition, scientists involved in international research projects should be conscious of their local audience when giving presentations or talking to the media. For example, a researcher studying the effects of provisioning wild dolphins should mention that this activity is illegal in the U.S. when presenting information to a U.S. audience.

Unfortunately, some researchers and conservation groups have sent mixed messages to the public about viewing wild marine mammals. Some have published popular books and articles that have encouraged the public's desire to touch and swim with the animals. It's one thing for a "New Age" advocate to publish a book on swimming with whales and dolphins; it's quite another for an established scientist or organization to do the same. It is equally disconcerting to see that others have lent their names and reputations to "eco-tourism" ventures that offer close interactions with the animals. Some of these individuals or groups protest such activities in the U.S. and yet, surprisingly, are endorsing or participating in the very same activities abroad.

One justification often used by those who promote interactive viewing in countries that hunt marine mammals is that it is "better to interact with the animals than to have them be killed." It is unclear why it has to be an "Either/Or" situation. Isn't it even better to view the animals in a manner that has little or no impact on them at all? There are numerous examples worldwide of economically successful viewing operations that involve observing marine mammals passively and at a safe distance *without* interaction, and that provide participants with an educational and rewarding experience.

There is no denying that viewing marine mammals in the wild is an important way to foster public support for conservation. Nevertheless, viewing activities need to be done responsibly to ensure the impacts are minimal and do not compromise the health and welfare of the animals. In

an era where nature programs on our televisions glorify "crocodile hunters" and other individuals who disturb or feed wildlife under the guise of "environmental education," it's no wonder the public is tempted to interact with wild animals. Marine mammals are not safe from this attention and we, as marine mammal scientists and conservationists, have a responsibility to promote safe and appropriate viewing practices for the animals in the wild. The zoo and aquarium industry needs to share this responsibility, especially the facilities that offer "interactive" programs. People who visit such facilities need to learn the differences between interacting with animals in human care *vs.* animals in the wild, and why interactions with wild animals are inappropriate and potentially dangerous. All serious marine mammal scientists and conservationists should make a concerted effort to encourage passive viewing of marine mammals at a safe distance without engaging in direct interactions. It is our responsibility to help ensure that our actions and messages do not encourage the public to get too close for comfort to marine mammals in the wild.

Note: The views expressed are those of the authors and do not necessarily represent NMFS policy or the Society for Marine Mammalogy. For information on NMFS regulations and guidelines for viewing wild marine mammals, please visit:

www.nmfs.noaa.gov/prot_res/MMWatch/MMViewing.html

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Marine Mammal Viewing – Asset or Liability?

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It's a fact. Nature and adventure tourism are the fastest growing segments of the tourism industry with a growth rate of about 30 percent per year. Bird watching alone saw a growth rate of 155 percent between 1983 and 1994; the fastest growing outdoor recreational activity during that period of time. Marine mammal viewing has seen comparable worldwide growth, resulting in a billion dollar a year industry serving over 9 million participants.

Today we will be looking at the growing public interest in marine mammal viewing and interaction, and discussing how to monitor, manage and encourage responsible wildlife viewing experiences.

While there are many horror stories regarding animal harassment, both intentional and inadvertent, that threaten marine mammal populations, I am optimistic about the future. The fact that wildlife viewing is growing in popularity, with an estimated 63 million viewers in the United States alone, reflects the level of public interest in wildlife and potential advocacy for wildlife conservation. Further, these viewers or nature tourists, pump billions of dollars into local, state and provincial, and national economies as they buy equipment and travel. Businesses and governments are beginning to recognize the economic value of wildlife and natural ecosystems to their communities, and are starting to make land-use decisions to protect wildlife habitat.

However, the growing demand for wildlife viewing experiences and the economic pressures being placed on wildlife populations threatens the very animals that support this growing industry. While most professional tour operators recognize and support the need for clear viewing guidelines and regulations based on sound scientific research and monitoring, the general public lacks the most basic understanding of wildlife biology or their individual and collective impacts on the animals.

Based on my experience in the watchable wildlife and nature tourism field for the last 20 years, I am convinced that most of our clients and constituents want to be responsible viewers. However, most viewers don't know what is expected of them when they are out in the field. Over 65 percent of all viewers come from urban areas where their exposure to wildlife, and wildlife agencies is limited. Their perceptions of wildlife and wildlife/human interactions are to some degree, influenced by various exploitative television shows such as the Alligator Hunter, or more subtly by seeing close-up photographs and videos of wildlife on tourism advertisements and web pages, and thinking they too can get that close.

So how do we develop sustainable marine mammal viewing programs? While this question merits its own conference, one of the outcomes of today's workshop is to develop a list of

universal viewing guidelines/practices that we all can begin to use to educate our peers, agencies, travel industry, and the viewers themselves to conserve and protect marine mammal populations.

While marine mammal viewing requires some species-specific and boating-related guidelines and educational materials, there are many universal viewing guidelines that can be adopted from a number of successful educational campaigns for terrestrial and aquatic viewing. Let's take a look at some of those.

Watchable Wildlife, Inc. – The Wildlife Watcher's Code of Ethics

In response to the growing demand for wildlife-associated recreation, a National Memorandum of Understanding created the Watchable Wildlife Initiative in 1990 to enhance and promote sustainable wildlife viewing programs across the country. A non-profit organization, Watchable Wildlife Inc., was created in 1999 to provide support for the program throughout North America. The Watchable Wildlife Program has four primary goals; conserve biodiversity, provide recreational opportunities tied to wildlife viewing, educate the viewing public about the values of wildlife and their habitats, and create economic opportunities tied to nature tourism.

Watchable Wildlife, Inc. sponsor's an annual conference, the 2002 conference will be held in St. Paul, Minnesota on October, 16-18, 2002 with a pre-conference Marine Viewing Issues Workshop occurring on October 15th. The organization has published a number of handbooks and materials designed to help create and promote sustainable viewing programs. One product is the Wildlife Watcher's Code of Ethics (see attachment 1 for the entire document) that is organized into five sections:

1. Observe animals from a safe distance for us and for them.
2. Allow wild animals to forage for their natural foods.
3. Film and photograph wildlife responsibly.
4. Always be considerate.
5. Return a gift to nature in all our actions.

American Birding Association's Principles of Birding Ethics

The American Birding Association is one of the premier birding organizations in North America. With a membership nearing 22,000, the association publishes the magazine ***Birding*** and various specialty natural history and guide books on birds, offers birding trips around the world, and works on many conservation activities in support of bird conservation around the world. They have produced their own Principles of Birding Ethics (see attachment 2 for entire document) that beyond the basics for bird watchers, offers guidelines for those individuals leading trips. The ethics are divided into four parts:

1. Promote the welfare of birds and their environment.
2. Respect the law, and the rights of others.
3. Ensure that feeders, nest structures, and other artificial bird environments are safe.
4. Group birding, whether organized or impromptu, requires special care.

National Oceanic and Atmospheric Administration (NOAA) – *Protecting Marine Mammals Brochure*

The Office of Protected Resources within the National Marine Fisheries Service has produced a number of well-designed fliers and brochures promoting responsible viewing and interaction with marine mammals. The ***Protecting Marine Mammals*** brochure starts with the strong message, "Look from a distance … but don't touch, feed or harm in the wild." After discussing how inappropriate human behaviors can harm marine mammals, it concludes with the following suggested actions:

What you can do…

1. Do not feed marine mammals when you are boating or walking along a pier.
2. Maintain a minimum distance of 50 to 100 yards from all animals, whether in the water or on shore, to prevent disturbance or harassment.
3. Learn more about marine mammals by visiting a library, nature center or museum and teach others what you know.
4. Find out who handles live marine mammal strandings in your area in case you see one. If no separate organization exists, contact the National Marine Fisheries Service, U. S. Fish and Wildlife Service or your state wildlife agency.
5. A seal or sea lion pup found alone on shore is generally not abandoned, but has only temporarily been left behind while the mother forages. Leave it alone. Any attempt to move the animal can result in injury or ultimate abandonment by the mother.
6. Keep your distance … respect their beauty, enjoy watching them, but don't feed them, harm them, or swim with them. You can return another day – make sure they can too.

California Department of Fish and Game – Watching Wildlife Exhibit

An educational campaign to encourage responsible viewing is best done at the place where the viewing takes place. The California Department of Fish and Game has developed exhibit kiosks at it's watchable wildlife sites to orient the viewers prior to their visit. Exhibits provide trail maps, wildlife viewing calendars and wildlife viewing tips to encourage responsible behavior and to direct people to the best viewing locations.

Their viewing ethics panel, ***Watching Wildlife: Viewing Tips for You, Protection for Them***, discusses the following points (full text found in attachment 3):

1. Use the right tools.
2. Expect to see animals as they are naturally.
3. Minimize movement, stay calm and be quiet.
4. Let wildlife eat wild food.
5. Keep your distance.
6. Stay on the trail.
7. Leave all wildlife alone.

While there are many general and species-specific examples of viewing ethics/educational campaigns that have been developed, the above examples provide a good sampling of the types of messages and approaches that we can use to develop a set of standard guidelines and viewing ethics for marine mammal viewing.

We have our work cut out for us, but if we can work together to develop viewing standards and educational materials based on sound research that lead to exciting and positive viewing experiences for the public, we can use the force of over 63 million viewers to help us conserve and protect marine mammal populations.

* * * * * * * * * * * *

Bob Garrison owns a private nature tourism planning firm based in Sacramento. He is currently working on a number of marine mammal education projects in California and Hawaii. He was previously responsible for California's statewide wildlife viewing and aquatic education programs within the California Department of Fish and Game. He currently serves as the chairman of California's Watchable Wildlife Project and as a board member of Watchable Wildlife, Inc., a non-profit organization that promotes sustainable wildlife viewing programs throughout North America.

Attachment 1

The Wildlife Watcher's Code of Ethics

National Partners in Watchable Wildlife
Watchable Wildlife, Inc.
www.watchablewildlife.org

We, as wildlife watchers, will put the needs and safety of wildlife first, conserve wildlife and habitats, and respect the rights of others. We will seek wildlife watching experiences that reward us with the gift of seeing animals behaving naturally in their own environments. Recognizing the importance of learning specific codes of ethics for observing birds, mammals, fish, reptiles, amphibians, and insects in the wild, we will adhere to these guiding principles:

1. Observe animals from a safe distance for us and for them.
-- Use binoculars, spotting scopes and viewing blinds for a close view.
-- Move slowly and quietly.
-- Avoid nests and dens. Leave baby birds and other young animals where we find them.
-- Learn to recognize and respect wildlife alarm signals.
-- When an animal changes behavior as a result of our presence, we are too close.

2. Allow wild animals to forage for their natural foods.
-- Put the safety and health of wildlife first by resisting that impulse to offer a handout.
-- Reserve feeding of wildlife to backyard birds.

3. Film and photograph wildlife responsibly.
-- Use a telephoto lens from a viewing blind or a vehicle.
-- Never chase, herd, flush, or make deliberate noise that stresses wildlife.
-- Leave plants, trees and other natural features as we found them.
-- Encourage photo and film editors to adopt ethical standards that include lens size of published photos, depict wildlife as part of a natural environment, and identify photos of captured wildlife.

4. Always be considerate.
-- Ask permission to watch or photograph wildlife on private land.
-- Observe all rules and regulations.
-- Wait our turn to view or photograph animals when sharing a viewing area.
-- Leave pets at home or in the car.
-- Tread lightly, staying on trails and roads.

5. Return a gift to nature in all our actions.
-- Consult our local wildlife agency for specific guidelines on ethical wildlife watching, filming and photography.
-- Participate in wildlife and habitat conservation.
-- Help others to become responsible wildlife watchers.

Attachment 2

American Birding Association's
PRINCIPLES OF BIRDING ETHICS

Everyone who enjoys birds and birding must always respect wildlife, its environment, and the rights of others. In any conflict of interest between birds and birders, the welfare of the birds and their environment comes first.

CODE OF BIRDING ETHICS

1. Promote the welfare of birds and their environment.

1(a) Support the protection of important bird habitat.

1(b) To avoid stressing birds or exposing them to danger, exercise restraint and caution during observation, photography, sound recording, or filming.

Limit the use of recordings and other methods of attracting birds, and never use such methods in heavily birded areas, or for attracting any species that is Threatened, Endangered, or of Special Concern, or is rare in your local area;

Keep well back from nests and nesting colonies, roosts, display areas, and important feeding sites. In such sensitive areas, if there is a need for extended observation, photography, filming, or recording, try to use a blind or hide, and take advantage of natural cover.

Use artificial light sparingly for filming or photography, especially for close-ups.

1(c) Before advertising the presence of a rare bird, evaluate the potential for disturbance to the bird, its surroundings, and other people in the area, and proceed only if access can be controlled, disturbance minimized, and permission has been obtained from private land-owners. The sites of rare nesting birds should be divulged only to the proper conservation authorities.

1(d) Stay on roads, trails, and paths where they exist; otherwise keep habitat disturbance to a minimum.

2. Respect the law, and the rights of others.

2(a) Do not enter private property without the owner's explicit permission.

2(b) Follow all laws, rules, and regulations governing use of roads and public areas, both at home and abroad.

2(c) Practice common courtesy in contacts with other people. Your exemplary behavior will generate goodwill with birders and non-birders alike.

3. Ensure that feeders, nest structures, and other artificial bird environments are safe.

3(a) Keep dispensers, water, and food clean, and free of decay or disease. It is important to feed birds continually during harsh weather.

3(b) Maintain and clean nest structures regularly.

3(c) If you are attracting birds to an area, ensure the birds are not exposed to predation from cats and other domestic animals, or dangers posed by artificial hazards.

4. Group birding, whether organized or impromptu, requires special care.

Each individual in the group, in addition to the obligations spelled out in Items #1 and #2, has responsibilities as a Group Member.

4(a) Respect the interests, rights, and skills of fellow birders, as well as people participating in other legitimate outdoor activities. Freely share your knowledge and experience, except where code 1(c) applies. Be especially helpful to beginning birders.

4(b) If you witness unethical birding behavior, assess the situation, and intervene if you think it prudent. When interceding, inform the person(s) of the inappropriate action, and attempt, within reason, to have it stopped. If the behavior continues, document it, and notify appropriate individuals or organizations.

Group Leader Responsibilities [amateur and professional trips and tours].

4(c) Be an exemplary ethical role model for the group. Teach through word and example.

4(d) Keep groups to a size that limits impact on the environment, and does not interfere with others using the same area.

4(e) Ensure everyone in the group knows of and practices this code.

4(f) Learn and inform the group of any special circumstances applicable to the areas being visited (e.g. no tape recorders allowed).

4(g) Acknowledge that professional tour companies bear a special responsibility to place the welfare of birds and the benefits of public knowledge ahead of the company's commercial interests. Ideally, leaders should keep track of tour sightings, document unusual occurrences, and submit records to appropriate organizations.

PLEASE FOLLOW THIS CODE AND DISTRIBUTE AND TEACH IT TO OTHERS

Attachment 3

California Department of Fish and Game Exhibit

Title: Watching Wildlife: Viewing Tips for You, Protection for Them Exhibit

Main Body Text:

Welcome! A great wildlife viewing experience requires more than diverse habitat and plentiful wildlife. Viewing wildlife takes patience, practice, and an understanding of their needs. This is one of 592 sites managed throughout the state by the California Department of Fish and Game. At all of these locations the conservation and enhancement of wildlife habitats come first. Hunting, fishing and wildlife viewing are carefully managed to ensure that healthy wildlife populations thrive. As a result, this area is home to a variety of wildlife, and offers some of the finest wildlife viewing found anywhere in the state.

Please follow the area regulations and seasonal closures that are designed to protect you and the wildlife. And use these viewing tips to help you enjoy and experience a new side of wild California.

Sub-titles and Text:

Use the Right Tools – Binoculars, cameras with zoom lenses, or spotting scopes will give you a viewing advantage without disturbing the wildlife.

Expect to See Animals as They Are Naturally – The spectacular action shots common on television are rare without special equipment and patience. Here you will see wildlife behaving naturally, but be prepared for that once-in-a-lifetime viewing experience.

Minimize Movement, Stay Calm and Be Quiet – Wildlife is sensitive to sounds and movement. Hide behind trees, shrubs, or vehicles as you view, and keep your voice low. Walk slowly or stay in your vehicle. A wave of an arm or a shout can cause hundreds of migratory birds to waste vital energy as they fly away.

Let Wildlife Eat Wild Food – Human food can cause digestive problems, provide improper nutrition, and even kill an animal. Let wildlife find their own food in the wild.

Keep Your Distance – If wildlife stop what they are doing to look directly at you, or change their behavior by turning their back, flying away or standing up from a resting position, then you are too close. Move back and become less conspicuous.

Stay on the Trail – Stepping off the trail can damage native plants, crush a nest, or cause soil erosion. Human scent alone may cause an animal to abandon a primary food path.

Leave All Wildlife Alone – If you find wildlife that appears abandoned or sick, leave it alone. If moved, animals can be harmed or become harmful to the handler. If you find a young uninjured animal, leave the area immediately so the adult can return. Report any sick animals or unusual behaviors to the area manager.

Human Interactions With Florida's Marine Mammals

Randall S. Wells and Stephanie Nowacek
Chicago Zoological Society and Mote Marine Laboratory
1600 Ken Thompson Parkway, Sarasota, FL 34236

The marine mammals inhabiting Florida's coastal, inshore, and inland waters face a variety of threats, including a number of human origin. This 15 min video, prepared through the support of the Florida Fish and Wildlife Conservation Commission, describes some of the anthropogenic threats faced by manatees and dolphins, and suggests how humans can reduce their impacts. Topics include interactions with fishing gear, boats, swimmers, and human provisioning of manatees and dolphins. The video includes video footage from an overhead perspective of manatees and dolphins responding to approaching vessels. The video provides documentation of the manatees' tendency to move to the nearest deep water, even if this brings them into the path of the oncoming boat.

Copies of this video are available for educational purposes for the cost of copying and shipping, at $10.00 each. Please make checks payable to "Mote Marine Laboratory" and send your orders to:

Stephanie Nowacek
Mote Marine Laboratory
1600 Ken Thompson Parkway
Sarasota, FL 34236

Human Interactions with Wild Atlantic Bottlenose Dolphins
***(Tursiops truncatus)* near Sarasota Bay, Florida**

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Literature and the media have endowed cetaceans with a reputation that predisposes people to expect friendly interactions with free-ranging dolphins. Theme parks and aquaria, where people can touch, feed and swim with captive dolphins, enhance this reputation. Outside such institutions, the public often seeks similar encounters with wild dolphins, using food as an enticement to facilitate these interactions. In coastal areas where boaters and dolphins share the same habitat, interactions between the boating public, hungry for contact with wild dolphins, and marine mammals habituated to the presence of boats and people, are becoming more frequent, in spite of the fact that such interactions violate the Marine Mammal Protection Act.

Marine mammal scientists and managers have expressed increasing concern over the impact such interactions can have on the behavior of wild dolphins. As demonstrated in many other situations where the public has fed wildlife, these interactions can substantially alter the normal behavior of animals, can create a dependency on humans, can modify foraging strategies and social relationships, and can place the animals at increased risk 1) of illness from ingestion of inappropriate items, 2) from disease and predators, 3) of injury from unnecessary exposure to boats and their propellers, and 4) of harm from adverse interactions with people.

The adverse effects of supplemental feeding of wild animals have been well documented. Wild monkeys, bears and alligators have been reported to become aggressive when fed by humans, resulting in injuries to both humans and animals. In some cases, such animals were destroyed after being declared nuisance animals. Wild dolphins conditioned to accept food from humans have similarly been reported to become aggressive during encounters with humans, increasing the likelihood of injury to the humans, and exposing the dolphins to the risk of retaliatory behavior by humans. In addition, dolphins engaging in these types of interactions may pass on this undesirable behavior to conspecifics, especially juvenile offspring.

Since 1990, a male Atlantic bottlenose dolphin, *Tursiops truncatus*, has been observed interacting with humans in an area of the Intracoastal Waterway near Nokomis, Florida. The dolphin, known as "Beggar", is commonly observed in a well-defined section of the waterway between the Blackburn Point and the Albee Road Bridges. Local boaters and tourists frequent this narrow, sheltered waterway, and boat traffic is often heavy.

Beggar inhabits waters just to the south of the community of bottlenose dolphins residing in Sarasota Bay. This community has been the subject of a long-term study of population biology, social behavior, health and ecology since 1970. As part of this longitudinal study, dorsal fin features of more than 2,500 dolphins in Sarasota Bay and surrounding waters have been documented, and observations of behavior, feeding, ranging patterns, and socializing with

conspecifics have been recorded. This long-term database has provided Sarasota Dolphin Research Program scientists with important perspective relative to Beggar's behavior.

As more people have become familiar with Beggar's predictable occurrence and behavior, reports of the dolphin biting humans, in some cases producing injuries requiring medical treatment, have increased in frequency. Over time, "begging" behavior has begun to be exhibited by some of Beggar's occasional associates. In response to these concerns, efforts were undertaken to systematically study the situation and to educate boaters about the dangers of interacting with wild dolphins. As part of the National Marine Fisheries Service's "Protect Wild Dolphins" program, signs were posted in the area. These were subsequently enlarged and improved in 1999 and 2000. The National Marine Fisheries Service and the Sarasota Dolphin Research Program engaged in a campaign with local and national media to publicize the dangers and laws associated with interacting with wild dolphins.

In 1997, a systematic study of interactions between Beggar and boaters was initiated. The purposes of this study were to characterize the frequency and types of boater interactions with Beggar, and to evaluate the effectiveness of efforts to curtail these illegal activities. The project consisted of three phases: 1) a baseline study, 2) a docent boater education program, and 3) a follow-up study.

A baseline study to determine the types and frequencies of interactions between boaters and the dolphin was conducted from a land-based platform on the west side of the Intracoastal Waterway. Observations were recorded from August 1997 to December 1998, and again in August of 1999. In total, 91.75 hours of focal observations were completed, and 1,686 interaction attempts with the dolphin were documented (total number of boats passing by the dolphin were not recorded during this portion of the project). Approximately 24% of interactions involved contact behaviors with the dolphin, such as touching, teasing or splashing. Feeding interactions comprised 13% of all interactions, including offering items not reasonably expected to be normal components of a wild dolphin diet. We observed dolphin bites to 8 people during this portion of the project.

In response to increasing numbers of complaints and reports of interactions with Beggar, we worked with the National Marine Fisheries Service to develop a direct boater education program, or docent program. Prior to the inception of the docent program, NMFS enforcement efforts were stepped up and a "town hall meeting" was held in Nokomis to allow local residents to ask questions of dolphin researchers and National Marine Fisheries Service personnel. Additional signage was posted in the waterway, and decals, posters and brochures were made available to local business owners. These efforts were designed to educate the public regarding the dangers of feeding and interacting with dolphins in the wild.

The docent program was conducted from December 2000 through May 2001. Researchers involved in the baseline study, assisted by trained volunteers, shadowed Beggar by boat during

peak boating times, monitoring the types and frequencies of his interactions with boaters. Boaters who engaged in interactions that were clearly in violation of the Marine Mammal Protection Act were approached by the docents and advised that their actions were in violation of Federal law. These and other boaters were also offered educational materials about responsible interactions with wildlife, as well as information about Beggar himself. The docent program involved 115.53 hours on the water with Beggar in sight. During this time, 7,794 boats passed through the area. Of these, 108 (1.3%) interacted with Beggar at some level, including 65 feeding attempts (0.008% of passing boats), and 79 touching attempts (0.010% of passing boats). We observed bites to 7 people (0.001% of passing boats). We delivered 173 information packets to boaters (0.022% of passing boats). Of those people queried when we approached them to distribute information, 61% indicated that they were already aware that their interactions with Beggar were illegal.

Follow-up observations were conducted from land to assess the effectiveness of the docent program and increased law enforcement efforts. A total of 10.95 hours of observations of Beggar was conducted during May through July 2001. During this segment of the study, 813 boats passed through the area. We observed 30 feeding attempts (0.037% of passing boats), 21 touching attempts (0.026% of passing boats) and bites to 3 people (0.004% of passing boats).

In total, 18 bite incidents were documented during the three phases of the program. In all cases, bites were inflicted only when the boater engaged in attempts to touch or tease the dolphin. Only 27% of the biting incidents involved offering food to the dolphin. This would suggest that bites inflicted by the dolphin were not an accidental result of feeding, but were an aggressive response on the part of the animal against those boaters who attempted to touch, or tease, or did not produce the expected food handout.

Human interactions with Beggar continue to be a problem with a small but determined segment of the boating public, in spite of posted signs, extensive public education campaigns, and limited law enforcement efforts. Violations appear to be infrequent in the presence of marked law enforcement vessels. Law enforcement efforts to date have resulted in more than 472 vessel operator contacts, with two citations issued for harassment (pounding on the sides of boats-dismissed upon review), 4 formal notices of violation for feeding (fines of $100 each), and 3 written warnings. Since the cessation of the docent program, interaction rates have increased from fewer than 2% of passing boaters to nearly 7%. The well-marked docent boat clearly seems to have had a deterrent effect, but the effect apparently did not last much beyond the cessation of the docent program. Educational programs conducted to date appear to have reached the vast majority of boaters using these waters. Most boaters appear to be aware of the laws regulating interacting with wild dolphins, but some chose to interact illegally with Beggar and other local dolphins in spite of the possible consequences. We suggest that increased law enforcement efforts, including the application of well-publicized punitive sanctions, may be required to bring about any further reduction in this problem. We recommend that increased law enforcement be combined with systematic evaluation efforts.

Dolphin Tourism: A Tool to Conserve Threatened Marine Mammals and Critical Habitats in East Africa?

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Marine mammals in the East African region suffer from direct and indirect takes as well as habitat degradation due to anthropogenic activities. Dugongs recently became extinct in Tanzania and only a few animals remain in Mozambique and Kenya. Since 1998 the potential for dolphin tourism to protect threatened marine mammals and their habitats has been investigated in Menai Bay, Zanzibar. Dolphins are still hunted for consumption as well as for bait in certain fisheries. During the latest recorded hunt in 1994, 23 dolphins were harpooned and used locally. In the same year, a dolphin tourist initiative commenced involving local boats taking tourists to watch and swim with the dolphins. Since this initiative no direct takes of dolphins have been recorded in the Menai Bay area. Approximately 150 Indo-Pacific bottlenose (Tursiops aduncus) and 60 Indo-Pacific humpback (Sousa chinensis) dolphins have been identified in the Menai Bay during photo-identification surveys in 1998-2001. Repeated sightings of known animals indicate that small resident populations of these species are present year round. The lack of reported directed takes of dolphins since the advent of dolphin tourism suggests that this may be a useful means of affording much needed protection to the animals in the region. However, in order to make this a sustainable resource it needs to be managed closely.

A pilot study of the social and socio-economic impact of the dolphin tourism has been conducted in Zanzibar. One of the conclusions from this was the need for some form of control of the dolphin tourism. A first step was taken in November 1998 by producing and distributing a set of guidelines for operators and visitors of the dolphin tourism. In 2000 a study was conducted testing the hypothesis that boats following suggested guidelines for the dolphin tourism cause less stress to the Indo-Pacific dolphins. Changes in group activity (resting, travelling, socialising and foraging) during boat approaches and occurrences of stress related behaviours (leaps, tail-slaps and coughing) during 30 minute follows were studied using scan sampling of groups. Approaches and follows in which the guidelines were followed were compared to when they were violated.

The results showed that the dolphins were more likely to change their group activity during boat approaches when guidelines were violated. Furthermore that, stress related behaviours were significantly more frequent during follows when guidelines were violated. The results from this study indicated that following the suggested guidelines significantly reduced the frequency of stress related behaviours among dolphins. This indicates that the behaviour of Indo-Pacific bottlenose dolphins in Menai Bay is significantly affected by the dolphin tourism in its present form.

The adoption, implementation and enforcement of suggested guidelines could be an important step towards a sustainable development of the dolphin tourism in Menai Bay. To facilitate future conservation and management of marine mammals in the region comprehensive education and

research programmes are essential. Guidelines and regulations for tour operators need to be developed and enforced alongside teaching materials for tourists, guides and local communities. In conclusion, historical and present hunt records along with current population data indicate that responsibly managed dolphin tourism may be an approach that could be developed elsewhere in East Africa where dolphin conservation is still very much in its infancy.

Compliance with Regulations by "Swim-With-Dolphins" Operations in Port Phillip Bay, Victoria, Australia

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We report on operator compliance with regulations on humans swimming with free-ranging bottlenose dolphins (*Tursiops* sp.) in Port Phillip Bay, Australia. A total of 128 commercial dolphin-swim trips were studied between September 1998 and April 2000. Data were collected on 107 dolphin groups using 1 minute scan samples and continuous observations from all five human-dolphin-swim boats operating in Port Phillip Bay. Four permit conditions were investigated: approach type, swim time, time in proximity of dolphins, and calf presence. The most common approach type was the parallel approach accounting for 64% of the approaches observed followed by the Direct approach (26.6%) and the J approach (9.4%). Results indicate that the mean length of time per swim is 3.0 minutes (SD = 1.8 min; Range = 0.8-13 min; N=316) which was within the condition of the permit. Results indicate that the condition is not met as the mean interaction time was found to be 34.78 min/sighting (S.D. = 28.7 min; Range 3-151; N=107). In addition the mean total time per trip with a group of dolphins is 48.9 min (SD = 32.29min; Range = 4-167; N=76). A total of 69.4% of human dolphin swims were conducted with adults only and 30.6% of human swims were conducted against regulations with foetal fold calves. Results indicate substantial non-compliance by operators to three of the four permit conditions studied. It is vital that the number of permits granted to dolphin swim operators in Port Phillip Bay be restricted to the existing four at least until there is total compliance in order to ensure that there are no adverse effects on this population of *Tursiops truncatus*.

Boats, Swimmers and Bottlenose Dolphins (*Tursiops truncatus*) in the Bay of Islands, New Zealand

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Since late 1991, a population of wild, non-provisioned bottlenose dolphins (*Tursiops truncatus*) have been exposed to permitted swim-with-dolphin tourism. Research on this population began in late 1993, and the effects of tourism have been studied from 1994 to early 2000. The aims of the research have been to evaluate the population size, home range, and habitat use of the population and to quantitatively assess the effects of the boats and swimmers on dolphin behaviour. This research has been based primarily in the Bay of Islands, an area with consistently high sightings of dolphins, as well as the most concentrated level of swim-with-dolphin tourism.

In order to accurately assess the potential impact of tourism, it was important to understand the population size and range. It appears that at least some of the bottlenose dolphins encountered in the Bay of Islands range over 400km south of the Bay. No dolphins were resident in the Bay, but there was an 81% resight rate of the 378 individuals photo-identified. With 100% of adults uniquely marked, the population has been estimated at approximately 450 dolphins. Photo-identification outside the Bay has failed to identify any new individuals from the 68 photographs taken to date. There are no known populations of coastal bottlenose dolphins anywhere else on the North Island, and the nearest population is approximately 1000km south in the Marlborough Sounds - West Coast area. Subsequently, all permits to interact with dolphins issued along the northeastern coast of the North Island focus on this wide-ranging population.

The Bay of Islands is a popular tourist destination and attracts a number of tourism and recreational vessels. Currently, there are six companies permitted to run a maximum total of 10 trips per day to view or swim with dolphins. At the initiation of the research on the effects of boat traffic on the dolphins, in late 1996, there were three companies regularly running six trips per day, and one company running one trip per day who infrequently interacted with the dolphins. The permitted operators spent 58 mins on average with the dolphins per trip. This was considerably longer than the mean duration of 9.3 mins for recreational vessels, and 6.8 mins for non-permitted operators (Berghan, 1998).

A total of 260 hours of independent focal group follows were conducted (average follow approx. 5 hours). Focal group scan samples conducted every two minutes recorded the predominant group activity and were used to determine what effect the number of boats, and the type of boats had on focal group behaviour. Dolphin behaviour differed depending on boat type (*i.e.*, permitted operator, non-permitted operator, or recreational), and the number of boats. There was a difference in dolphin behaviour when the research vessel was the only vessel present, suggesting boat-based research, if conducted carefully, can be minimally invasive. Resting and milling behaviour were most likely to change in all analyses. With an increasing number of boats, there was a decrease in resting and an increase in milling behaviour. When the permitted

operators were present, there was a decrease in resting and an increase in milling behaviour compared to when non-permitted operators and recreational vessels were present.

A change in operation times occurred when permits were issued to view- or swim-with-dolphins part way through the study. This resulted in a change from three boats leaving at 0800 and 1230, and one boat at 1000; to two boats leaving at 0800, two at 0900, two at 1000, two at 1230, one at 1300 and one at 1330. This change from "discrete" departures to "staggered" departures resulted in an increase in the duration of contact time the dolphins had with permitted operators from 98 mins (±S.E. 10.4 mins) to 152 mins (±S.E. 11.3 mins) per focal follow. The number of 2-min. samples when permitted operators were present increased from 37% (n = 1417) to 45% (n = 1734). Seventy-four bouts of resting behaviour were observed, with 92% occurring in the absence of the permitted operators. Dolphins were observed resting in the presence of the operators on only 8% of resting bouts, but entered a resting bout 79% of the time the operators departed. With the increased number of permitted boats interacting with the dolphins, resting behaviour decreased and milling behaviour increased.

Research conducted in 1994-1995 showed that dolphin response was correlated with swimmer placement (Constantine & Baker, 1997). In late 1996, research continued to evaluate the long-term effects of commercial swim-with-dolphin tours, and the findings of this are summarised below (see Constantine 2001). The number of tours and swimmer placements were identical to the 1994-1995 period, allowing a comparison of dolphin responses over time. The results showed an increase in avoidance of swimmers and a decrease in interactions with swimmers between the 1994-95 and the 1997-98 periods. Dolphin response to swimmers differed with swimmer placement, and between the two research periods. The "around boat" and "in path" placements showed a significant increase in avoidance response between the two research periods. The only placement to show a decrease in avoidance response was the "line abreast" placement. This was the only placement that allowed the dolphins the choice to approach the swimmers. No swimmer placement resulted in an increase in interactions with swimmers. These results suggest that over time the dolphins have become sensitised to the "around boat" and "in path" placements and have probably become tolerant of the "line abreast" placement. So why did their behaviour change?

Even though there were no resident dolphins in the Bay, a crude calculation of operators' effort to the photo-identification data showed that an average dolphin was exposed to 31 swim attempts per year. This degree of exposure to an apparently aversive stimulus is likely to explain their change in response over time. Further examination of the data on swim attempts found when there was an interaction with swimmers, only 19% (2.2 dolphins) of the group on average would interact with swimmers. Of those individuals which did interact, it was found that juveniles (weaned individuals, approximately 2/3 the size of an adult) were more likely to interact with swimmers than adult dolphins. As this population is exposed to increasing levels of swim-with-dolphin tours, documenting the changes in dolphin response to swimmers is important to manage the future of this industry in the Bay of Islands.

The results reported here highlight the importance of understanding the demographics of the population being exposed to tourism and the need for long-term research to understand the effects on these long-lived animals. The potential for a cumulative impact from tourism on a wide-ranging population (such as the one discussed here) is of concern. It is apparent from these results that resting, a vitally important behaviour to the dolphins' wellbeing, is significantly affected by the presence of three or more boats. In particular, the presence of permitted dolphin watching or swim-with vessels appears to affect their resting behaviour. These results suggest that the dolphins should have periods of time during the day when there are no permitted vessels operating. This would allow resting and milling behaviour to occur without influence from the permitted vessels' presence. In addition, the change in dolphin response to swimmers over time is of concern. Sensitisation is rarely reported in social mammals, and in this case, is directly related to swimmer placement. It is recommended that only the "line abreast" swimmer placement be used as this gives the dolphins the choice to come over and interact or to maintain their behaviour prior to the swimmers entering the water. It also minimises the impact on the majority of individuals, which do not want to interact with swimmers. Unfortunately, it is often difficult to limit this rapidly growing tourist attraction, but if left unregulated or proactive management systems are not put in place, the consequences for the dolphins' welfare and the industry are likely to be detrimental.

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Dolphin Interaction: Tourism Management and Best Practice

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This study examines a single wildlife tourist destination with a dedicated dolphin tourism focus. The study was funded by the Cooperative Research Centre (CRC) for Sustainable Tourism, under the Wildlife Tourism Sub-program and was undertaken at the Dolphin Discovery Centre (DDC), situated in Bunbury, Western Australia.

Initially a market survey of visitors was examined, focusing on who is visiting, why they are visiting and what their expectations and levels of satisfaction are derived from. Secondly, the study concentrated on the "swim with wild dolphin" tours offered by the Dolphin Discovery Center. This component of the study used pre and post swim surveys to assess tourists' expectations and satisfaction with the experience, including assessing satisfaction with the management guidelines used to manage the interaction. Surveys also examined the effectiveness of the education procedures used to interpret guidelines. This report concentrates upon the methods and preliminary results of the swim tour component of the study.

In November 1999 the DDC commenced its first season of wild dolphin swim (WDS) tours, operating under a license issued by the state department of Conservation and Land Management (CALM). The first swim tour season ran from November 1999 – April 2000. To assist in reducing the potential for negative impacts upon the local bottlenose dolphin population, a "Code of Practice" containing a number of minimal impact procedures, was developed. The procedures within the code were specific to the DDC swim tour operation, and complimented the set of generic conditions within the CALM license. Procedures were based upon a literature review of published and unpublished reports pertaining to the management of cetacean tourism. Prior to each tour an educational brief was given to all participants explaining the "minimal impact procedures" and other important license conditions.

Minimal Impact Procedures included:

- Boat approach method.
- No swimming with fetal-fold or lined calves.
- An assessment of dolphin behavior and activity was made prior to entry. Examples of behavior not compatible with swimmers include feeding events and aggressive social displays.
- Number of attempts made by swimmers.
- Attempts upon the same group were limited to three and based upon the dolphins initial response.
- Use of snorkel lines and no touching of dolphins (participants required to hold on to ropes at all times and not touch or attempt to touch dolphins if they approached the line).

During February to April 2000, 254 participants were surveyed using both a pre and post-swim questionnaire. 223 surveys were used for analysis. Surveys were used to explore tourist expectation, perception and satisfaction of wild dolphin interaction.

Results of the surveys have provided a profile of swim tour participants and help provide answers to the following questions:

What perceptions do tourists of have of wild dolphins, and of 'swimming with wild dolphins'?
How close do tourists expect to come? Do swimmers want to touch?
If it is wild animals that people wish to see, will they be satisfied if animals do not show interest or even appear due to this very reason?
Is a tourist interested in learning how they can minimize their impacts upon the dolphin(s)?
Do people understand and respect the use of management actions or strategies?
Is it possible that a tourist may want to view the animal only, finding the educational briefs and interpretive talks as an undesirable component of the activity?

Preliminary Results:

Tourist perceptions of wild dolphin(s)
Content analysis of responses to the pre-swim question "When you think of wild dolphins, what are the three main characteristics that come to mind?" revealed a very anthropomorphic view. Perception was based little on fact or on biological concept and more on a marine park mentality. 43% perceived dolphins to be friendly and kind. 40% of respondents perceived dolphins to be happy, playful and joyful, 35% perceived dolphins to be intelligent. 24% refer to dolphins as "free." After the tour 36% of respondents said their understanding of a wild dolphin had changed. 48% referred to dolphins as unpredictable and (or) wild. 43% found dolphins "not" to be friendly to humans.

Perceptions on wild dolphin interaction
According to pre-swim survey results, the three main features people were looking forward to when swimming with wild dolphins included, being able to be close to dolphins, being "in the water" with dolphins and "seeing" dolphins.

Based upon participant responses:
- 55% of tourists sighted dolphins underwater, and the mean number of dolphins sighted was 2.
- 69% of tourists sighted dolphins from the surface of the water, and mean number of dolphins sighted was 10.
- 91% sighted dolphins from the boat, mean number of dolphins sighted was 17.

Overall, results showed that tourists were significantly more satisfied with seeing dolphins from the boat, than with seeing dolphins from underwater.

Closeness to wild dolphins
The pre-swim questionnaire asked participants how close (in meters), they expected to get to a dolphin. The post-swim questionnaire asked participants to estimate how close they had come to a dolphin when in the water. Results showed that 72% had expected to get within 0-2m to a dolphin. After the tour 56% of respondents estimated they had come within 0-2m to a dolphin when in the water.

In total 85% of the respondents estimated they had come within 0-5m to a dolphin. Results from a scale within the post swim survey demonstrated that nearly half of those who came within 0-5m considered this distance "not close enough."

Touching dolphins
There were three questions in the pre-swim questionnaire that allowed insight into people's thoughts and expectations on touching dolphins. When asked what they were looking forward to when swimming with dolphins, 14% of respondents wrote "touching dolphins." A Likert Scale asked participants to rate how close they would like to get (1= do not expect to get close and 5= close enough to touch). 17 % of respondents chose "close enough to touch." In another question several factors were listed and participants were asked to rate the importance of each to their enjoyment of the tour. When asked how important touching dolphins was, 54% of respondents considered it "fairly important" to "very important."

Education and tourist satisfaction of management strategies
The post swim survey asked participants if they could recall the minimal impact procedures that had been explained to them during the educational brief. The guideline the majority of respondents recalled was "touching of dolphins is not permitted." The post-swim survey used a satisfaction scale to ask people how they felt about the procedures that prevented touching of dolphins and 74% chose "satisfied to very satisfied" with this restriction.

After the tour, people were also asked if their behavior while in the water with dolphins would have been different had they been on an unsupervised or unmanaged tour. 55% of respondents replied yes. When asked how their behavior would have differed, majority of the respondents wrote "would have tried to touch the dolphins." Others admitted they would have tried to "follow or chase the dolphins."

Overall, a total of 70% of respondents considered the minimal impact procedures to be "effective" to "very effective" in reducing impacts upon the dolphins. The post swim survey asked people if they thought the minimal impact procedures had been too strict. The majority of respondents seemed unsure and opted for the neutral category. The second strongest response was 26% who considered procedures "strict."

In the post swim question "Do you feel the snorkel line had: a) greatly reduced b) reduced c) made no difference d) improved or e) greatly improved quality of experience," the majority chose "improved the quality." When asked how, most people wrote it had made them feel safer. The most obvious negative for those who chose "reduced quality" was restricted movement.

Management Implications
Survey results demonstrate:

1) Tour operators need to be aware of the impacts they may be having upon the wildlife or environment and be proactive in their attempts to reduce it. Interaction guidelines specific to each wildlife tourist operation should be developed and interpreted to tourists. Interpretation of tour management procedures may:
- Increase understanding of why procedures are put in place
- Increase participant acceptance and implementation of procedures
- Establishes realistic expectations, helping to reduce dissatisfaction.

2) There is a need for tour guides to ensure that the education they provide is based upon fact. Current perceptions on "friendly and playful" dolphins are generally positive and have no doubt helped promote protection of endangered marine mammal species. However such perceptions may be to the dolphins detriment in making the animal appear to be something that it is not. Birtles *et al.* (in press) note the potentially dangerous situation that may arise where tourists' perceptions of wildlife are inappropriate. For example, the anthropomorphism of wild life as being "cute," "smiley," "friendly," etc., removes the notion of unpredictable (perhaps dangerous) wild animals.

Overall, results demonstrated that low underwater visibility, regular avoidance of swimmers by dolphins and frequency of dolphin behaviors which often prevented people entering the water (such as feeding, rapid traveling) (O'Neill personal observation) made the boat based component of the tour more satisfactory for the tourists. It has been recommended that the Dolphin Discovery Center conduct boat based tours only.

To date, the DDC continues to conduct swim with wild dolphin tours. Using results of this study, an interpretive video has been developed by Edith Cowan University students. The video is to be played to tourists prior to going out on a tour. Currently, a manual is being produced by Murdoch University students to assist other operators wanting to develop tours based upon marine wildlife interaction.

Marine Mammal Viewing in Port Stephens, NSW, Australia

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Site: Port Stephens is located on the mid-north coast of NSW on the east coast of Australia, about 200km north of Sydney. It is a drowned river valley with a surface area of approximately 140km, the eastern port being primarily marine with tidal influxes of oceanic water and sandy substrate, while estuarine processes dominate the western port. The entrance to the port is just over 1km between two large headlands and the waters are generally between two and eight metres in depth with some deeper channels of 40m. The area sees increasing tourism every year and is developing rapidly into Australia's largest cetacean viewing site.

Marine Mammals: Around 150 inshore bottlenose dolphins use the waterway, with common dolphins regularly sighted just offshore. Area V humpback whales pass by on the northern and southern legs of their annual migration, and there are occasional sightings of minke whales, Bryde's whales, killer whales, false killer whales, melon-headed whales, Risso's dolphins and Australian fur seals.

Marine Mammal Viewing: Dolphin watching focussed on the inshore bottlenose dolphins has been conducted since 1991. Since that time, the number of dolphin-watch operators has grown from two vessels to ten operators running 15 vessels. Some vessels run up to five trips a day during the summer and Easter holiday peaks in tourism activity. Up to four vessels also travel outside the port for whale watching, with dolphin and seal sightings as a portion of these trips. Some game fish charter vessels also advertise and run whale watches on occasion.

Viewing Rules & Regulations: Rules, regulations and guidelines for marine mammal viewing around Australia vary between States. There is little to no monitoring and enforcement of such rules. The National Parks & Wildlife Act is currently under review, the ANZECC Guidelines for marine mammal viewing were released last year and the Port Stephens Commercial Dolphin Watch Association have a self-imposed, voluntary Code of Ethics. This Code includes rules such as:

- A minimum approach distance of 50m
- A maximum of 30mins spent with dolphins
- A maximum of two vessels per dolphin group

Research: Movements of dolphin groups and vessels are being tracked using a theodolite coupled with custom-written software, and a series of stakeholder meetings are being run to include operators, agencies and researchers. We hope to:

- establish whether or not vessel activity is having a significant impact on dolphins
- provide recommendations on managing the dolphin-watch industry for sustainability of the dolphin population and the associated industry

Assessing the Impacts of Tourism on New Zealand Fur Seals (*Arctocephalus forsteri*)

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Marine mammal viewing and encounters are significant tourist activities in some areas of New Zealand – it was estimated in 1998 that 300,000+ tourists took part in marine related tourism in New Zealand annually. While ecotourism can have positive outcomes *(e.g.*, generating revenue and increasing environmental awareness), if it is not managed effectively, it can also have a negative impact on the target species and their environment. Effective management requires an understanding of how the target species react to tourist activities. We need to know: If the animals are modifying their behaviour and if so how can we measure the changes in behaviour? Are the changes in behaviour biologically significant? How can we prevent or mitigate any negative effects of ecotourism on marine mammals?

New Zealand fur seals, *Arctocephalus forsteri*, are the only marine mammal found regularly ashore on accessible sections of the New Zealand coastline and are therefore the target of both land and sea-based tourism. The time that fur seals come ashore to breed (Nov-Feb) coincides with the peak tourist season making it important that we understand the implications of tourist/seal interactions on the behaviour as well as the reproductive success of the species.

Three study sites were chosen to reflect a spectrum of visitor density, type of tourism, and anticipated fur seal sensitivity. Two experimental sites, the Kaikoura coastline and Tonga Island in Abel Tasman National Park both attract a large number of tourists for viewing by boat, and kayak, and by land in Kaikoura. A control site, Whakamoa, on the Banks Peninsula, which receives no tourist traffic, was used to compare responses of seals to various approach types. Data were collected during the Austral summer seasons 1999/2000 and 2000/2001. Behaviour was observed using focal animal and instantaneous scan sampling, while attributes of tourist approaches were tested experimentally via controlled approaches. Approaches were broken into land, kayak and boat approaches, and the following factors were manipulated: distance, noise, frequency of approach, and size of group approaching.

In the first field season (1999-2000), focal animal observations were carried out on 277 individual seals representing five different gender/age classes: adult male, adult female, sub-adult male, juvenile and pup. In the second field season (2000-2001), focal animal data were collected on 124 mother/pup pairs. Over both field seasons, 162 hours of instantaneous scan data were collected. Experimentally controlled approaches by land, kayak, and boat were also undertaken during both seasons and data collected on the responses of 3525 seals. The responses of fur seals to tourist approaches were recorded during both seasons on land and at sea in boats and kayaks (n=3699 seals approached). Further data were collected on 327 seals approached by a commercial guided walk and on 33 commercial swim-with-seal programmes in the second field season. Finally, a mark-recapture experiment was carried out at Ohau Point and Tonga Island breeding colonies both seasons (n=167 pups sampled) to assess pup productivity and condition at these sites.

The results from our observational studies indicate that fur seals are changing their behaviour in response to tourist activities. Focal animal and instantaneous scan data collected on all gender/age groups suggests that there are significant differences in the behavioural repertoire of seals based on site and gender/age differences. In general, fur seals at sites experiencing high visitor numbers respond less frequently and less dramatically to disturbances than seals where visitor numbers are low ($p<0.0001$), which suggests that habituation has and continues to occur.

The results from our controlled approach experiments show that fur seals respond more strongly to land-based approaches than sea-based approaches ($p<0.001$). As predicted from our observational research fur seal responses to different approaches varied between sites with a higher frequency of avoidance responses being observed at the control site ($p<0.005$).

Results from our observations of guided walks show that fur seal responses varied significantly based on the approach distance and the size of the approaching group. The responses of seals to the guided walk were also compared to responses of seals approached by tourists without a guide; the presence of a guide reduced the number of avoidance responses by as much as 15%. No significant difference was found in fur seal responses to swims organised by different companies, however several behaviours were observed to increase the likelihood of seals avoiding the swimmers.

Fur seal responses vary based on a large number of factors, but our data clearly illustrate that fur seals may habituate over time in areas of high tourist activity. Our data suggest that current management guidelines are not preventing negative impacts in tourist/seal interactions and to lessen the overall impact of ecotourism activities on fur seals we suggest a major revision of these guidelines. We are currently preparing a management document for the Department of Conservation. Chief among our recommendations are revisions to the current minimum approach distance and the implementation of a long-term monitoring program to assess the possible impacts of tourism on the reproductive success of the species.

Recommendations

1. New minimum approach distance guidelines
    - 20 m for kayak approaches
    - 30 m for land approaches
    - 40m for boat approaches

2. No entry to breeding colonies

3. Keep some population naïve
    - Restricting tourism to non-breeding sites that are already habituated in order to ease the pressure off of breeders and non-habituated seals
    - Base number of permits on the number and accessibility of the seals to ensure sustainability of the industry
    - Stagger trips so that not all traffic arrives at the same time

- Vary locations for viewing within the prescribed viewing area so that the same group of seals are not saturated everyday by all tour operators, this will also provide some variety and reduce the risk of seals avoiding "predictable" traffic
- Monitor the possibility of food association

4. Education
    - *Pamphlets* available to tour operators and tourists
    - *Workshops* for tour operators
    - *Code of conduct* for behaviour around seals
    - *Educational displays* that address current issues important to seals
    - *Regulatory signs* at all access points of a haulout
    - Signs must be placed at *eye level* in places where they are easy to see
    - Signs must be able to convey information to *non-English* speaking tourists
    - *Volunteers* may be useful for talking to tourists and monitoring their behaviour
    - *Guided walks* would ensure people are not approaching too close or entering breeding sites

5. Long-term monitoring

Monitor the impacts of tourist activity on:

- Pup production, condition and survival
- Biologically important measures such as female attendance patterns and pup suckling duration

A Tale of Two Haulouts: Walrus Viewing in Western Alaska

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Abstract

The author conducts commercial walrus-viewing tours to two terrestrial haul-outs in western Bristol Bay, Alaska. One is a mainland cape, part of a national wildlife refuge, where viewing is managed primarily on the basis of restricting access to the viewing area. The other is an off-shore island, managed as a state game sanctuary. Visitor limits are more liberal, prescribed vessel access is permitted, but more emphasis is placed on visitor behavior at the site. Both systems effectively limit disturbances. Other marine mammals and nesting seabirds also benefit from the viewer management programs. This report compares and contrasts the two management styles and offers observations about visitor response.

Background

Bull Pacific walrus use several terrestrial haulouts on the Bering Sea coast, only two of which are readily accessible to visitors, both of them in northwestern Bristol Bay.

Round Island, centerpiece of the Walrus Islands State Game Sanctuary, is ten miles off the mainland coast. Steller sea lions, foxes and colonies of various seabirds also are present. The Alaska Department of Fish and Game (ADFG), Division of Wildlife Conservation, manages the island, and keeps a biological technician there May to mid-August. The U.S. Fish and Wildlife Service also provides a biological technician, and the two share quarters and equipment.

Cape Peirce is part of the 4.3 million acre Togiak National Wildlife Refuge (TNWR). Cliffs provide nesting sites for seabirds similar to those of Round Island, plus raptors and shorebirds. Harbor seals haul, breed and pup in Nanvak Bay, just north of the cape. Two or more technicians spend the summer at the cape, and various scientists conduct research there.

Visitation is light at both locations due to remoteness and cost of access, but both are premier photography and viewing sites, providing between them most of the Pacific walrus images seen in the media today. Alaska native subsistence hunters have virtually unrestricted access to walrus, except at Round Island, where a limited subsistence hunt is allowed in the fall.

The Marine Mammal Protection Act prohibits disturbance, including any activity that causes an animal to deviate from its normal pattern of activity. Panicked walrus stampeding to the water can crush one another, snap tusks and break bones. Repeated disturbance can deplete energy budgets, and harassed animals can abandon a haul-out, never to return. Walrus may be disturbed by a vessel passing miles off shore, or by an airplane passing thousands of feet overhead. On the other hand walrus, like sea lions and harbor seals, often swim close to observe boats, and sometimes allow close approach by persons and boats.

Both ADFG and TNWR treat viewing as of secondary importance to wildlife protection but both allow guided and non-guided visitation as long as it can occur without serious disturbance.
Observations

This report summarizes observations over a period of eight seasons. I operate a small summertime ecotourism business called Walrus Islands Expeditions. I run small-group multi-day wildlife watching cruises aboard my 40-ft. motorboat, and land on both the Togiak refuge and Round Island. Previously I led university continuing education class groups on multi-day field trips at both locations.

Cape Peirce

USFWS managers of the TNWR have designated a six-square-mile area of Cape Peirce as Wildlife Viewing Area. Trails run along the periphery of the cape, mainly at the top of cliffs some hundreds of feet above the beaches. The beach most consistently used by walrus is small and far below the trail so viewing quality is low. At times thousands of walrus haul out on sandy, gently sloping Maggy Beach. A screen of dunes and rye grass allows visitors to approach to within 20 yards at those times.

TNWR allows no more six visitors in the WVA at once, and this includes any scientists or agency officials who may be visiting. Guides must obtain a commercial use permit, which entails a complex application process and a lengthy and detailed set of requirements and restrictions. They also must register in advance to visit the WVA to assure that the six-visitor limit is not exceeded. (Originally the provision was for six visitors in total, but was later amended to allow six clients plus two guides.)

Cape Peirce access is by floatplane to a small lake about a mile east of the mouth of the bay, or by boat. Visitors arriving by air have to walk two to four miles round trip over tundra and mudflat to get to viewing areas. Overnight visitors camp in a designated area near the lake and walk to and from viewing areas daily. (A designated camping area within the WVA is situated in sand dunes and is not a desirable location.) Annual visitation to the WVA ranges from about 20 to 60 persons.

While fishing vessels sometimes enter Nanvak Bay on high tides (“not recommended” due to disturbance of walrus and of seals), the only boat-based commercial viewing operation (mine) anchors in a small bight on the far side of the cape from the main walrus haul-outs. Visitors ferry ashore by inflatable boat and hike about a seven-mile round trip to observe the walrus and other wildlife.

USFWS has no statutory authority over navigable waters nor the airspace but can cite violators for willful disturbance of marine mammals and birds, although rarely has this occurred. The main threat the agency has over commercial operators is non-renewal of commercial use permits.

Round Island

Round Island is accessible to visitors only by boat. In addition to my 40-ft. launch, a 26-ft outboard boat visits the island once every five days shuttling campers. Vessels may enter the three-mile no-transit zone only with radio permission from the biological techs on the island, and must approach through a ten-degree-wide corridor from the north that leads directly to Boat Cove, the only access point. They anchor off the beach and ferry passengers ashore by inflatable boat. Once ashore, visitors ascend a low bluff to a trail that follows the eastern periphery of the island. This trail has overlooks at several locations that provide excellent viewing of walrus a short distance below. The trail ends at East Cape with an overview of the sea lion haul-out there.

Up to 15 campers are allowed to use the designated camping site during any five-day permit period, and no more than 30 visitors in total are allowed on the island at one time. Scientists conducting research and agency officials are not counted against these limits. Rarely has either limit been reached. Total annual visitation averages 100-150 persons, divided roughly equally among campers who stay five days, guided day visitors (who come with me), and commercial fishermen who visit the island on days off from fishing. Camper visitation has decreased slowly since the 1980s, while day use has increased gradually since I began operation. ADFG does not limit or license guides, but due to the lack of financial incentive no other guides have operated there to date.

The most intensively-used haulout is Main Beach, a half mile west of Boat Cove, but normally walrus are hauled out at various locations around the east side of the island, including both sides of Boat Cove, and often inside the cove itself. Anchoring and transfer of clients ashore must be done with great care to avoid disturbance, although walrus in the cove usually sleep through the whole process, and often animals swim to the anchored boat or pass alongside or under the inflatable.

On arrival at the start of the trail, visitors sign an agreement to abide by rules, including:

1. No access to beaches
2. Stay on the trails
3. Maintain a low profile at the overlooks and avoid rapid movement or loud noises
4. Do not feed the foxes or other wildlife

With a few exceptions, non-guided visitor compliance is good, and guided visitor compliance is excellent. In 2000 a French photographer went onto a beach and disturbed animals so he was detained and cited by authorities. More serious violations have occurred when unauthorized vessels deviated from the corridor, and some have caused major disturbances when they approached haul-outs. One such incursion in 2001 involved commercial fishermen from Togiak who said they felt the exclusion didn't apply to them.

Visitor Response

I have done fewer and less recent trips to Cape Peirce than to Round Island, mainly because the boat trip and hike to the viewing areas are much longer and the walrus viewing quality less consistent. My observation is that restrictions are less apparent to visitors at Cape Peirce. They are not required to stay on trails and overlooks are less clearly defined. When Maggy Beach has walruses, visitors may approach as closely as they can without causing disturbance. More control is exerted administratively on guides through the WVA visitor limit and commercial use permit, and visitors are unaware of that control.

Round Island techs meet all visitors and have them to read and sign a permit form that details the rules. I explain the visitation rules in advance, and gently enforce them with my group members on the ground. The techs travel the trail system frequently and while their interaction with visitors is friendly and helpful, they don't hesitate to remind visitors of the rules or inform them of potential violations.

Some professional or would-be professional photographers complain about lack of access to the beaches for close-up photos. Some visitors comment that they have approached marine mammals closer in the Galapagos Islands or elsewhere. On the other hand, many of the visitors comment that they understand the need for the rules and realize that without them the viewing opportunity might not exist.

Discussion

Experience at both Cape Peirce and Round Island demonstrates that it is possible to have a high quality visitor experience without disturbing walrus to a level that causes stress.
Managers of the Togiak refuge and the Walrus Islands sanctuary apply different approaches to minimizing disturbance, and both are successful given low visitor levels to date. The TNWR approach imposes tighter limits on access and more requirements on guides, but leaves visitors less constrained on site. The ADFG approach allows more access but imposes more controls visitor behavior. As a guide I find the state's approach slightly less onerous, and I like the buy-in required of visitors in terms of agreement to comply with an expressed set of behavioral standards, which I believe allows them to feel that they are participants in the on-going success of the sanctuary.

However, I believe that both approaches are acceptable to visitors, and most differences in visitor experiences between the two sites result more from differences in geography and animal behavior than from visitor management policies.

SEALS: Harbor Seal Protection and Disturbance Study

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The area between Bodega Head in Sonoma County and Año Nuevo Point in San Mateo County is home to California's largest breeding population of harbor seals, *Phoca vitulina richardsi*. It is also home to 6.5 million people of the San Francisco Bay Metropolitan Area. As more people move to the coast, interactions between marine wildlife and humans become more frequent. Wildlife such as harbor seals, which depend on the shoreline habitat, encounter increased human development and recreation. Harbor seals are often seen hauled out on intertidal rocks, beaches, sandbars, and mudflats and can spend more than 50% of the day resting out of water. Hauled-out harbor seals are particularly sensitive to the presence of humans and will typically retreat back into the water when people come too close. Many types of human activities can disturb harbor seals, including foot traffic, dogs, aircraft, watercraft, and loud noises. This "flushing" of seals into the water can have long-term consequences beyond the immediate disruption of their behavior. Haulout sites that are habitually disturbed may have low reproductive success rates and increased pup mortalities. Repeatedly disturbed seals may shift their usual diurnal haulout pattern to a nocturnal one and, eventually, may abandon a site altogether.

In 1996, the Farallones Marine Sanctuary Association (FMSA) in collaboration with the Gulf of the Farallones National Marine Sanctuary (GFNMS) started SEALS, a harbor seal monitoring and interpretation program along the central California coast. The SEALS program was developed to respond to high levels of disturbance to harbor seals. SEALS strives to achieve the following goals:

- Minimize disturbance to harbor seals and help maintain the integrity of rookery sites in the GFNMS,
- Preserve the harbor seal colony size in the GFNMS,
- Increase stewardship in the GFNMS, and
- Educate the general public about harbor seals and their habitat.

In order to achieve these goals, FMSA and GFNMS staff train local citizens to interpret and monitor harbor seals in Marin County, north of San Francisco. SEALS volunteers complete an intensive, 33-hour training course on harbor seal natural history, bay and lagoon ecology, interpretation and monitoring techniques, research protocols, and the history of the GFNMS. Since 1997, FMSA has managed a harbor seal interpretation site on Clam and Seal Islands in Tomales Bay and three harbor seal monitoring sites, two on the shores of Bolinas Lagoon and one on the cliffs of Tomales Point overlooking Clam and Seal Islands. Volunteers with staff supervision conduct the interpretation and monitoring.

The objective of establishing interpretation sites on Clam and Seal Islands was to reduce the number of disturbances to harbor seals from clammers (clam diggers) during the pupping season.

Studies conducted in the Point Reyes National Seashore in 1991 recorded an average of 350 people on the Islands each day and a maximum of 1,225 in a single day. Clammers and fishers visiting the Islands were associated with 51% of the disturbances to seals (0.68 flushes/hr)[1]. Overall, humans were associated with 1.33 disturbances per hour in 1991, which was the highest rate of disturbance ever reported on the west coast of North America at that time[2]. In addition, Hog Island, another haulout site in Tomales Bay, was virtually abandoned by 1990.

During the harbor seal pupping season (March–June), teams of SEALS docents spend every low tide weekend and holiday on Clam and Seal Islands. They mark a visual boundary approximately 300 feet around the seal haulouts using orange cones and set up an interpretive station with spotting scope and education materials. The goal is for clammers and fishers to continue to recreate on other areas of the Islands while the seals remain undisturbed at their haulouts. During the 1999–2001 seasons, SEALS volunteers have had the added benefit of the National Park Service patrolling Tomales Bay. On a cliff above Tomales Bay, a separate team of volunteers monitors the effectiveness of the SEALS docents in reducing seal disturbances. Their vantage point, some 300 feet above the Bay, enables them to view all activities and harbor seal haulouts. These monitors record the numbers of seals and pups, their vigilance rate (head alerts per seal per minute), all activities within a specified area around the Islands (including distance to the haulouts and duration), and behavior of the seals in association with each activity (flush, approach water, head alert, or no apparent change).

Monitors on Tomales Point have observed a remarkable decrease in the frequency of clammer-associated disturbances. Clamming has remained the most frequent activity around the haulouts year after year (11.65–83.53/hr). However, since 1998, after the SEALS docents began their work on the Islands, clammers and fishers have been associated with 14% or less of the seal flushes (0.08–0.13 flushes/hr). SEALS volunteers also recorded other disturbance sources to the harbor seals. They found that, although there were very few kayaks observed around the Islands, a high proportion of them, up to 48% of all kayaks, were associated with seal flushes (0.11–0.18 flushes/hr). Also, the overall frequency of motorboats in the area has increased with each successive year from 6.79 to 13.71/hr, and at the same time, the number of flushes associated with motorboats has increased almost five-fold from 0.27 to 1.24 flushes/hr. The large number of motorboat-associated flushes has effectively increased the overall flush rate of the seals at Clam and Seal Islands. In 1998 it was very low compared to the 1991 study (0.70 flushes/hr), but in 2000 it had risen to 1.72 flushes/hr, the highest yet observed at Clam and Seal Islands.

The harbor seals at Bolinas Lagoon encounter a different situation from those in Tomales Bay. Their haulout sites are located in the Lagoon next to Highway 1, a popular and heavily touristed road. Travelers have the opportunity to view harbor seals year-round and to see pups resting and nursing only a few meters from the road. Residents of the Bolinas Lagoon area have been concerned about the numerous cars stopping alongside Highway 1, because many of these motorists leave their vehicles to walk along the Lagoon shore and view the seals. The objectives of the Bolinas Lagoon monitoring program are to determine which activities are associated with

harbor seal disturbances, determine if the rate of disturbance is increasing, and to monitor harbor seal population changes.

In Bolinas Lagoon, the observation teams monitor three haulouts year-round. They use methods consistent with those used by SEALS volunteers at Tomales Point. Interpretation is not a goal at Bolinas Lagoon but occurs due to the conspicuous presence of the volunteers with their equipment and spotting scopes.

SEALS volunteers have found that the most numerous activities are roadside visitors to the Lagoon (12.47–16.94/hr) and shore-side hikers (0.89–2.25/hr). Roadside visitors, however, have been associated with only two flushes, and hikers have been associated with few flushes as well (0.02–0.03 flushes/hr). The biggest disturbance problem at Bolinas Lagoon does not appear to be road and shore-side pedestrians but kayaks and canoes. The situation is similar to what has been documented on Tomales Bay. Although there are very few kayakers, they can have large impacts on the seals. In the first two years of monitoring, 27–29% of all kayaks flushed seals (0.03 flushes/hr). In addition, data from Bolinas Lagoon have revealed that, on average, human activities associated with seal flushes were located 50–120 m away from the haulouts.

In 1999, the information collected from the SEALS program was used to develop educational materials for kayakers and boaters. FMSA, in cooperation with the GFNMS, Marin County Open Space District, Sierra Club, California Department of Fish and Game, and Bay Area Sea Kayakers, has developed a Paddler's Etiquette placard that outlines responsible wildlife viewing guidelines (Figure 1). Signs have been posted around Bolinas Lagoon specifying appropriate launch sites. The placard has been distributed to kayaking outfitters and recreational groups within Marin County, and FMSA hopes to extend this campaign to kayaks sold to individuals. During the 2000 season, following the boater education campaign, SEALS volunteers documented a slight decrease in the flush rate associated with kayaks (0.01 flushes/hr) and also noted that only 12% of all kayaks flushed seals.

The SEALS program has documented several successes in reducing harbor seal disturbances. Clammers at Tomales Bay are no longer associated with high numbers of flushes. It has been encouraging to witness the continuation of a long-standing recreational activity while virtually eliminating its negative impact on seals. However, data have indicated that kayakers can be a potential problem to harbor seals. The first steps of FMSA with the local community and regulation authorities to educate kayakers have been productive. However, in Bolinas Lagoon, canoes continue to be a disturbance problem in the same vein as kayakers have been. In the future, canoes will also need to be targeted for boater education and proper wildlife viewing techniques. Alarmingly, the increase in the number of motorboats on Tomales Bay may be creating a new disturbance problem for seals at their Clam and Seal Island haulouts. In the future, FMSA and GFNMS plan to work with the Point Reyes National Seashore and other local agencies to create a plan of action that will reduce the impact of motorboats on the seals of Tomales Bay. Meanwhile, FMSA and GFNMS staff have trained over 150 local citizens to monitor and interpret harbor seals and have given them an ethic of responsible wildlife viewing.

SEALS volunteers continue to document interactions between people and harbor seals and work to meet the other objectives of the SEALS program.

Figure 1. Paddler's Etiquette

P•A•D•D•L•E•R's Etiquette

- Pass far so that animals do not feel threatened. Watch for changes in behavior to avoid disturbing them and stay at least 300 feet away.
- Approach indirectly and avoid direct confrontation. Do not slow down, speed up, or splash your paddle. Do not walk or paddle toward, through, or near wildlife.
- Discreetly view wildlife and restrain your impulse to get closer. Use binoculars. Do not engage in stalking activity or attempt to approach animals undetected.
- Defer immediately when you observe behavior changes (seals lifting their heads or birds moving away or flapping their wings).
- Leave wildlife alone. Do not attempt to rescue apparently abandoned or injured wildlife. If you are concerned about an animal, call your local wildlife agency.
- Explain to other paddlers and small boaters how they can help protect wildlife. Marine mammals and migratory birds are protected from harm, flushing, and harassment by the Marine Sanctuary Act, the Marine Mammal Protection Act, and the Migratory Bird Treaty Act. Protect your boating privileges by helping educate less aware paddlers.

Footnotes

[1]"Proceedings from the 3rd Biennial State of Tomales Bay Conference" (Inverness, CA1992), pp. 33-37.

[2]Mortenson, J. 1996. Human Interference with Harbor Seals at Jenner, CA 1994–1995. Stewards of Slavianka, Sonoma Coast State Beaches, Russian River/Mendocino Park District, California State Parks. Duncan's Mills, CA. 48 pp.

Whale Watching and Humpback Whale Protection in Hawaii and Alaska

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A large proportion of humpback whales from the Central North Pacific stock spend the winter months in the breeding and nursery grounds off Hawaii and the summer months feeding in the nutrient rich waters off Alaska. These animals have been subject to intensive commercial and recreational whale watch pressure for some time in Hawaii and recently in Alaska. Recognizing the potential for a negative impact to this endangered and recovering population, the Southwest Region, Pacific Islands Area Office of the National Marine Fisheries Service (NMFS) sought to implement protective measures for humpbacks and their young while in waters off Hawaii starting with an interpretation of harassment in 1979. When this measure began losing its effectiveness in the mid-1980s, regulations were implemented in 1987 that restricted the access to humpback whales by managing the approaches of vessels, swimmers, divers, and aircraft viewing these animals. During the implementation of regulations in Hawaii, commercial ventures for whale watching in the waters off Alaska were virtually non-existent. However, in recent years the development of that industry in Alaska waters, particularly in Southeast Alaska, has grown substantially. The Alaska Region of NMFS recognized the need for equal protection to the humpback whale in the feeding grounds as was afforded in the nursery grounds off Hawaii. NMFS chronicles the development of region-specific protective measures for humpback whales that frequent both the waters off Hawaii and off Alaska during two critical life history stages. While the development of protective measures was offset by a decade and was purposefully region-specific, Hawaii and Alaska faced similar issues in determining and implementing appropriate management measures.

The Marine Mammal Protection Act and the Endangered Species Act, our governing statutes, mandates the conservation, protection, and recovery of listed marine mammals. In order to implement these goals the Acts also prohibit "taking" of these animals, defined to include harassment and disturbance. Any protective regulation that addresses "take" and "harassment" by its very nature results in the management of human activities. These terms are often difficult to define and as a result, implementing regulations to manage people watching whales is difficult. Such measures must be practical, effective, and enforceable. Thus, any regulatory initiatives to prohibit and prevent harassment must provide clear-cut definable measures that are easy to follow and easy to enforce. For Central North Pacific humpback whales this resulted in the implementation of a minimum approach distance of 100 yards in waters off both Hawaii and Alaska. In Alaska, NMFS also implemented a requirement for slow, safe speed when near a humpback whale, and also created some exceptions to the minimum approach distance. This presentation explores the local situations in their similarities and differences and details the issues and problems in the development of protective regulations for the NMFS regions of Hawaii and Alaska.

Sperm Whale Watching off Kaikoura, New Zealand:
Current Research, Impacts and Education

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Kaikoura is situated on the east coast of the South Island, New Zealand. The exceptionally narrow continental shelf off Kaikoura allows easy access to waters deeper than 1,000m which are frequented by sperm whales (*Physeter macrocephalus*) year-round. It is common to encounter whales within 1-10 nm from shore (Childerhouse et al. 1995; Dawson et al. 1995b). Due to these unique circumstances, sperm whales off the Kaikoura coast have been the focus of increasing commercial whale watching activities as well as of regular research.

Whale watching off Kaikoura began around 1988 with a single company (Horn et al. 1998). A second company started operations a year later and merged with the first organization in 1989 (Poharama et al. 1998). Currently, only this remaining company has permits for sperm whale watching off Kaikoura. While hey are allowed up to 16 trips per day (Constantine 1998), fewer than 12 is the norm during high-season. Trips are 2.5 – 3 hours long, made on four catamarans powered by twin in-board diesel engines driving jet units. Each boat carries 40 to 50 people. Whales are tracked either by directional hydrophone, or by waiting in the vicinity of previous sightings. Kaikoura is one of the very few places offering commercial whale watching from fixed-wing planes and helicopter (Hoyt 2000).

Sperm whales off Kaikoura have been the focus of scientific studies since 1990, when photo-identification efforts began (Dawson et al. 1995b). Research has focussed mainly on abundance and residence, foraging behaviour, population structure, and developing techniques to census and measure whales acoustically (Childerhouse & Dawson 1996; Childerhouse et al. 1995; Dawson et al. 1995a; Dawson et al. 1995b; Douglas 2000; Jaquet et al. 2000; Rhinelander 2001). Potential impacts of the whale watching activities were first investigated in 1991 (MacGibbon 1991) and again in 1992 (Gordon et al. 1992). Both of these studies collected data over a few weeks. To build on these studies our research group has monitored sperm whale behaviour in relation to whale watching vessels since 1998 during 8 field seasons, totaling over 1,200 hours of observation time. Sperm whale behaviour was recorded from an independent research vessel and from shore, allowing observation of whales without vessels in their vicinity.

Data were collected from shore, via a theodolite, and from our 6.6m RIB. Observations from shore eliminate any confounding effect of the research vessel, but distance prevents detailed observations (restricted to blow rates, aerial behaviour, swimming directions and position). Boat based observations, from a discreet distance, were used to provide more detail, including whale identity (via photo-ID) and vocalisation rates. Shore observations of whale behaviour around our research boat allow us to quantify its impact.

So far, only short term responses have been analyzed. General linear models, with model choice based on Akaike's Information Criterion (Burnham & Anderson 1998) showed that "vessel presence" needed to be included to explain patterns in blow rates. However, the effect size due to

vessel presence was small (standardized mean difference < 0.5). Whale surface time significantly increased in the presence of whale watching vessels, even though effect size was small again (standardized mean difference < 0.5). Further effects of vessel presence were detected in changes in directional headings of the whales and surface behaviour . An analysis of spatial distribution in response to vessels is currently under way and will be completed before the workshop.

Since our research group has data going back to 1990, we will be able to investigate some aspects of long term changes in response to whale watching activities, such as altered distribution patterns, changes in dive characteristics and residency times.

It is interesting to note that two groups of sperm whales frequent the Kaikoura coast. Transients seem to move through the area and are seen only a few times, generally only on one day. Residents, in contrast, remain off Kaikoura for periods of days to weeks and often return in subsequent years (Jaquet et al. 2000). Transient whales are commonly further offshore compared to residents (Jaquet et al. 2000) and are therefore visited less by whale watching vessels. Thus, the situation off Kaikoura allows us to assess possible habituation to whale watching activities by comparing the responses to vessels between these two groups. Some of these results will be presented during the conference, as a poster. Further results can be discussed at the workshop.

Parallel with our monitoring efforts, we have attempted to establish closer contact with the whale watching companies in an effort to increase co-operation, information sharing, and educational impact. We went on several whale watching trips to get to know people involved in the day-to-day operations and to assess the information given by tour guides. We have offered constructive criticism of a proposed brochure and have given two talks to the general public and to people who had attended whale watching trips.

We also offered to hold seminars for staff of the companies, which currently receive mainly in-house training. In 1999, we organized a first workshop for marine mammal tour operators in cooperation with the New Zealand Marine Studies Centre in Dunedin and repeated that workshop in Kaikoura a year later. This last workshop was well attended by guides and management of the whale watch companies and useful discussions and contacts were made. We have also shared our technical expertise by supplying Kaikoura Tours with two of our custom-built directional hydrophones, and have held a workshop for their staff on how to build them.

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Noise-Based Guidelines for Killer Whale Watching

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In this paper, I pose the question, "Have whale watching guidelines been developed to limit noise exposure to a fixed level?" To answer it, I will estimate the implications of key points in killer whale watching guidelines for noise levels received by whales, and whether there is a consistent pattern.

Whale watching guidelines for watching killer whales in British Columbia and Washington have been developed by experienced whale watchers. These guidelines address proximity between vessels and whales, vessel operating speeds, and orientation of the vessels relative to the whales. There are two sets of guidelines, one for Northern Residents and one for Southern Residents.

Both sets of guidelines suggest a closest approach of about 100 meters. Both presume vessels at this range will be travelling at the same speed as the whales, which is typically around 2 m/s. That is, engines will be operating at relatively low RPM, and hence noise produced will be relatively low both in amplitude and frequency. The guidelines for Southern Residents envision faster vessel travel (3.5 m/s) at a distance of about 400 m from the whales. They also allow for travel at unlimited speeds at distances of greater than 800 m. As speed increases, the total amount of noise and the emphasis on high frequencies both increase.

Both sets of guidelines suggest that whales be approached from behind or to the side, not from in front.

Bain and colleagues have studied hearing abilities of killer whales in the presence and absence of noise (Bain and Dahlheim 1994, Szymanski et al. 1998, Szymanski et al. 1999). These studies have shown that killer whales experience a masking effect from noise as other mammals do. The masking effect was strongest when both the test signal and the noise source were located directly in front of the whale. Whales were much more sensitive to frequencies above 4 kHz than they were to lower frequencies, and showed best sensitivity at about 20 kHz.

Bain and colleagues have also addressed effects of noise on behavior of killer whales and other marine mammals in the wild. In Barnes Lake, Alaska, where killer whales had become entrapped, noise generated by banging on metal pipes was used to drive the whales out of the lake. The distance maintained by the whales between themselves and the drivers suggested they were maintaining noise levels at or below the level that induced strong behavioral responses in captive whales (Bain 1995). When exposed to high levels of noise, different species of marine mammal appear to have different thresholds for leaving the immediate vicinity of the source. The noise level at which individuals transitioned from a random direction of travel to travel oriented away from airguns was relatively tight for each species, however (Calambokidis et al. 1998).

Noise produced by vessels tends to increase both in frequency and intensity as vessel speed increases. Because sound dissipates with distance, received levels fall as the distance between the vessel and the whales increases.

Methods

Frequency structure and overall source noise level generated by vessels were estimated from the literature (e.g., Richardson et al. 1995, Erbe 2001). Noise was estimated to dissipate according to a standard spherical spreading model, to allow estimation of the noise level received by whales.

To place received levels in context, they were compared to levels used in experimental exposure of killer whales to noise in captivity and the wild.

Results

Outboard powered vessels operating at full speed are estimated to produce a total noise level of approximately 165-175 dB. The frequency spectrum will contain significant amounts of energy to frequencies above 10 kHz. At a distance of 800 m, the noise will have dissipated to a received level of approximately 107-117 dB. This would correspond to source levels of 147-157 dB at 100 m and 159-169 dB at 400 m. These both appear to be reasonable estimates of source levels for vessels travelling at the lower speeds cited in the Southern Resident guidelines. That is, the Southern Resident guidelines could be interpreted as designed to limit noise exposure to the ambient level generated by non-whale related traffic (Bain in prep.).

The admonition in both guidelines against approaching from in front parallels the finding that masking noise had its strongest effect when directly in front of whales.

Discussion

Williams et al. (2001) noted some behavioral responses to vessel traffic appeared to diminish between the mid-1980's and the mid-1990's, and one possible explanation was that operators had learned to maneuver their vessels in a way that had less impact on whales than practices in the early years. While measurements of noise under real-world conditions need to be made to be certain, it appears that guidelines for killer whale watching may reflect an understanding of the effects of noise at a "traditional knowledge" level, and responsible operators amended their practices accordingly. While it is also possible that some whales in the population habituated to the presence of vessels, this is at best a limited explanation since responses to vessels were still present after more than 20 years of whale watching (Williams *et al.* in press).

Southern Resident guidelines allow operators to periodically reposition their vessels in front of whales rather than travel to the side at a constant distance as recommended in the Northern Resident guidelines. When a vessel stops in front of whales, the whales have the option of

changing their direction of travel to avoid the vessel or continue their previous course and closely approach it. Some operators use repositioning as way to get around distance guidelines because sometimes, "the whales come to them." However, it is important to note that travelling at a high rate of speed to get in front of whales increases the noise level received by the whales, and as the vessel approaches the path of the whales, its noise comes from the direction that maximizes masking. In light of noise-based guidelines, it is not surprising that this practice is controversial.

Summary

Distance-based guidelines alone do not reflect all the expertise experienced whale watchers have gained about how to minimize their own impacts on whales. It may be that taking physical measurements of noise generated by whale watching vessels would allow more refined guidelines to be generated by combining traditional knowledge with scientific methods. It is important not only to consider distances between vessels and whales, but also how those vessels travel and where they are relative to the whale.

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Community-Based Whale Watching Management in the U.S./Canadian Boundary Waters of Haro Strait

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Over the last 12 years whale watching management in the U.S./Canadian boundary waters of Haro Strait has evolved a changing set of voluntary guidelines that have been stricter than the guidelines of both the U.S. and Canadian federal governments (Table 1). These guidelines have developed as a result of community-based efforts from local non-governmental organizations working in conjunction with the commercial wildlife tourism industry, and with both local and federal government encouragement, but funded essentially without tax dollars (Osborne *et al*., in press, Figure 1). The Whale Museum and its Soundwatch Boater Education Program has been a long-standing participant in this community-based process (Osborne 1991, 1998; Soundwatch 1997, 1998, 1999, 2000). Presented here is an overview of this regional process of whale watching guideline development and implementation using data collected by The Whale Museum's Soundwatch Program.

The focal study area of the Soundwatch program is the boundary waters of the San Juan and Gulf Islands but educational outreach efforts include the entire Puget Sound-Georgia and Juan de Fuca Straits, and the world-wide-web. The objectives of the Soundwatch program are to educate boaters before they leave the shore and to reinforce the learning experience in the context where disturbances take place. Supporting objectives include participation in the development of community-based voluntary guidelines, and providing a scientific platform to monitor vessel activity and to help evaluate the successes and failures of guidelines.

The key component in the development of this process of community-based self- regulation has been the operation of daily educational vessel patrols during the summer tourism season (Figure 2). The tasks during patrols include: 1) distribution of local guidelines to each recreational vessel that is encountered in a whale watching context, 2) the collection of systematic field data on vessel and wildlife activity, and 3) compliance monitoring of commercial operators relative to their self-regulatory guidelines.

Findings indicate that it is possible to distribute guidelines to every vessel present at whale watching areas under most circumstances, and to maintain some educational saturation with private boats from day-to-day and even year-to-year. It has also been found that the presence of the educational patrol boat measurably increases compliance to the voluntary guidelines by both private and commercial vessels.

Results from vessel activity monitoring indicate that beginning in 1998 whale watching activity started a new trend by: 1) exhibiting a small annual decrease in the maximum and mean numbers of vessels with the whales, 2) an increase in the ratio of commercial boats relative to private

boats, and 3) an increase in the daily and seasonal windows under which whale watching takes place.

Present trends in management are pointing to a more active role by both local and federal governments on both sides of the international border. In 2001 this increased participation by government was demonstrated through the joint endorsement of the newest version of the voluntary guidelines by both the U.S. National Marine Fisheries Service (NMFS) and the Department of Fisheries and Oceans Canada (DFO). On the Canadian side, DFO has also provided matching funding for the new Marine Mammal Monitoring program (M-3), which is now operating out of Victoria in partnership with the Soundwatch program. At the local level San Juan County has sponsored several workshops on whale watching issues over the past year in response to public pressure, and has made it's sheriff boat and deputy available for occasional educational patrols. Future plans call for continuation of this successful community approach with the hope of additional governmental participation.

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Figure 1 **Diagram of How Voluntary Whale Watching Guidelines are Generated in the Haro Strait Region.**

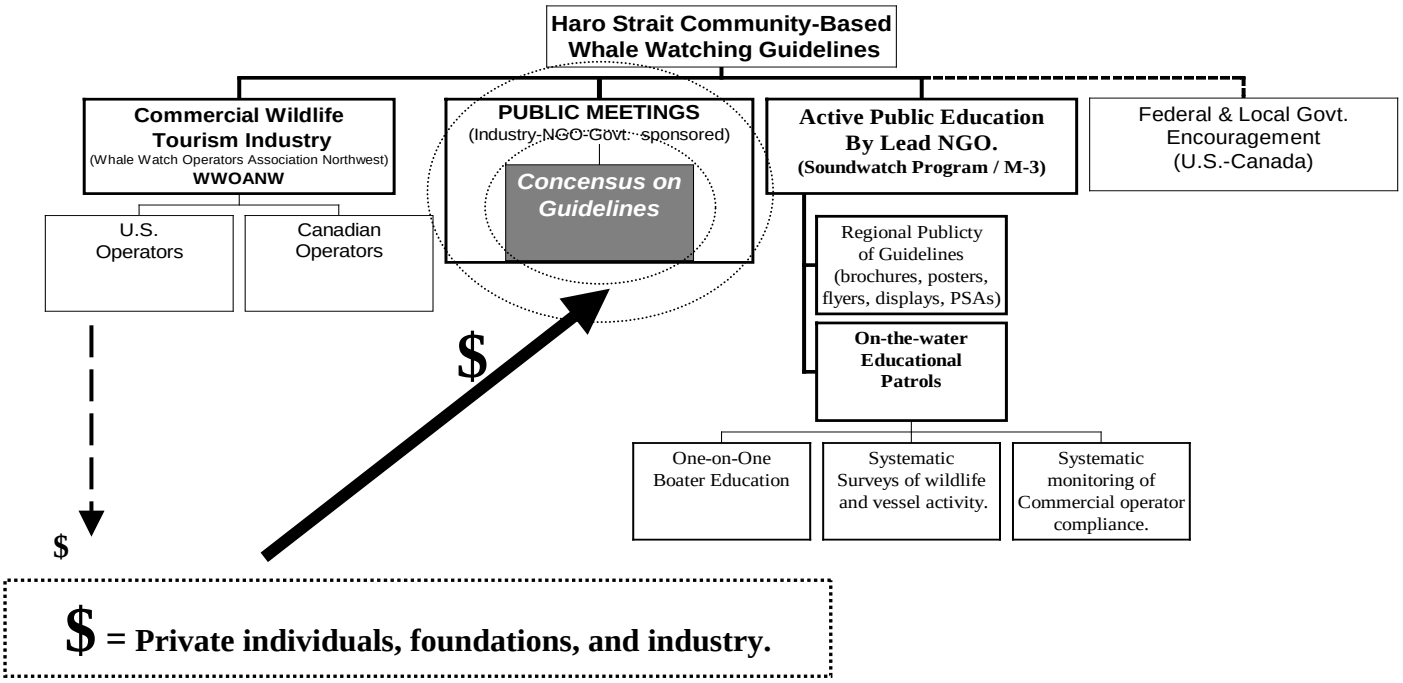


Table 1. The Progression of Whale Watching Management Initiatives in the Boundary Waters of Haro Strait.	
1988-present	The Whale Museum begins research and education on whale watching (industry surveys, public meetings, posters, and brochures) with encouragement from U.S. National Marine Fisheries Service (NMFS).
1993-present	The Whale Museum initiates on-the water educational patrols and data collection as the *Soundwatch* program.
1994-present	International *Whale Watch Operators Association Northwest* (WWOANW) is formed with self-regulatory guidelines (U.S./Canadian).
1995-present	WWOANW annually adjust and implement stricter voluntary guidelines through a series of semi-annual public meetings.
1996-present	½ mile no whale watching zone is established at Lime Kiln State Park by WWOANW & Soundwatch.
1999-Present	WWOANW/Soundwatch impliment the ¼ mi. No Whale Watching Zone off the westside of San Juan Island. Increasing participation/support for voluntary guidelines from Canadian and U.S. governmental agencies.
2000	Petition with 1,4000 signatures for stricter whale watching guidelines from San Juan County community submitted to Board of County Commissioners.
2001	Canadian Dept. of Fisheries and Oceans co-sponsors the Marine Mammal Monitoring Program (M-3) with local NGOs, and in partnership with Soundwatch. DFO and NMFS sign-off on a single set of voluntary guidelines for a new international brochure that is distributed by M-3 & Soundwatch.

Figure 2. Soundwatch Boat passing out literature to a recreational boater.

The Whale Museum's Soundwatch Boater Education Program and The Marine Mammal Monitoring Project Guideline Bullets

Guidelines for watching cetaceans (whales, dolphins, and porpoises)

BE CAUTIOUS and COURTEOUS: approach areas of known or suspected marine mammal activity with extreme caution. Look in all directions before planning your approach or departure.

SLOW DOWN: reduce speed to less than 5 knots when within 400 metres/yards of the nearest animal. Avoid making any abrupt changes in speed or course.

MAINTAIN at least 100 metres/yards from the nearest animal.

ALWAYS approach and depart animals from the side, moving in a direction parallel to the direction of the animals. Avoid approaching from the front or from behind.

LIMIT your time engaged in viewing to a maximum of 30 minutes, being sensitive to the presence of other vessels and to minimize the cumulative impact of many vessels.

STAY on the OFFSHORE side of the animals when they are travelling close to shore. Remain at least 200 metres/yards offshore at all times.

NEVER position your vessel within the 400 metre/yard area in the path of the animals. Keep the path of the animals clear.

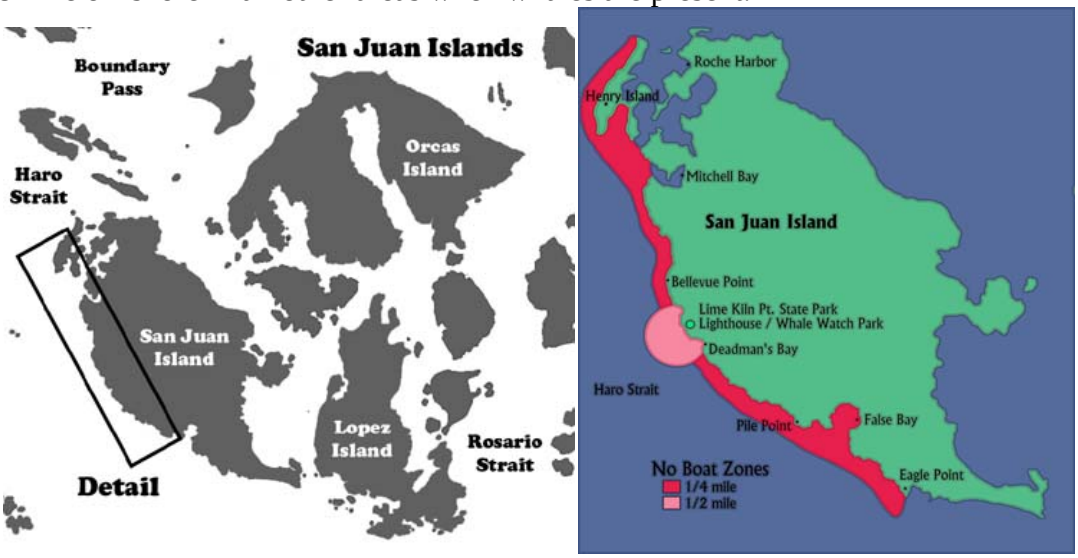
If your vessel is unexpectedly within 100 metres/yards, STOP IMMEDIATELY and allow the animals to pass.

Guidelines for Watching Seals, Sea Lions and Birds when animals are on land:
MAINTAIN at least 100 metres/yards distance from any marine mammals or birds.
SLOW DOWN and reduce your wake/wash and noise levels.
PAY ATTENTION and back away at the first sign of disturbance or agitation.
BE CAUTIOUS AND QUIET when around haulouts and bird colonies, especially during breeding, nesting and pupping seasons (generally May to September).
DO NOT FEED any marine mammals or birds.

Guidelines for Viewing Wildlife within Marine Protected Areas, Wildlife Refuges and Parks
1. Check your nautical charts and local marinas and harbors for the location of various protected areas.
2. Abide by posted restrictions, if available, or contact a local authority for further instructions before proceeding.

*Creation of VOLUNTARY NO MOTOR BOAT ZONES such as the Haro Strait No Motor Boat Zone in San Juan County, Washington:

Observe the ¼ mile " Haro Strait No Motor Boat Zone" recommended by the Whale Watch Operators Association Northwest (see map) and the ½ mile zone at Lime Kiln Point State Park. Stay 1/8 mile off shore in all other areas when whales are present.



Marine Mammal Monitoring (M3) Project:
A Stewardship and Outreach Partnership in the BC/Washington Trans-Boundary Waters.

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Marine mammal issues are the subject of much concern in British Columbia and Washington trans-boundary waters. Recently progress has been made in establishing a Pacific Marine Mammal Advisory Council and many organizations have developed guidelines for viewing marine wildlife in efforts to reduce the effects of human interactions. Along with the development of the Species at Risk Act (SARA), Fisheries and Oceans Canada is taking a more active management role with the marine mammals for which it is responsible. There has also been some interest in developing national marine mammal viewing regulations. However, the move from guidelines to regulations is not without debate.

Within this context, the Marine Mammal Monitoring (M3) project was developed. M3 is designed to offer educational support to marine ecotourists in the trans-boundary area and to assess the issues of marine mammal viewing. Outreach efforts have been developed to modify boater behaviour.

M3 objectives are to (1) distribute marine mammal viewing guidelines and educational information (Figure 1), (2) monitor and collect data on marine mammal viewing activities, and (3) report compliance of commercial whalewatch vessels based on self-regulated industry guidelines.

Figure 1. M3 distributing information regarding marine mammals and viewing guidelines.

M3 is a partnership-based marine stewardship initiative, which has generated tremendous interest and forged new relationships between communities and governments on local and international levels. The operational nature of M3 is far broader than was originally anticipated and with more extensive partnership requirements. The cooperation and support of key partners like the Veins of Life Watershed Society, Environment Canada, The Whale Museum's Soundwatch Boater Education Program, and Fisheries and Oceans Canada have allowed M3 to expand its scope.

Recognizing a lack of information for boaters with regard to marine mammals and recommended viewing behaviours. *Be Whale Wise* brochure (Figure 2) has been created, internationally, as a guide to marine mammal issues and viewing best practices. M3 has been a catalyst in the cooperative development of these concise international guidelines (Figure 3) with partner organizations, industry, and researchers. These guidelines have enjoyed wider acceptance than was initially envisioned. The need for province-wide or federal marine mammal viewing guidelines is emerging, however the issues of regionally specific modification which accommodate unique habitats, animal behaviours and various species need also be addressed.

Figure 2. "Be Whale Wise" brochure offering boaters international guidelines for watching marine wildlife.

Brochures and regulations are not enough. Presentations and public interaction are essential to ensure an enhanced appreciation for marine mammals, their habitat, and the threats they face.

M3 has received encouraging responses and keen appreciation from commercial and recreational boaters, as well as the public at large, for its on-water presence and educational efforts.

Guidelines for watching cetaceans (whales, dolphins, and porpoises)

1. BE CAUTIOUS and COURTEOUS: approach areas of known or suspected marine mammal activity with extreme caution. Look in all directions before planning your approach or departure.
2. SLOW DOWN: reduce speed to less than 5 knots when within 400 metres/yards of the nearest animal. Avoid making any abrupt changes in speed or course.
3. MAINTAIN at least 100 metres/yards from the nearest animal.
4. ALWAYS approach and depart animals from the side, moving in a direction parallel to the direction of the animals. Avoid approaching from the front or from behind.
5. Limit you time engaged in viewing to a maximum of 30 minutes, being sensitive to the presence of other vessels and to minimize the cumulative impact of many vessels.
6. STAY on the OFFSHORE side of the animals when they are travelling close to shore. Remain at least 200 metres/yards offshore at all times.
7. NEVER position your vessel within the 400 metre/yard area in the path of the animals. Keep the path of the animals clear.
8. If your vessel is unexpectedly within 100 metres/yards, STOP IMMEDIATELY and allow the animals to pass.

Guidelines for watching seals, sea lions and birds

1. MAINTAIN at least 100 metres/yards distance from any marine mammals or birds.
2. SLOW DOWN and reduce your wake/wash and noise levels.
3. PAY ATTENTION and back away at the first sign of disturbance or agitation.
4. BE CAUTIOUS AND QUIET when around haulouts and bird colonies, especially during breeding, nesting and pupping seasons (generally May to September).
5. DO NOT FEED any marine mammals or birds.

Figure 3. International guidelines for viewing marine mammals in the BC/Washington trans-boundary area.

Based on the first season of monitoring, concerns were raised over the observed activities by air and sea transportation services, as well as other government vessels, engaging in marine mammal viewing. As this is the initial season of data collection, at this time it is difficult to assess whether an educational initiative has had an effect, or if voluntary compliance by commercial operators is improving. M3 reports are collectively compiled with those of Soundwatch to increase the scope of the database of viewing behaviours. M3 recognizes the formidable challenges in achieving significant marine mammal viewing behaviour change. Initial indications are that an M3 and/or Soundwatch presence seems to evoke positive changes in vessel operations around marine mammals.

As the Canadian government is moving toward revised marine mammal regulations and the concept of marine mammal viewing regulations, baseline data of viewing activities and characterization of issues will be required. M3's efforts are setting the stage for these important processes to proceed.

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"See A Spout, Watch Out! Responsible Whale Watching": An Attempt to Educate Recreational Boaters Regarding Whale Watching Guidelines

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Abstract:

Recently amended whale watching guidelines in the Northeast Region of the United States took into consideration recommendations from government agencies, conservation groups and commercial whale watching enterprises. Although outreach to the whale watching industry was a priority, little effort was made to educate private boaters. As a result, the International Wildlife Coalition and the Stellwagen Bank National Marine Sanctuary have collaborated on an innovative new public education campaign entitled "*See A Spout, Watch Out! Responsible Whale Watching*." This pilot outreach program targets recreational boaters throughout the state of Massachusetts. Efforts include presentations at safe-boating courses, Tips and Tides cards and posters available at marinas, marine retail stores and yacht clubs. Permanently affixed, waterproof signs are placed at boat ramps, launch services and fuel docks.

Introduction:

Whale watching has been encouraged as a noncomsumptive, commercial use of whales throughout the world. Hoyt (2000) estimates that at least 87 countries participate in commercial whale watching generating revenues over one billion USD annually. Whale watching has also been useful as a platform for scientific research (Robbins 2000, Robbins and Mattila 2000). Concerns have been raised that whale watching operations may result in adverse short and long-term effects in cetacean populations targeted by whale watching vessels (IFAW et al. 1995, Brandão et al. 2000, Trites and Bain 2000). As a result, most countries have instated whale watching guidelines and/or regulations to minimize the impacts on the target populations (Carlson 2000).

However, studies of whale watching impacts, and efforts to monitor compliance with guidelines/regulations, have largely ignored recreational boaters. Commercial vessel operators and/or commercial vessels were most often targeted or used as a platform for the studies (Baird and Burkhart 2000, Coscarella et al. 2000, Erbe 2000, Lalime-Bauer 2000, Ollervides and Pérez-Cortés 2000, Richter 2000, Urbán and Gómez-Gallardo 2000, Warburton et al. 2000). Recent changes to whale watching guidelines in the Northeast Region of the United States were developed cooperatively by government agencies, conservation groups and commercial whale watching industry representatives but there was no involvement of from recreation vessel operators. Recommendations by the International Whaling Commission's Sub-committee on Whale Watching have also only focused on commercial operations (Anon 2000).

In cases where public outreach campaigns such as the U.S. NOAA sponsored Protect Dolphins Campaign, the Virginia Marine Science Museum's Boat Safely Respect Wildlife campaign, Lifeforce's Lifewatch Boater Awareness Program, and the Soundwatch Boater Education Program do exist, the main focus has been how to operate recreational vessels around small cetaceans such as dolphins, not large cetaceans.

"See A Spout, Watch Out!" Public Outreach Campaign:

The potential impact of recreational vessels on large cetaceans should not be ignored. The close proximity of whales to shore during summer feeding seasons attracts numerous small boats to these high use areas to view whales. As a result of the increasing numbers of recreational boats frequenting the feeding grounds of whales in the Northeast Region of the United States, the International Wildlife Coalition, in conjunction with the Stellwagen Bank National Marine Sanctuary (SBNMS) have developed a multi-phase pilot program called "*See A Spout, Watch Out! Responsible Whale Watching* " in an attempt to increase awareness to recreational boaters about whale watching guidelines within the SBNMS.

Phase I of "*See A Spout, Watch Out! Responsible Whale Watching*" specifically targets Massachusetts' boaters and includes a brief educational slide show with script for incorporation in boater safety courses conducted by the United States Coast Guard Auxiliary, the Massachusetts Environmental Police, the New England Maritime, and the United States Power Squadron. Information includes, a description of the SBNMS, its importance as a seasonal feeding area for cetaceans, and four tips for proper boating behavior when in the vicinity of whales. The four tips are specifically written in a "catch phrase" format to simplify the guidelines and increase the likelihood of the reader retaining the message (Appendix A). Static decals, tide-chart rack cards, and registration cards are included in the packet given to course participants. Registration cards will provide feedback regarding the program and help in contacting participants for a follow up assessment of this program. Current estimates indicate that more than 5,000 safe boating course participants are likely to receive this information in 2001.

In addition to the course materials, four-color posters, and tide-chart rack cards are being placed at marinas, yacht clubs, and boating supplies stores for distribution to boaters during the summer whale watching season in Massachusetts. The tide-chart on the back of the rack card encourages boaters to keep the "tip card" on their vessel while the poster serves as an attractive visual reinforcement of the program. To date, over ten thousand rack cards have been distributed to various boating outlets around Massachusetts.

The goal of Phase II of "*See A Spout, Watch Out! Responsible Whale Watching*" program is to target Massachusetts' residents and transient boaters through the placement of permanently affixed signs at boat ramps, fuel docks, and launch services. The 18" x 24" vinyl-coated, black and white, aluminum signs not only contain the four tips outlined above, but they also include stronger language and notification about the current federal/state laws that prohibit approaches to the critically endangered right whales (Appendix B).

Conclusion:

While whale watching has increased as a commercial industry, the International Whaling Commission must consider that this activity has also increased in popularity with private boaters. Commercial operations have historically been included in guideline/regulation development and monitored for compliance and impact on cetaceans populations. However, the impacts from recreational vessels can be the same as that from commercial operations. In some areas, large numbers of recreational boaters

who may disturb feeding or resting whales, may have a greater effect than the lesser number of commercial whale watch boats. The concerns raised by large numbers of well-meaning but uneducated boaters who operate closely around large whales underscore the need to increase awareness of recreational vessel operators to safely maneuvering in the presence of whales.

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Appendix A

Tip number one- See A Spout, Watch Out!

Whales come to the Stellwagen Bank National Marine Sanctuary to feed. If you see a whale, it is likely foraging or feeding in that area and there may be other animals doing the same. Some whales can hold their breath for 20 minutes or more, so even if you don't see other whales, they may be in the area. If you see a spout, slow down and post a look out.

Tip number two-Head On is Wrong!

A whales' direction of travel may be taking them to an important food resource. Try not to alter the whale's path by cutting it off. Always approach a whale from the back or side, not from the front.

Tip number three- Lots of Boats, Then Talk to Folks!

Although whales may be aware of boats around them, they can't predict where a boat is headed. If there are other boats watching or traveling near whales, call them on your VHF radio (channels 9 and/or 16) to coordinate viewing/traveling efforts in order to avoid boxing in, stressing or injuring whales.

Tip number four-Don't You Get Close, Let Whales Approach!

Closely approaching a whale may cause the animal to move away from its food source. Try to respect the whale's behavior and keep your distance. If a whale moves away, don't chase it. A curious whale will sometimes approach a boat, but a frightened whale never will.

Appendix B

1-See A Spout, Watch Out!

If you see a spout, or a tail, or a breaching whale, please slow down and post a lookout. Some whales dive 20 minutes or more searching for food. If you've seen one whale, many more could be close – maybe too close to your boat and its spinning propellers. Proceed cautiously!

2-Head On is Wrong!

Don't alter the whale's path by cutting it off. When in sight of a whale, follow official guidelines and adhere to existing regulations that restrict or prohibit closely approaching whales. Always keep your boat a safe distance; don't risk striking a whale. Federal law prohibits the harassment of all marine mammals. Federal and Massachusetts laws prohibit approaching the highly endangered North Atlantic right whale closer than 500 yards.

3- Lots of Boats, Then Talk to Folks!

If there are other boats watching or traveling near whales, hail them on your VHF radio (channels 9 or 16) and coordinate your viewing efforts.

4-Don't You Get Close, Let Whales Approach!

If a whale moves away, don't chase it. A curious whale will sometimes approach a boat, - a frightened whale never will. Enjoy the whales, don't endanger them!

"Boat Safely ~ Respect Wildlife"
A Public Education and Outreach Program for Virginia Boaters

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In recent years, Virginia has registered increasing numbers of recreational motorboats and personal watercraft (PWC) in both inland and coastal waters. Safety, noise and crowding issues have dominated headlines regarding vessel operations and increased traffic. Throughout the public discussion of these issues, there has been very little comment about the effects of increased vessel traffic and operations on protected species such as marine mammals, migratory waterfowl and sea turtles. For example, many vessel operators, natural resource managers and even law enforcement personnel are not aware of the marine mammal harassment provisions incorporated into the Marine Mammal Protection Act (MMPA). The MMPA provides protection for all marine mammals such as dolphins, whales, seals and manatees. The Endangered Species Act also protects sea turtles and some birds and marine mammals. The Migratory Bird Act protects many other bird species that spend time on and around the water. As a result, the animals covered by these laws are protected from being disturbed and harassed.

Although it is against the law to harass protected species, most recreational vessel operators are uninformed and there is very little enforcement of these laws. Agencies charged with enforcing marine wildlife protection laws, such as the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, have produced pamphlets and other materials aimed at educating the public about wildlife harassment issues. Unfortunately, these materials have not been directly targeted to recreational boaters. This program, "Boat Safely ~ Respect Wildlife", was initiated by the Virginia Marine Science Museum (VMSM) to specifically educate the boaters of Virginia about wildlife they may encounter and encourage them to operate their vessels in a wildlife friendly manner. The project's long-term objectives are to:

- Inform recreational vessel operators about protected marine mammals, sea turtles and birds in Virginia waters
- Increase vessel operator's knowledge of federal and state wildlife protection laws
- Provide vessel operator's with guidelines for safe operations around wildlife
- Achieve these educational objectives utilizing existing boater education courses

Like many states, Virginia is moving toward increasing educational requirements for recreational boaters. Eventually, there will very likely be mandatory education courses required of all recreational vessel operators. The VMSM has developed a curriculum explaining appropriate operation of vessels in the vicinity of marine mammals and other protected species. The curriculum has been incorporated into the guidebooks used in Virginia boating and PWC safety classes. By targeting the boating public through these classes, we hope to raise public awareness of marine mammal harassment issues and teach vessel operators to recognize and behave appropriately around these and other protected species. In addition, brochures, guidelines stickers for vessels and bumper stickers have been produced to promote the "Boat Safely ~ Respect Wildlife" program.

Ideally, all future recreational vessel operators in Virginia will be exposed to these wildlife protection issues. Responsible vessel operation around wildlife and in sensitive habitats can reduce the harassment and disturbance of animals as well as preserve natural resources. As more vessel operators are educated in these classes, the level of harassment will hopefully decrease. If not, ignorance of the laws protecting these species will no longer be a viable excuse and enforcement personnel can respond accordingly. We believe this educational approach to decreasing harassment is a positive, innovative way to protect marine mammals and other species from unnecessary interruptions by recreational vessels.

The Value of Outreach Programs to Educate the Public About Responsible Marine Mammal Viewing Practices

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Viewing whales, dolphins, seals and sea lions in their natural habitat can be an educational and enriching experience if conducted safely and responsibly. However, when conducted irresponsibly, these activities can be disturbing to the animals and place their health and welfare at risk. In addition, there are significant public safety considerations as people have been seriously injured while trying to interact with wild marine mammals. The National Marine Fisheries Service (NOAA Fisheries) encourages people to learn about the animals and observe them in their natural habitat, but the distinction between "viewing" *vs.* "interacting" needs to be made to the public, an effort that the Agency has been pursuing for over a decade.

The U.S. Marine Mammal Protection Act (MMPA) prohibits the "take" and "harassment" of marine mammals in U.S. waters[1]. To support the protections provided in the MMPA, NOAA Fisheries has specifically promulgated regulations explaining what types of activities are considered "takes" and "harassment," including specific prohibitions on: aircraft or vessel operations that disturb marine mammals; feeding or attempting to feed marine mammals; approaching North Pacific humpback whales closer than 100 yds (90 m) in Hawaii and Alaska waters; and approaching right whales closer than 500 yds (460 m) in the North Atlantic (see Appendix).

The MMPA provides limited special exceptions to these prohibitions (*via* permits or authorizations) for activities such as scientific research, public display and incidental take in commercial fisheries. It does not provide special exceptions for commercial or recreational activities to view marine mammals in the wild. Therefore, activities such as whale watching and dolphin or seal viewing tours must be conducted in a manner that do not "take" (*i.e.*, harass) the animals. In order to avoid harassment of marine mammals, NOAA Fisheries recommends that wildlife viewers follow the Agency's responsible viewing guidelines which are available from NOAA Fisheries Headquarters, each Regional Office, and on the Internet at:

www.nmfs.noaa.gov/prot_res/MMWatch/MMViewing.html

NOAA Fisheries has particular concerns with illegal feeding, swim-with activities, dangerous vessel interactions (*e.g.*, use of outboard or inboard boats, kayaks, canoes, underwater scooters, or other types of water craft to elicit interactions with marine mammals in the wild), and land-based interactions (*e.g.*, closely approaching seals and sea lions in haul out areas). NOAA Fisheries believes that public awareness is a key factor in effectively addressing this problem. Most people who engage in harmful interactive activities are interested in marine mammals and do not realize that they are placing the animals and themselves at risk. Unfortunately, public interest in marine mammals has been shaped by the abundant images of "friendly" marine mammals on the Internet and TV, in the movies, and at some public display facilities. Many

[1]This prohibition also applies to U.S. citizens on the high seas in international waters.

commercial operators and "eco-tour" groups have perpetuated this "Flipper myth" and promote interactions with the animals in the wild. A quick search on the Internet can reveal hundreds of web sites advertising swim-with trips, as well as a variety of other opportunities to touch, pet, "cuddle," and otherwise interact with many species of marine mammals.

NOAA Fisheries has launched several educational campaigns to increase public awareness that feeding and harassing wild marine mammals is harmful to the animals, dangerous to people and illegal under the MMPA. Many of these efforts have resulted in an increased public awareness of the concerns and, as a result, some operators and individuals have curbed their potentially harmful activities. When people become aware of the harmful effects of interactive activities, most will "do the right thing" by following the guidelines and viewing the animals responsibly.

NOAA Fisheries' education and outreach efforts are administered by staff at Headquarters and the Regional Offices, in close partnership with NOAA's Office for Law Enforcement. Education can go a long way toward achieving voluntary compliance with the regulations and guidelines. To date, our efforts have included:

- Developing brochures, posters and interpretive signs, and public service announcements that educate the general public on how to responsibly view marine mammals in the wild without causing harassment. These items are regularly distributed to the stranding network, wildlife tour operators, jet ski/boat rental businesses, zoos/aquaria and educational institutions.

- Launching a "Protect Dolphins" campaign to specifically address concerns about closely approaching, feeding or swimming with wild dolphins.
- Partnering with the Watchable Wildlife program to promote marine wildlife viewing.
- Getting the word out to like-minded organizations by regularly presenting at professional conferences, environmental groups, zoo/aquaria and even schools and community organizations.
- Assisting with the development of community based volunteer docent programs, including land-based initiatives geared toward pinniped viewing and several on-water programs to reach recreational boaters and report violations.
- Developing a new web site highlighting responsible wildlife viewing: *www.nmfs.noaa.gov/prot_res/MMWatch/MMViewing.html*

- Collaborating with various zoos/aquaria to help ensure visitors understand the differences between interacting with animals in captive programs *vs.* animals in the wild.

- Responding to media inquiries about viewing issues. Over the past few years, feature stories have appeared on CNN, ABC News, CBS News, BBC Radio, and in *The New York Times*, *Sarasota Herald Tribune*, *Atlanta Journal Constitution*, *Audubon* magazine, *Boat U.S.* magazine, *Dive Training* magazine, and *People* magazine.

- Communicating with corporations and other groups whose advertisements directly or indirectly promote inappropriate interactions within their literature or on the Internet.

- Creating enforcement "Warning Signs" for dolphins, seals, sea lions and Hawaiian monk seals. These signs are specifically posted in high traffic areas, such as beaches, piers, bridges, channel markers, marinas and similar waterway structures.

Although NOAA Fisheries' educational campaigns have been successful, we recognize the important role of enforcement in protecting wild marine mammals, particularly in the case of repeat offenders. Financial and personnel resources are always limited, and it is not always easy to prosecute cases. NOAA Fisheries is exploring ways to improve enforcement while continuing to build upon and strengthen our educational efforts. It is important to understand the motivations behind the public's desires to view marine mammals in their natural habitat to find an effective balance between education and enforcement. Education and outreach programs need to be routinely evaluated to gauge their effectiveness on the target audiences (*e.g.*, through human dimensions studies) and make improvements.

Partnerships are also a key component to successful education and outreach efforts. Without the help of researchers, wildlife interest groups, community based docent programs, and individually concerned citizens, NOAA Fisheries (and other wildlife protection agencies) would face a far more difficult task of reaching the public on marine mammal viewing issues of concern.

For more information, please contact Trevor R. Spradlin, Lynne M. Barre, Jill K. Lewandowski, Eugene T. Nitta or Ann D. Terbush at the NOAA Fisheries Office of Protected Resources, Permits, Conservation and Education Division (301) 713-2289.

Appendix

CURRENT DEFINITIONS OF "TAKE" AND "HARASSMENT" UNDER THE MMPA AND NMFS' IMPLEMENTING REGULATIONS

The term **"take"** is defined in the MMPA as:

> *"to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal."*

The term **"take"** is further defined in NMFS' regulations (50 CFR 216.3) to include:

> *"The collection of dead animals, or parts thereof; the restraint or detention of a marine mammal, no matter how temporary; tagging a marine mammal;* ***the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in disturbing or molesting a marine mammal; and feeding or attempting to feed a marine mammal in the wild****."* (emphasis added)

The 1994 Amendments to the MMPA defined the term **"harassment"** as:

> *"any act of pursuit, torment, or annoyance which –*
>
> *(1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or*
>
> *(2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment)."*

NOAA has also promulgated regulations (50 CFR 224.103; 66 FR 29502, May 31, 2001) that:

> (1) prohibit approaches closer than 100 yards (90 m) to humpback whales in Hawaii and Alaska and;
>
> (2) prohibit approaches closer than 500 yards (460 m) to North Atlantic right whales

Additional Summaries
(In Alphabetical Order According to First Author)

Applying Precautionary Principles to Marine Wildlife Viewing in Pacific Rim National Park

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The role of Parks Canada is to protect and present representative examples of Canada's natural and cultural environment in a system of national parks, historic sites and marine protected areas. Within that system, Pacific Rim National Park Reserve (PRNPR) encompasses a total area of 49,962 hectares of land and ocean on the west coast of Vancouver Island. The park stretches 125 km in a narrow coastal strip between Tofino and Port Renfrew. Almost 43% of this area consists of marine waters and small offshore islets. The park receives close to 1 million visitors per year.

PRNPR adopted voluntary industry guidelines for viewing marine wildlife in 1995. However, subsequent compliance monitoring showed that both commercial and private boaters routinely disregarded the guidelines. In addition, concerns were raised regarding the appropriateness of the guidelines to address social, biophysical and cumulative impacts of marine wildlife viewing on park resources. To address these concerns, the park sponsored a marine wildlife viewing workshop in 2000 involving industry, government, educators and researchers. Although the results from those discussions are still under review, one idea being considered is the development of a set of precautionary wildlife viewing principles. These principles would form the basis, or foundation, of the more specific viewing guidelines. We felt that if stakeholders could agree on the general principles first, then the specific guidelines would flow logically from these. Should there be any disputes, we would then be able to refer back to the principles to which we had all agreed.

We developed the following precautionary principles in order to see how they might apply.

Precautionary Principles of Wildlife Viewing

The following are suggested principles for interacting with wildlife in marine or terrestrial settings at Pacific Rim National Park Reserve. Their goal is to minimize the disturbance to, and reaction of, wildlife to people.

- **Take leadership, pride and responsibility in preserving the well-being of wildlife.**
  - ❖ learn about the species you observe.
  - ❖ set an example.
  - ❖ educate others.

- **The goal in viewing wildlife is not to modify the behaviour of the wildlife.**
  - ❖ modify your own behaviour so that wildlife do not react to your presence.
  - ❖ feeding wildlife alters their natural behaviour and relationships.

- **Act with the best interests of the wildlife and their habitat in mind.**
  - ❖ if you are not certain what to do when encountering an animal, ere on the side of caution.

- **Don't surprise or sneak up on wildlife.**
  - ❖ animals are more likely to flee if startled.

- **Predictable, consistent viewing behaviour is least likely to disturb wildlife**.
  - ❖ by standardizing our approach and behaviour, wildlife may be more tolerate of our presence.

- **If in doubt whether your actions are disturbing the animal, move away**.
  - ❖ guidelines are based on typical interactions and set minimum distance values only, they may not always provide appropriate security for the situation.

- **Limit your time around an animal.**
  - ❖ our presence in an area may have a ripple effect, causing unforseen and/or unknown impacts. Ere on the side of caution.

- **Wildlife reactions and sensitivity will vary with individual, species, season and circumstance**.
  - ❖ some species and some areas are more sensitive to humans than others.
  - ❖ young animals and females with young are more sensitive to disturbance.
  - ❖ birds in large flocks are more easily flushed, give them extra space.
  - ❖ 'Specialists' are more sensitive then 'Generalists' species.

- **Guide your actions by the most sensitive species on site.**
  - ❖ no species is more important than another, show respect for all.

- **Ecological "hot spots" are real and do not exist by accident**. **Tread lightly, treat them with respect.**
  - ❖ "Hot spots" are habitat convergence zones which attract a high density and diversity of species.
  - ❖ although they're often small in area, these sites play a big role in the larger ecosystem.
  - ❖ any impacts to these areas often have much wider-ranging consequences.
  - ❖ treat all offshore islets and reefs as sensitive habitat.

- **High quality wildlife habitat is limited.**
  - ❖ most high quality habitat is already occupied.
  - ❖ if displaced from one site, animals have few other places to go.

- **Point (or perpendicular) access is less disruptive than linear (or parallel) access.**
  - ❖ shorelines are a physical barricade for most marine species.
  - ❖ following closely along shore can create situations where animals are forced between the boat and shore, or, to escape, they keep leapfrogging just ahead of the boat.
  - ❖ because they are an ecotone, shorelines are often sensitive areas.

- **Be extra cautious at the beginning of the season.**
  - ❖ animals may require more space early in the season.
  - ❖ as the season progresses, they may become more accustomed and allow closer viewing.

- **Establish control areas which are off limits to viewing.**
  - ❖ if viewing does prove to be detrimental, it ensures that not all areas are impacted.

- **Be cautious and humble while viewing, there is always more to learn.**
  - ❖ we really know very little about the ecology of most wildlife species and how our activities impact them.

- **Cumulative impacts are real.**
  - ❖ wildlife viewing is only one of many potential stressors on wildlife. Our activities must be managed within a broader context.

As we tried to integrate these principles into the viewing guidelines, it became apparent that more site-specific guidelines were needed. For example, to incorporate the principle that *predictable human behaviour is less disruptive to wildlife*, we had to develop specific routes for boaters visiting sea lion haulouts in the park. Common routes near seabird colonies and other sensitive areas (i.e. estuaries) were also developed. Although this principle of predictability appears to work elsewhere (i.e. grizzly bear viewing at McNeil River) we're unsure if it will be as effective for marine wildlife viewing situations. As such, we're interested in receiving any comments or experiences which others may have relating to this or any of the other principles described above. We also recognize that our list of principles is not exhaustive and would welcome any suggested additions.

An Evaluation of the Impact of Whale Watching Vessels on Humpback Whales in Newfoundland, Canada and an Evaluation of Voluntary Codes of Conduct to Minimize Impact and Ensure Passenger Benefits

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I am investigating the impact of commercial whale watching vessels on humpback whales (*Megaptera novaeangliae*) in Newfoundland, Canada, and the effectiveness of a voluntary code of conduct for tour boat operators protect the whales from vessel disturbances.

During the summer months Newfoundland is home to transitory populations of cetaceans, including humpbacks, minkes (*Balaenoptera acutorostrata*), fins (*Balaenoptera physalus*) that are targeted by the whale watching industry. Throughout the entire summer season, all cetacean species, in some areas, are subject to intense whale watching activities, but humpbacks are the main focus for the 63 commercial tour boat operations in the province. Because of the rapid growth of this industry which concentrates in critical inshore habitat areas concern has grown about the impact of the vessel activity on the whales.

These concerns were behind a voluntary code of conduct which was negotiated during 2000-2001 between the tour boat operators trade association – Hospitality Newfoundland/Labrador, the Department of Fisheries and Oceans, and Memorial Universities Whale Research Group. The code is based on IWC Scientific Committees principles for managing whale watching. About half of the operators in Newfoundland and Labrador signed up to follow the code.

My study evaluates the impact of commercial whale watching on humpback whales, and the effectiveness of a voluntary Code of Conduct as a management tool to control tour boat impact on the whales and ensure passenger benefits. The sites selected for the study are three different areas of the province of Newfoundland: Witless Bay and St. John's Bay on the Avalon Peninsula, and St. Anthony on the Northern Peninsula. The study is a three-year project that begun this year. Thus far only several parts of the study have been completed.

Effect of the presence and number of commercial whale watching boats on the behaviour of humpback whales

Humpback whale behaviours were recorded by researchers positioned on the cliffs and were correlated with proximity and numbers of tour boats within 100m of the whales. Distances were calculated with the use of a theodolite during a three week period. The study showed that animals in Witless Bay were accompanied by at least one whale watching boat during most daylight hours (72.3% of the time when observations were made). Instances of aerial behaviour (breaching, lob-tailing, flippering and spy hopping) all increased during the presence of whale watching vessels.

Effect of the compliance to a Code of Conduct on passengers satisfaction

The second part of the study was carried out during the months of July and August 2001 in Witless Bay and St John's. Seven tour boat companies operating in these areas collaborated with the study. A questionnaire was presented to tour boat passengers at the end of their trip. Questions regarded passenger experience, passenger opinion on tour boat compliance to the Code of Conduct, passenger satisfaction and passenger opinion on the effect of a Code of Conduct on their whale watching experience. More than three hundred passengers were interviewed. Passenger satisfaction was usually high. Tour boat operator manoeuvring was usually considered respectful with regards to the whales but some infractions to the Code of Conduct were also reported. A Code of Conduct was usually welcomed by passengers. Most of them would give away the "thrill" of a close encounter with the whales for a more cautious kind of approach. Some of passengers showed their concerns on the well being of whales that were continuously approached by whale watching boats.

Effect of the Compliance to a Code of Conduct on humpback whale behaviour

The third part of the study was carried out in St Anthony during the month of September 2001. A commercial tour boat carrying passengers was hired to randomly perform approaches to humpback whales with either strictly complying with the code of conduct, or not complying with the code. In the second scenario, the tour boat operator was asked to control the interaction and violate specific aspects of the code. Distances boat-whale were always checked with the use of range finder binoculars. Individual animals were photo-identified. Behaviours of the vessel and followed animal were simultaneously recorded. At the end of each trip a questionnaire evaluating their experience on the trip was presented to the passengers. Trials to evaluate distance judging at sea were also performed with the skipper and with passengers. Analysis of data has yet to be performed but some relevant findings of the research are: people have difficulties in judging distances boat-whale at sea (whales always seem closer than the actually are) but this can be overcome with practice. In fact, skipper performances in judging distances improved with feedback. Passengers have also difficulties if tour boat operators are following a code of conduct rendering them quite unreliable for reporting infractions of codes of conduct.

Odontocete-Human Interactions: Implications of Literature Review and Practical Application for Management

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The development of programs offering the public contact with free-ranging odontocetes has resulted in a form of intensive and commercial exploitation of various species of odontocetes internationally. Research, management, and legislation of these programs have lagged far behind their expansion. Consequently, numerous accounts of harassment to involved animals, including severe injuries and mortalities, have been reported.

In 2000, the International Whaling Commission Scientific Committee Meeting formally addressed in-water interactions with odontocetes for the first time. For this purpose, a review of literature documenting odontocete behaviors indicative of stress in the context of "sociable" interactions with humans over the last century was conducted (Frohoff 2000). Sociable interactions were characterized by the animals initiating or allowing close and sustained proximity to humans (*e.g.,* swimmers, waders, boaters) and allowing sustained or repeated interaction. A review of the risks of short- and long-term impact to the animals involved in these interactions was also conducted. Here, we summarize the results of this review in light of their implications to management of human-odontocete interactions. Our oral presentation will include relevant examples of some of these points from our most recent, unpublished research.

Review

The review documented a total of 177 reports (not observed frequencies of actual occurrences) of stress-related odontocete behaviors observed in the context of sociable human interaction. Of these, 107 reports were made for solitary animals. Eighty-seven (almost 50%) of the total reports involved swimmers only. This high proportion of stress-related dolphin responses reported with swimmers alone (*i.e.*, not related to boats) indicates that their impact on odontocetes may be serious under a variety of conditions. Of the 38 behavior types indicative of stress that were noted, "avoidance" was the most frequently reported, followed by "slaps and splashes" against the water surface and "forcefully pushing" and "biting" swimmers.

The review also illustrates that odontocetes exhibiting the highest degree of contact with humans are generally at the greatest risk of injury, illness, and death. In particular, incidents in which humans intentionally injured or killed animals involved in sociable interactions were reported almost exclusively for solitary animals and animals regularly provisioned with food.

Management Recommendations from Review

The research on this subject depicts how identification of stress-related behaviors is valuable in determining the type, extent and level of impact to animals as well as how to minimize impacts

when stress-related behavior identification is incorporated into management programs. However, research has largely been restricted to studies of short-term impacts on the animals. Because of the difficulties inherent in observing behavioral impacts to odontocetes, determination of no or minimal impact should not be made based on the absence of perceived short-term responses alone. Long-term, quantitative studies of cetaceans targeted for recreational human activity need to be initiated as early as possible in the development of the activity. Management appeared to be most effective when it was based on research, was site- and animal-specific and was implemented early in the development of the interaction.

Also, adequate monitoring, education and, occasionally, enforcement were essential for effective management or prohibition of these interactions. The existing research indicates that a precautionary approach to management of these activities is warranted so that the burden of proof lies with those who want to interact with the animals instead of those who want to protect them. In light of the proliferation of programs that are facilitating contact with cetaceans, it is recommended that this observation be supported by legislation and funding of research and management accordingly.

Management in the Real World

Despite concerns expressed by researchers, the reality is that the public continues to exhibit an increasingly active interest in close encounters with cetaceans and this trend shows not sign of declining. Since we cannot manage the behavior of wild dolphins in general, we must focus on managing human behavior to whatever extent possible and necessary. Afterall, it is important to realize that the ocean is not our home, but our playground.

The following guidelines are the result of an informal review of guidelines used around the world (Herzing, Frohoff, and Santos 1995) as well as our own experience at various research sites. Drafting and dissemination of these guidelines is not meant to condone interactive programs and are only provided for situations in which absolute and complete prohibition of interactions with cetaceans is impossible. As was concluded from the review, guidelines can be need to be specifically tailored relative to different people and delphinid species, age and gender, habitats (*e.g.,* shallow or pelagic), local laws, and any other unique characteristics of dolphins. Guidelines do not address issues of human safety.

1. Do nottouch the dolphins. If dolphins initiate touch, then people should avoid sensitive areas on dolphin body: blowhole, eyes/face, genital region, flippers, dorsal fin, flukes, and not wrap arms around or restrict dolphin movement in any way.
2. Do not chase, swim after, or follow the dolphins.
3. Always listen to dolphin naturalist and Captain.
4. Direct or head-to-head approaches or fast swims at 90° to others may signify aggressive activity to dolphins. Avoid these approaches.
5. Leave immediately if dolphin exhibits sexual or agonistic behavior directed at humans.
6. Keep the ratio of people to dolphins in the water small.

7. Do not enter water abruptly and avoid loud or sudden noises or movements if dolphins are nearby.
8. No presentation of inorganic objects to dolphins.
9. Absolutely no feeding of dolphins.
10. No flash from cameras used under water.

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Swimming Regulations with a Social Solitary Dolphin

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Regulations for Swimming with a Social Solitary Dolphin and Her Calf

Scientists are not sure why a dolphin leaves its pod and seeks human companionship on a continuous daily basis, this phenomena is cold social solitary dolphin. Females especially, tend to stay in tight matrilineal groups and one reason may be that the social solitary dolphins ranked low in the hierarchy and preferred, or were pushed out. In our research that was conducted on an Indian Ocean bottlenose dolphin of the species *Tursiops aduncus*, which lives and maintains close contact with humans for the last 7.5 years in the Red Sea at the Gulf of Aqaba N 28.58.09.1 E 034.40.35.0. In her residence she interacts with the Bedouins and tourist on a daily basis, her attitude gradually changed from submissive to indifferent and in the last 2 years to somewhat aggressive. This could mean that she at least as she sees it is building up confidence and rank in her substitute human group. The fact that she is forced to make contact with an ever-changing crowd of swimmers, some or all, of which she may consider outsiders, complicates matters further.

The bottom line is that aggressive acts (head butting, tail slapping, raking and biting human's organs) which used to be rare and "well deserved " by swimmers that grabbed her fins or flukes or otherwise harassed her, have in the last 2 years become more numerous and unpredictable. Fortunately, as of now, all documented aggressive acts followed physical contact or attempted contact by the swimmer. Also fortunately, the dolphin continues to use body language known to researchers of dolphin/dolphin interactions, including warning signs.

Goffman ©

Therefore, we suggested that swimmers should follow these simple rules:

*This swimming regulation can be use for almost any other social solitary dolphin worldwide, which is swimming & interacting with swimmers near the shore on a day basis. **The regulation should be short & simple to understand in 5 minutes of reading.**

Rules For Swimming With A Social Solitary Dolphin

- Do not touch the dolphin unless she overtly solicits belly-rubbing approaches and presents her underside in a horizontal position towards you, or stands motionless vertically with the tip of her nose protruding from the water.
- Do not "join the party " from the side when she is being rubbed by someone else.
- Do not swim between her and the calf (if she is razing one) when they are in a close contact.
- When you do touch her, never hug or hold her body, fins or flukes firmly and always look for one or more warning signs, which mean, "Back off!" Those are:

  Flinching in response to your touch
  Back arching with spread fins
  Jaw clapping/opening mouth
  Simultaneous jerky movements of both fins
  Any jerky movement of a part of the body
  Forceful grunt

Rules For Swimming With The Social Solitary Dolphin &Calf

Dolphin calf that is born to a solitary sociable dolphin and raised with her is not a solitary dolphin, not by choice nor by force and there is no guarantee that it will stay solitary when it grows up. Although his mother teaches him most of it's need behaviors, it misses others that would have been gained by living with other dolphins. In his first month it is in a "phallic stage " and performs sexual behaviors towards the mother as well as towards just about all swimmers around him. This behavior would have not been tolerated for long in a dolphin pod where his elders would have forcefully disciplined him. In contrast, most swimmers tend to meet this behavior by hugging and petting it. This encourages it to continue its unchecked, which when he grows up and gains weight could become embarrassing. Even worse, if it "befriends" with some swimmers who allows it this behavior, it may show aggression to those who do not, to the point of ramming into them (which we document) and pinning them down to the seafloor. This, when it grows up, could be very dangerous.

The rules for it, until further notice, would then be:

- Do not initiate physical contact
- Avoid it or if you have to, ward off firmly when it insistently initiates contact that involves "mounting " with protruded penis or poking/ramming your head and mask with his nose.

Suggested outdoor sign:

Both dolphins face daily interaction with more and more swimmers as time goes on. Please remember that dolphins are a very strong, independent wild animal and not an item in a petting zoo.

Goffman ©

Goffman ©

For their own well being, for the continuing good of the local tourists and for the enjoyment and safety of present and future visitors, please observe the above rules.

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SeeMore Wildlife Systems, Inc. President Daniel Zatz and Project Developer Stephen Howell have designed and installed video systems for monitoring wildlife in remote locations from Maine to Hawaii. Several of the systems are currently deployed and used by researchers for the National Marine Fisheries/National Marine Mammal Lab, United States Geological Survey, Alaska SeaLife Center, Oregon Department of Fish and Wildlife, California State Parks, and the Audubon Society.

During the presentation, we will discuss the role that certain remote video imaging systems have played in diminishing human presence at sea mammal and sea bird rookeries in Alaska, California, and Oregon and present alternative viewing practices with a universal application.

In exploring the remote video alternative to human presence, we will look at different types of data collected by researchers using remote video systems including population counts, pupping success/mortality, mother-pup interaction, age-sex group interaction, brand/tag/natural marker cataloging, and predator presence. Brief video clips and still images captured with remote imaging will accompany the talk.

We will present an overview of the system components near the wildlife and briefly describe the evolution of those components to reduce animal disturbance.

Finally, using a live video feed from a remote sea lion haulout, we will demonstrate how a remote system reduces human disturbance while it improves data collection.

Whale Stewardship Project:
Overview of Research and Management Programs

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The occurrence and behavior of solitary sociable beluga whales in Atlantic Canada has presented the Whale Stewardship Project with opportunities to develop and conduct research and management programs for responsible human/whale interaction under exceptionally unique circumstances. We recognize the uncommon nature of both the situation and the behavior of solitary sociable whales. However, it is our belief that information, gained through research and management, can and does hold potential benefits for the individual whales for whom the programs are designed, as well as for other human/whale interactive situations.

Research

Since 1998, we have collected data on the behavior of three individual whales in diverse regions of Nova Scotia and Newfoundland. The first, was a juvenile female who resided in a single region of Nova Scotia from 1993 to 1999. The second, was a juvenile male who inhabited two populated Newfoundland harbors over the course of four months in 1999. The third, is a juvenile female who has inhabited several populated harbors along the northeast coast of Newfoundland since June 2000. She has been at her current location since 25 September 2001.

We developed a behavioral catalogue and have completed a combination of quantitative and qualitative analysis of nearly 300 hours of videotaped observations (above-water and less frequently, underwater) collected opportunistically from research boats and from shore. Currently, research is continuing in Newfoundland with the third beluga.

We have found that the degree of sociability in these animals, as determined by frequency, proximity and duration of contact with humans, appears to be a function of increased habituation over time. However, individual variability may also be a factor. The two females demonstrated a particularly high degree of sociability, marked by close, frequent and prolonged visual and physical contact with swimmers, boaters and people on shore. All three belugas exhibited a strong attraction to boat motors and other objects in the water.

We observed in at least one, and in most cases, all three whales, interactions with humans and boats or other objects, which included exploration; tactile, acoustic and visual interaction; play; postural and vocal mimicry; and agonistic behaviors ranging from submission to aggression.

We have noted that the arrival of a solitary sociable beluga whale in or near populated harbors, quickly leads to increased presence of boaters and swimmers, followed by increased incidence of human high-risk behaviors and injuries to the whales, some quite serious. Whale behavior that posed risk to humans has also been observed.

Management

We developed a management program with the approval of the Department of Fisheries and Oceans Canada, which consists of on-site protection measures and intervention; and public education. The program includes a series of guidelines* (copy attached), designed specifically for viewing and human interaction with solitary sociable beluga whales.

Application of the management program has resulted in the mitigation of numerous high-risk human behaviors directed toward the whales. These include attempts by people to feed the whale; dangerous operation of boats in the vicinity of the whale; presentation of dangerous objects to the whale; inappropriate touching; interaction when the whale shows signs of stress or agitation; and disruption of resting and foraging activities.

We have found that successful protection of an animal is directly related to early implementation of the management protocols and the ability to provide monitoring on a consistent and regular basis. It is important to note however, that complete protection for the whales, can only be achieved with adequate regulatory support. Canada's Fisheries Act currently states that "no person shall disturb a marine mammal…" The ability of either the Whale Stewardship Project or Fisheries Officers to fully protect the whales has been limited, by the absence of clearly defined regulations, specifically, the lack of definition of the word "disturbance."

Current and Future Considerations

It is unusual for beluga whales to be found in the regions of Atlantic Canada where we have had occasion to conduct our studies and management programs for the solitary whales. Furthermore, the discovery in 2001, of at least two solitary juvenile beluga whales around Newfoundland, in addition to the juvenile female that we are currently studying, suggests that the occurrence of solitary beluga whales may persist and even increase in the future. We recognize the potential for continued and unprecedented research in this field, as well as opportunities to refine and adapt management programs to each unique situation. We also recognize the opportunity to provide information to regulatory agencies, which supports the development and implementation of more adequate whale protection regulations.

It is the intention of the Whale Stewardship Project, to continue as well as expand our research and management programs for solitary sociable beluga whales and to apply our experience and knowledge for the benefit of other situations where human and whale interaction is taking place.

The Whale Stewardship Project is a non-profit Canadian organization based in Halifax, Nova Scotia.

* The attached guidelines were created by the Whale Stewardship Project for use with the general public, and reflect the fact that no clear definition of "disturbance" currently exists in Canadian regulations concerning whales. The WSP would ideally like to see more rigid guidelines governing human/whale interaction. However, imposing stricter guidelines is extremely difficult, since regulatory agencies currently tolerate intense levels of interaction, including physical contact and swimming with free-ranging whales.

GUIDELINES FOR OBSERVING A SOLITARY SOCIABLE BELUGA WHALE

It is unlawful to disturb a whale in Canadian waters. The following guidelines are designed to help you avoid causing disturbance, stress or injury to the whale.

Make sure your expectations are realistic. A whale may or may not choose to come close to your boat or wharf. Enjoy observing whichever activities the whale is engaged in while you are there, such as foraging, resting, socializing or playing on his own.

Choose land-based over boat-based whale watching whenever possible.

Slow to no-wake in the area inhabited by the whale and avoid making any abrupt changes in speed or direction.

If stopping to view the whale, turn your motor *off* when 50 meters from the whale and drift. Allow the whale to initiate closer contact if he chooses.

Beluga whales show a strong attraction to boat motors. Never use a boat motor or any other object to deliberately attract or manipulate the whale.

There should never be more than two boats operating within 50 meters of the whale at one time.

Respect rest areas and foraging areas by giving the whale his space. Rest areas are often marked by a moored boat or float, where he surfaces frequently.

Be courteous to other boat-based whale watchers and limit the number of visits to the whale, as well as the amount of time spent around the whale to about 15 minutes in a single visit.

Do not pursue, herd or chase the whale.

Do not offer objects as “toys” to the whale.

Never attempt to feed a wild whale. His survival depends on maintaining an ability to capture fresh, live food. Feeding him could result in sickness or even death.

If the whale is close to you, never reach out to touch or grab him. Any contact, must be initiated by the whale.

Recreational swimming in the vicinity of the whale is not recommended, as this creates a situation of high risk for both human and whale.

Remember, it is a privilege to view wild, free-ranging whales. Enjoy them from a distance. You may be treated to one of the greatest wildlife experiences nature has to offer.

For more information, contact the Whale Stewardship Project: Toll free: 1-877-560-8917

Human Disturbances Affect Harbor Seal Haul-Out Behavior:
Can the Law Protect These Seals from Boaters?

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Over 30,000 harbor seals inhabit the near shore waters of the Gulf of Maine. They leave the water (haul-out) primarily onto rock ledges to rest, sleep, give birth and nurse their young. Federal legislation, the Marine Mammal Protection Act of 1972 (MMPA), protects harbor seals from human disturbance, including non-lethal disturbances that disrupt normal behavior.

We observed the harbor seal population that hauls-out at low tide on two rock ledges in Gun Point Cove, Casco Bay, in the southern Gulf of Maine. Throughout four consecutive Augusts (1997 - 2000) we counted the number of harbor seals hauled out at each low tide between 7 AM and 7 PM. We also determined the level and type of boat traffic passing the ledge, the off shore weather conditions (temperature, wave height and % possible sunshine - from the nearest weather buoy), as well as the current status and enforcement of the MMPA (from statutory law, case law and the agency responsible for enforcing this law).

Using multivariate analysis, we found that the number of seals hauled out correlated positively with off shore wave height but negatively with % possible sunshine. We also found that the level of boat traffic in the cove was, by far, the single strongest predictor of harbor seal haul-out number, accounting for 27% of its variability. In 122 days of observation, we observed 85 incidents in which the harbor seals were flushed off their haul-out ledges. Of these, 93% were caused by boats. Because most (526/565=93%) of the boats passing the ledge were motor boats, this boat type caused the majority of flushing events. However, 55% of paddled boats caused flushing events whereas only 11% of motor boats did so. We also observed no enforcement of the MMPA in Gun Point Cove. Our legal research determined that the MMPA has been used to prosecute lethal harassment of seals, but we could find no indication that the MMPA has ever been used to deter disturbances of the type we observed.

We have found that human disturbance by boat traffic has a large impact on harbor seal haul-out behavior on near-shore ledges in the Gulf of Maine. However, while the MMPA has been used successfully to deter human activity that directly and immediately harms seals, penalties have not been imposed to prevent harassment by boaters. This suggests that education of boaters and clear regulations may be a reasonable first step in reducing the impact of boaters on harbor seals in the Gulf of Maine.

Full text of this article is available in the Macalester Environmental Review at:/

http://www.macalester.edu/environmentalstudies/MacEnvReview/articles.htm

Ecologically Sustainable Management of Tourist-Minke Whale Interaction: Visitor Experiences with Dwarf Minke Whales in the Far Northern Region of the Great Barrier Reef, Queensland.

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Swimming with dwarf minke whales is the only known commercial swim with whale operation in Australia. Since 1995 the activity has become increasingly popular with dive vessels operating within the far northern section of the Great Barrier Reef, Queensland. In the 1996 and 1997 seasons a Code of Practice designed specifically for the swim with dwarf minke whale industry was developed by Dr.'s Arnold and Birltes in order to reduce the potential for impacts of the swimmers upon the whales. This study looks specifically at the in water experience of tourists aboard live aboard dive vessel *Undersea Explorer* during the 1997 dwarf minke whale season.

Pre-swim questionnaires and post-swim in-depth interviews were conducted over four weeks on 48 swimmers to gain insight into the levels of anticipation about, and satisfaction with, the interaction. From this, an understanding of the elements that contribute to a satisfactory experience (and unsatisfactory) were recognised. A number of different elements that made this a highly satisfying experience were identified, with the closeness of the whales being the most outstanding.

Many of the themes developed from participants responses demonstrate the need for operators to understand the tourists experience, in order to provide a quality experience whilst reduce the potential for impacts upon the whales. Operators can use the results and recommendations of this study to adequately prepare swimmers for the encounter. This is an essential step towards best practice management and hence creating a sustainable dwarf minke whale industry both for the tourists and the dwarf minke whale.

This is part of a larger study that is looking at the behavioural ecology of minke whales and overall management of the industry. The results of this study will then be used to make recommendations on how to manage the industry from the tourist side, which will then be used for management guidelines catered specifically for minke whale tourism.

Some recommendations include:

It is vital that both operators and tourists understand why snorkel lines are necessary during dwarf minke whale interactions. Results demonstrate that understanding will enhance the quality of the experience for the tourist. It may also help to reduce the potential for impacts upon minke whales.

Operators must not make competitive claims about the proximity to whales and false promises about the nature of the swim program. This will create unrealistic expectations and put whales at risk. Operators need to ensure the protocol is made clear in their advertising.

To contain all the elements contributing to satisfaction in interpretive material, not only to prepare people for the experience, but also to enhance or increase levels of satisfaction already obtained.

Guests need to be made aware that large swells, strong winds and water temperature may create discomfort and that the activity may require a degree of physical effort.

Studying and Mitigating Disturbance to Humpback Whales Near Juneau, Alaska

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Background

Juneau, Alaska's capital city, is now experiencing multiple benefits from whale watching. This community of 31, 000 people in Southeast Alaska is also grappling with whether and how to mitigate the negative impacts of vessels on humpback whales. As the state capital, Juneau is the center of tourism—and the hub of whale watching activity—in the southeastern portion of Alaska. But the immediate Juneau area has never been a summer home for many humpback whales, according to marine biologist Jan Straley, who has studied Southeast Alaska humpbacks for over two decades. As the number of humpbacks in the Southeast Alaska feeding aggregation has gradually increased to over 400 animals, the number of humpbacks near Juneau has also risen, albeit slowly.

Straley believes the Juneau area didn't attract enough humpbacks to support a whale watching industry until the early 1990s. At this time, the appearance of commercial whale watching boats in Juneau coincided with an influx of humpbacks. Now over twenty boats (affiliated with at least six companies offering daily whale watching charters) traverse the narrow waterways north of Juneau in search of humpbacks each summer. These are the boats that interact with humpbacks *regularly*. Eco-tourism excursion vessels, charter and recreational sportfishing boats, Alaska State Ferries, cruise ships, kayaks, and skiffs also operate continuously, and more sporadically, around the same few whales.

Almost immediately after companies began to run whale watching charters near Juneau, complaints started to trickle into the Protected Resources Division (PRD) of Juneau's NOAA Fisheries Alaska Regional Office. In response to these concerns and in an effort to control the activities of commercial boats around humpbacks in Alaska, Juneau's NOAA Fisheries PRD published voluntary *Alaska Marine Mammal Viewing Guidelines* in 1996.

However, PRD soon decided that they must do more to manage vessel traffic around humpbacks in Alaskan waters. The agency faced what they felt was a lack of compliance with the viewing guidelines, growing whale watching industries in several communities, and mounting complaints from the public. On June 26, 2000, NOAA Fisheries placed the following proposed rule on the Federal Register:

> *NMFS proposes to prohibit the approach within 200 yards (182.8 m) of a humpback whale, Megaptera novaeangliae, in waters within 200 nautical miles (370.4 km) of the coast of Alaska* (65 FR 39336*).*

My Research

Just after NOAA Fisheries proposed the above rule, I began my research in waters north of Juneau. I commenced research with several objectives in mind. Most importantly, I sought: (1) to collect baseline data on the humpbacks that feed and socialize north of Juneau in the summer (whales that have never been formally studied in the past); (2) to determine whether vessel activity leads humpbacks to significantly alter their behavior in the short-term; (3) to assess boater compliance with NOAA Fisheries' *Alaska Marine Mammal Viewing Guidelines*.

From 6 July to 25 August 2000, I collected behavioral data from a 7 m inboard-outdrive research vessel in Stephens Passage and Lynn Canal north of Juneau. Utilizing continuous and point behavioral sampling, I recorded locations, identities, and behaviors of 27 humpback whale focal pods for 39.6 observation hours. I also recorded number, type, approach style, length of stay, and proximity of whale watching boats within 400 m of each focal pod. I observed 16 pods (1404 total min.) when at least one whale watching vessel was present for more than ten minutes, and observed 11 pods (972 total min.) when no whale watching boats were present. I then compared whale behavior between the two conditions, whale watching vessels present and whale watching vessels absent.

In short, I found that humpbacks exhibit, at best, *subtle* short-term behavioral responses to whale watching boats. I usually encountered only a maximum of two to four humpbacks per day in the study region; clearly the same individual whales interacted with heavy vessel traffic for extended time periods during the duration of my study. Yet I rarely witnessed these whales responding to boats with avoidance behavior, such as that noted by other humpback whale researchers in Alaska and Hawaii.

Furthermore, I found that boater compliance with NOAA Fisheries' *Alaska Marine Mammal Viewing Guidelines* was surprisingly quite good. Notably, almost 80% of whale watchers remained at least 200 yards (182.8 m) from focal whales. But the occasional reckless behavior of recreational boaters and charter sportfishing vessel operators stood in contrast to the behavior of most whale watching vessel captains. These boaters often traversed areas where whales were predictably found (e.g., North Pass) at speeds above 10 knots, and didn't seem concerned about other boats or whales in the vicinity.

Finally, only twice did I hear vessel operators inform nearby boaters of their intentions and of the recent positions of sighted whales. Tensions ran high between commercial whale watching operators desperately seeking to find enough animals to watch. And most commercial operators were strongly opposed to NOAA Fisheries' proposed 200-yard approach regulation.

The Juneau 2001 Whale Watching Season

July and August 2001 were vastly different from this time period in 2000. Commercial operators seemed generally pleased with—and informed about—NOAA Fisheries' final rule, published on May 31, 2001:

> *NMFS is (1) prohibiting approaches within 100 yards (91.4 m) instead of the 200 yd (182.8 m) distance as outlined in the proposed rule….* (66 FR 29502)

Much of the competition between commercial operators had also lessened. Captains communicated fairly regularly about the positions of whales via VHF radio and Juneau whale watching industry members seemed more united in their concerns over the recklessness of many recreational boaters and charter fishing vessel captains.

Such changes in commercial operators' attitudes is likely due to a number of factors. First, whales were relatively numerous in waters north of Juneau in the 2001 season; it wasn't uncommon to see 15-20 whales per day in my study region. Second, I also feel the presence of my research vessel in their tour area has started to foster a spirit of cooperation and awareness among whale watching captains. Third, news that a cruise ship had struck and killed a pregnant humpback in Glacier Bay National Park in July 2001 seemed to galvanize commercial operators' concerns about the high speeds at which many recreational boaters transit areas heavily used by humpbacks. Finally, and perhaps most importantly, the Operations Manager for the largest commercial whale watching company in Juneau called a meeting of all Juneau whale watching company managers before the start of the 2001 tour season. In a library conference room, these managers discussed how they could work together to minimize the collective impact of all boats on humpbacks near Juneau, while still benefiting economically from their tours.

My Recommendations

- Place as much energy and funds into **education** efforts as possible—especially when it's difficult to enforce regulations or laws aimed at minimizing marine mammal disturbance:

  -Ensure educational message(s) reach *general public*, as well as marine mammal-watching industry members

  -Emphasize why folks should *care* about species, and how there are better (and worse) ways to drive around marine mammals, in addition to announcing actual viewing regulations or guidelines

  -Encourage boaters to radio others when on the water (e.g., alert others to whales in the vicinity, etc.)

  -Use array of educational materials to reach wider audience (PSAs, billboards, brochures, flyers, etc.)

  -Enlist help of existing local organizations to spread message (e.g., non-profits can organize events or festivals that raise awareness of species, Coast Guard Auxiliary classes can address safe driving around wildlife, etc).

- Recognize that the topography, bathymetry, geography, boater profile, etc. in a particular area may so unique that they warrant ***site-specific*** **marine mammal viewing guidelines or regulations**.

- Establish **speed limits** in geographically clear areas (e.g., narrow channels utilized by transiting boaters and feeding/resting/socializing marine mammals). In Southeast Alaska, particularly, cruise ships—as well as other large vessels such as barges—should have to limit their speed to $\leq$10 knots when traversing established waters where humpback whales are predictably found. THE SPEED OF VESSELS AROUND MARINE MAMMALS IS AN ISSUE THAT NEEDS TO BE SERIOUSLY ADDRESSED.

- Create a **forum where marine mammal-watching company representatives can come togethe**r in a neutral setting to discuss how they might work together to minimize marine mammal disturbance (such a meeting can dispel some competitiveness, encourage communication).

- Establish an **endorsement/certification program** that recognizes those commercial operators that take a "safe driving workshop", support research and conservation efforts, and/or demonstrate a commitment to minimizing their impact on marine mammals.

- Advise vessel operators to **keep engines on** when within 100 yards of focal animal in order to lessen chance of surprising animal

Support comprehensive, ***long-term*** **monitoring of individual animals** in specific study regions (noting individual behavior, associations with others, movement, calf presence, etc.—as well as vessel activity and prey identification and distribution throughout each season)

Development of Hawaiian Monk Seal Disturbance Monitoring on Midway Atoll 1997 – 2001 and How Data Assists with Visitor and Volunteer Education Programs

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Four organizations have cooperated over the last 4-½ years to access human impact to monk seals on Midway Atoll. They are comprised of two federal agencies, National Marine Fisheries Service (NMFS) and US Fish & Wildlife Service (USFWS) along with two non-profit groups, Oceanic Society (OS) and Hawai'i Wildlife Fund (HWF). All contributors have different concerns, responsibilities, and resources. However all share common goals of wanting the recovery of monk seals on Midway's three islands to be successful, free of human impact, and provide a platform on which a meaningful education program may be developed.

In 1997 Midway Atoll switched from a Naval Air Facility to a National Wildlife Refuge operated by US Fish and Wildlife Service. All of the islands in the Northwest Hawaiian Islands and the waters surrounding them have been designated as critical habitat for the endangered Hawaiian monk seal. The exception to this designation is Sand Island. Sand Island is the largest of Midway Atoll's three islands and has a year round population of about 150 people.

Yearly Midway attracts about 1600 visitors who generally stay for one week or longer Additionally about 1400 visitors (transients) arrive on the island but spend limited amounts of time, usually less then 2 days. On occasion cruise ships or other large capacity vessels arrive at Midway and offload between 200 and 650 passengers that spend the day on Sand Island. This last type of usage is expected to increase in the coming seasons.

During the last four years monitoring of human impact to monk seals on Sand Island has developed from occasional incidental observations, to a coordinated disturbance monitoring patrol. This patrol has evolved by categorizing types of disturbance, viewing rules violations, and where they are observed. Also areas of Sand Island that were described as problem areas based on the initial data, have been incorporated into a twice daily, standardized monitoring effort. This effort has three main objectives:

- Mitigate disturbance,
- Delineate areas where seals are resting, so people can readily identify a seal's location, and are less likely to approach too closely
- Make staff available in problem areas so that interactions with public are commonplace and not the exception

This pro-active disturbance monitoring has evolved each year to be more effective and data generating. This data has been utilized to develop marine mammal viewing guidelines (specific to monk seals) for the public on Midway. More importantly, it provides ways to analyze how successful these guidelines are at reducing human impact to the seal population, and if those efforts are directed where they need to be.

In 1997 the monk seal population at Midway was estimated to be about 35-40 individuals. In the last four years this population has increased to 60-70 individuals, about a 40% increase in numbers. Where previously groups could spend a week at Midway and never see a seal, now it is hard to go a whole day without someone encountering a seal. Many of these encounters are innocuous. However as both visitor and seal numbers increase we have seen, during increased monitoring effort on Sand Island, that regular disturbance to monk seals does occur. At the moment it does not appear collectively to be disruptive to routine seal behavior. Continued data collection shows that monitoring seal haulout patterns on Sand Island, and visitor and resident activities around seals, and on protected areas is critical to understanding the type and extent of human seal/interactions that occur. The merging of a visitor program allowing access to sensitive habitat areas and a population of animals shown to historically be adversely affected by human intrusion makes this a prudent endeavor. The main importance of this knowledge is that by knowing and understanding what problems exist, managers are able to make informed decisions directed at mitigating any effects before they alter seal behavior.

It is hoped that Sand Island will serve as an area of dispersal for a growing local seal population. It is also hoped that seals will eventually use protected areas of Sand Island to pup. In the last five years (’97-’01), 61 monk seal pups have been born, and only 4 have been born on Sand Island (the first of these was the first recorded birth on Sand Island). The additional two islands of Midway, where the other 57 pups were born, have been relatively free of human intrusion for the last 15 years, due in part to the critical habitat designation. This is important since it has been shown that the presence of only 20 persons at a Coast Guard station on Green Island, Kure Atoll was enough to reduce pupping events on that island. While it may take time for seals to learn that areas of Sand Island offer safe harbor, it is important to monitor and make sure that these areas truly live up to that billing.

Through the monitoring efforts of the last 4 years we have documented a regular pattern of human/seal interactions on both public and restricted areas of Sand Island. While some interests worry about the cumulative effects these interactions may have on the individual seals, that is not the primary reason for identification and documentation of these occurrences. The monitoring efforts and data’s main purpose is to identify when interactions occur, where they occur, and how often. By understanding these parameters managers can develop education programs that reduce the likelihood of these interactions taking place. Additionally, knowing when and where seals and humans are likely to interact allows for rangers and signage to be positioned in locations and ways that they will not only be visible, but will also be most effective. Many times the only information available to managers to address these issues comes from the quality and completeness of the monitoring data gathered.

The data collected at Midway Atoll has shown that the more time spent monitoring for seal/human interactions the more interactions observed. This information when integrated with all refuge staff, helps people with different backgrounds become familiar with monk seals behaviors, hauling patterns, and special needs in ways that did not happen prior to the collection of this data. Additionally, as a variety of people actively participate in not impacting monk seals

they are also actively participating in that species' recovery. Over time as they share in this responsibility it is hoped that they will take more personal stake in that responsibility.

In addition, by spending more time throughout the year monitoring for disturbance, the monitors have interacted with many persons on the island in a positive way. The visible presence of monitors (associated with monk seal populations) has previously been shown to effectively educate individuals in sensitive habitat areas to be more aware and modify their behaviors in ways that are beneficial to monk seal recovery. In some instances at Midway Atoll, potentially detrimental interactions have been stopped or interrupted by monitors. These encounters rather then being policing actions have been viewed as educational opportunities where visitors and members of the community can learn why protections are in place. With this knowledge, individuals may gain a better appreciation of the history and status of the monk seal and actively participate in conservation efforts on Midway. This personal choice to recognize the seal's needs via these educational encounters again actively encourages the visitor or resident to take a personal stake in the recovery efforts of the refuge.

One unexpected benefit of these monitoring encounters is that when persons are seen violating refuge seal viewing rules, direct contact is made. This contact allows the monitor to learn how the violator ended up breaking a viewing rule. Many times this information has led to new information being incorporated into visitor orientations, and into monk seal weekly lectures. Additionally, areas that people simply didn't understand were off limits were better marked on visitor maps, and had more visible signs posted. These measures seemed to go a long way to reducing specific problem areas on the island. Information from the monitoring effort also showed refuge staff specific times when these violations were more likely to occur. Data showed that the day before visitors were scheduled to leave Midway (Midway has a once a week flight) there was more likely to be a violation of seal viewing rules. Also visitors who were part of the short-term visitors (transients) and did not receive complete refuge orientations were likely to accidentally find their way onto protected areas. Because they had not received complete orientations they did not realize there were large portions of the beach areas closed to human traffic.

By organizing the manner in which persons on Midway collect data about human seal interactions, and collecting this information in a consistent manner. Managers have gone a long way towards developing a system whereby incidental sightings are collected in a standardized fashion and more individuals are involved in that collection. Making this information much more useful in actively mitigating human impact. As well as developing an educational program on the island which could become an integral part of the refuge meeting established recovery goals, while still allowing visitors to view a critically endangered animal in it's natural habitat. Ultimately, putting individuals in close contact with endangered marine mammals and risking additional human impact has no place in species recovery unless some commitment to education programs during this contact is a serious component of the program.

Theodolite Study of The Effects of Vessel Traffic on Killer Whales (*Orcinus Orca*) in the Near-Shore Waters of Washington State Between 1999 and 2001

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Since 1996, the Southern Resident population of killer whales (*Orcinus orca*) of Washington State and lower British Columbia has experienced a dramatic decrease (~22%) in their population according to The Center for Whale Research. Many factors may potentially contribute to this decline, with impacts from commercial and private whale watching boats being noted among them. The Whale Museum in Friday Harbor has estimated that 500,000 people go whale watching with commercial tour operators per year with another 3000-8000 watching from private vessels. The Whale Watch Operators Association Northwest (WWOANW) in the past few years has imposed self-regulated guidelines in an attempt to mitigate pressures regarding behavior of boats around whales. Since 1999 an opportunistic theodolite tracking study has allowed the examination of potential relationships between boat movement and whale behavior, offering a unique perspective into the Southern Resident Community killer whale, and a detailed way to accurately monitor compliance of specific distance related guidelines, such as the ¼ mile "no-boat" zone along the west side of San Juan Island, implemented in 1999.

Utilizing the THEOPROG program by Dr. David Bain, and adapting the methods of Rob Williams', M.Sc., 1996 study in Johnstone Strait, I and nearly a dozen volunteers collected 373 "tracks" during over 11, 000 hours of field observations between early May and Labor Day, from 1999 through 2001. Shore based observations were carried out, at 48º 29.756 latitude and 123º 07.132 longitude. One focal (known) whale was selected and tracked for a minimum of 20 minutes. At each surfacing, the time of taking a breath and additional behavioral events such as breaches, pec slaps, fluke slaps were noted. Positions of surfacings were pinpointed using a Pentax ETH-10D Theodolite, as well as the positions of vessels surrounding the focal animal. Comments indicating whether the vessel was engaged in whale watching, under power and general class of conduct were included in the data set. These measures have been used to calculate derived indices of behavior. Positions were used to generate swimming speeds, frequency and magnitude of changes in direction, and directness of the path taken. Rates of surface behavior were calculated as well as respiration rates, and sequences or respiration intervals.

Vessel positions were used to calculate vessel speed and proximity to whales. This allowed us to test for relationships between proximity and whale behavior. The numbers of vessels were counted every 10 minutes to show these relationships between vessel abundance and behavior. Tide and current conditions were automatically noted every 10 minutes using Tides & Currents for Windows, Version 2.2 Nautical Software Inc. Overall whale behavior in relation to current was noted on separate data sheets. A video record was made of each data collection session. The videotapes allowed the opportunity to review data for accuracy, and provide a method of presenting results to the general public, as well as a record of any boater-induced harassment.

Tracking whales in the absence of boats has proven to be significantly difficult, due to the increased numbers of hours boats are around whales. Boats appear to be accompanying whales for up to 10 hours a day, seven days a week. For each of the past two years of the study only 9% of whale passes were without boats. (At this time, the third year's data is being analyzed, and is not included in this summary.) Also in the first two years there seems to be a slight yet significant trend for animals to increase distance traveled in the presence of even just a few boats. Whales were direct (on a straight-line course) with zero boats, and then adopted a less direct path with boats numbering between 4 and 17. Positions of focal animal marks showed a heavy distribution of whales just inside the ¼ mile both in 1999 and 2000. Though each pod uses the study area slightly differently, overall J, K and L pods seem to prefer traveling in the area between shore and ¼ mile. This area sees lots of social, kelping and mating/copulation attempts. Cultural use of this area by resident whales may be similar to the Northern pod usage of Johnstone Strait Rubbing Beach at Robson Bight.

Compliance regarding the ¼ mile has been easily determined during this study. For 1999 and 2000, private vessels complied with the ¼ mile "no-boat" zone 55% of the time, while commercial whale watchers were just under 80%. The few research vessels observed (including photographers who may be under permit) complied 63% of the time. Presently at 400 meters a boat is viewing 50% of the animals within the study area. Effectiveness of the Soundwatch Boater Education Program shows that nearly half of the WWOANW members are staying at 600 meters, as well as 90% compliance at the ¼ mile when Soundwatch is present.

Members of the association seem to carry enough weight to influence non-members, so Soundwatch may play an important role in encouraging compliance from vessel captains that know the rules. From an observational standpoint, however, private boaters are still apt to use the ¼ mile no-boat zone as a corridor to motor in. More efforts in research and education are needed to mitigate any further impacts that may be found from this study. Specifically, further education of the private boaters will likely have a major effect on improving the situation during the summer whale-watching season and lessen the burden the whales face in the coming years.

Minimizing Harassment of the West Indian Manatee (*Trichechus manatus*) in Crystal River, Florida

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As people place increasing value on experiencing animals in the wild, there is increased concern over harassment and the resultant negative impacts that may occur to the target species (Roe, Leader-William, and Dalal-Clayton 1997). Harassment can result in changes in wildlife physiology, behavior, reproduction, population levels, and species composition (Hammitt and Cole 1998). The relationship between recreation and tourism to wildlife impacts is not well understood; yet, both wildlife and tourism managers are faced with the dual challenge of providing visitors opportunities to observe rare and endangered wildlife while simultaneously protecting the target species from potential deleterious impacts.

This is the case in Kings Bay near Crystal River, Florida where over 300 endangered West Indian manatees[1] (*Trichechus manatu*s) currently migrate each winter to thermoregulate in its naturally warm springs. This phenomenon draws approximately 100,000 visitors who take advantage of the easy access and good visibility to observe and encounter manatees (E. Nuñez pers. comm. 2000). Access to manatees is primarily gained through commercial tour operators who provide guided tours and/or rental boats. The manatee encounter is a unique experience, providing participants with the opportunity to interact with a large, docile marine mammal. Participants often touch, pet, and even "play" with manatees during encounters. However, the potential for negative impacts resulting from harassment concerns some within the manatee protection community.

Defined by Neil, Hoffman and Gill (1975), harassment is "any activity of man…which increases the physiological costs of survival or decreases the probability of successful reproduction of wild animals" (1). Ream (1980) conceptualized harassment more generally as human "disturbance" that "produces stressful situations for wildlife," resulting in a myriad of negative outcomes for an individual or species including "events which cause excitement and/or stress, disturbance of essential activities, severe exertion, displacement, and sometimes death" (Ream 1979). The common focus of these harassment definitions is the potential for human behavior to have a significant negative effect on an individual's or population's overall fitness.

For these reasons, harassment has been incorporated into policy pertaining to wildlife protection. Both the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972 prohibit the "take" of animals under their jurisdiction, which includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting protected animals. Thus, because significant impacts can occur, wildlife managers seek to protect wildlife from the negative impacts associated with recreation and tourism.

[1] Manatees are an endangered species and are federally protected by the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

This summary outlines the difficulty of defining and applying the concept of harassment to manatee encounters in Crystal River, Florida. Then, it provides recommendations to manatee encounter tour operators to minimize harassment.

Data Collection Methods

Between January and March of 2000, data on manatee encounters were collected in Crystal River through participant observation, interviews, and document analysis using the snowball sampling method (Babbie 1998). Participant observation involved direct observation of the participants and the setting with a focus on use levels as well as what people were doing and saying about the experience. Thirty-four unstructured and semi-structured in-depth interviews were conducted with state and federal wildlife research and management agency employees, agency volunteers, manatee tour operators, other manatee-related businesses in Crystal River, tourism officials, advocacy groups, and participants. Finally, document analysis was used to enhance observations, to verify interview data, and to provide historical context. It included newspaper archives, general tourism literature, and videotapes relevant to Crystal River.

Results

There are two major factors that make the concept of harassment difficult to apply in Crystal River. First, stakeholders interpret the definition of harassment based on their own values. Second, effective application and enforcement of harassment regulations is confounded by a complex physical, social, and managerial setting.

Defining Harassment

While there is consensus that harassment must be minimized, stakeholders tend disagree on what exactly constitutes harassment. The following example serves to demonstrate how different groups interpret the definition of harassment[2]. As one guided tour group began following two manatees moving upriver, one participant announced that the group was not allowed to chase the manatees. At this, a teenage girl responded that they were not "chasing," but "following" them. The tour guide then placated the group saying that this "following" behavior was okay because the manatee "do this everyday" and are used to people.

Tour operators make a distinction between pursuing and following as respective harassing and non-harassing behaviors. However, according to one advocacy group employee, "anything that alters not just natural behavior, which is the standard, but just gets in their way, is harassment for me." With a strict interpretation, this group would consider any attempt to follow a manatee an act of pursuit and, therefore, harassment. In contrast, the U.S. Fish and Wildlife Service makes decisions regarding harassment not on what they believe is harassment but based on what is enforceable—what they believe will "stick" in a court of law.

[2] Interpretations of harassment are discussed based on the Endangered Species Act because the U.S. Fish and Wildlife Service in Crystal River uses it for enforcement efforts.

Applying Harassment

The U.S. Fish and Wildlife Service is the primary agency in Crystal River that enforces manatee protection regulations. Their ability to protect manatees from harassment, however, is confounded by the following factors:

- Kings Bay has multiple access points. Consequently, the Service does not have direct contact with users (e.g., for educational purposes).
- Encounters occur off Service-owned property. Thus, it cannot spatially/temporally control use.
- The Service's law enforcement efforts are ineffective due to:
    - An increased density of use at encounter sites without increased enforcement, and
    - Enforcement standards that result in officers only citing the most egregious violators.

Because of these factors, the Service relies on tour operators to act as de facto managers—to educate participants as well as monitor and control their behavior.

Discussion and Recommendations

A conflict situation has evolved in Crystal River because of the Service's and tour operators' inability to effectively control use and participant behavior. Currently, some stakeholders in the manatee protection community perceive an imbalance between the use of manatees as a recreational resource and their protection[3]. These groups are adept at mobilizing resources and could significantly influence the future of manatee encounters. Thus, it is incumbent upon the tour operators to take manatee protection seriously by limiting themselves as well as making serious efforts to educate participants and control their behavior. Otherwise, the operators may ultimately jeopardize their ability to provide manatee encounters. The following recommendations are ways in which manatee encounter tour operators can minimize harassment:

Psychologically reposition manatee encounters as "close-up observation" rather than "touching."

> Tour operators inadvertently increase the potential for harassment by creating an expectation in participants that they will get to touch a manatee during an encounter. Instead of focusing on touching as a goal of the encounter, operators should de-emphasize it and focus on observing manatees close-up in their natural habitat. In addition, operators may be able to lessen the pressure on manatees by shifting the focus from the manatee to the underwater ecosystem as the target of the experience.

Increase "Awareness of Consequences" educational messages.

> In Crystal River, operators generally focus their educational talks on how to have a "successful" encounter (within the behavioral guidelines provided by the U.S. Fish and

[3] The Save the Manatee Club, Florida Marine Research Institute, and the Marine Mammal Commission have officially taken positions against manatee encounters.

Wildlife Service). Awareness of Consequences educational messages may aid in minimizing harassment by conveying the potential consequences of inappropriate behavior including:

- Being removed from the setting – the operators can remove their own participants that behave inappropriate,
- Tickets/Fines from law enforcement personnel, and
- Hurting or harming a manatee – In addition to the participant, inappropriate behavior can have consequences for the target species (e.g., displacement)

Create self-imposed limits on the use levels and types.

Concern from the manatee protection community stems from the unregulated increased use of manatees as a recreational resource. Because the Fish and Wildlife Service is unable to regulate use, tour operators should create a self-governing association that can address manatee protection concerns by limiting the types of use (guided tours vs. rental boats) and use levels (e.g., number of boats on-site, etc.)

In conclusion, the first priority of the tour operators in Crystal River must be manatee protection. Because manatee protection supersedes the use of manatees as a recreational resource, operators need to behave in a manner that minimizes harassment or risk losing the opportunity to provide manatee encounters.

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California Sea Lion (*Zalophus californianus*) and Steller's Sea Lion (*Eumetopias jubatus*) Interactions with Vessels in Pacific Rim National Park Reserve: Implications for Marine Mammal Viewing Management

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Summary

Information on the impacts of marine mammal viewing vessel activity on sea lions is currently lacking. As the marine mammal viewing industry grows rapidly, the cumulative effects of human activities on sea lions and their habitat has increased. In Pacific Rim National Park Reserve (PRNPR), marine mammal viewing has recently created management issues due to potential disturbance of sea lions by vessels. In the absence of applied science exploring the effects of vessel traffic on sea lions, viewing guidelines have been created ad hoc for marine mammal viewing within the park. The purpose of this study is to evaluate the park's draft pinniped viewing guidelines to determine what kind and level of behavioral response California sea lions (*Zalophus californianus*) and Steller's sea lions (*Eumetopias jubatus*) have to vessel activity. To do this, vessel numbers, types, speed, and distance from haulouts will be tested and the resulting behavioral responses will be compared between species. Results of this study will be used to recommend changes to PRNPR's draft pinniped viewing guidelines.

Introduction

Over the past two decades, marine mammal viewing, particularly of whales has become the fastest growing wildlife-based tourism industry in the world (Lien 2000). The impact marine mammal viewing has on animals is not known. It is only recently that concern regarding effects of such activities has been recognized. The fact that pinnipeds 1) experience frequent vessel interactions and 2) are reliable to observe at designated haul outs, make sea lions the ideal species for studying marine mammal/vessel interactions.

Background

Pacific Rim National Park Reserve (PRNPR) is one location on BC's west coast where vessel activity around pinnipeds has become a management concern. The marine mammal viewing industry centered in Tofino, BC has increased over the past decade and trends indicate that it will grow and diversify in the future. Given the size, speed and noise generated by all types of vessels, there is concern regarding the potential disturbance vessels may have on sea lions.

Marine mammal viewing operators generally show concern for sea lions and attempt to regulate their activities through peer pressure and use of locally developed guidelines. These guidelines however, in Clayoquot Sound and elsewhere, are not based on science: approach speeds and distances are created ad hoc. The proposed research will test the validity of proposed pinniped guidelines (PRNPR 2000) and provide recommendations based on observed sea lion behavioral

reactions. This information will help make management decisions that will allow marine mammal viewing activities to proceed in a sustainable manner for the long term.

The lack of scientific evidence significantly indicating "disturbance" of marine mammal viewing activities has resulted in management challenges in PRNPR. A recent approach has been put forth to clarify the subjective and difficult interpretation of "disturbance" in regards to marine mammal viewing: "(…whale watching activities may disturb cetaceans in the performance of normal daily activities which are critical to their survival, and that such disturbances, if persistent and repetitive, could cause long term conservation impacts" (Lien 2000). This approach can be applied to pinnipeds. Essential life processes of sea lions include foraging, resting, reproducing, caring for young, avoiding predators, as well as communicating and socializing with its group. Any human activity that interrupts a sea lion engaged in these activities interferes with the animal's ability to carry out its life processes. "If an animal cannot carry out its life processes its own survival may be at risk. If such disruption to life processes occurs to a particular segment, or to a significant number of individuals within the population, it follows that conservation may be at risk" (Lien 2000). This holds true for sea lions.

If vessel interactions with sea lions at haul outs within PRNPR become frequent and repetitive, as they have over the past few years, and the interactions elicit disturbed behavioral responses, then conservation of these animals may be at risk. With three of Ucluelet's operators visiting one particular haulout twice each day during the summer marine mammal viewing season, along with numerous recreational boaters, there is a risk of disturbance. Because Parks Canada has a mandate to protect ecological integrity, it seems important that PRNPR engage in research of sea lion/vessel interactions to base management of marine mammal viewing on science.

Methods

California and Steller's sea lion behavior was observed at Wouwer Is., Broken Group Islands, PRNPR daily during the month of August 2000 and the months of August and September 2001. This site has been chosen to conduct observations because whale watching vessels provide consistent and predictable interactions with sea lions at this haulout during these three months. Scan samples were made and recorded every half-hour from 9:00 am to 4:00 pm. As well, observations will be made before, during and after vessel interactions. Distance buoys were set up to test behavioral reactions at 25 m, 50 m 100 m, 150 m and 250 m from the haulout. Via VHF radio, participating vessel operators were directed to approach each haulout site to the various distance at the following speeds: slow (no-wake), medium (10-12 knots for power boats), and fast (cruising speed for power). When possible, these approaches were tested with more than one vessel.

Half hour observations were done by scanning sea lions on the haulout for the following behaviors: *resting* (lying recumbent with head down either on the substrate or on another animal); *resting with head up* (lying recumbent with head raised); *standing/sitting with head up* (standing or sitting with head up); *shifting* (lying down, sitting or standing while moving or shifting in place); *moving* (physically moving from one location on land to another at moderate

speed); *stampeding* (rapid movement on land); *flushing* (rapid retreat into the water). Animals in the water adjacent to the haulout will also be scanned and the following categories of behavior recorded: *resting* (recumbent and not engaged in activity); *swimming* (actively moving from one location in the water to another). The number of individuals for each species engaged in these behaviors will be recorded on a data sheet. The level of vocalization (one a scale of one to five, with one being the most quiet and five being the most loud) was also be recorded.

All interactions were videotaped using a Sony Hi8 460X video camera. Video recordings will later be viewed to determine the number of each species engaged in the above-listed behaviors. In addition, the following were recorded during vessel interactions: level of vocalization (as above); vessel type (zodiac, power vessel under one ton, power vessel over one ton, kayak); number of vessels (one, two, three); approach speed and distance (as described above).

Also recorded at each half hour scan and interaction were environmental variables including cloud cover, precipitation, tide, sea, relative humidity, wind speed, wind direction, and air temperature. The effect of these environmental variables is not the focus of this study but needs to be considered when interpreting behavioral responses.

Results

Analysis will be done during the winter/spring of 2002. General observations indicate that vessel activity may cause disturbance to sea lions at Wouwer Is., PRNPR. There is also indication that type of vessel, speed of vessel, numbers of vessels, and the distance at which the vessel is from the haul out effects sea lion behavior. The following trends are apparent:

1. The closer the vessel to the haul out, the more heads would raise and the more animals would flush into the water
2. The faster the vessel moved, the more heads would raise and the more animals would flush into the water
3. The larger the vessel (*i.e.*, over 1 ton) the more heads would raise and more animals would flush into the water
4. Kayaks caused heads to raise and animals to jump into the water more than “regular” vessels - those that visited the site two to three times a day during the marine mammal viewing season
5. Motorized vessels that were not regular visitors to the site illicited a more disturbed response (more heads raised, more movement, and more animals flushing into the water) than the “regular” vessels

Analysis will include comparing behavioral reactions for each species during vessel interactions with behavioral states recorded for each species during half-hour scans. Analyzing the video recordings of behavioral states during vessel interactions will be done by recording frequencies of the behaviors listed above. The types and frequencies of behaviors will be compared between species.

Further research needs to be done to determine what specific vessel numbers, types, speeds and distances cause disturbed reactions in sea lions. As well, special attention will need to be given to environmental variables to see to what extent, if any, weather, sea state, or wind contributes to sea lion reactions.

Other issues also need to be considered and investigated as well. These include: site-specific variations, species-specific variations, dynamics of social behavior, and habituation. Social dynamics and habituation may also affect the reactions of sea lions in the presence of vessels.

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Recommendations for Pinniped Viewing
in the Broken Group Islands
Pacific Rim National Park

Sea Lions

- Remain 25 m away from rocky haulouts
- Remain 50 m away from sandy beach haulouts
- Remain 150 m away from the outer Wouwer Is. haulout
- Remain further away at the beginning of the marine mammal viewing season
- Approach at no-wake speed
- Avoid sudden change in speed
- Avoid sudden change in sound level (i.e. throttle)
- Avoid erratic movement in vessels
- Kayaks should maintain at least 50 m away from haulouts

Seals

- Remain 100 m away from haulouts
- Approach at no-wake speed
- Avoid sudden change in speed
- Avoid sudden change in sound level (i.e. throttle)
- Avoid erratic movement in vessels

WDCS: Promoting Responsible Non-Physical Interactions Between Humans and Cetaceans

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WDCS Overview

Established in 1987, WDCS, the Whale and Dolphin Conservation Society is dedicated to the conservation, welfare and appreciation of all whales, dolphins and porpoises. WDCS is at the forefront of research and conservation efforts with active field, education, and public awareness projects and campaigns in more than 40 countries around the world.

WDCS is supportive of responsible, educational whale and dolphin watching, which can help raise awareness of these animals and bring economic benefit to local communities, a real and viable alternative to more exploitative and consumptive industries, such as whaling or captive programs. In 1991, 31 countries or overseas territories were involved in whale watching, and around 4 million people took a whale watch trip. By 1998, 87 countries offered whale watching, and 9 million people went whale watching that year. Some communities have been transformed by the economic, educational and scientific benefits that a responsible whale watching industry can bring. By 1998, tourism revenues from whale watching were estimated at $1.5M (Hoyt, *Whale watching 2000: Worldwide Tourism Numbers, Expenditures and Expanding Socioeconomic Benefits*, 2000).

WDCS is, therefore, involved in a whole range of projects and activities related to whale watching. These include:

- Providing advice and information to governments, and other authorities about whale watching and the regulation of the industry;
- Providing training opportunities and advice to whale-watch operators, including advice on how to incorporate environmental education into whale watch commentaries;
- Funding projects researching the impacts of whale watching;
- Providing easily accessible information to whale watchers and potential whale watchers about what to expect from a responsible whale-watch operator

A Sampling of WDCS Projects

- ***Whale-watch operator training workshops****: WDCS* produced a training manual for whale-watch operators and has run a series of training workshops to encourage responsible, well-managed and educational whale watching. Workshops have been organized and funded in

the following countries: Iceland, Japan, Azores, Tenerife, Colombia, Argentina, Chile and Dominica.

- ***Sail to Save Project:*** WDCS has recently launched its "Sail to Save" program in the United Kingdom (UK). "Sail to Save" is a project that collaborates with boat owners, sailing associations, corporate sponsors (such as Nikon), divers and others to ensure that encounters with whales and dolphins in the wild are responsible. "Splash proof" educational materials were developed that provide guidelines for viewing, visual descriptions to aid in identification and sightings, prime cetacean hotspots, overviews of the environmental and human threats facing each species of whale or dolphin that may be encountered in UK waters, and the WDCS boat-users code of conduct. This code of conduct aims to improve boat handling behavior around cetaceans, as WDCS regularly receives reports of cetaceans being disturbed, injured or even killed by thoughtless vessel handling.

- ***Moray Firth:*** WDCS' ongoing project aims to assess the impact of wildlife tourism in the Moray Firth, focusing on bottlenose dolphins. The Moray Firth Wildlife Centre (MFWC), WDCS and Nottingham University are collaborating in this research. Questionnaires are distributed at MFWC and on local dolphin watch boats to gather and assess visitor information, including: type of visitor, educational value, importance of wildlife to holiday choice, attitudes towards environmental issues, factors contributing to satisfaction (e.g. seeing dolphins and other wildlife, scenery, weather, information available and naturalist guide). Follow- up questionnaires assess subsequent involvement in conservation issues. Comparisons are made between educational benefits and overall satisfaction at the wildlife center and on boat trips.

WDCS and Human-Dolphin Interactions

Interactions with marine mammals have intensified over the past decade, with a recent proliferation of programs aimed to quench our desire to interact, touch, feed and commune with these ambassadors of the sea. Such programs have prevailed over, and in spite of, concerns that our activities may actually harm these animals. Swim-with-the-dolphin programs are multiplying, and reports of new facilities are surfacing all over, from the Caribbean and Mexico, to Japan. Lucrative dive and tourist operations worldwide tout opportunities to swim with and feed wild whales, dolphins and other marine life. These swim and interaction programs are conducted in captivity, as well as in the wild.

WDCS is concerned by the growing body of literature that discloses the risks associated with human interactions with marine mammals, specifically dolphins, in captivity and in the wild. WDCS is also concerned by the growing body of evidence that suggests commercial whale watching and other interactive programs are being rivaled by the public's attempts to interact with cetaceans "privately" through personal watercraft. These activities are harder to monitor and regulate. And in the UK, WDCS is finding that these types of private or "leisure" activities are extremely detrimental.

In reality, viewing or watching whales and dolphins often promotes or enables direct interactions between these animals and humans, and dramatically increases the potential for harassment. In the United Kingdom, WDCS has consolidated reports from inshore interactions between vessels and dolphins in southwest England, Wales and Scotland (WDCS, *Chasing Dolphins,* 2000), and determined that persistent disturbance (even wounding and killing as a result of ship strikes) may be affecting the viability of the remaining populations of cetaceans in UK waters. Most of these vessels are personal watercraft, such as jet skis. Disturbance may sometimes be unintentional, but it is also clear from the observations reviewed that some vessel users intend to harass and harm the animals. Education is a part of the necessary response to this problem. One of the aims of WDCS is to raise public awareness, and to inform people how to behave around such animals when they encounter them.

Voluntary codes of conduct, such as those recently issued by the UK Government and WDCS, and similarly issued by the US and other countries, are helpful. However, these codes will not address the problem of those who deliberately, or recklessly, harass or endanger these animals. Only suitable laws, supported by appropriate marine enforcement agencies and appropriate punitive measures, will work to eliminate these behaviors that are sometimes associated with "viewing" marine mammals in the wild.

WDCS also believes that the issues surrounding commercial facilities that conduct swim-with and viewing activities "in the wild" cannot be addressed without addressing those programs that take place "in captivity." WDCS' research into the risks associated with human-dolphin interactions at petting pools, for instance, reveals the inseparable connection between the promotion of interactive behaviors (both human and dolphin) in public display facilities, and the persistence of similar behaviors occurring during "wild" programs or during the public's recreation in dolphin habitat. WDCS is continuing its studies of dolphin interactive programs in captive facilities, and the resultant impact and influence on human and dolphin behavior and welfare witnessed and documented in the wild.

Recommendations

The difficulties in regulating commercial programs and determining their actual impact on the health and welfare of whale and dolphin populations necessitates the understanding that even preferred interaction alternatives, such as whale watching ("viewing"), if conducted irresponsibly, may be just as disruptive and detrimental to dolphin welfare as direct in-water physical interactions. Consistent with the precautionary principle and pending further research into the long-term impact of swimming interactions in the wild, WDCS opposes commercial swim-with-the-dolphin programs that are often part of whale or dolphin watching enterprises.

WDCS encourages the public to go whale and dolphin watching, rather than participating in "swim-with" programs. It is important to choose a responsible whale watch operator. WDCS publishes a "whale watch" section on its website, at **www.wdcs.org** *and is developing an interactive forum which will educate and inform both operators and whale watchers, and encourage feedback from both groups. The website aims to promote responsible whale watch operators.*

Summary of Research on Dusky Dolphin Behavior in New Zealand

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Unlike in many countries including the United States, in New Zealand regulations allow individuals to enter the water and swim with dolphins. During spring, summer and fall, operators take passengers out to see and swim with the dusky dolphins (*Lagenorhynchus obscurus*) that are found near the Kaikoura Peninsula, South Island, New Zealand. Dolphin viewing trips may occur during winter months, but only when tourist numbers are sufficient to warrant a trip. Tourist operators are licensed by the New Zealand Department of Conservation (DoC) under the Marine Mammals Protection Regulations (1992). Regulations are enforced on the number of boat trips per day, number of boats near dolphins or whales, and number of swimmers allowed in the water at any one time. Swimming with mother and juvenile dolphins and whales is not permitted. In Kaikoura, the licensed dolphin swim company may take a total of 7 trips and up to 180 passengers each day to observe and swim with duskies and common dolphins (*Delphinus delphis*, frequently called commons) that are often associated with duskies (Würsig *et al.* 1995, pers. obs.).

We have been studying the effects of this viewing and swim with dolphin tourism since 1994 (Yin 1999). We've conducted our work from two platforms—from elevated shore viewing stations as well as from our research vessel. Results from our shore-based research are described below.

From the shore station, we used theodolites to track groups of dolphins and note changes in behavior, speed, direction of travel and orientation of dolphin groups. Much of our work has focused on small groups of <25 dolphins, often containing mother/calf pairs that are usually not targeted by the tourist operators, but often are in the vicinity of both tourist and recreational fishing vessels. From our theodolite data we examined three variables; mean leg speed, linearity, and reorientation rate, to determine the possible influence of vessel presence on dolphin behavior. Leg speed values were calculated as total distance between two successive fixes divided by time. Track linearity is a ratio between distance 'made good' and the total distance. Reorientation rate is the total sum of all changes in a group's bearing divided by number of seconds over the entire trackline. Vessels were grouped into one of three distances: within 100m, 101-300m and 301-1,000m.

Our analyses showed that mean leg speeds did not differ by presence of a vessel within any of our distance criteria. But we found there was a great deal of variability in dolphin inter- and intra-group mean leg speeds, which may have obscured speed changes due to any one factor, including vessel presence. Linearity increased when boats were within 100-300m. Higher values were recorded during boat and post boat conditions (> 15 minutes after the boats had left) than during no boat conditions, indicating that dolphin groups traveled in a more direct fashion during these two periods. Reorientation rates were higher when boats were within 101-300m, indicating that dolphins changed course more often when boats were present.

What does this all mean? What are the long-term effects of these short-term changes in dolphin behavior? We don't know. But by continuing our research, we hope to understand some of the potential long-term effects posed by the vessel and swimmer interactions.

One step towards minimizing disturbance of the duskies off Kaikoura was initiated by local tourist operators and Department of Conservation personnel. Voluntary guidelines have been formulated and adopted by the operators during the summer months to allow the dolphins time to rest during the middle of the day. No swimmers are allowed in the water after 11:30 a.m. and all vessels must stay at least 200m away from the dolphins. From 12:00 p.m. until 13:00, no commercial vessels are permitted to interact with the dolphins and from 13:00 to 13:30, swimming is not allowed and vessels must remain at least 200m away. We are just now starting to study the effects, if any, that this break has on dolphin behavior. But it's a remarkable step taken by the operators towards reducing the potential effects of our attempts to get close to these fascinating creatures.

References

Würsig, B., F. Cipriano, E. Slooten, R. Constantine, K. Barr and S. Yin. 1997. Dusky dolphins (*Lagenorhynchus obscurus*) off New Zealand: status of present knowledge. Report of the International Whaling Commission 47: 715-722.

Yin, S. 1999. Movement patterns, behaviors, and whistle sounds of dolphin groups off Kaikoura, New Zealand. 108 pages. Unpublished thesis. Texas A&M University, College Station, TX. August 1999.

Recommendations to minimize disturbance

- Set limit on number of vessels interacting with any single or group of marine mammals
- Set minimum limits on group size of animals with which vessels can interact (i.e. three boats shouldn't all attempt to interact with a group of only 5 dolphins)
- Keep laws clear, understandable and enforceable
- Determine times of day where animals may be more susceptible to disturbance. Limit or prohibit close approach of tourists and vessels at these times
- Determine if animals interacting with tourists are of a particular age/sex class to see if more juveniles/males etc., are more 'boat-friendly'. Only a few animals may be repeatedly interacting with the boats/swimmers.
- Realize that different species of dolphins and whales may react differently during different seasons to approach by boats.