THE WHALE MUSEUM
EDUCATION • RESEARCH

PROMOTING STEWARDSHIP OF WHALES AND THE SALISH SEA ECOSYSTEM THROUGH EDUCATION AND RESEARCH

December 24, 2009

Donna Darm and Lynne Barre
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

Dear Ms. Darm and Ms. Barre;

The Board and staff of the Whale Museum would like to express our appreciation to NOAA for exercising your authority under the MMPA and ESA by proposing strong federal vessel regulations. While we acknowledge that vessel disturbance is but one of the three main threats faced by the endangered Southern Resident orcas, reducing acoustic and behavioral impacts will make synergistic contributions to the recovery of this icon of the Salish Sea.

The Whale Museum's comments on NOAA's proposed regulations are based on our thirty years of first-hand experience on the water as well as extensive outreach to stakeholders and agencies. We have worked with citizens, the whale watch industry (Pacific Whale Watch Association - PWWA) and various governmental agencies over the years to collaboratively develop and fine-tune the "Be Wise Guidelines." One thing we have heard clearly from the greater community is that we all care about the whales and want to help them recover. It is our hope that we can band together around these modifications of NOAA's proposal as we think they better reflect the whales' place in our community.

While we are also concerned about the whales' having sufficient supplies of unpolluted prey, we welcome this opportunity to address how to improve the management of whale watching and other vessel activities. We consider NOAA's current proposal a work in progress. In addition to addressing our suggested modifications we encourage you to expand upon the information given to the public in the Federal Register Vol. 74, No. 144 under the title 'Rationale for Regulations' as to how this regulatory effort fits into the other efforts being made to recover salmon and reduce pollution in the region. We believe there is much for NOAA to inform the public about such exciting restoration efforts that are occurring on the Elwha, Skagit and Nisqually Rivers. However, this past year's dramatic salmon declines on the Fraser are of grave concern, which like so many other management issues, underscore the importance of bilateral efforts with Canada.

THE WHALE MUSEUM
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The Whale Museum believes that while whale watching provides crucial conservation education and outreach opportunities furthering marine mammal protection, continued boating pressures and noncompliance with the Be Whale Wise Guidelines, the Pacific Whale Watch Association Guidelines, the San Juan County Marine Stewardship Area Guidelines as well as the Washington State Vessel Regulations for Killer Whales, show a clear need for new federal regulations and a critical call for enforcement funding.

As the sponsor of the Soundwatch Program, we are keenly aware of the importance of an adequate enforcement program to accompany any proposed regulation. In fact we believe that NOAA's inability to commit to funding a rigorous enforcement program is one of the greatest shortcomings of the current proposal. While we recognize that Congress must appropriate funding for such an effort, we ask that NOAA include recommendations for such a program that is supported by a broad cross-section of the community. We have a suggestion for using the budget line item created by Congress for the NW Straits Commission to codify this effort but would welcome any alternate suggestions NOAA may propose as well.

In our June 20, 2007 scoping comments letter to NOAA, The Whale Museum recommended several items that we think are essential for success. Our focus on the west side of San Juan Island is based on years of observation that this portion of the whales' critical habitat serves as the core area for their survival as this is where the majority of salmonids migrating to the Fraser River travel and are easiest for the whales to encounter. For the same reason, this is also the area where there are intense sport, commercial and tribal fishing efforts and where violations of vessel guidelines and regulations most commonly occur.

In addition, the publically accessible areas along the shorelines from the San Juan County Park south to the Land Bank's Westside Preserve, including Lime Kiln Point State Park (a.k.a. Whale Watch Park) serve as a unique area where the public can view the ocean's top predator from shore. It is imperative that the boating activities that occur within sight of this highly sought after destination model appropriate behavior so as to serve as a model for respectful viewing on the water. Finally, the Lime Kiln Lighthouse has been The Whale Museum's acoustic and visual monitoring station for over 25 years and could serve as a research station for whale behavior without boats into the future.

The following are our comments regarding the currently proposed regulations and suggestions for further consideration predicated on the existence of an increased and ongoing education and enforcement effort:

Geographic Scope of proposed regulations

The Whale Museum supports the current proposal as is: applying to vessels in navigable inland waters of Washington under U.S. jurisdiction.

The Whale Museum supports boater education about the Southern Resident Killer Whale Summer Core Habitat (designated as critical habitat by NOAA). We recommend that this area be referred to on all NOAA and navigational charts/aids as '*Whale Waters-Watch Out*' to serve as notice to boaters of the high likelihood of encountering killer whales in this area during the summer months (May–October) and to alert boaters that vessel regulations are in effect. These areas could be widely published as Notices to Mariners, in the WDFW sport fishing rules booklet and included in the Washington State Department of Licensing along with boater registration renewal notices. Specific areas within the larger '*Whale Waters-Watch Out*' area that are frequented by whales could be highlighted as *'Whale Cautionary*

Areas'. Special Vessel Management Areas' with specific vessel regulations should require that vessels *'give right of way'* to the whales.

Proposed Vessel Exemptions:
The Whale Museum supports the general exemptions as proposed, excepting specifics outlined in a recommended modification to the proposed No Go Zone outlined in detail (see "No Go Zone" comments).

In addition, we suggest that additional special restrictions apply for kayakers and other human-powered craft. Regulations that apply to kayakers should require them to remain at or within 440 yards of shore when in these same areas to prevent them from moving off shore to paddle in the whales' path and into the area of high vessel traffic. Specific kayaker regulations could also require rafting up and not paddling when whales are within 200 yards, waiting onshore as whales pass and/or going next to the shore as whales pass, etc.

Proposed Restrictions Applied to All Killer Whale Types:
The Whale Museum supports that the proposed restrictions apply to all killer whale types occurring in the geographic range proposed as it is hard for the average boater to ascertain killer whale types.

Proposed Approach Restriction
The Whale Museum supports NOAA's proposal to increase the minimum distance that vessels will be allowed to be from orcas. However, we recommend that the approach restriction be set at 150 yards which is an increase over the current 100 yards which is in Washington State law but is less than the 200 yards proposed by NOAA.

Given the often unpredictable and dynamic social nature of multiple pods of killer whales and the high likelihood of vessel encounters with whales in the summer months, we recommend that vessels be encouraged through the *Be Whale Wise* guidelines to stay 200 yards away from whales whereas enforcement would require that vessels standoff at least 150 yards. (www.bewhalewise.org)

With clear evidence of impacts on killer whales from vessels in peer reviewed publications [see note #1 at end], The Whale Museum supports the proposed 200 yard distance from all killer whales. However with the passing of the 100 yard State and County laws, Soundwatch data shows that the majority of commercial whale watch operators are now often keeping a distance of 150-200 yards. This has not been the case for private vessels. We believe that the strict and consistent enforcement of a 150 yard buffer around the whales and encouragement via *Be Whale Wise* to maintain a 200 yard buffer will provide additional protection and will provide an acceptable compromise for stakeholders. With the legal limit set at 150 yards, commercial operators have said they will remain at the 200 yards we originally proposed. In order to get these distances from private vessels, more enforcement is needed.

We do not believe there is any justification to support retaining a universal 100 yard approach distance for all cetaceans as has been called for by some during the public hearings. Not only does such a *"one size fits all"* approach fail to recognize the differences in the life history of the diverse array of cetacean species, it also fails to recognize that while all marine mammals are protected under the MMPA, those that are also listed as an endangered species deserve even greater protections. The Southern Resident orca community is amongst the most endangered of all cetaceans in the in the United States.

Proposed Prohibition of Parking in the Whales' Path:
The Whale Museum fully supports NOAA's proposal that vessels keep clear of the whales' path within 400 yards of the whales. Evidence presented in recent years has indicated that vessel presence in the whales' path may elicit behavior changes and/or impede a whale's or group of whales' ability to capture and/or share prey [see note #2 at end]. We support that vessels should be restricted from approaching (motoring) or positioning (stopping) a vessel (including kayaks or other human-powered craft) or otherwise allowing a vessel to become within 400 yards of approaching whales or positioned so that the whales pass closer than 150 yards of the vessel.

Proposed No Go Zone:
In concept, The Whale Museum supports NOAA's proposal to create a NO GO ZONE [see note #3 at end] along the west side of San Juan Island. The Whale Museum recommends that the west side of San Juan Island be considered a *Special Vessel Management Area* as an alternative to the proposed blanket NO GO ZONE.

The Whale Museum recommends a three-component approach along the west side of San Juan Island establishing specific vessel regulations requiring that vessels '*give right of way*' to the whales in this congested area:.

San Juan Island Special Vessel Management Area:

- *SLOW ZONE* for all vessels, requiring vessels to travel at less than 7 knots from Mitchell Point to Cattle Pass when within 1/2 mile of shore, in effect year round
- *WHALE RIGHT OF WAY ZONE* for motorized vessels (human-powered craft exempt) when whales are present between May 1 and Sept 30 from Mitchell Point to Eagle Point. Vessels shall be required to move off shore to ¼ mile (440 yards) when whales are *'present.' 'Whales present'* should be defined as when a whale is within ¼ mile (440 yards) of your vessel and when vessels and whales are within ¼ mile (440 yards) from shore
- *ORCA ZONE* around Lime Kiln Point for motorized vessels year round. This would create a *No Go Zone* (human-powered craft exempt) from shore out to ½ mile off shore, running south from Lime Kiln Bay to Deadman Bay on the west side of San Juan Island. This area would be a kayak/human-powered craft only zone, all other restrictions applying. No exemptions for recreational or commercial fishing.

These recommendations are consistent with the existing whale watching guidelines adopted by the PWWA.

Details:

***SLOW ZONE* for all vessels, requiring all vessels to travel at less than 7 knots, Mitchell Point to Cattle Pass when within 1/2 mile of shore, in effect year round.**

Rationale for this provision is to reduce the most common and potentially most harmful violation of vessel regulations recorded by Soundwatch (> 7 knots within 440 yards, motoring within 100 yards and motoring inshore of whales) as well as to reduce the volume and pitch of boat noise in the primary areas where whales are known to be spread out and foraging.

In additional areas known to be regular foraging areas for the whales such as the Salmon Bank Triangle (Offshore SE from Eagle Point to the Salmon Bank Marker and E to Iceberg Point on Lopez Island - this includes the Cattle Pass area) we suggest having additional *'Cautionary Whale Waters - Watch Out'* highlighted on the NOAA Navigation Charts, as a Notice to Mariners and in the WDFW sport fishing Rules Booklet along with the *Summer Core Whale Habitat* (as designated by NOAA as part of the critical habitat for southern resident orcas). In these areas vessels would be required to follow all of the other regulations. The highest densities of vessel traffic tend to be from Cattle Pass at the south end of San Juan Island to Turn Point on Stuart Island, with the highest overlapping densities of vessels and whales occurring along the west side of San Juan Island from Cattle Pass to Kellett Bluff on Henry Island.

WHALE RIGHT OF WAY ZONE **for motorized vessels (human-powered craft exempt) when whales are present between May 1 and Sept 30 from Mitchell Point to Eagle Point. Vessels shall be required to move off shore to ¼ mile (440 yards) when whales are *'present'*. *'Whales present'* should be defined as when a whale is within ¼ mile (440 yards) of a vessel and when vessels and whales are within ¼ mile (440 yards) from shore**

The waters ¼ mile offshore within the established *San Juan Special Management Area* should be off limits to motorized vessels when the whales are present. The current Voluntary No-Go Zone of ¼ mile from Mitchell Pt. south to Eagle Pt. should be made regulatory to protect the whales established core routes and areas known to have high vessel densities. The highest densities of vessel traffic tend to be from Cattle Pass at the south end of San Juan Island to Turn Point on Stuart Island, with the highest overlapping densities of vessels and whales occurring along the west side of San Juan Island from Cattle Pass to Kellett Bluff on Henry Island. Kayakers and other human-powered craft frequently use this route as well, and while human-powered craft have the potential to cause disturbances, consideration for allowing human-powered craft access within the zone should be considered as the overall risks are considerably lower than for motorized vessels.

ORCA ZONE **around Lime Kiln Point for motorized vessels year round, creating a *No Go Zone* (human-powered craft exempt) from shore out to ½ mile off shore, running south from Lime Kiln Bay to Deadman Bay on the west side of San Juan Island. This area would be a kayak/human-powered craft only zone, all other restrictions applying. No exemptions for recreational or commercial fishing.**

Create a No Go Zone (human-powered craft exempt) from shore to ½ mile off shore, running south from Lime Kiln Bay to Deadman Bay on the west side of San Juan Island. This area could be a kayak/human-powered only zone. No exemptions for any type of fishing or boating. Several other county and state conservation and recreation opportunities already exist in this key area. It is an area that has a Voluntary Bottomfish Recovery Zone under the San Juan County Marine Stewardship Area, has been part of the established Voluntary No Motor Boat Zone when whales are present since 1996 as well as having The Whale Museum's Whale Research Lab and OrcaSound Hydrophone acoustic station present. It is adjacent to Lime Kiln Point "Whale Watch" State Park and two of the San Juan County Land Bank Westside Preserve Areas - all areas of prime shore-based whale viewing areas and areas where the whales are most often right along the shoreline. This is the main area targeted by the commercial and private kayakers engaged in whale watching and is adjacent to the only San Juan Island west side put-in and public beaches for take-out along the west side of San Juan Island. All other vessel regulations would apply to human-powered crafts. While we recognize that conditions along this stretch can make it difficult to plan for kayakers, we would like NOAA to encourage kayakers to tuck into bays

such as Lime Kiln or Deadman Bay rather than rafting up in the kelp at the prominent points along the way. Since the whales rarely linger at this spot, it would not pose undue hardship on the kayakers. It would allow for the shore-based observers at Whale Watch Park to have an unobstructed view of the whales free of human interactions which can set unreasonable expectations for them when they approach the whales on the water.

Other Recommendations:

- **Special consideration should be given for human-powered craft to address the unique needs of this vessel type.** Maintaining distance restrictions as well as remaining out of the whales' path can be extremely challenging for human-powered craft even with the best of intentions. We submit that strict adherence to the special previsions and well-defined best practice guidelines could serve to address the potential threats human-powered craft have on changes in behavior demonstrated by the endangered Southern Resident Killer Whales.
- **Recommend federal support for kayaker-specific education efforts** with resources to operate at the San Juan Island County Park throughout the summer core season (May 1 – September 30).
- **Designate a US/Canadian federal, state, provincial, local government, and NGO enforcement and education team,** with identified agency and persons responsible for enforcement and education.
- **Additional funding sources for enforcement.** The Whale Museum has issued a call to the commercial whale watch industry to match federal funding for enforcement through a self-imposed per passenger fee. None of the regulations will have the intended impact without a consistent enforcement presence. We all care about killer whales. We all feel that enforcement is necessary. We all therefore need to join forces to insist on proper funding for enforcement from our state and federal elected representatives and agencies.
- **Reduce vessel speed near whales.** Recommend a specific speed limit of no more then 7 knots within 440 yards (¼ mile) from whales anywhere and at all times would be an appropriate 'slow, safe speed' and distance to give vessel operators enough time and distance to see whales, slow down and still be able to make course adjustments to get themselves out of the whales' path while operating the vessel in a safe manner.
- **Cautionary Exit Corridors Adjacent to Whale Routes**. Adjacent to the whales' core routes are several heavily used traffic areas that exit out into whale routes. In addition to the alternate vessel restriction areas and special '*Whale Waters Watch-Out' Caution Areas*, these exit corridors need to be marked on the same NOAA navigational charts, Notice to Mariners, etc. Notices of these cautionary exit areas could be posted on existing or intentionally placed navigational buoys or markers at the exit areas cautioning boaters as to the *'Whale Crossing Area Ahead'*. In these areas boaters should be advised to approach slowly, ascertain whales' presence, proceed cautiously and/or wait for the whales to pass. Vessels should not exit the pass until whales are at least 400 yards beyond the exit area and vessels should go out at least 400 meters at maximum of 7 knots before going out and around whales. Some exit areas of concern are Cattle Pass, San Juan County Park (Small Pox Bay), Mosquito Pass/Open Bay, Roche Harbor/Spieden and New Channels to North Haro Strait and the Turn Point Boundary Pass Area.
- **Vessel Operator Permit and Naturalist Certification Program**. The Whale Museum recommends NOAA further explore vessel permitting systems and suggests a phased permitting system that could evolve over time as current levels of whale watching efforts are evaluated and better understood. To start off, we recommend a permit be immediately required for all commercial company vessels engaged in whale watching activities, including kayaks, charters,

aircraft and specific whale watching vessels operating in the *'Summer Core Whale Habitat'*. This would include all Canadian and U.S. companies operating in this specific area. Initially there could be an annual permit given out to all operators for a fee, established as a flat rate or an assessment based on use and/or passenger capacity. In the first years, it could be a requirement just to obtain and display the vessel permit, reporting on vessel statistics (make, model, engine type, passenger capacity, total annual passengers, etc.) and require operators to log and report contact time with Southern Resident Killer Whales, or all killer whales and/or all other whales.

In order for a permit to be obtained by a company, all company vessel operators (guides for kayakers) must also be required to obtain an annual certification as to knowledge of whale behaviors and proper procedures for operating vessels around whales as well as current regulations. This could be done through annual operator certification training courses. In addition, naturalists/guides working for these companies would also need to hold a certificate of training on killer whale biology, conservation, guidelines and regulations. This could be accomplished through a certification naturalists' course with a requirement for annual "continuing education" coursework. Fees should be charged for certifications that cover the costs of the courses and materials. If companies do not meet these requirements, they would not be given their permit to operate in the Whale Waters Area.

In the future, permits may give a company more access to certain areas, viewing times, approach distance, etc. Permits may also become limited as to numbers given out, limited by company, and/or vessel operator record of incidents, regulation violations, areas, etc. Permits may also be used to limit the number of vessels allowed to operate or to operate in certain areas.

All permit fees should go directly to supporting not only the permitting infrastructure but also enforcement and monitoring efforts. Fines from regulation violations should go back into the enforcement of regulations. Additionally, one or two dollar per passenger stewardship fees should be encouraged of each passenger on board permitted vessels if the permit fee alone is not sufficient to fully fund permitting. Additionally, these fees should go into killer whale conservation, education, stranding networks and monitoring activities.

Work with the San Juan County Parks to create a San Juan Island County Park permit and fee for recreational and commercial kayakers launching from the park. Motorized vessels should be charged a launch fee. Create a Whale Museum/San Juan County Park Partnership/NOAA/Kayak Association partnership to implement a sustainable kayaker education program (slide show, programs, materials, personnel) for kayakers, boaters.

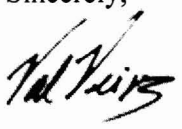
- **Foreign Vessels:** It is important that the regulations apply to all commercial and recreational vessels, including vessels originating from Canada, as we know many of the private recreational boaters and commercial vessels operating in these waters are from Canada. Explore whether the Vessel Traffic Treaty between the U.S. and Canada can be used to address this concern.
- **Use of Special Shoreline Symbols** to Remind Boaters of Area Restrictions when Whales are Present: Much like the fishing regulations are displayed in Canadian waters, large yield symbols outlined in a certain color could be placed along the shoreline in the restriction and exit areas. The symbols and their locations could be published on the NOAA navigational charts, Notice to Mariners and Sports Fishing rules booklets.
- **Utilize the State Vessel Licensing System**: At time of vessel registration, the state should handout or mail whale-watch regulations and guidelines including brochures and stickers for placement in vessels. Signature on a vessel's registration would signify awareness of these regulations. The State's current Carbon Monoxide Program could be used as mode for an annual 'Orca Sticker' to be placed prominently inside any vessel operating in the ***San Juan Island***

Special Management Area. Consideration should be given to requiring that vessel operator training include procedures for operating around whales. Fines could be assessed upon vessels caught operating in the area without sticker.

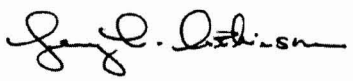
- **Create a 'Whale Waters Watch Out' VHF Radio Channel/or Notice System**: Utilize the NOAA Weather and/or emergency notification channel and Notice to Mariners updates to provide notices of whale regulations and restrictions especially on busy holiday or special whale situation days. Use a regular frequency for vessels on-scene to communicate about proper placement. Note: Not a channel for vessels to call into to find out where whales are. NOAA USCG VHF radio ALERT broadcasts when whales in the zone Cooperative enforcement & education monitored, designated low frequency VHF radio channel for whale info in zone.

We appreciate the opportunity to comment on behalf of The Whale Museum. We are pleased to be working together to help recover the Southern Resident Killer Whales and their important habitats. We believe the implementation of these modifications to the original proposal will go a long way to furthering that goal.

Sincerely,



Val Veirs, PhD
President, The Whale Museum Board of Directors



Jenny L. Atkinson
Executive Director, The Whale Museum

Kari L. Koski
Soundwatch Program Director

A P P E N D I X :

#1 Vessels affect the behavior of killer whales:

Recent papers on studies of the Southern Resident orcas published by Foote et. al. and Holt et. al. document changes in orca vocal behavior when in the presence of vessel noise. Williams et. al. documents changes in swimming behavior when in the presence of vessels and Noren et. al. established that the southern resident orcas carryout more surface active behaviors when vessels are close than when vessels are far away.

- Foote AD, Osborne RW, Hoelzel AR (2004) Whale call response to masking boat noise. Nature 428:910.
- Holt MM, Noren DP, Veirs V, Emmons CK, Veirs S. Speaking up: killer whales (orcinus orca) increase their call amplitude in response to vessel noise. *The Journal of the Acoustical Society of America*. 2009;125(1):EL27.
- Williams R, Ashe E. Northern resident killer whale responses to vessels varied with number of boats. *Field Methods*. 2006; (Williams 2003):1-36.
- Williams R, Ashe E (2007) Killer whale evasive tactics vary with boat number. J Zool 272:390–397.
- Noren DP, Johnson A, Rehder D, Larson A. Close approaches by vessels elicit surface active behaviors by southern resident killer whales. *Endangered Species Research*. 2009;8:179-192.

#2 Noise limits acoustic range:

Many modeling studies calculate the reduction in range that vocalizing or echolocating animals caused by increased underwater background noise. One often cited study (Erbe) was done on the Southern Resident orcas. A recent compendium summarizes noise effects on terrestrial animals and reports that a 3 dB increase in noise, which we humans would say is barely perceptible, reduces the listening area available to animals by 30% and a 10 dB increase reduces listening area by 90%. A vessel making noise at 150 yards is 3.5 dB quieter than when at 100 yards. At 200 yards this vessel's noise is 6 dB quieter. Requiring boats to be farther than the current 100 yard requirement will give the orcas increased listening area which should assist them in their foraging.

- Erbe C. Underwater noise of whale-watching boats and potential effects on killer whales (Orcinus orca), based on an acoustic impact model. *Marine Mammal Science*. 2002;18(2):394-418.
- Barber, Crooks, Fristrup. The costs of chronic noise exposure for terrestrial organisms. Trends in Ecology and Evolution, 2010.

#3 Value of 'NO GO ZONES'

Regulatory powers and effective enforcement are necessary if vessel interactions with whales are to be reduced. Voluntary compliance is not enough (Wiley et. at.). Marine protected areas have been created in many places around the world and these, when large enough, lead to dramatic increases in the health of the protected areas. In the U.S. there is precedent for whale sanctuaries including: Stellwagen Bank National Marine Sanctuary, Cordell Bank National Marine Sanctuary, and the Hawaiian Islands Humpback Whale National Marine Sanctuary. While such whale sanctuaries are too small to fully protect such wide ranging species, they do provide some needed protection. In the case of the Southern Resident orcas, the proposed limitations on vessels on the west side of San Juan Island are centered strategically on locations of known foraging hot-spots and hence would significantly improve their foraging prospects. (Ashe et. al. in press).

- Wiley DN, Moller JC, Pace RM, Carlson C. Effectiveness of Voluntary Conservation Agreements: Case Study of Endangered Whales and Commercial Whale Watching. *Conservation Biology*. 2008.
- Stewart, G.B., Côté, I.M., Kaiser, M.J., Halpern, B.S., Lester, S.E., Bayliss, H.R., Mengersen, K., & Pullin,A.S., http://www.environmentalevidence.org/Documents/Summary-SR23.pdf
- MPA Summaries at http://ww3.mpa.gov/mpa_lib/org_and_institutions.aspx
- "Small conservation area could make big difference for whales", (2009) http://www.greenbang.com/small-conservation-areas-could-make-big-difference-for-whales_13045.html (paper by Ashe, E., Noren, D., Williams, R. in press)

15 January 2010

Donna Darm and Lynne Barre
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

Dear Ms. Darm and Ms. Barre:

The Friends of the Earth would like to NOAA for your proposed efforts to protect the endangered southern resident killer whale community from the impacts of whale watching vessel operations.

We endorse the 24 December 2009 comments submitted by the Whale Museum in Friday Harbor, Washington as the best way to achieve those goals. In addition, we urge NOAA to seek additional funding for enforcement of these regulations in your budget requests to the administration for the whales' charisma can often compel even well intentioned observers to get too close.

We also urge you to continue to seek collaborative opportunities with the Washington State Department of Fish and Wildlife, US Coast Guard and the Whale Museum in carrying out your enforcement and educational responsibilities.

Thank you once again for addressing the issue of whale watching impacts to the whale's recovery. We look forward to also understanding how NOAA will be addressing the threats posed by depleted Chinook salmon runs and toxicity that is still present in their critical habitat.

Sincerely,

Fred Felleman, MSc.
NW Consultant
Friends of the Earth
311 California St. Ste 510
San Francisco, CA 94104-2607

January 8, 2010

Assistant Regional Administrator
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
Attn: Lynne Barre
7600 Sand Point Way NE
Seattle, WA 98115
Email: orca.plan@noaa.gov

Re: Comments on Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act

Dear Lynne,

I have read the notice of proposed rulemaking published in the Federal Register on October 19, 2009 by the National Oceanic and Atmospheric Administration (NOAA). The proposed regulations would prohibit vessels from approaching killer whales within 200 yards, and prohibit them from entering a conservation area during a defined season to protect killer whales from interference and noise associated with vessels. I would like to offer the following comments for consideration.

My graduate thesis at the University of British Columbia investigated an aspect of vessel disturbance to killer whales that has not been previously investigated to my knowledge. The thesis is available online at https://circle.ubc.ca/handle/2429/7566, and is titled "A model-based approach investigating killer whale (*Orcinus orca*) exposure to marine vessel engine exhaust". This work is being prepared for publication and I would like to summarize the main findings as they are relevant to the proposed regulations.

Obtaining air quality measurements near southern resident killer whales would be extremely difficult, expensive, and time consuming, so instead I used a simple dispersion model to estimate killer whale exposure to exhaust from whale-watching vessels. I incorporated data on whale and vessel behavior, atmospheric conditions, and the output of airborne pollutants from whale-watching vessels based on emissions data from regulatory agencies. The model determined that the wind direction had the largest effect on the killer whale's air pollutant exposure, followed by the vessel-to-whale distance, and the turbulence-induced mixing height of the pollutants. To determine potential adverse health effects for killer whales, I used allometric extrapolation of physical impacts of engine exhaust gases on other species. The findings suggested that current whale-watching guidelines are usually effective in limiting pollutant exposure to levels just at or below those at which measurable adverse health effects would be expected in killer whales under average whale-watching scenarios (based on published information with 20 vessels 100 m from the whale). However, under worst-case conditions (with 40 vessels at 50 m from the whale) and even under certain average-case conditions (i.e., during atmospheric inversions which are common during the summer), the pollutant levels were much higher than those predicted to cause adverse health effects.

The models I ran only lasted for 1 hour of real-time, whereas whale-watching can occur for up to 12 hours a day; therefore, the model likely under-predicted actual exposure conditions. This is problematic since longer exposures increase the occurrence of adverse health effects, even if the exposure concentration remains the same. To reduce exposure to vessel exhaust levels consistently below

adverse health effect thresholds, it is recommended that: vessels position on the downwind side of whales, the number of vessels whale-watching within 800 m of whales is limited to the average of 20 vessels, viewing periods are limited, and current whale-watch guidelines and laws be strictly enforced. Realistically it would be very difficult for vessels to maintain a position downwind of whales at all times, as would enforcing a maximum number of vessels around whales. Thus, I encourage NOAA to expand the approach distance to 200 yards and prohibit vessels from entering a conservation area to protect killer whales from chronic exposure to vessel exhaust pollutants from both commercial and recreational vessels. While exposure to vessel exhaust is not the number one threat resident killer whales face, it is one area that deserves further (empirical) research, and is a threat that can quickly be ameliorated. Exhaust pollutants from vessels also impact human health, and tourists, vessel operators, and naturalists onboard are also potentially at risk from adverse health effects. This issue deserves further consideration, as it is not only a health concern for killer whales but also for humans.

Thank you for the opportunity to provide comments. If you have any questions please do not hesitate to contact me at lachmuth@zoology.ubc.ca

Sincerely,

Cara Lachmuth, MSc
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PUBLIC SUBMISSION

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Docket: NOAA-NMFS-2008-0327
Protective Regulations for Killer Whales in the Northwest Region under the Endangered Species Act and Marine Mammal Protection Act

Comment On: NOAA-NMFS-2008-0327-0001
Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act

Document: NOAA-NMFS-2008-0327-DRAFT-0045
Comment from David Mellinger

Submitter Information

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Corvallis, OR, 97330
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Organization: Oregon State University

General Comment

See attached file.

Attachments

NOAA-NMFS-2008-0327-DRAFT-0045.1: Comment from David Mellinger

I am a marine mammal acoustics researcher with approximately 30 peer-reviewed publications in the field. The impact of vessels on southern resident killer whales (SRKWs) that seems most important is sound. Killer whales use sound for important life-history functions, including finding food, navigating, and social communication. The disruption of these activities by vessel noise is likely one of the important reasons for the continued non-recovery of the SRKW population.

Perhaps you have had this experience: While swimming or diving in the ocean, you hear the sound of a propeller boat, a fairly loud one. For safety reasons, you surface to see where it is, only to discover that it is far away on the horizon. This is a small illustration of how loud motor-driven vessels are, and a poor one at that, since humans are quite bad at hearing sound underwater. (Our auditory system is mechanically optimized for hearing in air; underwater, most incoming sound bounces off our eardrums.) But it nevertheless illustrates how loud vessels are, and their potential for disrupting important orca activities that are mediated by sound.

My suggestions here are focused on the impacts of noise on SRKWs:

- Two hundred yards is an extremely small distance in terms of how far noise travels. This number should be increased to at least 1000 yards (or perhaps one kilometer), or preferably more. The standard should be based on the sound level that the whales receive, which declines with distance from the whales. A reasonable standard might be to set the distance such that the received sound level from each vessel is near the average natural background noise level; then the combined effects of many vessels will be somewhat louder than background noise, but not a lot louder.

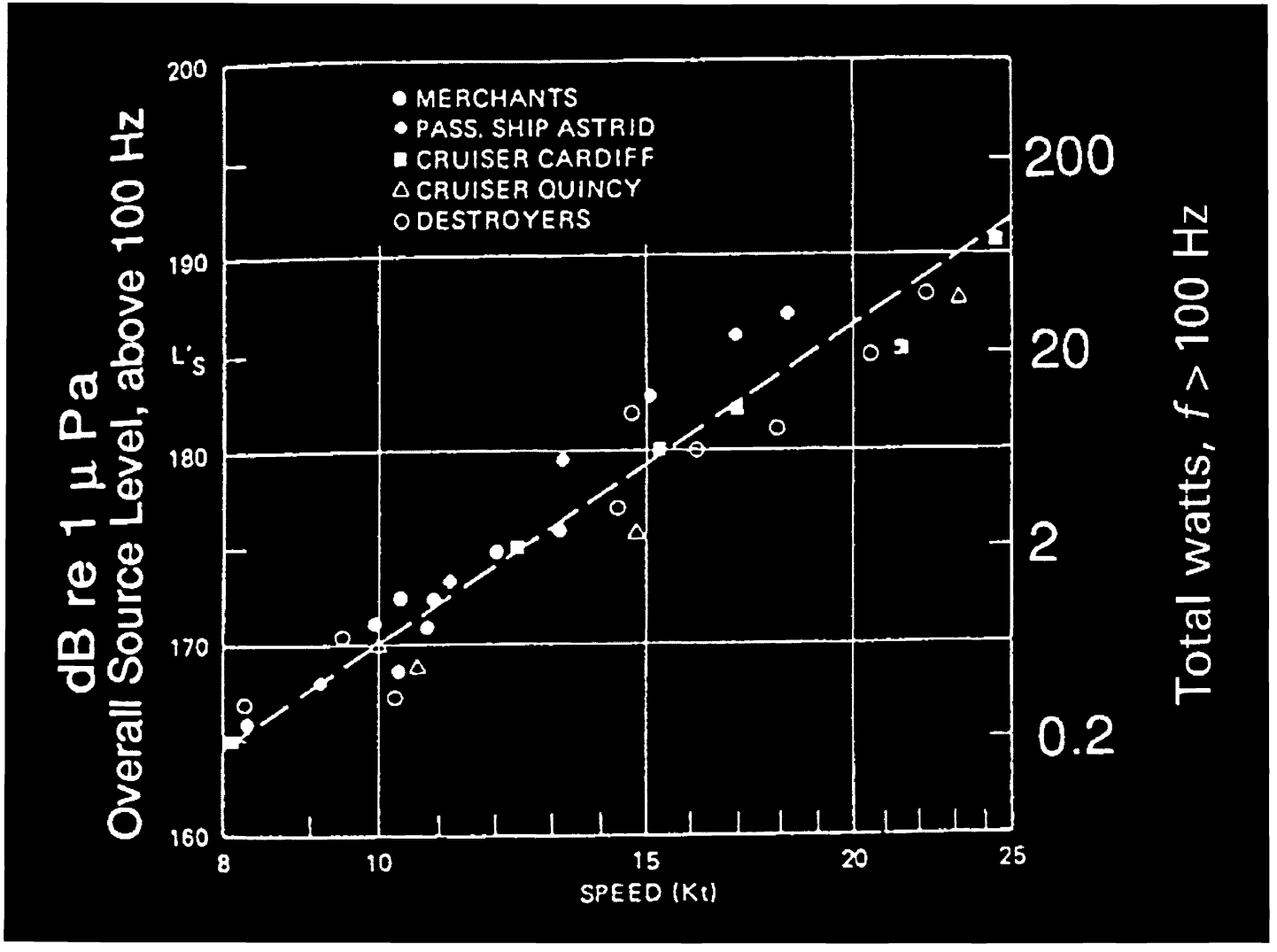
- Ships in Haro Strait and elsewhere in critical habitat from May 1 to Sep 30 should have a speed restriction -- say to 5 knots -- to keep them quieter. This is at least as important as the restriction zone around the whales. Two slides are included that illustrate the effect of speed on vessel noise. (These came from Prof. James Moum at Oregon State University.) The vessels will still be quite loud at 5 knots, but they will at least be somewhat quieter. Actually the important factor is not the net vessel speed, but rather the speed through water, taking the speed of the current into account. The speed through water determines the amount of noise.

- Non-motorized and self-propelled vessels do not cause significant amounts of noise underwater. I don't know if there is evidence that these vessels cause changes to killer whale behavior significant enough to impact important life-history functions; if not, I would leave them out of the regulations. The fact that the large majority of these vessels are too slow (oar/paddle vessels) or not sufficiently maneuverable (sailboats) to keep up with most killer whale pods is also important; it means that they cannot follow a pod for any long period of time (as can motorized vessels), and so they are likely to be near the whales for only short periods of time. These vessels are also usually small and slow, so vessel impacts are not much of an issue.

Thank you for your attention.

David K. Mellinger

Ship speed and source level



Subject: comments on proposed vessel regulations
From: acarey@preserveourislands.org
Date: Fri, 15 Jan 2010 15:35:25 -0800
To: Orca.Plan@noaa.gov

Comments from Preserve Our Islands on proposed vessel regulations are attached. If possible we would appreciate confirmation of receipt.

Amy Carey, President
Preserve Our Islands

PRESERVE OUR ISLANDS

PROTECTING OUR NATURAL RESOURCES + QUALITY OF LIFE THROUGH SCIENCE + PUBLIC AWARENESS

Assistant Regional Administrator
Protected Resources Division, Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

January 14, 2010

To whom it may concern:

Preserve Our Islands is a non-profit environmental organization focused on the preservation and protection of important marine ecosystem environments – with a current focus on those areas that are unique and important to the endangered Southern Resident Killer Whale (SRKW) and the habitat functions that support their hopeful recovery. We would like to thank NOAA for the opportunity to comment on proposed vessel regulations.

We fully support the formal adoption of the proposed vessel regulations (alternative 8) currently under consideration by NOAA and urge the agency to finalize and implement this rule expeditiously. Indeed, we offer that this alternative is the only true option for NOAA when considering the science at hand. Extensive NOAA analysis and study conducted by a wide range of specialized researchers clearly shows that anthropogenic vessel noise causes disturbance to the whales, creating impacts to important pod communications, energy expenditure and detrimental effect on the whales ability to successfully forage (Noren, 2009 and Bain, 2003-2005 Williams, Ashe 2006, Holt, 2009)

However, we are compelled to clarify that while we support the proposed regulation in comparison to other alternatives offered – a review of the best available science shows that the proposed 200 yard setback is insufficient to provide the protection intended.

For example, Holt 2008 found that in the presence of noise typical to whale watching boats and other similar vessels, the distance at which whales are able to echolocate preferred prey species diminished by up to 90% when the boats are at a distance of 200m and vessels at a distance of 400m continued to create a 50% reduction in prey detection ability. In accordance with this analysis even the extended 200 yard buffer zone will still clearly be creating impact to the whale's basic biological functions due to anthropogenic noise and we strongly urge that NOAA implement this proposed rule as an interim first step and utilize language that provides clear provision for near - future modifications to increase vessel setbacks further in order to support SRKW recovery.

We offer that the Holt findings also dictate the urgent and unquestionable need for the expanded l ½ mile seasonal no- go zone along the West side of San Juan Island. As NOAA documents in the draft EA, analysis has clearly identified the West Side of San Juan Island to be a critical foraging area for the whales. In reflection of this, a wide range of orca and marine mammal specialists have also independently called for a no – go conservation zone near San Juan Islands to protect orcas, noting the significant conservation benefits that would be gained. Recognizing that there are also other critical foraging areas and that SRKW's may benefit from a reduction in vessel activity in these areas, we also suggest that regulation language contain provision for rule modification to add additional areas as identified.

We are well aware that in particular, the whale watching community is vehemently opposed to both the extended setback and the seasonal no-go zone. However, this opposition is based on unfounded concerns related to industry profit margins and has no scientific basis.

When considering the documented science at hand, NOAA has no choice but to fully implement the proposed rule as offered under alternative 8.

In 2008 Preserve Our Island was forced to bring legal action against NOAA for the agencies failure to properly consider the noise related impacts to the SRKW during ESA consultation for a proposed project in an area extensively utilized by the orcas. Over the course of a very frustrating and disconcerting 2 year period which lead to our lawsuit, our organization repeatedly reminded NOAA that their review dismissed the agency's own science - based findings on anthropogenic noise and vessel impact on SRKW's. Yet at every step, rather than rely on this documented information, NOAA instead chose to ignore the science before them.
So clear was this failure that in the recent federal court decision made fully in favor of Preseve Our Islands, the Judge resoundingly took the agency to task noting in response to NOAA actions that "what is missing here is science".

The science before NOAA related vessel impact is clear and we urge NOAA to act accordingly by implementing the most stringent vessel regulations immediately.

Sincerely,

Amy Carey, President
Preserve Our Islands
PO Box 407
Vashon, WA 98070
(206) 755-3981
acarey@preserveourislands.org

Subject: COMMENTS ON PROPOSED VESSELS REGULATION TO PROTECT KILLER WHALES IN PUGET SOUND
From: "Lusseau, David" <d.lusseau@abdn.ac.uk>
Date: Thu, 14 Jan 2010 22:56:12 +0000
To: "orca.plan@noaa.gov" <Orca.Plan@noaa.gov>
CC: "Lynne.Barre@noaa.gov" <Lynne.Barre@noaa.gov>, "r.williams@fisheries.ubc.ca" <r.williams@fisheries.ubc.ca>, "dbain@u.washington.edu" <dbain@u.washington.edu>, "ea84@st-andrews.ac.uk" <ea84@st-andrews.ac.uk>

to whom this may concern,

Please find attached a consensus document that presents our comments on the proposed vessels regulation.

with congratulations,

best wishes for the new year,
David

Dr. David Lusseau
Lecturer in marine populations

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website: http://www.abdn.ac.uk/ibes/staff/d.lusseau

Find out more about our MSc programme in Applied Marine and Fisheries Ecology(www.abdn.ac.uk/fisheco)

Remember: Populations are full of individuals

Ashe Williams Bain Lusseau Comments on proposed vessels regulation Jan 2010.pdf	**Content-Description:**	Ashe Williams Bain Lusseau Comments on proposed vessels regulation Jan 2010.pdf
	Content-Type:	application/pdf
	Content-Encoding:	base64

COMMENTS ON PROPOSED VESSELS REGULATION TO PROTECT KILLER WHALES IN PUGET SOUND

Ms. Erin Ashe
University of St Andrews, St Andrews, UK

Dr. David Bain
Friday Harbor Labs
University of Washington, USA

Dr. Rob Williams
Canada-US Fulbright Chair
University of Washington, USA
and University of British Columbia, Canada

Dr. David Lusseau
Lecturer in Marine Populations
University of Aberdeen, UK

GENERAL COMMENTS

As scientists who have published extensively on effects of boat traffic on the behaviour of killer whales and other cetaceans, we **welcome** the news from NOAA Fisheries that action is being taken to protect southern resident killer whales. We **believe strongly** that existing science supports taking action. We **welcome** the use of a spatial approach to management, including no-go zones.

We outline below a few comments on areas where we disagree with the specific proposals, *but want those comments to be interpreted in the context of our strong support for the desire to take action.* We believe that the regulations will have better support from the public and a greater chance for success if they include clear plans for (a) monitoring; (b) feedback (adaptive management); and (c) programs for both on-the-water education and enforcement. We have noticed that much of the negative public reaction to this proposed rulemaking stems from a misunderstanding that vessel regulations are being imposed in lieu of management action to support salmon recovery. Our work has demonstrated that the salmon and vessel issues cannot be considered in isolation: boat traffic affects feeding behaviour of both northern and southern resident killer whales (Lusseau et al. 2009; Williams et al. 2006), so reducing vessel interactions should increase the time that southern resident killer whales spend feeding (Ashe et al. in press).

In a recent paper (Lusseau et al. 2009), we note that SRKWs spend less time foraging and feeding (see definition in Williams et al. 2006; Ashe et al. in press) in the presence of boats than in their absence.

Proportion of time spent feeding (including foraging, Lusseau et al. 2009)

No-boat:	0.77
Boat:	0.61

Previous work (Williams et al. 2006) reports a method to convert the changes in activity budgets due to disturbance to a relative measure of energetic cost. Using these methods, we note that while boat traffic causes an increase in energetic expenditure, it also causes a more biologically significant decrease in time spent feeding. We believe there is sufficiently strong evidence to warrant management action, and this provides an important reminder that human disturbance and prey limitation are linked. We urge NOAA Fisheries, in its messaging on this issue, to remind the public that salmon recovery is an obvious priority, but that vessel regulation will provide benefits on day one, while salmon restoration will take many years to show benefits. Both forms of management action are needed.

In the current rulemaking, proposed management actions fall into three broad categories:

1. 200m distance guideline – A number of studies (Lusseau et al. 2009; Noren et al. 2009; Williams et al. 2002a; Williams et al. 2009; Williams et al. 2002b) now suggest that killer whales respond to boats at distances well beyond 100m. Current studies do not allow us to specify an appropriate distance precisely, but do suggest that the distance should be larger than 100m. In fact, a truly precautionary approach would use a distance guideline >400m, but we acknowledge that this would be impractical for the commercial whale watch industry. Instead, we encourage NOAA Fisheries to specify that the new 200m regulation is the initial distance in an adaptive management approach, such that 200m is adopted until better science suggests modification. Ideally, that adaptive management framework would include a mechanism to allow instant rule revision.
We see an integral connection between this rule and the one relating to the creation of a no-go zone (marine protected area, MPA). It would be useful to acknowledge the iterative nature of science explicitly, by noting that an MPA can serve a dual purpose, namely to mitigate impacts and to assist research efforts (to understand those impacts and monitor efficacy of mitigation). It might be useful to consider a 200m regulation as a placeholder distance that can be revised as science improves; but note that it is essential to have an MPA in order to do controlled-exposure experiments to refine appropriate distances.

2. Marine Protected Areas – this is a welcome development. We believe that the science supports an MPA, and would benefit from an MPA. In addition to the need already recognised by NOAA to protect high-use areas, it is also important to protect areas that are used preferentially for feeding. We note that the stated objectives suggest that the proposed MPA includes feeding habitat, but that statement is not supported by the data presented. We note that the behavioural data presented by Noren and Hauser (in prep) and the prey sampling data (Baird and Hanson In prep) both suggest that feeding activities are disproportionately high off the southwest side of San Juan Island. In addition, historical and long-term monitoring data show that these areas are used often for feeding (Heimlich-Boran 1988; Osborne 1986). The data presented are coarse, and interpreting the data is subjective. We suggest that NOAA Fisheries adopt a more objective, quantitative approach to identifying preferred feeding habitat. It is sensible to prioritise feeding habitat (see evidence in Lusseau et al. 2009; Williams et al. 2006, and see Ashe et al. in press for an example of how the approach can be used for guiding mitigation measures). But the methods by Ashe et al. (In press) offer a more rigorous way to

identify such habitat than simply eyeballing the dots on a map. In the attached paper (Ashe et al. in press), there are several maps showing where preferred feeding habitat was identified in 2006, and how such preferred feeding habitat could feed into an MPA design framework. The size, shape and targets of an MPA are management decisions, but the science tells us that high-probability feeding habitat should receive higher priority for protection than travel corridors. In the next round of activities, NOAA will be specifying targets for MPA size and shape, and will no doubt have to balance the weights placed on these different and possibly competing objectives, along with logistical, social and economic concerns. At that stage, if NOAA Fisheries wanted to incorporate our model predictions of feeding probability, we would be happy to share those (and other behavioural habitat use data, including confidence intervals on the feeding probability predictions) in electronic form.

We propose that NOAA Fisheries specify explicitly that this MPA would have a dual mandate (like Robson Bight): (1) mitigation; (2) an experimental site that feeds into monitoring. The MPA could serve as a site where one could exert experimental control over boat traffic (i.e., conduct controlled-exposure experiments in the MPA, under permit) in an adaptive management framework as suggested as a way forward by the Scientific Committee of the International Whaling Commission. This addresses much of the concern about lack of experimental controls in existing SRKW vessel interaction studies (Williams et al. 2009; Noren et al. 2009; Lusseau et al. 2009), and would allow NOAA to fund and conduct CEEs such as those conducted on northern residents (Williams & Ashe 2007; Williams et al. 2002a; Williams et al. 2002b).

3. Parked in the path – we are less concerned about boats being parked near the path of whales with their engines off than about practices that boaters use to intentionally place themselves in the path in the first place. Our regulations should not be encouraging boaters to fire up their engines, engaging their propellers and making noise, as whales from a critically endangered population are swimming toward them at close range. We should be encouraging practices that keep noise at whales to a minimum

ADDITIONAL CONSEQUENCES TO BE CONSIDERED

1. In addition to the high -use area NMFS proposed to establish as a no -boat zone, it will be important to protect less used areas that that are important for feeding (as discussed above). However, as much of the range has only been studied from boats, which inhibit foraging, there may be additional areas beyond those identified by Ashe et al. in press that merit protection. It would be advantageous, from an adaptive management perspective, to also have temporary no-go zones in these areas to determine whether such closures result in increased time spent foraging.
2. Should the regulations address boat number or crowding (Williams and Ashe 2007; Williams et al. 2009)?
3. Should the regulations explicitly incorporate received noise level (Holt & Noren 2009)? Does this affect how we manage kayak traffic? Should kayaks be the target of dedicated research in an adaptive management framework, in order to evaluate whether noise level or proximity alone are driving behavioural responses? Would the use of quieter vessels than those shown to cause effects at long range allow closer approaches without

disturbance than those typically used for whale watching in recent years? As boaters have expressed strong interest in getting closer than the science suggests they can using conventional methods without causing disturbance, and some environmental groups have recommended whale watching continue as a way to maintain public support for effective conservation actions, additional research and adaptive management should address alternative technology and practices that may benefit both whales and whale watchers.

4. If areas within 800 yards of shore are closed, will whales that normally travel more than 800 yards offshore be surrounded by the entire fleet? If so, what are the implications of that crowding?
5. Do we need to make these regulations hierarchical? For example, if conditions change and legal watching is no longer possible, which is the most important rule to follow? If a boater is stuck between the group of whales that they are following and a second group that comes in, remaining parked in the path may be appropriate.
6. Would the MPA "push" boaters out into the shipping lanes, or closer to ships than maritime laws or safety procedures allow?
7. Should we be monitoring other forms of shipping noise in the region than just whale-oriented noise? If shipping noise swamps the MPA, is it fair to ask quieter vessels to stay out? Biologically, it is fruitless to ask whalewatchers to be quiet if non-whalewatching traffic is generating the bulk of the noise received by the whales.
8. Modeling to expressly address the relationship among prey availability, vessel traffic, and killer whale population dynamics would be an important step in clarifying the importance of these regulations, both to the public and to NMFS.

References

Ashe, E., D. P. Noren, and R. Williams. in press. Animal behaviour and marine protected areas: incorporating behavioural data into the selection of marine protected areas for an endangered killer whale population. Animal Conservation.

Heimlich-Boran, J. R. 1988. Behavioral ecology of killer whales (*Orcinus orca)* in the Pacific Northwest. Canadian Journal of Zoology **66**:565-578.

Holt, M. M., and D. P. Noren. 2009. Speaking up: killer whales increase their call amplitude in response to vessel noise. Journal of the Acoustical Society of America **125**:EL27-EL32.

Lusseau, D., D. E. Bain, R. Williams, and J. C. Smith. 2009. Vessel traffic disrupts the foraging behavior of southern resident killer whales *Orcinus orca*. Endangered Species Research **6**:211-221.

Noren, D. P., A. H. Johnson, D. Rehder, and A. Larson. 2009. Close approaches by vessels elicit surface active behaviors by southern resident killer whales. Endangered Species Research **8**:179-192.

Osborne, R. W. 1986. A behavioral budget of Puget Sound killer whales. Pages 211-249 in B. Kirkevold, and J. S. Lockard, editors. Behavioral biology of killer whales. Alan R. Liss Inc., New York.

Williams, R., and E. Ashe. 2007. Killer whale evasive tactics vary with boat number. Journal of Zoology **272**:390-397.

Williams, R., D. E. Bain, J. K. B. Ford, and A. W. Trites. 2002a. Behavioural responses of male killer whales to a 'leapfrogging' vessel. Journal of Cetacean Research and Management **4**:305-310.

Williams, R., D. E. Bain, J. C. Smith, and D. Lusseau. 2009. Effects of vessels on behaviour patterns of individual southern resident killer whales *Orcinus orca*. Endangered Species Research **6**:199-209.

Williams, R., D. Lusseau, and P. S. Hammond. 2006. Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). Biological Conservation **133**:301-311.

Williams, R., A. W. Trites, and D. E. Bain. 2002b. Behavioural responses of killer whales (*Orcinus orca*) to whale-watching boats: opportunistic observations and experimental approaches. Journal of Zoology **256**:255-270.

Subject: People For Puget Sound comment letter: Orca Vessel proposal
From: htrim@pugetsound.org
Date: Fri, 15 Jan 2010 10:14:07 -0800
To: Orca.Plan@noaa.gov, Lynne.Barre@noaa.gov, Donna.Darm@noaa.gov
CC: 'Kathy Fletcher' <kfletcher@pugetsound.org>

Hi Donna and Lynne,

Please see our attached comments.

Thank you so much.

Best,
Heather

Heather Trim
Urban Bays and Toxics Program Manager
People For Puget Sound
911 Western Ave, Suite 580
Seattle, WA 98104
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People For Puget Sound Orca Vessel Comment Letter Jan 15 2010.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

Joint letter to NOAA orca rec Nov 12 2007.doc	**Content-Type:** application/msword **Content-Encoding:** base64

Comment Letter Recovery Plan for Orcas Final Feb 27 2007.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

PEOPLE FOR PUGET SOUND

pugetsound.org

January 15, 2010

Assistant Regional Administrator
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way, NE.
Seattle, WA 98115
Via email: orca.plan@noaa.gov, Lynne.Barre@noaa.gov, Donna.Darm@noaa.gov

RE: Proposed Vessel Regulations for Killer Whales

Dear Assistant Regional Administrator:

We are writing to comment on the Proposed Vessel Regulations for Killer Whales - Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act (Federal Register Vol. 74, No. 144, July 29, 2009, p. 37674).

People For Puget Sound is a non-profit membership organization working to restore the health of Puget Sound.

People For Puget Sound is disappointed that NOAA/NMFS continues to delay on key needed actions to protect orcas. Although vessel operational changes are part of the solution, critical action is needed now on:

- Restoration of salmon runs through removal of dams, restoration of habitat, land use restrictions, water quality improvements and changes in harvest and hatchery practices.
- Reduction of toxic pollution that impacts the food web
- Reduction of noise impacts from sonar and other activities

People For Puget Sound and other stakeholders provided extensive comments to NOAA in the past few years (see attached) and yet the only real energy we have seen from NOAA is on the vessel issue. We feel that NOAA needs to devote more staff and resources to address the orca issue in a serious manner. Existing NOAA-approved salmon recovery plans are not adequate to restore salmon runs, let alone support orca recovery. NOAA's strategy to address toxins in whales is a research plan, not an action plan.

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People For Puget Sound believes that NOAA should refocus its limited staff resources to the salmon recovery and toxic reduction actions that are essential for whale survival, and devote further time and effort to the vessel issues when increased staff and other resources are devoted to orca recovery overall.

Lack of public awareness about Puget Sound issues is one of the major impediments to successful protection and restoration. Whale watching is one activity that reaches thousands of people every year with compelling reasons to protect our marine waters. It would be supreme irony to focus so intently on restricting whale watching while the whales themselves go extinct for lack of sufficient non-toxic food.

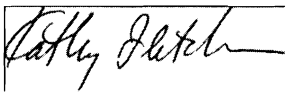
With regard to the vessel proposal:

- People For Puget Sound supports the distance (200 yards) and no intentional parking in the path of traveling whales
- People For Puget Sound agrees in concept with a "no-go zone" akin to the Robson Bight protected area in British Columbia, but has concerns about the scientific basis, actual size, exemptions for some types of operations, access to public parks, unintended consequences, feasibility of enforcement, and other questions.
- People For Puget Sound also suggests that vessel speed limits applicable to all vessels in critical areas could be an effective alternative or complementary strategy.
- People For Puget Sound suggests that NOAA convene a vessel operator stakeholder group that includes commercial fishing operators, recreational fishers, container and cruise ship operators, small recreational boat companies, research vessel operators, military, whale watching companies and others to help craft the most effective and enforceable strategies and to ensure that fair treatment is given to all.

Enforcement is a key pragmatic and fairness issue that should be addressed regarding both existing and proposed regulations. Without a much-improved strategy for education and enforcement, increasing restrictions will increase the inequity between those who comply and those who do not. One of the major vessel issues is inappropriate and harassing behavior by recreational boaters who are apparently unaware even of the existing limits. Another issue is how to address the international nature of the problem, reaching Canadian boaters and whale watch operators in an effective way. NOAA could make a meaningful contribution to these issues by providing steady financial support to state and local enforcement agencies. NOAA should also fully support education efforts aimed at recreational boaters and others (such as shippers and boaters who transit the area) who may be oblivious of the killer whales and of the regulations.

We look forward to continuing to work with you towards the recovery of our precious orca population. Thank you for your consideration. You can reach me at (206) 382-7007 if you have any questions or concerns.

Sincerely,



Kathy Fletcher
Executive Director

Attachment

PEOPLE FOR PUGET SOUND
pugetsound.org

Wild Fish Conservancy
NORTHWEST
SCIENCE EDUCATION ADVOCACY

Save Our wild Salmon

November 12, 2007

Lynne Barre
Donna Darm, Chief
Protected Resources Division
1201 NE Lloyd Blvd., Suite 1100
Portland, OR 97232
Via email: orca.plan@noaa.gov

RE: Draft Proposed Recovery Plan for Southern Resident Killer Whales (Orcinus orca)

Dear Ms. Darm and Ms. Barre,

Thank you for the opportunity to comment on the Draft Proposed Recovery Plan for Southern Resident Killer Whales (Orcinus orca), dated November 2006.

In this comment letter we focus on specific language suggestions. This letter adds to the letters previously submitted by each of organizations, either jointly or individually.

We have the following specific text language suggestions related to the proposed plan:

<u>Proposed Recovery Criteria</u>

> Using the annual counts of Southern Residents from 1974 (the end of the live-capture and removal period) to the end of the period of rapid growth of the Northern Resident population in 1997, the average annual growth rate of the Southern Resident DPS was 0.0127 (1.27%) with a sample standard deviation of 0.0397, hence a coefficient of

variation of 3.1 (310%). Annual growth rates ranged from -5.15% to +12.86%. This is an extreme amount of variation. During the same period the Northern Resident population exhibited an average annual growth rate of 0.0258 (2.58%) with a sample standard deviation of 0.0204 and a coefficient of variation of 0.79. Annual growth rates ranged from -1% to +7.3%.

We recommend that the proposed growth rate criteria for a recovered Southern Resident DPS include a maximum coefficient of variation close to that observed in the Northern Resident population during the period of pronounced growth between 1974 and 1997. In any case, the standard should be substantially lower than that observed during the period of growth from 1974 to 1997 (3.1). Tentatively, we recommend a maximum C.V. of 0.8.

Therefore we request the addition of this benchmark: *Before the first five-year review, NOAA will develop an appropriate variance criterion for the growth rate target listed in the recovery plan.*

Threats Criteria

We suggest the inclusion of the following benchmarks:

a. *Using best available scientific information, NOAA will set a tentative, risk-averse estimate of the number of salmon (including the subset that consists of Chinook) that must be made available to SRKW to encounter (and hence to be potentially available as prey to SRKW) in order to achieve recovery.*

b. *NOAA will convene a standing technical committee consisting of scientists from the Northwest and Alaska Fisheries Science Centers' National Marine Mammal Laboratory, the Northwest Fisheries Science Center's Conservation Biology Division, and the Sustainable Fisheries Division. This committee should be tasked with a) refining the salmon encounter allocation schedule for Southern Resident killer whales, and, then, b) recommend the appropriate reconfiguration of salmon fisheries that will be necessary in order to secure the allocation. The allocation schedule will be a priority issue for US representatives at the negotiations for the renewal of the Pacific Salmon Treaty (PST).*

c. *NOAA will instruct to all US parties that the Pacific Salmon Treaty must have a substantive provision for the killer whale encounter allocation in order to receive an incidental take statement through the ESA Section 7 consultation.*

Downlisting

We suggest inclusion of this growth rate criterion: *A minimum annual growth rate of 1.0 for the 14-year cycle period is included as an independent criterion.*

Oil Spills

We suggestion inclusion of: *NOAA and the other Federal signatories to the 2001 MOA will ensure that ESA Section 7 consultations on pre-spill planning, spill response, and post-response activities will be carried out as outlined in the 2001 MOA, and, working with the Region 10 Regional Response Team/Northwest Area Committee, update the Northwest Area Contingency Plan as needed.*

Environmental Contaminants

[note: these actions are more detailed than the proposed actions in the draft recovery plan]

1.2.1 Clean up contaminated sites and sediments.

We suggest that this action should include the following benchmarks:

a. *Create a site specific map of sediment sites that identifies for each site the contaminants of concern, outlines specific areas with contaminants above sediment management standards, and identifies approximate acreage (within 1 year).*
b. *Prioritize contaminated sediment sites based on known threats to orcas (including prey) (within 18 months).*
c. *Cleanup target of minimum of 25% of this acreage every five years (assuming full cleanup in 20 years), with highest priority sites substantially cleaned up by 2020.*
d. *Monitor all cleanup sites for re-contamination problems as well as success of cleanup methods and create a database that tracks this information in a systematic (and easy to use) fashion (within 2 years).*

1.2.2 Minimize continuing inputs of contaminants into the environment.

a. *Use current toxics loading assessment being undertaken under the direction of Ecology and EPA to prioritize toxic pollutants of concern for orcas (e.g., lead, cadmium, mercury, PCBs, PBDEs, phthalates, emerging chemicals) (within 1 year).*
b. *EPA and Ecology will determine the current load of conventional pollutants and determine the needed reductions in BOD and nutrients in order to eliminate the*

threat of dissolved oxygen problems, especially in the South Sound [such a study is already underway*] within 2 years, in order to avoid fish kills and other prey reduction threats.*

c. *Ecology and EPA will update water quality standards under their respective authorities of 40 CFR 131.20 and 40 CFR 131.21 (within 3 years).*
d. *EPA will advocate to Ecology to phase out "mixing zones" for bioaccumulative and toxic chemicals or use its authority under 40 CFR 131.22(b) (within 2 years).*
e. *EPA and Ecology will issue discharge permits to cover all pollutants of concern (within 5 years).*
f. *Ecology and EPA will provide incentives for upgrading treatment systems and pretreatment programs (within 2 years).*
g. *EPA and Ecology will increase their inspections and enforcement of permitted discharges (within 2 years).*
h. *EPA and Ecology will develop a program to phase out all Combined Sewer Overflows (CSOs) (within 10 years).*
i. *The federal agencies and state agencies will contribute to and help develop a new initiative to develop green chemistry and new technologies that will address contamination issues of concern for orcas (within 3 years).*
j. *Ecology will update (or EPA will promulgate) municipal stormwater permits that are based on basin planning and other recommendations made by NOAA to address land use threats and include standards that are sufficient to meet ecosystem water quality goals (within 2 years).*
k. *In addition, the municipal stormwater permits will address retrofitting existing development (within 2 years).*
l. *Ecology will issue stormwater NPDES permits that meet water quality standards (within 5 years).*

1.2.2.2 Minimize the levels of harmful contaminants released by non-point sources of pollution.

A major area that has been insufficiently addressed is pollution from stationary and mobile air sources, including marine vessels.

We suggest the following actions:

<u>Air</u>

a. *Ecology and EPA will prioritize air toxic pollutants by source and develop a strategy to reduce toxic pollutants of concern for orcas and their prey (within 3 years).*

b. *EPA and Ecology will work with Washington Ports to reduce toxic pollutants (in addition to diesel and greenhouse gases) from the emissions of marine-related vessels and activities (within 2 years).*
c. *NOAA and EPA will work with other federal agencies and other nations to create stronger emission control regulations and agreements for all vehicles and vessels.*

Source Control

a. *Ecology and EPA will conduct source control studies to determine chemicals of concern from products and processes that flow into the Sound (through various pathways) and develop a reduction strategy, including bans, that will eliminate these threats (within 4 years)*

1.2.2.3 Develop environmental monitoring programs for emerging contaminants.
We suggest that this action be renamed:
Reduce threats to orcas from emerging contaminants

We suggest the following actions:

a. *EPA, USGS, WA DOH and Ecology will develop a comprehensive Puget Sound-wide environmental monitoring program for brominated flame retardants (BFRs), polychlorinated paraffins (PCPs), perfluorooctane sulfonate and other perfluorinated compounds, polychlorinated naphthalenes (PCNs), polychlorinated terphenyls (PCTs), endocrine disruptors (e.g., synthetic estrogens, steroids, some pesticides,and pharmaceuticals.(within 2 years).*
b. *EPA and Ecology will develop water quality standards and/or regulations to eliminate the threat of emerging chemicals to orcas and their prey (within 5 years).*
c. *EPA and Ecology will develop strong source control and/or pretreatment regulations to address emerging contaminants (within 5 years).*
d. *EPA will, as part of its ESA Section 7(a)(1) obligations and after consulting with NOAA, will initiate and/or advocate to Ecology for initiatives and additional controls on environmental contaminants as needed.*

1.2.3 Minimize contamination in prey.
We suggest that the first action in this category should state
The above actions 1.2..1 – 1.2.2.3 will address contamination in prey, where relevant.

Puget Sound Regional Monitoring.
We suggest the addition of the following action:

NOAA will work with other federal agencies, state agencies, tribes, local governments, businesses, nonprofit groups, academic researchers and others to help develop a comprehensive regional monitoring program for the Puget Sound basin [such an effort is already underway] *that will address the key questions about ecosystem health, including status and trends, which areas are impaired, if actions undertaken are improving ecosystem health and what actions must be undertaken to improve health. This regional monitoring program will be conducted in an independent, credible and transparent manner in conjunction with the Puget Sound Partnership and NOAA's recovery actions.*

Implementation schedule and costs. The implementation table of the draft Recovery Plan does not include costs for many actions and does not address additional costs for underfunded programs. Further, the budget should be developed to reflect actions not motivated by killer whale recovery (e.g., superfund cleanups, recovery of endangered salmon), but that would contribute to killer whale recovery and could be expedited for this reason. Specific gaps noted include:

- The draft Plan assumes that existing salmon recovery plans are adequate even though there are significant gaps and substantial uncertainties in this effort.
- The draft Plan does not address the need for additional funding for contamination cleanup and source control. Existing cleanup efforts are significantly and chronically underfunded.
- Stormwater management will require significant increases in funding to perform at even marginally adequate levels.
- Non-endangered salmon stocks need to be maintained and enhanced where possible, in addition to restoration of listed stocks.
- The budget needs to include an allowance for programs that don't have specific costs (e.g., disease management).

The budget should be front-loaded starting in FY'08 to allow initial actions to be implemented (e.g., essential research, management actions justified based on existing information, the first ten years of salmon recovery, etc.). Finally, it is a huge miscalculation to presume that the research program is expected to cost almost 6 times more than management actions. Although research is critical, on-the-ground actions, if fully described, should cost many multiples of the research costs from the start.

<u>Prey</u>

Snake River Dams. As the draft recovery plan acknowledges, the decline of Columbia River Basin salmon stocks has meant a significant decrease in the availability of prey for these whales, particularly during the winter months. The best available science points to removal of the four lower Snake River dams as the surest way to recover abundant salmon from that river system. Recovery of those salmon would mean large numbers of fish (particularly chinook) for the whales to feed on, as they did historically when Columbia Basin runs numbered in the tens of millions.

Therefore we request that the agency include removal of the four Lower Snake River dams as a site-specific recovery action in the Southern Resident killer whale recovery plan.

Elwah Dams.

We suggestion the following actions be included:

a. *Sufficient funding should be secured to commence removing the Elwha River dams in 2010. This is primarily a federal responsibility, but the State of Washington should contribute funds as necessary to avoid delay.*
b. *The Park Service and other federal agencies should timely implement all actions necessary to remove the Elwha River dams starting in 2010, including completion of water quality and hatchery facilities and flood control measures.*

<u>Overall</u>

We suggest the inclusion of: NOAA will invite Ecology, US Fish and Wildlife Service, EPA, and the Puget Sound Partnership to launch a joint effort to evaluate protective measures and restoration efforts, on a watershed basis, to ensure that the entire suite of initiatives will both meet water quality goals and ESA goals.

Thank you for your consideration of our comments and we look forward to continuing to work with you to recover Southern Resident orcas.

Sincerely,

Darcie Larson
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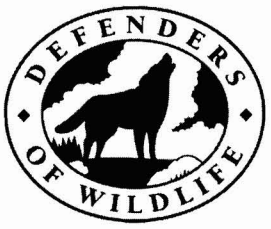

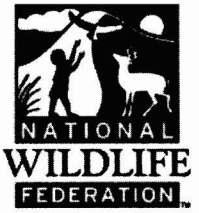

February 27, 2007

Lynne Barre
Donna Darm, Chief
Protected Resources Division
1201 NE Lloyd Blvd., Suite 1100
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Via email: orca.plan@noaa.gov

RE: Draft Proposed Recovery Plan for Southern Resident Killer Whales (Orcinus orca)

Dear Ms. Darm and Ms. Barre,

Thank you for the opportunity to comment on the *Draft Proposed Recovery Plan for Southern Resident Killer Whales (Orcinus orca)*, dated November 2006.

People For Puget Sound is a nonprofit, citizens' organization whose mission is to protect and restore Puget Sound and the Northwest Straits, including a specific goal to protect and restore the 2,000 miles of Puget Sound shoreline by 2015.

Defenders of Wildlife is a nonprofit environmental organization with approximately 500,000 members and supporters. Defenders is dedicated to the protection of all native wild animals and plants in their natural communities. Defenders advocates new approaches to wildlife conservation that will help keep species from becoming endangered. Our programs encourage protection of entire ecosystems and interconnected habitats while protecting species that serve as indicator species for ecosystem health.

The National Wildlife Federation's mission is to inspire Americans to protect wildlife for our children's future. With approximately 4 million members and supporters nationwide, National Wildlife Federation educates and empowers Americans to protect and restore wildlife, connect people with nature, and address the threat of global warming.

PEER is a national non-profit alliance of local, state and federal scientists, law enforcement officers, land managers and other professionals dedicated to upholding environmental laws and values.

The Center for Biological Diversity is a non-profit organization dedicated to the protection of imperiled species and wild spaces through science, advocacy and the law.

Save Our Wild Salmon is a nationwide coalition of conservation organizations, commercial and sportsfishing associations, businesses, river groups, and taxpayer and clean energy advocates working collectively to restore self-sustaining, healthy, and abundant wild salmon to rivers, streams and oceans of the Pacific Salmon states.

Southern Resident Killer Whales are a signature species of Puget Sound and their health and population status are indicators of the health of the Sound overall. We believe that significant, aggressive and timely actions must be taken just to protect, let alone to recover, their diminished population.

The draft Recovery Plan, especially the Background Section, is well written, clearly organized, and is inclusive of scientific research to date. The threats to orcas are well defined. We are troubled, however, that the Recovery Strategy, Goals, Objectives, Criteria, Program and Implementation Schedule and Costs are not strong enough to recover the Southern Resident orca population.

We appreciate that NOAA Fisheries has produced orca ESA documents on schedule and is pursuing a high quality orca research program. What we don't see in the document is the partnership effort that is needed with other federal agencies, tribal governments, state agencies, the Canadian government, businesses, nonprofit organizations and others to address orca recovery. It is not clear that significant outreach to these partners has occurred yet. Piggybacking on existing programs such as Shared Strategy and Puget Sound Partnership is an appropriate strategy but this Recovery Plan must go further than these efforts, which are built on compromise and have some serious gaps related to the protection and improvement of critical ecosystem components fundamental to orca recovery.

The ESA requires that the NOAA Fisheries "develop and implement" a recovery plan "for the conservation and survival of" any threatened or endangered species. 16 U.S.C. § 1533(f)(1). Generally, a recovery plan "identifies and assigns priorities to actions required for the recovery of a species." National Marine Fisheries Service Recovery Planning Guidelines (September 1992). Thus, a recovery plan acts as a "basic road map to recovery, i.e., the process that stops or reverses the decline of a species and neutralizes threats to its existence." Fund for Animals v. Babbitt, 903 F. Supp. 96, 103 (D.D.C. 1995). The ESA states that, "to the maximum extent practicable," the recovery plan must contain both "site-specific management actions necessary for the conservation and survival of the species," and "objective, measurable criteria" by which the recovery of the species may be judged. 16 U.S.C. § 1533(f)(1)(B).

The development of the "site-specific management actions" within a recovery plan requires the NOAA Fisheries to "consider the distinct needs of separate ecosystems or recovery zones occupied by a threatened or endangered species." Fund for Animals, 903 F. Supp. at 106. Indeed, for a recovery plan to meet the statutory standard, it must be "as explicit as possible in describing steps to be taken in the recovery of a species." Id. (citing S. Rep. No. 240, 100th Cong., 2d Sess. 9 (1988)). In the absence of detail and specific management actions, the NOAA Fisheries will not be able to properly "implement" the plan, and such "inaction eviscerates the recovery planning provisions . . . and amounts to an abdication of the [NOAA Fisheries] responsibility to plan for the survival and recovery . . . of endangered and threatened species." Id. (quoting Sierra Club v. Lujan, 1993 U.S. Dist. LEXIS 3361, *66 (W.D. Tex. 1993)).

ESA Section 4(f)(1)(B) Statutory Requirements 1 and 3:

Our major comment is that the Management Actions and Implementation Schedule do not meet the ESA Section 4(f)(1)(B) statuary requirements described on page 118 of the draft Recovery Plan:

> "1. A description of the site specific management actions necessary to achieve the plan's goal for the conservation and survival of the species"
>
> nor
>
> "3. Estimates of the time required and cost to carry out those measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal."

Below we provide specific comments on the ways that these requirements are not met:

1. Regulatory Actions. Table 6 (page 74), *Factors considered in listing and potentially affecting recovery of Southern Resident killer whales,* clearly identifies threats to orca and the barriers to overcoming these threats. For several of the threats, including Contaminants, Vessel effects, and Sound, an identified barrier is "Inadequacy of Existing Regulations." Therefore, the Recovery Plan must clearly recommend the specific regulatory actions needed to ensure the recovery of the species.

2. Lack of benchmarks. The approach in the draft Recovery Plan is forgiving rather than directive in terms of timely implementation of actions. Although an adaptive management strategy is warranted, such an approach should also incorporate specific benchmarks that much be achieved by certain dates. At those dates, 5 year or 10-year intervals, an assessment can be made and a change of course implemented. Otherwise, we have a sliding timeline in which we continue to merely "minimize" our impact. History has shown this approach usually "minimizes" the benefits for and protections of listed species.

3. Recovery Program Outline (pages 127-132). This outline of recovery measures relies heavily on the use of such terms as "minimize" and "support." This soft approach over the past several decades has led to our diminished orca population. It is the responsibility of NOAA Fisheries, we believe, to outline specific actions and benchmarks that get us beyond "minimization." The terms that should be used are "Significantly reduce" or "eliminate the threat of" or other more directive language. Better yet would be for NOAA Fisheries to identify quantitative benchmarks for toxic clean up, toxic loadings, noise in the marine environment, habitat loss for food species, etc. Interestingly, the language *is* more directive and detailed in the Research and Monitoring section of this chapter.

4. Recovery Action Narrative (pages 133-165). Almost all of the management actions (habitat management, regional restoration, prey contamination, etc.) are described in broad, general terms. By contrast, the Research and Monitoring actions are specific. There is no reason why management actions cannot be specific and directive. We strongly recommend that the management section be re-formatted and significantly strengthened with specific bulleted actions that relate to specific management measures and trace directly back to benchmarks identified under each measure.

Our suggested approach is (this same approach should be taken for each action, these are just examples):

a. Habitat Management (1.1.1.1).
   - Improve salmon habitat on a regional basis with targeted recovery of xx salmon populations to xx level in xx years, with a focus on prey density year-round.
   - Removal of large bottlenecks for large salmon populations, such as culverts blocking fish passage, tidegates diminishing estuaries, and dams in xx watersheds by xx date, prioritized by amount of prey gain and other related factors.
   - Increase nearshore salmon habitat by xx amount in 10, xx in 20 years. Increase nearshore productivity at the same rate as the streams, so that one or the other does not become a bottleneck.
   - Implement updated landuse plans, such as shoreline management plans and critical area ordinances that will directly address improvement and protection of salmon and other aquatic habitat including sufficient shoreline buffers, riparian vegetation protection and restoration, and clean water incentives.
   - Ensure that Washington Department of Ecology manage streamflow, through allocations and other methods, to provide adequate flows for salmon and other aquatic species.
   - Ensure water flow is adequate in the Columbia System (Oregon, Idaho, Montana, British Columbia, California, Nevada and Utah) and in other river systems in California and Oregon, particularly the Klamath.
   - Significantly improve water quality management actions in Shared Salmon strategy (and WRIA plans) so that, at a minimum, water quality standards are met.
   - Implement stormwater NPDES permits and other stormwater management tools to ensure that water quality standards to protect aquatic species are met
   - Implement TMDLs and other actions to remove contaminated waterbodies from the state's 303(d) list
   - Create a mechanism (feedback loop) that ensures that habitat management takes into account anticipated climate shifts. Actions adequate in present climate may not be adequate in a warmer climate.
   - Etc.

b. Improve restoration for other species (1.1.2)
   - Monitor progress of recovery of species that are covered under existing management plans. Identify gaps in these plans.
   - Develop management plans for other species not currently covered
   - Increase the number and acreage of marine protected areas to a level that ensure adequate protection of important critical spawning, feeding and rearing areas for important other aquatic species
   - Identify gaps and increase enforcement of protection of other species
   - Etc.

c. Cleanup contaminated sites and sediments (1.2.1)
   - Identify and create a GIS map of all sediment and upland sites with contaminants of concern to orca recovery in Puget Sound and the Strait of Juan de Fuca by December 31, 2007 (with contamination levels above recognized government standards)
   - Create a cleanup timeline for these sites, prioritized by the largest threats, so that all sites are cleaned up by 2020.

- Clean up all Superfund sites, which should already be a high priority based on their high levels of contamination, on a similar timeline.
- Monitor all cleanup sites for re-contamination problems as well as success of cleanup methods and create a database that tracks this information in a systematic (and easy to use) fashion
- Etc.

Again, these are examples. We would be happy to meet with NOAA Fisheries to help work through a similar process for all management actions.

5. Add new action: Source control. [This action is different from action 1.2.2 that addresses continuing pollution in a broad way] A huge priority should be placed on source control because source control is one of the main limiting factors for site cleanups. USEPA and the Washington Department of Ecology should identify human and financial resources necessary to do this task effectively and devote those resources to source control for Puget Sound cleanup sites. Cleanup cannot proceed until source control is adequately addressed.

6. Add new action: Stormwater control and treatment. Stormwater is such an important issue that it should be addressed by its own directive action. Contamination from stormwater has been described as the most significant toxic threat to Puget Sound. Stormwater control and treatment is also critical for salmon recovery. Recently issued municipal stormwater permits do not adequately address water quality standards and land use planning. Significant funding is needed on local, state and federal levels to remove the threat of stormwater to the health of Puget Sound and to Southern Resident orcas.

7. Strengthen water quality actions. Excessive nutrients, persistent bioaccumalative toxic (PBTs) chemicals, and other contaminants continue to be discharged into the Puget Sound drainage under federal wastewater permits. This contaminant load should be capped at today's levels and then gradually reduced with an aggressive new level of green chemistry and technological investments. Mixing zones for PBTs should be phased out by 2015. Water quality and sediment standards should be upgraded within 3 years to ensure orcas are not exposed to harmful PBTs.

8. Add new action: Endocrine Disruptors. Reduction of endocrine disruptors should be addressed by their own recommended regulatory action. Much recent human, rodent and other mammal research has pointed to fecundity decreases due to endocrine disrupters in products and in the environment. These chemicals, including phthalates, PAHs, some pharmaceuticals, and some pesticides, should be addressed at a state or federal level with Chemicals Policy Reform – that is, manufacturers should be required to identify which chemicals are in products and industrial processes in Washington State, prove that these chemicals cause no reproductive, toxic or carcinogenic harm to mammals and find safer alternatives. As is pointed out on page 98 of the draft Recovery Plan, "environmental levels of many emerging contaminants, which are typically poorly regulated, are probably increasing." This threat is significant and must be directly addressed more aggressively than the proposed action that calls for an environmental monitoring program.

9. Add new Action: Effective enforcement of existing regulations. The array of existing environmental protection laws, if enforced, could significantly improve the health of the Puget Sound ecosystem and help reduce threats to orcas. This need for enforcement extends to removal of barriers to fish passage with a priority on blockages that cause greatest diminution of salmon runs. Noise is a good example where enforcement of existing regulations would be beneficial. Funding for enforcement is also needed.

10. Harvest and hatcheries. The Recovery Plan should aggressively address the difficult issues of harvest and hatchery management. In terms of salmon restoration, the focus should be on minimizing harm to wild salmon from hatcheries and supporting wild salmon recovery. For example, wild and hatchery salmon provide different contributions and opportunities as a food source for orcas and the recovery plan should plan actions carefully with these differences and distinctions in mind.

11. MOU with Navy. A Memorandum of Understanding (MOU) should be developed with the Navy so that their specific adverse actions can be addressed directly rather than sprinkled through actions and excluded in the critical habitat designation.

12. Climate Change. Briefly mentioned in Research Action B8, climate change should have a stronger emphasis in this Recovery Plan. Climate change could be one of the most significant factors in the survival and recovery of orcas given the potential for much more frequent sewer or combined sewer overflows, other toxics releases, spread of diseases, loss of nearshore habitat, change in food web characteristics and more.

13. Cumulative Impacts. It's important that management actions be evaluated in terms of cumulative effects rather than on a case-by-case basis. Cumulative impact assessment should be explicitly built into most of the management actions. For example, if the plan calls for increasing nearshore salmon habitat, projects that reduce nearshore habitat should not be approved, even if the reduction in habitat seems insignificant.

14. Dam Removal in Lower Snake River. While much of the draft recovery plan's discussion of prey species necessary for a recovered orca population focuses on those stocks most commonly found in the Puget Sound/Georgia Basin area, the plan correctly concludes that "[p]erhaps the single greatest change in food availability for resident killer whales since the late 1800s has been the decline of salmon in the Columbia River basin." p. 82. Southern Residents, particularly K and L pods, typically vacate the inland waters of for the late fall and winter months and migrate either north along the west coast of Vancouver Island or South along the Washington and Oregon coasts, sometimes as far south as California. As NOAA Fisheries acknowledges in the recovery plan, salmon from the Columbia River Basin, which once numbered from 10-30 million returning salmon per year, were a vital food source for the Southern Resident population during these crucial months. Many Columbia Basin salmon, especially fall chinook, have migration routes that bring them close to the coast where Southern Residents are most frequently spotted. As the recovery plan notes, L pod has been observed feeding on the Columbia River spring chinook run in the spring of 2004. Not only are salmon from the Columbia River an important historic food source, recovered abundant salmon in this river are an indispensable requirement for the recovery of Southern Residents. We believe that NOAA Fisheries' acknowledgment of the importance of this food source in the draft plan is critical and we urge the agency to include in the final recovery plan specific recovery criteria for the number and seasonal distribution of salmon, particularly chinook, that Southern Residents need to return to the Columbia River to support a recovered population. To support and implement these criteria, the agency should include removal of the four Lower Snake River dams as a site-specific recovery action in the recovery plan. This action is the single most effective way to generate the abundant Columbia Basin salmon that Southern Residents need to recover.

15. Klamath River Dams. The Klamath River was once the third largest salmon river in the US portion of the Southern Resident range, and would also benefit from dam removal. Its location between the Columbia and the Sacramento will be important to establishing independent sub-populations.

16. Pacific Salmon Treaty. Given its huge impact and NOAA Fisheries' role in consulting on the next round, this treaty is a huge issue that should be addressed in the Recovery Plan. As this treaty is renegotiated orca recovery actions should be included.

17. Additional Critical Habitat. The Recovery Plan should prioritize designation of additional Critical Habitat as soon as possible. Recovery targets are inadequate, and as a result Hood Canal is in fact essential to the recovery of the species. Additional data from the Pacific Coast will undoubtedly justify designation of additional Critical Habitat there. Due to the ratchet nature of Critical Habitat, designation sooner rather than later is important.

18. Shallow Water Use. Research oriented toward documenting use of shallow water is also needed, as it may be important in expanding critical habitat.

19. More specific International actions. Specific language and targets should be included to address international issues related to orca recovery. These actions could enhance the ongoing cooperation with the Canadian Killer Whale Recovery Team and indeed we should support the Canadian effort with funds and research (to protect Southern Residents on their side of the border). Some examples of issues that should be addressed by specific actions are:

- The Fraser is probably the primary source of food for Southern Residents at this time
- Canada has its own habitat that is critical.
- International sources of toxins will become relatively more important as we reduce US sources.
- Salmon fisheries in international waters need to be managed.

20. Educational map. Oregon and California as well as Washington are orca habitat, and inland states like Idaho contain watersheds that drain into Southern Residents' habitat. In addition to the toxic sediment map, it would be productive to produce watershed maps showing where contaminant sources drain into the Southern Resident range and an airshed map showing where aerial discharges find there way into orcas through prey. Also, having a range map for prey species would help people envision where human activities affect Southern Residents.

21. Synthesis of existing knowledge to expedite actions. Existing knowledge should be synthesized from a regulatory perspective. This should be a priority to allow initial management actions to be taken, followed by adaptive management changes as additional data on threats become available and the effectiveness of on-going management protocols is assessed. That is, a quantitative population dynamics model should be developed that incorporates food availability, disturbance, toxins, disease outbreaks, oil spills, and other factors. The effect of proposed actions on population growth rates could then be estimated. In turn, stakeholders could be convened to set timelines for habitat improvement actions in various sectors (fisheries, vessels, noise, oil, the Navy, stormwater, toxins, etc.) that would result in steady population growth.

22. Follow-up forums on management actions. The set of science workshops that NOAA Fisheries have held related to orca recovery have been excellent. We suggest the NOAA Fisheries convene a series of similar workshops to refine the management actions for the Recovery Plan so that the actions can reach the level of specificity and detail of the Monitoring and Research Actions in the draft.

23. Implementation schedule and costs. The implementation table of the draft Recovery Plan does not include costs for many actions and does not address additional costs for underfunded programs. Further, the budget should be developed to reflect actions not motivated by killer whale recovery (e.g., superfund

cleanups, recovery of endangered salmon), but that would contribute to killer whale recovery and could be expedited for this reason. Specific gaps noted include:

- The draft Plan assumes that existing salmon recovery plans are adequate even though there are significant gaps and substantial uncertainties in this effort.
- The draft Plan does not address the need for additional funding for contamination cleanup and source control. Existing cleanup efforts are significantly and chronically underfunded.
- Stormwater management will require significant increases in funding to perform at even marginally adequate levels.
- Non-endangered salmon stocks need to be maintained and enhanced where possible, in addition to restoration of listed stocks.
- The budget needs to include an allowance for programs that don't have specific costs (e.g., disease management).

The budget should be front-loaded starting in FY'08 to allow initial actions to be implemented (e.g., essential research, management actions justified based on existing information, the first ten years of salmon recovery, etc.). Finally, it is a huge miscalculation to presume that the research program is expected to cost almost 6 times more than management actions. Although research is critical, on-the-ground actions, if fully described, should cost many multiples of the research costs from the start.

ESA Section 4(f)(1)(B) Statutory Requirement 2:

In addition, we have the following comments regarding the objective measurable criteria that would lead to a removal of orcas from the list:

1. Biological Criteria (pages 119-126). There is no compelling evidence presented that a 2.3% per year population growth rate indicates a healthy population of Southern Resident Killer Whales. In fact, after a period of growth at this rate, the Southern Resident population declined precipitously. The 3% per year growth rate of Northern Residents, which are less likely to suffer from reproductive impairment and immuno-suppression due to toxins, is a better target. A larger population is less likely to be affected by random fluctuations so is better able to maintain consistent growth. Nevertheless, some variation in rate is to be expected due to changes in age structure and sex ratio.

As a trigger for downlisting or even delisting, other factors should be more important, and a sustained growth rate close to 3% should be required. Absolute population size (500-1000 individuals), the existence of subpopulations (with three different core areas), the number of breeding individuals (250-1000), population trends (increase near 3%/year), range utilization (use of core areas for weeks to months with travel throughout the range the remainder of the year), and the result of population viability analysis (with population parameters adjusted to produce a stationary rather than increasing population with a maximum possible size set at the then current size, and allowance for catastrophes such as disease outbreaks or oil spills) all should be favorable before change in status takes place.

2. Threats Criteria, Factor A-2, Fisheries Management (page 123). This factor should include support of *wild* salmon stocks as a key to the long-term sustainability of the health of the Puget Sound ecosystem and of orcas. Fisheries management needs to consider the status of the Sacramento, Klamath, Columbia, and Fraser rivers, along with smaller coastal rivers. In addition, the importance of non-salmonid species needs to be understood and those species need to be healthy enough that their abundance and trends don't pose a threat to continued SRKW survival. A lot more than Puget Sound salmon need to be considered.

Targets for Salmon Recovery. A 3% per year growth rate for orca recovery (see above) corresponds to about 34% over 10 years, and 81% over 20 years. The food supply will need to keep up with the whales, so 3% is a realistic target. We need to add 10%, since the brief recovery in the population has reversed. The year 2002- 4 average - is the baseline to grow from. Salmon returns vary with natural variations in climate, so an allowance should be made for adequate fish in bad years. Reasonable targets (from the orcas' perspective) might be 50% in 10 years and 100% over 20 years. Toxic load may preclude maximum growth even if fish are abundant, but reduced population growth would be expected until females who already have high toxin levels die or reach post-reproductive age.

3. Threats Criteria, Factor A-3, Contaminant Levels (page 123). Although a focus on legacy pollutants is important, this factor should also include ongoing pollution such as flame retardants, PAHs, endocrine disrupters, metals, emerging chemicals, and more.

4. Threats Criteria, Factor D, Inadequacy of existing regulatory mechanisms (page 124). It is not clear why the objective for this factor is limited to the impact of contaminants on the species. The inadequacy of existing regulatory mechanisms is a contributing factor to a majority of the threats to the whales. Thus, the object here should be stated to include the elimination of all threats that currently exists as result of the lack of necessary regulatory protections, such as, but not limited to: contaminants, vessel effects, sound, oils spills, and invasive species. We recommend that this section be expanded to include all regulatory actions that must be implemented to protect the species from these threats.

5. Threats Criteria, Factor E, Other Natural or Manmade Factors (page 124). Similarly, this section is too limited in scope. Oil spills are not the only manmade factor impacting the species and threatening its recovery. We recommend that specific factors be added to address each item (i.e., oil spills, population status, coastal use, etc).

6. Threats Criteria, Factor E 2, Oil spill prevention (page 124). We object to the language of this factor – that oil spill prevention plans must be "no less protective than those in place at the time of listing." The plans should be *much more* protective than the old plans. They are outdated and inadequate.

Thank you for your consideration of our comments and we look forward to continuing to work with you to recover our signature orcas.

Sincerely,

Brendan Cummings
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Subject: Comments on NOAA's Proposed Orca Vessel Regulations - Cetus Research & Conservation Society (Straitwatch)
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Date: Thu, 14 Jan 2010 20:32:42 -0800
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Please find attached our comments in support of NOAA's proposed orca vessel regulations.

Best regards,
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NOAA Proposed Orca Regs - Cetus Comments.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

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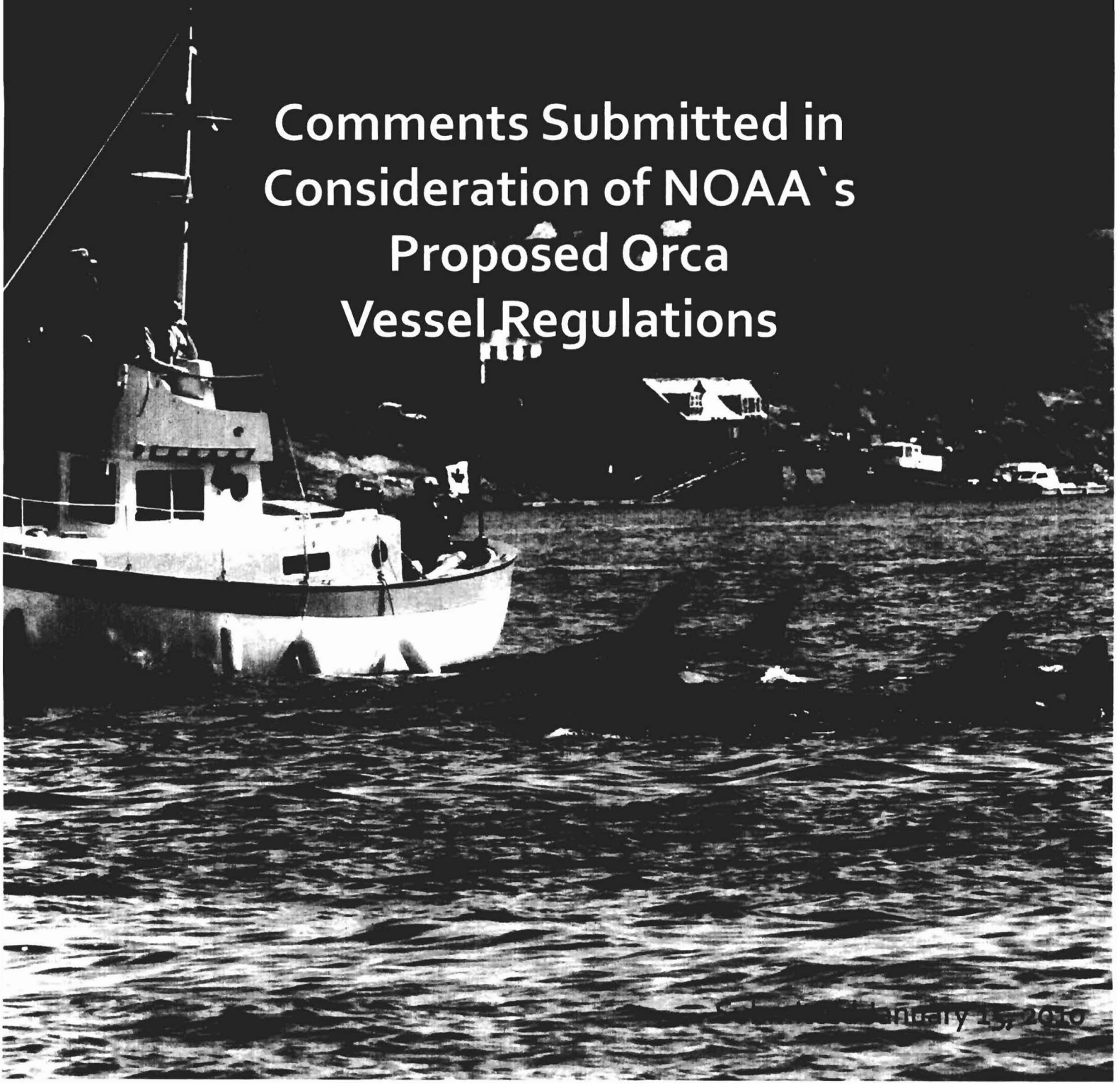
Comments Submitted in Consideration of NOAA`s Proposed Orca Vessel Regulations



January 15, 2010

Acknowledgements

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Fisheries and Oceans Canada

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INTRODUCTION

Straitwatch is a marine mammal stewardship program operated on the inshore waters off Vancouver Island, British Columbia, Canada (Figure 1). The main functions of Straitwatch are to monitor the boating activity around marine mammals (primarily killer and humpback whales), and to educate boaters about how to reduce their impact by following the "Be Whale Wise Marine Wildlife Viewing Guidelines for Boaters, Paddlers and Viewers (BWW) (DFO and NOAA 2006). By increasing the public awareness of the threats these animals face, such as habitat degradation, decreased food availability, increasing underwater noise and contaminant levels, we encourage boaters to modify their behaviour to reduce their impact on these species. Straitwatch conducts regular monitoring of both the number of vessels following marine mammals and boater compliance with BWW.

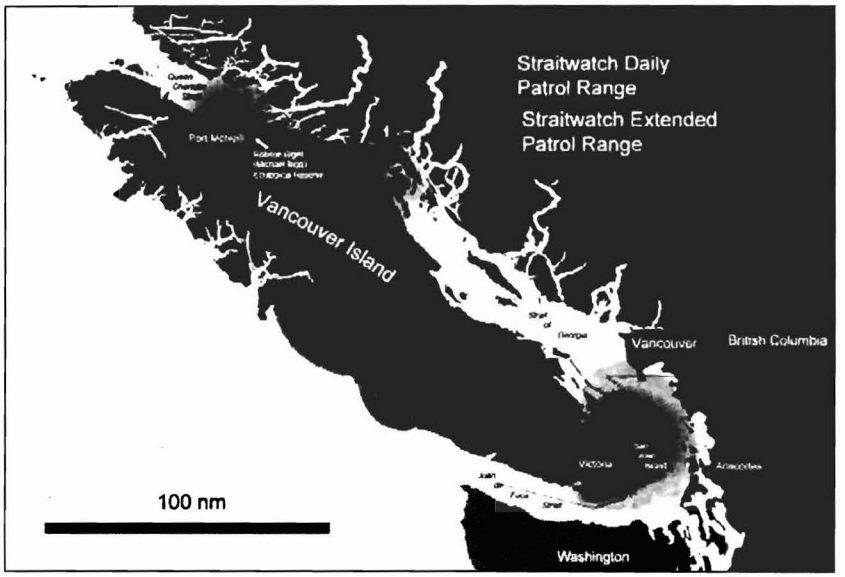

Figure 1: Straitwatch Patrol Range

NOAA, in the Draft Environmental Assessment for New Regulations to Protect Killer Whales from Vessel Effects in Inland Waters of Washington, has outlined the peer reviewed research into the effects that the presence of and noise from vessels have on killer whales. This research has demonstrated that killer whales show avoidance behaviour in the presence of vessels, and that killer whale responses to vessel presence and sound may include the cessation of feeding, resting, and social interaction (Lusseau et al. 2009; Williams et al. 2006). Other research has shown that vessel traffic may cause this species to abandon nursing areas, alter travel patterns, or relocate to other areas (NMFS, 2009; DFO, 2008). Several studies have demonstrated that noise from vessels can interfere with the whales ability to communicate, navigate and to echolocate prey (Holt et al. 2009; Williams et al. 2002; Erbe, 2002). Disturbance is difficult to confirm in a species that spends most of its time underwater. However, that these whales exhibit detectable differences in their behaviour from the presence and sound of vessels surely means that the effects of those vessels are felt at distances further than those reported in the above literature.

The vessel-whale distances and vessel operating behaviour that these studies have identified as causing disturbance to killer whales are in many cases equivalent to the distances and conditions that the BWW guidelines recommend boaters avoid. Thus, the data collected by Straitwatch on vessel compliance with BWW provides an indirect measure of the exposure of southern resident killer whales (SRKW) to vessel disturbance both spatially and temporally. Here, in our public comment, we utilize the Straitwatch data on vessel compliance corresponding to the thresholds for disturbance to examine where, when and how often killer whales in the southern Vancouver Island region are disturbed. Our goal is to provide NOAA with additional information to help assess the proposed vessel regulations.

METHODS

The Straitwatch stewardship vessel operates from May to September in the southern Vancouver Island region with a crew of 1-2 staff and 1-2 volunteers (Figure 2). At regular intervals, the crew records the number of vessels within one kilometre of a focal group of SRKW (*Vessel count*) and two to four times a day monitors the vessels around the focal group of whales for compliance with the BWW guidelines (*Incident scan*). During monitoring, the Straitwatch vessel must be positioned within 400 m of the focal group to accurately record vessel numbers and observe BWW non-compliance.

Figure 2: Straitwatch Patrol Vessel

The focal group is defined by the identification of a focal animal and includes any whales within 400 m of the focal whale that are travelling together and in the same overall direction. Vessels included in the count must be within 1km of the focal group of whales. This arrangement means that vessels included in the count will be a maximum distance of 1800 metres from the Straitwatch vessel. Distances are measured using laser range finders, radar and relative positions on a GPS plotter. Each season staff are trained to ensure data collection techniques are standardized and accurate.

Vessel Counts are completed every 30 minutes and record the number, type (e.g. private, eco-tour, maritime commercial, shipping etc.) and behaviour (e.g. whale oriented, transiting, fishing etc.) of vessels within 1 km of a focal group of whales. Information on the focal whale group size, degree of group cohesion (tight to spread out), behaviour, speed and direction are also recorded.

Incident scans are completed every two hours for 20 minutes, with a vessel count occurring at the start and end of the scan. During this 20 minute period the crew focuses solely on monitoring vessels for incidents of non-compliance with the BWW guidelines. The crew does not speculate on the intent of the vessel operator to comply or not comply with the guidelines; instead, incidents of non-compliance are measured from the animal's perspective.

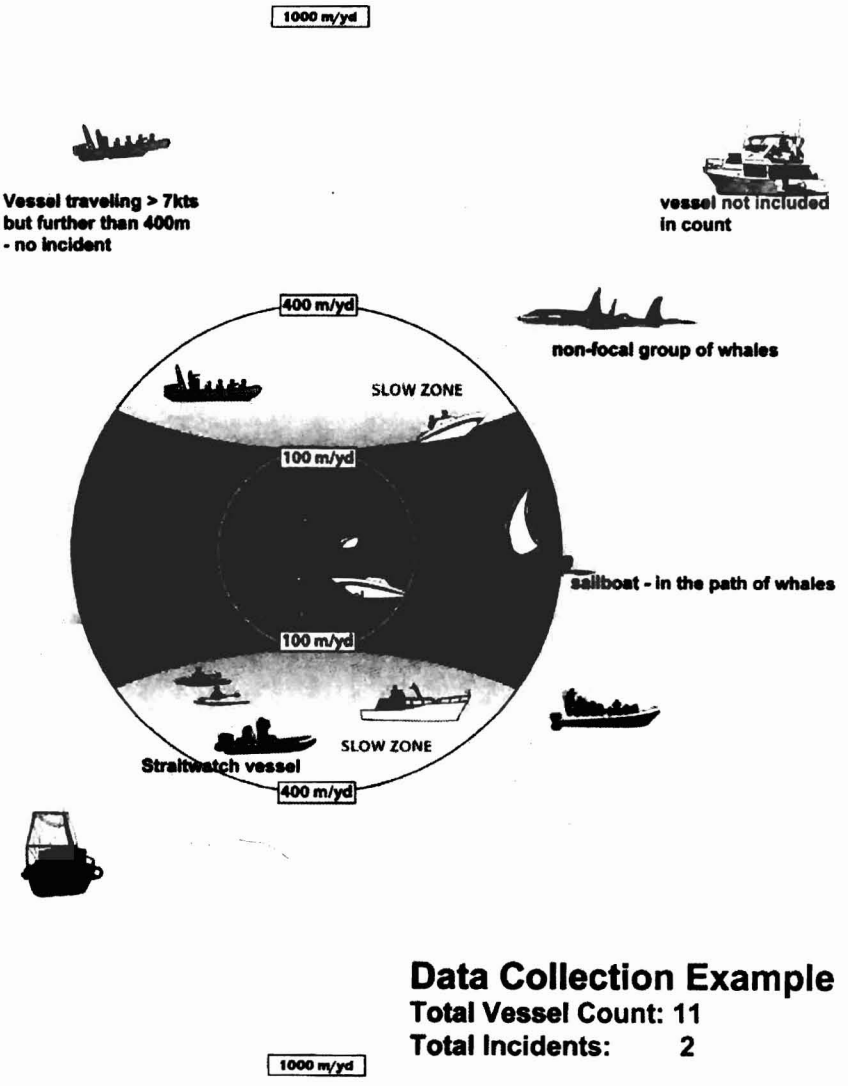

Figure 3: Data Collection

Types of non-compliance corresponding with disturbance:

Towards linking whale-vessel interactions recorded during Incident scans with disturbance, we undertook a review of the scientific literature to identify situations of non-compliance with the BWW guidelines that correspond with situations of disturbance.

1. Vessels within 100 metres of whales (Figure 4):

The approach of vessels to within 100 metres of cetaceans has been identified by several studies as inducing behavioural changes and disturbance. Noren et al. 2009; Lusseau, 2006; Lusseau et al. 2009; Erbe, 2002 all noted an increase in the amount of Surface Active Behaviours (SAB) exhibited by the animal when boats approached within 100 m. Noren et al. (2009) found that vessels approaching within 79-99 metres of the SRKW and 125-149 metres resulted in a significant increase in the amount of SAB's. Furthermore, when the vessel was motoring whales exhibited a significantly greater amount of SAB bouts (3-8) versus when the vessel was stopped (1-2).

Figure 4: Vessel < 100 m/yd from whales

Several studies have also explored the effects of close approach by vessels on the behavioural patterns of killer whales and have found that when in the presence of vessels whales tend to switch from important feeding or beach rubbing activities, to lower energy states such as travelling (Williams et al. 2002; Lusseau et al. 2009). While the overall change in energy requirements is small (3%) the greater concern is the loss of potential energy acquisition which has been estimated at 28% (Williams et al. 2002). Lusseau et al. (2009) detected a significant difference in the time spent foraging versus travelling when boats were present within 100 and 400 metres of whales, such that whales changed from foraging to travelling. Taken together, these results strongly suggest that the zone of influence of a vessel on whale behaviour is greater than 100 metres.

In our analysis we have included all incidents of non-compliance where vessels were within 100 metres, whether the vessel was stopped with engines on or off, or under way.

2. Vessels travelling at speeds >7 knots within 400 metres of whales (Figure 5):

Williams et al. (2002) found that the received sound levels of vessels travelling at speeds greater than 7 knots at 500 metres was equivalent to the received level of a slow vessel paralleling whales at 100 metres. These results were similar to those of Erbe (2002) who measured similar sound levels for vessels at 100 and 400 metres. Erbe (2002) recorded changes in behaviour from vessels travelling greater than 7 kts within 200 metres. Further, she noted vessel travelling at speeds greater than 20 knots to be audible at 16 km and to be capable of masking killer whale calls at 14 km (Erbe, 2002).

Figure 5: Vessel travelling > 7 kts within 400 m/yd of whales

3. Vessels parked in the path (Figure 6):

The presence of vessels in the path of whales has been shown to affect the directness of the animals' path, such that the mean angle between successive surfacings significantly increases (Williams et al. 2002). This results in more erratic swimming behaviour, with killer whales increasing the deviation in their path. Williams et al.(2002) detected a 17% increase in the distance a whale would have to swim to cover 100 metres of a straight line. The predator avoidance behaviour employed by whales to avoid vessels results in an increase in energy requirements, and with vessels within 100 and 400 metres of whales likely also causes the whale to switch from foraging/feeding to travelling, resulting in an increase in energy demand with a concomitant reduction in the opportunity for energy acquisition (Lusseau et al. 2009).

Figure 6: Vessel parked in the path of whales

For this study, Straitwatch monitoring data collected over three years (2007 to 2009) were aggregated into 24 zones (Figure 7) and analyzed to determine when the thresholds of disturbance above were exceeded, both spatially and temporally. In particular, the proposed no-go zone was considered separately from other areas to evaluate differences between this area and others.

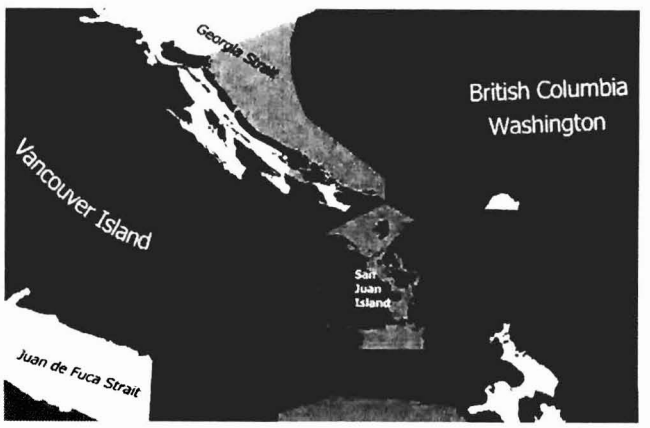

Figure 7: Zones for spatial analysis

RESULTS

From June 1st to Sept. 30th SRKW experience an average of 2.8 incidents of disturbance every 20 minutes (Figure 8). The rate of disturbance has been relatively consistent over the three years Straitwatch has collected this data (Table 1). These disturbances, however, are clustered both temporally and spatially (Figure 9 and Figure 10).

Each year in July and August rates of disturbance climb above rates recorded in June and September. Areas with higher average vessel counts (Figure 13) also have higher levels of disturbance (Figure 10). The proposed No-Go Zone along the west side of San Juan Island experiences one of the highest rates of disturbance (average: 2.97; standard deviation: 3.88 incidents per 20 minute scan). Whales in the zone just south of the proposed No-Go zone including the important feeding area (Ashe et al.. 2009) of Salmon Bank are disturbed at an almost identical rate (average 2.9; standard deviation 2.59). Most incidents scans have at least one incident of disturbance, with only 5.4% of scans reporting zero incidents.

The most common disturbance type is "vessel within 100 m" followed by "speed >7 knots within 400 m/yd" and "parked in the path".

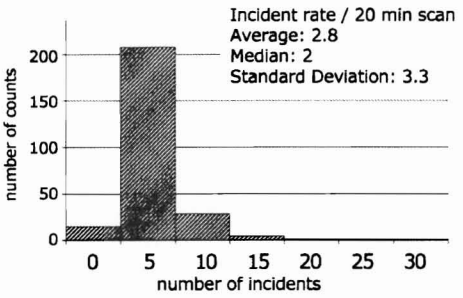

Figure 8: Histogram of Incidents per Scan 2007 - 2009

Year	Disturbance rate	Std Dev
2007	3.16	4.4
2008	2.53	3.3
2009	3.33	2.4
Overall	2.81	3.3

Table 1: Disturbance rate per 20 minute scan 2007 - 2009

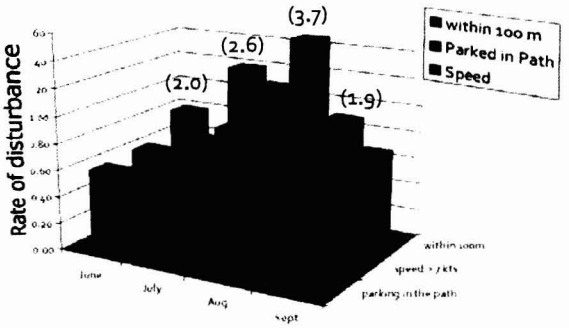

Figure 9: Rate of Disturbance by Month (average all types by month)

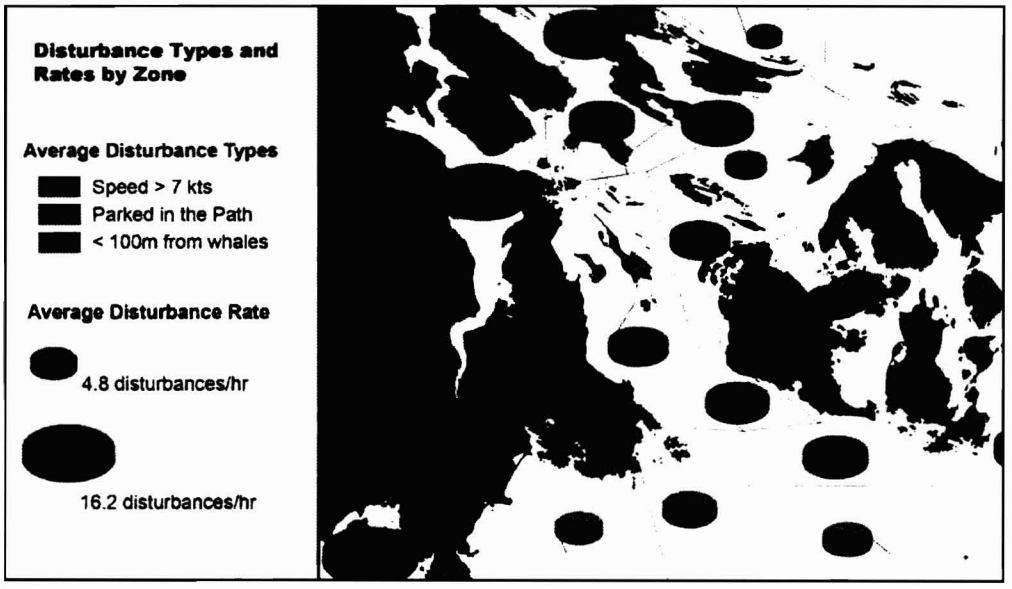

Figure 10: Incident Rate by Zone

The disturbance type and frequency differs by vessel type (Figure 11), with the most common vessel types being private motor and sailing vessels (Private), commercial whale watching vessels (Eco-tour) and kayakers (both private and eco-tour). Other vessel types, including commercial fishing vessels, ferries, and marine transport also have been recorded operating contrary to the BWW guidelines. However, these occurrences are less frequent by comparison to the above vessels.

The disturbance type that causes the most alarm amongst those watching is high speed vessels travelling within 400 yards of whales (although no research has identified the relative impact of different disturbance types). Our data shows that high speed disturbances are caused overwhelmingly by private motor vessels.

Not surprisingly the zones identified as having the highest rates of disturbance are also zones with the highest average boat traffic density (Figures 10 & 13).

Straitwatch preferentially chooses a focal group in Canadian waters, if there is a choice between SRKW in Canadian or US waters (for example, Straitwatch will often travel from our home port at Oak Bay to Race Rocks, Active Pass or the southern Strait of Georgia to join whales in Canadian waters over a group of SRKW at San Juan Island). Even so, most days Straitwatch will follow whales to the west side of San Juan Island; our data reflects the fact that SRKW spend most of their time in zones along the west side of San Juan Island (Figure 12).

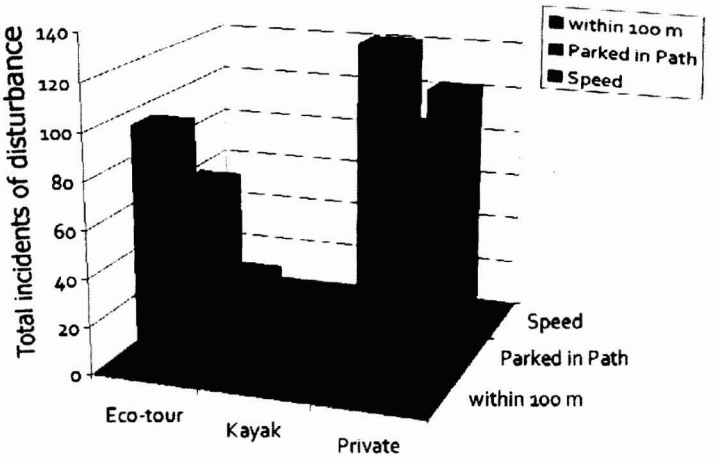

Figure 11: Incident type by vessel type.

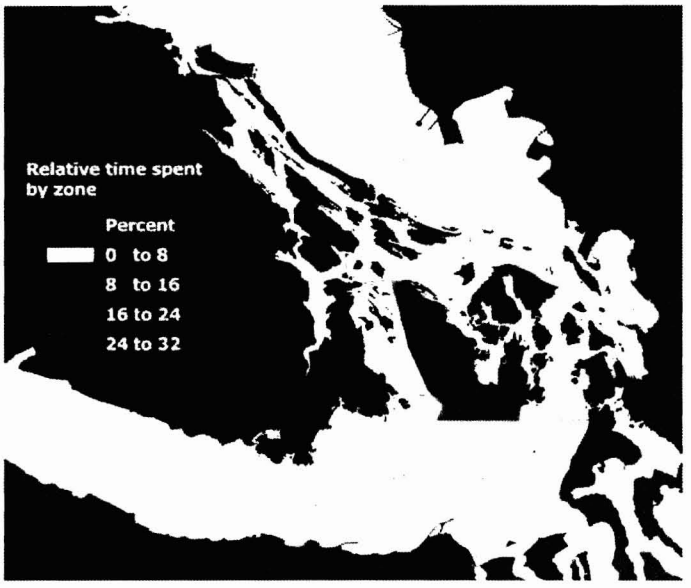

Figure 12: Relative amount of time spent in each zone by SRKW

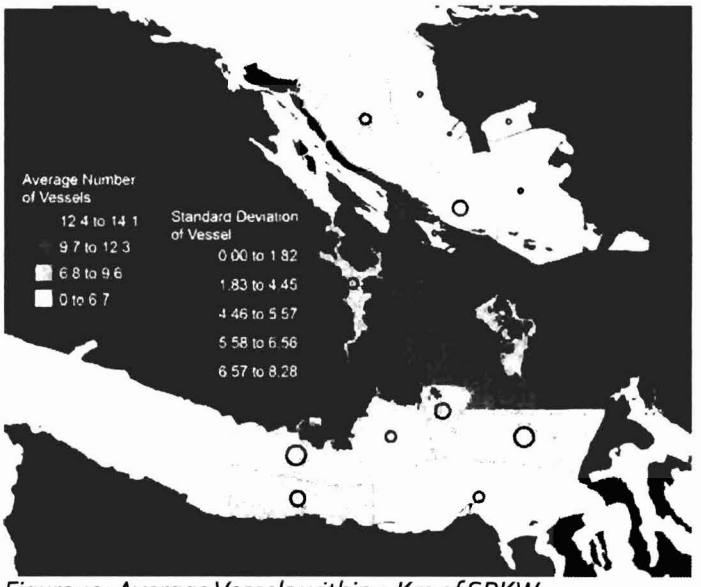

Figure 13: Average Vessels within 1 Km of SRKW

DISCUSSION

As the SRKW move through their critical habitat they encounter vessels that interfere with their behaviour (Williams et al. 2002; Williams et al. 2006; Lusseau, 2006; Noren et al. 2009), their foraging patterns (Lusseau et al. 2009),and their ability to locate prey (Erbe, 2002; Holt el al 2009). Vessel disturbance is just one factor affecting the SRKW population; with low prey abundance and high toxins loads as other major factors.

Analysis of the Straitwatch data suggests that the conditions described by the scientific literature as causing disturbance of SRKW will be experienced by the "average" SRKW an estimated 100 times per 12 hour period between June and September.

In light of the fact that vessel disturbance causes an increase in SRKW energy requirements and a decrease in opportunities for energy acquisition, the rate of disturbance estimated here is of serious concern. It seems highly likely that vessel disturbance will contribute to population decline, especially in years when Chinook abundance is low, given how SRKW mortality is closely linked to poor Chinook salmon abundance (Ford et al, 2009).

The management options considered in NOAA's Proposed Orca Vessel Regulations will prohibit:

- Causing a vessel to approach within 200 yards of any killer whale;
- Entering a restricted zone along the west coast of San Juan Island during a specified season; and,
- Intercepting the path of any killer whale in inland waters of Washington.

These proposed strategies will address many of the threats facing the SRKW.

Increasing the accepted approach distance from 100 to 200 yards will provide for a greater margin of vessel operator error. Currently, most well-intentioned vessels approach whales to a distance of around 150 to 200 yards to ensure that if the whales change course they will be no closer than 100 yards (Figure 14). However, some vessel operators approach whales to 100 yards and are then caught much closer than 100 yards when the whales inevitably change course. Increasing the approach distance to 200 yards will reduce the number of events where vessels are closer than 100 yards.

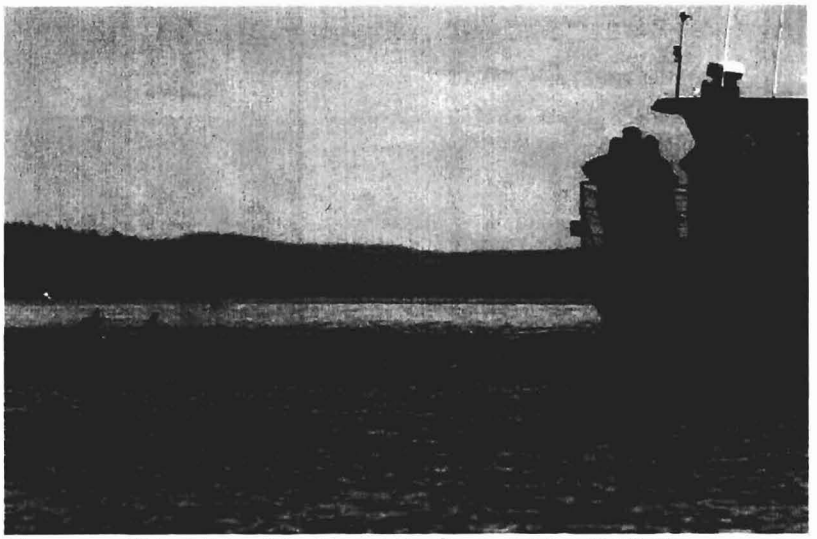

*Figure 14: Whale Watching Vessel **Squito** watching SRKW from 150 yards*

The proposed No-Go zone along the west shore of San Juan Island is of a similar size as the Robson Bight (Michael Bigg) Ecological Reserve (RBMBER) at the north east end of Vancouver Island. Both the RBMBER and the proposed No-Go zone are key foraging habitats for their respective populations of killer whales. RBMBER was originally protected to preserve habitat of the northern resident killer whales (NRKW), a population of ~250 Chinook salmon specialist killer whales that range from the northern Strait of Georgia to south east Alaska. A large portion of this population of killer whales congregates in the waters of Johnstone Strait and western Queen Charlotte Strait during the summer months. Robson Bight was originally protected in 1982 from a proposed log-booming operation, as it was recognized that RBMBER was an area that NRKW rubbed on smooth pebble beaches in the area and that this behaviour was susceptible to vessel disturbance. Since then, researchers have realized that RBMBER is also a very important foraging habitat and the reserve is very important in providing an area free from vessel disturbance. The RBMBER warden program has been very successful at ensuring vessels comply with the voluntary closure of the RBMBER boundaries.

Similarly to RBMBER, the proposed No-Go zone could confer the benefit of providing a portion of SRKW's key foraging area (Ashe et al, 2009) free from vessel disturbance. While the proposed No-Go zone does not protect the entire foraging area of the SRKW, it does protect a portion of the foraging area that has high rates of disturbance. Extending the No-Go zone to include more of Salmon Bank (where whales are disturbed at a similar rate) could provide additional benefit. Protecting areas where whales are most frequently disturbed, will likely benefit the species. Straitwatch data shows that whales remaining in the proposed No-Go zone for 12 hours would be expected to be disturbed 109 times, and many pods and subpods do spend a large portion of time in this, or adjacent areas.

RBMBER is successful because of a full-time warden program, funded by BC Parks. The warden program features two components: a vessel tasked with contacting vessels that enter the reserve; and a land-based monitoring team (at a shore-based site 55 yards above sea level) that helps directs the warden vessel to the presence of boaters that have entered or are approaching the reserve. The land-based monitoring team is key to ensuring the success of the program.

We suggest that if NOAA implements the No-Go zone that funding be set aside for a full-time program similar to the Robson Bight Warden Program, with both vessel-based and land-based components. This program should be well-supported by enforcement agencies.

We also support the proposed restriction on vessels intercepting the path of any killer whale. This vessel behaviour is common for all vessel types. It is sometimes difficult for the untrained vessel operator to predict the path of SRKW. However, if most vessels are compliant with this rule, it becomes more obvious for other vessel operators arriving on scene to understand where to position their vessel. In some areas, SRKW frequently change direction and it will be important for enforcement agencies to understand when vessels are attempting to comply with this regulation, but are caught by whales changing direction.

In addition to these proposed regulations, we suggest that NOAA reconsider regulations to reduce the speed of vessels near killer whales. Vessels traveling at high speed near whales are not only a concern due to potential collision with whales, but also sound levels from vessels travelling at high speed are likely to interfere with killer whale echolocation, and calls used for communication (Erbe, 2002). Further, the public perception of and outrage towards the threat caused by vessels traveling at high speed near whales warrants consideration.

CONCLUSION

Repeated disturbance of SRKW is a factor reducing the quality of life, foraging efficiency, fitness and reproductive success of individual animals (Lusseau et al. 2009), and mitigating these effects should be a key component of recovery actions. The data Straitwatch collects on compliance with the BWW guidelines shows that vessel disturbance occurs frequently throughout the SRKW's habitat. The effects of vessel disturbance should be considered in the context of other threats; vessel disturbance exacerbates the severity of other threats such as access to prey and high toxin loads.

In addition, the scientific literature has noted vessel-induced behavioural changes in situations not currently captured by Straitwatch vessel-compliance data. As such, the rate of disturbance presented here is likely a minimum value.

The regulations proposed by NOAA will address the threats posed by close vessel interactions with SRKW. Cetus urges NOAA to adopt these regulations and consider additional regulations that address high-speed vessels traveling near whales and expanding the No-Go zone to include more of Salmon Bank.

Cetus strongly encourages NOAA to fund enforcement and educational programs to support these regulations.

REFERENCES

*Ashe E, Williams R. 2007. Feeding hotspots and whale watching 'not-spots': using killer whale behaviour to prioritize vessel exclusion zones. *Journal of Cetacean Research and Management.* SC/59/WW18.

*Ashe E, Noren D.P., Williams R. 2009. Animal behaviour and marine protected areas: incorporating behavioural data into the selection of marine protected areas for an endangered killer whale population. *Animal Conservation* DOI: 10.1111/j.1469-1795.2009.00321.x

*DFO. Fisheries and Oceans Canada. 2006. Viewing Guidelines. Accessed September 25, 2009. http://www.pac.dfo-mpo.gc.ca/species/marinemammals/view_e.htm

*DFO. Fisheries and Oceans Canada. 2008. Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada. *Species at Risk Act Recovery Strategy Series*, Fisheries & Oceans Canada, Ottawa, ix + 81 pp.

*Erbe, Christine. 2002. Underwater noise of whale-watching boats and potential effects on killer whales (orcinus orca), based on an acoustic impact model. *Marine Mammal Science* 18(2): 394-418.

*Ford JKB, Ellis GM, Olesiuk PF, Balcomb KC. 2009. Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator. *Biology Letters*. DOI:10.1098/rsbl.2009.0468

*Holt MM, Noren DP, Veirs V, Emmons C, Veirs S. 2009. Speaking up: killer whales (Orcinus orca) increase their call amplitude in response to vessel noise. *Journal of the Acoustic Society of America* 125 (1): EL 27 to EL 32

*Lusseau, D. 2006. The short-term behavioural reactions of bottlenose dolphins to interactions with boats in Doubtful Sound, New Zealand. *Marine Mammal Science.* 22(4): 802-818

*Lusseau D, Bain DE, Williams R, Smith JC. 2009. Vessel traffic disrupts the foraging behaviour of southern resident killer whale (orcinus orca). *Endangered Species Research* 6: 211-221

*NMFS. 2009. Draft Environmental Assessment – New Regulations to Protect Killer Whales from Vessel Effects in Inland Waters of Washington. National Marine Fisheries Service, Northwest Region, Seattle, Wa.

*Noren DP, Johnson AH, Rehder D, Larson A. 2009. Close approaches by vessels elicit surface active behaviours by southern resident killer whales. *Endangered Species Research*. 8: 179-192.

*Williams R, Bain DE, Ford JKB, Trites AW. 2002. Behavioural responses of male killer whales to a 'leapfrogging' vessel. *Journal of Cetacean Research and Management.* 4: 305–310

*Williams R, Lusseau D, Hammond PS. 2006. Estimating relative energetic costs of human disturbance to killer whales (Orcinus orca). *Biological Conservation.* 133:301–311

*Williams R, Ashe E. 2007. Killer Whale evasive tactics vary with boat number. *Journal of Zoology.* 272: 390-397

Subject: re: Proposed rulemaking Vessels and SRKW's
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Date: Fri, 15 Jan 2010 12:11:30 -0700
To: Orca.Plan@noaa.gov

From:
Killer Whale Tales
PO Box 16453
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To:

Assistant Regional Administrator

Protected Resources Division, Northwest Regional Office

National Marine Fisheries Service

7600 Sand Point Way NE

Seattle, WA 98115

January 14, 2010

To Whom It May Concern:

Killer Whale Tales is committed to the conservation of our marine environment and we are grateful for the opportunity to comment on proposed vessel regulations to protect endangered Southern Resident Killer Whales (SRKW).

Vessel interference is one of the primary threats to the recovery of the SRKW community. Killer Whale Tales supports precautionary measures based on the best available science to help relieve anthropogenic pressure on this fragile and unique population. We note that a population weakened by lack of prey and heavy contaminant loads may be more susceptible to the stress of vessel impacts. Research suggests that vessel effects alter SRKW behavior (Noren, 2009 and Bain, 2003-2005) and Northern Resident Killer Whale studies supplement this data (Williams, Ashe 2006). Also of note is that SRKWs increase the amplitude of vocalizations in the presence of vessels (Holt, 2009). In addition to altering the behavior of SRKWs, vessels are likely to have negative effects by interfering with echolocation and communication, polluting air at the water's surface, and by putting whales in physical danger of a ship strike.

Despite NOAA's best efforts to educate and inform the public, Soundwatch Boater Education Program data shows that voluntary *Be Whale Wise* guidelines and Washington State and San Juan County regulations have not been effective enough at decreasing harassment and harmful interactions between vessels and SRKWs. In fact, during the summer of 2009 Soundwatch documented a record 2,427 violations by vessels on the water with orcas present (Soundwatch Observed Incidents Summary 2009). We emphasize that new regulations will not be effective without sufficient

support from law enforcement on the water. Federal, state and local governments should work collaboratively and with adequate funding.

Killer Whale Tales strongly supports regulating a 200 yard distance between vessels and killer whales. This measure will lessen vessel effects on SRKW behavior, decrease acoustic impacts, provide a buffer from noxious fumes at the surface, and decrease the likelihood of a ship strike. In addition, we strongly support the prohibition on parking in the path of killer whales for many of the same reasons.

In response to commercial whale watch operators who suggest that it is difficult to have a 'teachable moment' and/or a meaningful experience at 200 yards we respectfully submit evidence from the Killer Whale Tales outreach program suggests otherwise. Based on our experience, of reaching over 10,000 students annually, we feel that effective and exciting interactions can take place with or without killer whales in the vicinity.

We urge whale watch vessels to focus on excellent interpretation by trained naturalists. We also suggest that whale watch companies can better manage guest expectations by not using marketing photos that depict orcas within an unsafe and unlawful proximity to boats. If the 200 yard regulation goes into effect, Killer Whale Tales is willing to work with NOAA to facilitate interpretation training to interested parties.

Killer Whale Tales supports the proposed seasonal no-go zone on the west side of San Juan Island. This area is a small but important portion of the critical habitat defined in the recovery plan. Unfortunately, this same stretch of shoreline is popular with commercial fishers, whale watch companies, and recreational boaters, fishers, and kayakers. We recognize that many commercial and recreational interest groups and private citizens oppose this regulation. Our reasons for supporting this proposal include the following:

- Resident killer whales have been shown to be more vulnerable to vessel disturbance while feeding than during resting, travelling or socializing activities. Killer whales were predicted to be 2.7 times more likely to be engaged in feeding activity on the southwest side of San Juan Island than they were in adjacent waters (Ashe, 2009).

- The SRKW traveling path has become more spread and less predictable in recent years. It has become increasingly difficult for even well-intentioned marine vessels to stay out of the path of whales. The no-go zone will create a safety buffer between boats and SRKWs and decrease the number of speeding recreational boats in transit through critical orca habitat.

- With respect to the kayaking community, research suggests that kayaks can alter the direction of travel of SRKWs even more than power boats, while admittedly leaving the waters quieter and the air and water unpolluted. The main reason the west side of San Juan Island is such a popular kayaking destination is because of the opportunity to see orcas. If kayaks are concentrating on the west side of San Juan Island and having a detrimental effect on the SRKW, kayakers should relocate to other regions.

- It is in the best interest of commercial groups to make every effort to rebuild the SRKW population for their future commercial success and the enjoyment of future generations.

It is not the intention of Killer Whale Tales to demonize the boating public. Indeed, the SRKWs face myriad complex challenges to their recovery. It is apparent that even were NOAA able to prevent 100% of the interactions between vessels and the Southern Residents, their population would continue to decline due to lack of prey and persistent and increasing levels of bioaccumulated toxins. Salmon habitat - including dam removal - and marine pollution must be addressed by NOAA **in relation to SRKW recovery**. The existing Chinook salmon recovery plan should be incorporated into the orca recovery plan. NOAA's 2009 Biological Opinion on water projects in California's Central Valley (http://swr.nmfs.noaa.gov/ocap.htm) finds that because these projects harm Chinook, they harm SRKW. We urge NOAA to apply this same logic to the Columbia-Snake Rivers Biological Opinion, and come to the same conclusion as in the Central Valley BiOp.

Killer Whale Tales' concerns about the regulations as they are proposed include:

- The legislation does not address tanker and container ship traffic that add noise to the environment in addition to presenting the threat of a large oil or fuel spill.
- The legislation does not address the use of sonar by military vessels throughout the SRKW range.
- The legislation does not address other anthropogenic disturbances such as seismic exploration.

Killer Whale Tales is interested in examining the following for the benefit of the SRKWs and other protected species that share their range:

- Speed limits for all water craft throughout the already designated critical habitat area for the Southern Resident Killer Whales.
- The creation of a marine protected area on the west side of San Juan Island (see Ashe, 2009).
- The creation of a long term a sustainable funding source for enforcement

Some suggest that 'reasonable practical efforts' are necessary to protect this population. We submit that 'reasonable practical efforts' have been in place since well before the ESA listing and that meaningful sacrifices must be made to protect this valuable resource.

The long-term needs and the rights of an endangered population must be placed before the short-term desires of the public for the future benefit of both human and SRKW populations.

Killer Whale Tales supports the proposed regulations and will continue to partner with NOAA Fisheries to educate the public about SRKWs and the recovery plan. We would like to see NOAA move quickly and audaciously towards implementation.

Sincerely,

Jeff Hogan

Executive Director

Killer Whale Tales

PUBLIC SUBMISSION

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Protective Regulations for Killer Whales in the Northwest Region under the Endangered Species Act and Marine Mammal Protection Act

Comment On: NOAA-NMFS-2008-0327-0001
Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act

Document: NOAA-NMFS-2008-0327-DRAFT-0046
Comment from Jodi Smith

Submitter Information

Name: Jodi Smith
Address:
P.O. Box 78
Crescent Mills, CA, 95934
Email: orcacita@gmail.com
Phone: 530-284-7858
Organization: Naked Whale Research

General Comment

To Whom It May Concern:
I would like to comment in support of the proposed NMFS regulations on both distance, speed and a no-go zone along San Juan Island when Endangered Southern Resident killer whales (SRKW) are present.
As a former independent biologist and NMFS contracted biologist (2003-2006) specifically addressing vessel effects on SRKW's, data I've collected has shown that SRKW's have similar reactions to vessel approach as Northern Resident killer whales. During the summer months of 1999-2001, Southern Resident killer whales were found to decrease path directness with the point of closest approach of vessels. As whales adopted a more circuitious path, distance travelled increased by 9.5% when boats were within 100 m. I have also looked at Australian humpback whales in a comparative study and found that humpback whales significantly decreased their rate of surface active behaviour by 50% when boats were present. Though fasting and expending more energy via these surface behaviours, mother whales may also be keeping in constant contact with new calves and other socially close individuals with these behaviours. Vessels may be interfering with these type of communication between animals.
I would like to submit my Master of Science thesis (Smith, JC MSc Thesis) as support of these

data and statistically significant findings.
I implore NMFS to make law, what is already based in scientific fact as part of the SRKW Recovery plan. There are plenty of opportunities for eco-tourism to continue their businesses and experience the animals. As this population has been shown to use the west side of San Juan Island, land-based whale watching at locations such as Lime Kiln State Park and the San Juan County Park will aide in offering non-invasive whale watching to the public. With only 88 individual animals in this population, it is vital that NMFS take the lead in offering protection against the public "loving" the whales to death.
Thank you.

Attachments

NOAA-NMFS-2008-0327-DRAFT-0046.1: Comment from Jodi Smith

A STUDY OF THE RELATIONSHIPS BETWEEN THE BEHAVIOUR OF CETACEANS AND VESSEL TRAFFIC USING TWO CASE STUDIES: KILLER WHALE (*Orcinus orca*) AND HUMPBACK WHALE (*Megaptera novaeangliae*).

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Science
in
Conservation Biology

Massey University, Auckland,
New Zealand.

Jodi Christine Smith
2009

Assistant Regional Administrator
Protected Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA
98115

Dear Assistant Regional Administrator:

My name is Katherine Ayres and I am a Ph.D. candidate in Conservation Physiology at the University of Washington's Center for Conservation Biology; however, my opinions are my own and do not formally represent the Center for Conservation Biology or the University of Washington. Thank you for allowing me to comment on the proposed **Protective Regulations for Killer Whales In the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act**.

NOAA's Obligation Under the ESA

NOAA has a legal obligation under the Endangered Species Act to define and protect critical habitat of an endangered population using the best available science. Therefore, the proposed regulations to protect the southern resident killer whales (SRKW) seem appropriate based on the best available science. A management agency that is legally bound to protect an endangered population should follow the precautionary principal. The most recent behavior and acoustic data suggest that the SRKW are experiencing behavioral changes related to vessel traffic. Thus, until we can prove otherwise, NOAA should institute protections that conservatively limit potential harm to the SRKW population.

The 200-Yard Viewing Distance

I support the 200-yard viewing distance and disagree with the argument that boat based education cannot be effective at a 200 yard viewing distance. Distances on the water appear much closer than they actually are. I have had experience driving our research vessel at close distances under permit as well as greater distances. 200 yards is more than close enough to see many of the whales' surface activities. In addition, I often find that viewing a group of salmon-eating killer whales at greater distances provides a great opportunity to observe the way the whales are arranged in the environment and how this arrangement is conducive to cooperative foraging. The viewing distance also allows naturalists the perfect opportunity to explain how whale watch boats are being proactive in reducing their potential impact on these endangered animals. If the message is framed in a positive light, then people will find orcas just as amazing at 200 yards as they do at 100 yards and will understand why the whale watch boats are taking precautions necessary to protect these amazing animals.

The Proposed No-go Zone

Although I support the no-go zone, I see merit in a compromising settlement of a slow zone that includes more of the whales' critical habitat and/or is year round, as winter seems to be a difficult time for this population. In addition, it may be justifiable to exempt kayaks. However, it seems reasonable to require kayakers to watch an educational video on how to behave around whales and purchase a day use permit once they have been educated. A similar approach is used to promote bear safety in Denali National Park. At the same time, it is important to recognize that kayakers DO have the potential to affect whales behaviorally and/or physiologically. I have seen kayakers pursuing slow moving whales and paddling into the middle of a greeting ceremony, a presumably important socialization event for these whales. In addition to potentially disturbing socializing whales, this may be dangerous for the kayaker as well. I have no doubt that Kayakers can view the whales in a responsible manner and kayaks presumably cause less acoustic disturbance than motorized vessels, but they should be strictly held to responsible whale watching if they are exempted from the regulations.

Enforcement

It is often stated that NOAA should only focus on enforcement and not draft more laws until current laws are enforced appropriately. Not only does this not fulfill NOAA's legal obligation to pass **federal** laws that protect the SRKW, it seems illogical that enforcement would suffer from passage of a no-go or slow-go zone. In fact, enforcement would likely benefit from such a regulation. I would argue that a "zone" is much more easily enforced than limits on the viewing distance: if you cross the line or go too fast, you get a ticket, end of story. No one could appeal a ticket because they did not "know the difference in residents and transients", "the whales approached them" or they were "just transiting to Roche Harbor and didn't know the whales were there". With the proper education, a "zone" of some kind would limit confusion, making it much easier and economical to enforce than the viewing distance, which is usually only enforced when blatant disregard of the law occurs anyway.

My Doctoral Research and Findings

Last, I have heard my doctoral research cited thoughtfully, yet somewhat inappropriately. My doctoral research involves analyzing fecal hormones to test for nutritional deficits, anthropogenic disturbance and toxic exposure in the SRKW population as well as potential interactions of all three threats. While my preliminary results DO suggest that this population experiences times of relatively poor nutrition associated with high mortality, it is premature to conclude from my data an absence of cumulative effects of vessel disturbance on the stress burden and/or the whales' ability to capture prey. Therefore, chinook salmon protection and restoration seems vital to the protection of the SRKW, however vessel regulations may also be necessary to help the whales find what little salmon are available to them. For example, vessel regulations may not matter so much in good salmon years, but may be crucial in bad salmon years. We will have more

results forthcoming regarding the potential interactions of prey abundance and vessel disturbance on killer whale health that should help shed light on this issue. Until then, it seems necessary to take precautions based on the current published behavior and acoustic data until more conclusive physiological data is available.

Continued Non-Invasive Health Studies for Adaptive Management

It is my hope that whatever regulations are passed by NOAA, they will continue to fund non-invasive physiological monitoring studies of southern resident health so that we can be sure that policy decisions are associated with improvements in the health of the SRKW population and management can adapt to what we learn. This is not only important for the management of the SRKW, but it is also important for informing management decisions for endangered cetacean populations that face similar threats throughout the world.

Thank you for your time and consideration of these comments.

Sincerely,

Katherine Ayres, Ph.C.

Kla5@u.washington.edu
The Center for Conservation Biology
Department of Biology
University of Washington
Seattle, WA

Subject: Vessel regulations
From: Giles <dagiles@ucdavis.edu>
Date: Fri, 15 Jan 2010 23:42:11 -0800
To: Orca.Plan@noaa.gov

To Whom it May Concern:

My name is Deborah Giles, and I am a PhD. graduate student from UC Davis studying conservation biogeography. I am in support of vessel regulations that will best aid in the recovery of the federally listed endangered Southern Resident killer whales, a distinct population segment of the worldwide species know collectively as Orcinus orca.

While there are several components to the proposed regulations, I am most concerned with the 200 meter distance regulation.

Having attended all three public comment meeting, I was saddened to hear several people comment that they will be put out of business and that they will not be able to effectively establish an emotional connection between their passengers and the whales if proposed regulations are codified. These kinds of statements indicate a need for a unified education curriculum to which owners, captains and naturalists can refer to assemble an appropriate whale conservation message, including the rationale for vessel regulations. A discussion on the precautionary approach to species and ecosystem conservation is palatable to the public if the message is well presented - it's all in the framing.

In the pursuit of the recovery an endangered species, the precautionary principal guides us to prioritize the needs of that species above all else. The proposed 200 meter distance law would give the whales more room to engage in biologically significant behaviors such as resting, foraging, socializing and traveling. Given the fluctuations in the population just since the 2005 federal endangered listing, it seems most prudent to err on the side of caution by passing the proposed 200 meter distance regulation as proposed. Indeed, there are ample peer-reviewed studies on the Southern Residents to reasonably state that vessels do alter whale behavior, whether the change is acoustic (Holt, 2009, Foote,2004) or behavioral (Noren, 2009, Williams, et al., 2009, William and Ashe, 2007, Lusseau, 2009).

By definition, peer-reviewed research is not anecdotal, is reproducible and has followed the scientific method. Peer review refers to the screening work that is done when research is submitted for publication to a scholarly journal. Peer review requires a group of qualified experts to perform an extensive and impartial review of a research plan, the methodology, the analysis used, and finally, the results of the research. The peer review process prevents the publication of unacceptable interpretations of research results, irrelevant findings, and subjective opinions. Peer review does not mean PUBLIC REVIEW by interest groups or other persons.

Until science is able to quantify the physiological impacts of vessel-elicited behavioral changes in the whales, the precautionary principal guides us to presume they are high and demands that we act accordingly, by passing the proposed 200 meter distance regulation as proposed.

Thank you for recording my comments.

Sincerely,

Debbie Giles
San Juan Island, WA and
Sacramento, CA

Foote, A.D., R.W. Osborne, and A. Rus Hoelzel. 2004. Whale-call response to masking boat noise. Nature 248: 910.

Holt, Marla and Dawn Noren.(2009) Speaking up: Killer whales (Orcinus orca) increase their call amplitude in response to vessel noise. Journal of the Acoustical Society of America. 125 (1). http://www.beamreach.org/wiki/images/d/d2/JAS00EL27.pdf

Lusseau, David, David Bain, Rob Williams and Jodi Smith. (2009) Vessel traffic disrupts foraging behaviour of southern resident killer whales. Endangered Species Research 6:211-221. (PDF)

Noren Dawn, Johnson A.H., Rehder D., Larson A. (2009) Close approaches by vessels elicit surface active behaviors bySouthern Resident killer whales. Endangered Species Research 8:179-192.

Williams, Rob*, David Bain, David Lusseau and Jodi Smith. (2009) Effects of vessel traffic on behaviour patterns of individual southern resident killer whales (Orcinus orca). Endangered Species Research 6:199-209. (* - Joint first-authorship.) (PDF)

Williams, Rob and Erin Ashe. (2007) Killer whale evasive tactics vary with boat number. Journal of Zoology (London) 272(4): 390-397. [PDF]

Subject: NOAA Vessel Regulations and Orcas
From: "Lindsay H. Robinson" <lindshowell@gmail.com>
Date: Sun, 10 Jan 2010 22:05:08 -0800
To: Orca.Plan@noaa.gov

Ms. Lynne Barr

Thank you for accepting further comments from the public. As a kayak guide and naturalist on San Juan Island in the past, I can see the difficult nature of this subject based upon tour guides' livelihoods and the inherent need to protect the SRKW from further population declines.

It's easy to see why Orcas are the iconic species of the Pacific Northwest. I've seen people from all walks of life learn to open their hearts and minds to the natural world in the presence of Orcas. City dwellers, office workers and nature lovers alike connect with orcas in a way that bridges the dichotomy between humans and the ecosystem that support us and makes people care for our planet, and the other species we share the our habitat with. Orcas are not only important to protect for themselves, but for their power to galvanize people behind habitat restoration, resource protection and care for biodiversity. They have a special power to create advocates out of the formerly apathetic. Along with keystone species like polar bears, frogs and songbirds, their plight is both the indicator of the health of our ecosystems, but an indicator of our ability as a society and a species to protect our world for future generations.

If we want to continue to enjoy the incredible awe we feel around orcas and if we want the incredibly lucrative whale watching industry to continue into the future, I believe greater funding of Soundwatch is necessary as well as further boater education and certifications for those who use or own boats in the Puget Sound. I also strongly advocate a larger No Go Zone, and no Intercept Zone. One of the biggest problems I've seen on the water are people driving out to get in front of the Orcas so that they are not "breaking" the regulations since the orcas have "come to them".

As a student, I was particularly interested in the effects of vessel noise on Orca echolocations, and under the tutelage of Scott and Val Veirs, I conducted research to assess the vessel noise compared to the Orca echolocation noise in the Puget Sound. My research aimed to find out what boat noise masked Orca communications and if the directionality of sound that propagates from an engine has any effect on how the Orcas are experiencing boat noise in the Puget Sound.

Attached is my research paper, which I hope may be of some help as an initial study showing that normal vessel noise may be harmful to the Orca's ability to echolocate, hunt and forage.

Thank you again for considering my commentary.

Sincerely,
Lindsay Robinson

Beam Reach Orcas and Vessel Noise_v1.doc	**Content-Type:** application/msword **Content-Encoding:** base64

Underwater Vessel Noise in Haro Strait

Lindsay Robinson

University of Puget Sound

Intern with Beam Reach Marine Science and Sustainability School

LindsHowell@gmail.com

Abstract

Interactions between orcas and vessels are common along the west coast of San Juan Island in Haro Strait. Because underwater noise from vessels may interfere with orca communication and echolocation, it is important to measure vessel sound source levels. I tested a method of finding source levels in the field by measuring the sound of a typical privately-owned vessel called the Cat's Cradle. Using an array of hydrophones that are fixed to the sea floor in Haro Strait, I measured the received level with the vessel engine going at a speed of 3500 rotations per minute (rpm). I monitored the distance between the vessel and hydrophone with a laser range finder as the vessel moved toward and away from shore along a fixed transect. After measuring RMS received levels from three hydrophones (110 to 137 dB with background noise subtracted) with a sonogram computer program, I used the measured distances to each hydrophone and a spreading model to calculate source levels. I then averaged the source levels from all three hydrophones and found that the average source level of the Cat's Cradle is 148.5 dB re 1μPa @ 1 meter. I then addressed whether Cat's Cradle is an asymmetrical sound source by graphing source level versus distance and looking for a pattern change as the boat was facing toward and away from the hydrophone. To supplement these graphs, I averaged

the source levels from when the engine was facing the hydrophone and when the bow was facing the hydrophone. This analysis did not show any forward or backward asymmetry in the way the sound was propagating from the engine.

Introduction

Orca background

The Southern Resident orca is endangered in Canada and is being considered for listing as threatened under the U.S. Endangered Species Act. A potential risk factor for the Southern Resident population is disturbance by anthropogenic sources of underwater noise (NOAA, 2004). Such noise may interfere when orcas use echolocation and pulse calls to forage for food, orient themselves in their environment, or communicate with other orcas. The main habitat for the Southern Resident orcas during the summer months (May to September) is Haro Strait between the southern part of Vancouver Island and San Juan Island.

Vessel history

Interactions between orcas and boats are frequent in Haro Strait. Vancouver is the largest port in Canada, while the Seattle/Tacoma ports are the third largest in the U.S. (Fred Felleman pers. comm). This makes Haro Strait an extremely busy area for boat traffic in the form of tankers, cargo ships and other commercial vessels. Additionally, the local whale watching industry has grown exponentially since the 1980s. The orcas currently have an average of 100 vessels with them on every summer day, whereas just 15 years ago (in 1990) there were on average only four boats observing them per day.

While it is unknown which vessels are the most disturbing to orcas, private (sail and power) boats and commercial whale watch boats are usually closest to the orcas. Their proximity raises the concern that I am focusing on: are nearby whale watch vessels the dominant contributor to the level of sound received by orcas? My experiment was designed to measure the source level of the type of vessel that frequently observes the orcas at a close range and thereby get an idea of what the orcas are experiencing in their habitat. The recommended "Be Whale Wise Guidelines" have a 100 meter parameter that boats cannot enter into when observing the whales. Noise levels at this distance may interfere with orcas' ability to communicate and forage for food by masking their acoustics or damaging their hearing.

Evidence that noise can affect cetacean behavior

Behavioral changes in response to vessel noise have been documented in studies conducted on other cetaceans. For example, in the barrier islands off the western Florida coastline cetaceans exhibited altered behavior when watercraft were present (Buckstaff, 2004). Some of these behaviors include increased speed, longer dive times, closer proximity between whales and increased breathing synchrony. Buckstaff gives the frequency range of recreational watercraft as between 0.1 and 10 kHz and the range of dolphin whistles between 4 and 20 kHz. This study and other similar studies documenting the frequency overlap of cetacean acoustics and watercraft suggest that orcas may have to change their acoustic range in order to communicate and echolocate over the boat noise.

An extreme example of the disturbance that vessels can induce in orcas occurred in May of 2003 when the navy ship USS Shoup passed through the Haro Strait while

operating an active sonar. The J pod orcas near Lime Kiln Lighthouse stayed very close to the surface, where sound is known to be attenuated. They also formed a tight group and changed directions many times in what appeared to be very agitated behavior (Ken Balcomb, pers. comm.). This was an abrupt change of behavior from their previous diving and foraging activities.

Motivation for investigating source asymmetry

Anna Hall, who leads Whale Watch tours from Victoria has observed situations where boats were so quiet near the bow that they were running over grey whales before the animals actually heard the vessel. This lead me to a curiosity about the directionality of source noise and how sound propagates from the engine. Boats with outboard motors are especially known to emit more sound backward, from the stern of the boat. (Anna Hall pers. comm.). Jet boats may also create asymmetrical sound. If asymmetry is common in whale watching vessels, boats that are turning away from the orcas after observing them may inadvertently direct the loudest part of the boat at the orcas. Verifying asymmetry might lead to restrictions on how the vessels leave the orcas, such as backing away from them to a certain distance before turning around.

Methods

General procedure

I chose to study a typical diesel-powered private vessel called "Cat's Cradle." This was convenient because it is owned by Val and Leslie Veirs. Cat's Cradle is a sailing catamaran (Gemini 105) that is 10.5 meters (34.5 feet) long. Its diesel engine is mounted within an insulated engine compartment aft of the cockpit between the hulls. A

2 meter-long "leg" transfers power (and probably much of the sound energy) from the engine to the propeller which is located about 0.5 meters below the water surface.

I measured the source level of the Cat's Cradle by using an array of four hydrophones that are fixed on the sea floor just offshore of the west side of San Juan Island, in Haro Strait (**see figure 3)** . My first step was to find a position from shore where I could measure the range of the Cat's Cradle as it drove toward or away from me. Using a hand held laser range finder, (**See figure 4**) I situated myself in line with hydrophone 0, 1 and 2. I then used a compass to find the bearing of the course over these hydrophones that the boat would follow. This line had a bearing of 223 degrees going away from shore and 43 degrees coming toward the shore. I talked to the boat captain via VHF (which stands for very high frequency) radio to make sure the boat was lined up where I wanted it to be.

I then had the boat come in toward me and then go out away from me two times each. The first two times (in and then out), the captain went to full speed immediately and the third time he revved up his engine more slowly. The fourth run was much like the first two, where he went to full speed immediately. The data from the first two runs (recorded after he went to full speed immediately) offer a more accurate depiction of typical engine noise because there are no variables such as an increase in boat speed over time (revving).

The full speed for all trips was approximately 3500 rpm. There was most likely a degree of human error in keeping the boat speed at 3500 rpm. The captain may have sped up at different rates on different runs or been a little above or below 3500 rpm. This might skew the results because the different runs might have resulted in slightly different

source levels. This error margin is not accounted for in the results because we are assuming that it was fairly low. In the future it might be more accurate to measure the speed in knots instead of the engine speed because it is easier to see the exact speed on the knot meter.

Each time I measured the distance from myself to Cat's Cradle, I called the numbers up to Scott Veirs, who was using a computer to record the sound from the hydrophones. He noted the time of my ranges and recorded a sound file for each of the Cat's Cradle's runs. Between runs, the Cat's Cradle cut its engine so that we could record the background noise (a tanker went through the study area during the experiment). Our background recordings were somehow mislabeled in the files of the sound recordings. We only found the background noise at the beginning and end of the experiment. These two numbers were only different by .49 of a dB so I used the first one for the first half of the recordings and the end background level for the second half of the data.

Data analysis and computation of source levels

Once all the data were collected, I used the computer sonogram program that recorded the hydrophones to find the RMS (root mean squared) sound level received at each hydrophone during the experiment. The sonogram displays the decibel level (y-axis) over a period of time (x-axis). **(See figure 4)** I entered the times and ranges into a spreadsheet. For each time I found the RMS value in dB by taking the average RMS for that time (the averaging window extended 0.2 second before and after the actual time of the range measurement). I did all of this for hydrophone 0, then recorded the background level.

To subtract the background level (bk, in dB) from the received level (RL, in dB) I used the equation:

10 log (10^(RL/10)-10^(bk/10))

This equation gave me the actual received level of the boat without the background noise. For hydrophone 0, I labeled this "true" received level (RL1-bk0) for received level minus the background noise. This means that for hydrophone 1, the true received level would be calculated by RL-bk1 for the background noise from hydrophone 1.

After finding the true received level, I found the actual distance from the Cat's Cradle to the hydrophone. To do this I used a map of the shoreline and hydrophone placement **(see figure 1)** to measure from myself ("L" stands for Lindsay) to each hydrophone and named the distances D0L, D1L, and D2L. From the laser range finder, I knew the distance from myself to the Cat's Cradle (RF). With these two distances, I subtracted the distance between myself and a hydrophone from the distance between myself and the Cat's Cradle to find the distance from the Cat's Cradle to the hydrophone, e.g.: D2=RF-D2L. I called the vessel-to-hydrophone distances D0, D1, and D2 respectively, for each hydrophone.

To examine how sound spread from the engine to hydrophone 0, I graphed the log of the D0 (y-axis) versus the true received level, RL-bk0 (x-axis). The line best fitting the data is y = -13.121x +152.17. Under the assumption that the engine source level was constant throughout the run, the graph shows how the sound spread out in the local environment. The slope defined the spreading model for the area so that I could translate received level into source level using the equation:

Source level= true received level + transmission loss.

where the transmission loss term was taken to be 13.121*Log (vessel-to-hydrophone distance). I used these same methods to collect the data from hydrophones 1 and 2 and used the same spreading factor of 13.121 for all of them.

Averaging source levels

Once I had computed these source level data, I began to analyze them to find the average source level. The first method I used to find the average source level was to graph received level relative versus log distance for each of the four runs. While the slope of the resulting best-fit line characterized how the sound was spreading, the y-intercept defined the average source level (defines as the sound level when the vessel-to-hydrophone distance is one meter).

This method worked well for hydrophone 0 and gave me an average source level of 152 dB re 1μPa @ 1 meter. The other two hydrophones yielded widely scattered data points and the line did not fit the data well. Therefore the y-intercept did not give an accurate representation of the source level. Because of this, I simply averaged the source levels from each of the hydrophones.

Assessing asymmetry

To investigate the asymmetry of the sound emanating from the Cat's Cradle, I graphed the received level versus the log distance for two different runs: one when the vessel was approaching and one when it was departing. I did this for hydrophone 0, which the vessel never passed over because it is right next to shore. I expected the graph would show me both how the sound was spreading when the engine was facing toward

and away from the hydrophone and whether the orientation of the vessel relative to the hydrophone affected the source level. This method was vulnerable to the possibility that a slight variation in engine speed (due to human error) could make the comparison less meaningful.

To really address the asymmetry I had to use data from hydrophones 1 and 2, because the vessel passed over these two hydrophones in one run that had a consistent engine speed (the throttle was not adjusted during runs). The position of these hydrophones made it possible to have the boat faced toward and away from the hydrophone during a single run. Because of the way I calculated distance (**see figure 2**), the distances closer to shore from the hydrophones were negative numbers, and those on the west side of the hydrophones were positive numbers. Depending on whether the vessel was on a departing or approaching trip, the relative orientation of the engine to the hydrophone changed (and distances changed signs) as the boat passed over the hydrophones. I added a column to my data to show whether the engine was facing away or toward the hydrophone. With this information, I took the average of the source levels when the boat engine was pointed towards and away from the hydrophone. I compared these averages within one run so that there was less likelihood of different engine speeds causing any difference in the toward and away averages.

The next method I used to analyze asymmetry was to graph the source levels versus distance. Because source level is defined at 1 meter from the boat, the "toward" and "away" source levels should all be the same unless there is asymmetry in the environment or the vessel's engine noise. I graphed every hydrophone this way to see

how their position might affect the source level. The results of first the source levels, and then the asymmetry are presented in the next section.

Results

Average source levels

From my simple averaging of every source level, I found the average source level from hydrophone 0, 1 and 2 to be 152, 147.4 and 146 dB re 1μPa @ 1 meter respectively. The overall average source level of the Cat's Cradle engine (from every hydrophone) is 148.5 dB re 1μPa @ 1 meter. **(See graph 1)**

Asymmetry

The first graphs from hydrophone 0 (**see graphs 2 & 3**) and their best-fit equations indicate almost no difference in source levels in front of Cat's Cradle versus behind it. The approaching source level at 154 dB re 1μPa @ 1 meter and the departing source level is 156 dB re 1μPa @ 1 meter. The 2 dB difference is not enough for the human ear to perceive, and given the range of intensity in a killer whale vocalization, it is highly unlikely that they could perceive this difference. The spreading model for the approaching and departing received levels is also very similar. This shows us that the sound was lost at similar rates when the vessel was departing and approaching.

Discussion

One of the interesting characteristics of the source levels was the difference between the averages from each hydrophone. Hydrophones 1 and 2 had very similar source levels, while hydrophone 0 had an average source level that was five to six

decibels higher than the other two. There are many possible explanations for this difference.

One explanation hinges on the fact that Cat's Cradle did not run exactly over hydrophones 1 and 2 as planned (**ref. figure 1**). My calculations of distance counted on the fact that a straight line extended from me to Cat's Cradle and went directly over the three hydrophones. A minor misalignment could cause an error of approximately five meters; if Cat's Cradle was actually 5 meters further away from hydrophone 1 or 2 than I assumed it was, then the computed source levels would underestimate the true source level. My analysis shows however, that with a 1 meter difference, there is a .5 decibel difference and with 10 meters there is only a 4 decibel difference. Since the error margin is so slight, it is unlikely that the distance was the only factor causing the different results between hydrophones.

A more likely possibility is that the underwater environment is different around hydrophone 0, and this changes the way sound spreads. As can be seen, hydrophones 1 and 2 are very close to each other and separated from the shore, while hydrophone 0 is right next to shore. With the rocks right behind hydrophone 0, there could be some sound bouncing off the rocks that is making the received levels higher. Without using a different spreading model, these received levels translate to higher calculated source levels. Theoretically, an echo doubles the sound intensity, increasing the number of decibels by six. This explanation seems to make sense, when looking at the 6 decibel increase in the source levels from hydrophone 0.

The results from hydrophone 0 also look different than the other two when *source* level is plotted against hydrophone-boat distance (**see graphs 4 and 5**). These two

graphs show that the source levels computed using hydrophone 0 were highest and lowest (depending on whether the boat was approaching or departing) at a distance of around 100 meters whereas the other two hydrophones had the lowest source levels around 0 meters distance for both the departing and the approaching runs. This difference also may be due to the distinct position of hydrophone 0. The boat was never directly over hydrophone 0, so there could be no observation of an increase or decrease in source level at 0 distance. The other hydrophones recorded a decrease in source level at 0 distance, which could be explained if sound propagates out from the boat in such a way that it is quietest directly below the boat. These low source levels make the overall average of source levels lower.

Asymmetry

In the method with which I first tried to detect vessel noise asymmetry with log distance and received level, I expected the graphs to be very linear with the assumption that the sound would spread evenly and thus the different distances would correspond to a uniform line of received levels. When I graphed a departing and approaching run in this way, I found very little asymmetry. As I described in the results section, there was only a two decibel difference between the y-intercepts in graphs 2 and 3. Graphing the log distance and received levels did not seem to be the best method for finding asymmetry because the source level is extrapolated from the received levels and does not represent the entire real source levels found.

The other method I used to calculate asymmetry was to graph the source levels versus the distance from the hydrophones to the vessel. Hypothetically, all the source

levels should be the same since they are all referring to the sound from 1 meter away, but if there is asymmetry this would not be true.

The graphs of all the source levels and distances (**see graphs 4 & 5**) clearly indicate that the softest source levels for both hydrophones 1 and 2 occur when the vessel is directly over the hydrophone. This implies that the noise is emitted at an angle; it does not project directly downward as powerfully as it projects forward or backward (and possibly to the side). The negative distances on the "out" run (graph 4) correspond to the vessel going toward the hydrophone and the positive distances correspond to the vessel going away and facing its engine at the hydrophone. The higher source levels are seen when the vessel is going toward the hydrophone, which does not support the idea that the engine noise is loudest behind the vessel.

In the graph of the same variables for a run where the boat was going *in* toward shore (graph 5), the negative distances correspond to the boat when it is departing and the positive distances correspond to the vessel approaching the hydrophone. If the boat was in fact louder in the front as graph 4 suggests, then this graph would show higher source levels at the positive distances. Instead it indicates that the vessel is 15-20 dB louder when heading away from the hydrophones. This graph implies asymmetry, but coupled with graph 4, it implies the same as the first method of assessing asymmetry, which is that there is no front-versus-back asymmetry in the Cat's Cradle's engine. Further studies are needed to characterize a/symmetry in Cat's Cradle engine noise because some graphs, such as graph 5, suggest that source levels are louder in the back of the boat, while graphs indicate no asymmetry. It remains clear, however, that the engine projects reduced levels of sound immediately downward.

Comparison to other sounds in the orca environment

I compared the Cat's Cradle data to other sounds that make up the Orcas' acoustic environment. Three Colorado College students, whom I worked with, found the source levels of both the Washington State Ferry (as it passed from Friday Harbor to Sidney) and a whale herding device. The whale herding device – a metal pole – was manufactured for NOAA to use as a deterrent to keep whales out of oil spills. It has been successfully used in the past by protesters who wanted to alter orcas' movements when they were being captured for aquariums. It is being tested for its effectiveness. The Washington State Ferry seemed extremely loud at our hydrophone site although it was almost 10 km away. These source levels were also compared to an average orca pulse call, which is quieter than an echolocation call, and is used when the orcas are communicating with each other.

The comparison of *source* levels shows that Cat's Cradle is actually the quietest noise out of the four and is even quieter than an orca pulse call. The Washington State Ferry was by far the loudest sound at 215 dB re 1μPa @ 1 meter. (**See table 1**).

While comparing the source levels of many things in the orcas' environment is important, it is not as explicit at showing the level of sounds that the orcas actually perceive. Here the received level is more important because all of these sounds are typically generated at different distances from the orca in normal circumstances. For instance, the ferry source level is much louder than the orca call, but orcas typically are about10,000 meters away from the ferry. In contrast, orcas are usually only 10 meters away from each other when they emit the relatively quiet calls.

To estimate characteristic receive levels for each source, I assumed different distances away from the orca for each of the sounds. I used 100 meters for the catamaran because that is the recommended viewing distance in the "be whale wise guidelines." I chose 1000 meters for the pipe because that is likely to be the distance that pipes are banged to keep orcas out of oil spills. I chose 10,000 meters for the ferry because the orcas typically stay very far away from the ferry as it runs from Friday Harbor to Sydney. When the orcas are communicating with each other they are often observed about10 meters apart, so that is the distance I chose for them.

I assumed a cylindrical spreading model to compute comparable received levels (**table 1**). Gauged by receive level, the catamaran at 100 meters away is still not as loud as the orcas talking to each other, and is not even as loud as the much more distant ferry and pipe.

While these numbers illustrate a rough estimate for comparison, they cannot be used statistically because a cylindrical spreading model cannot be assumed for all of them. For instance, we measured received level of the Washington State Ferry from our fixed array show that it is not as loud as 175 dB re 1μPa @ 1 meter. This gets into another problem of how and why the sound is spreading differently than expected in different environments. Thus, the cylindrical spreading is assumed to make this general comparison, but it may, for a more statistically significant set of data, yield distinct results.

In the end, the source level of the Cat's Cradle suggests that this is not the kind of vessel that is a huge disturbance to orcas, nor is it the kind of boat that can show the kind of evidence needed to change policies and get more protection for the orcas. It may be

that cargo ships and other tankers are the disturbances, and whale watch vessels aren't greatly affecting the orcas. In this case, it would not be the whale watching policies that would need to be changed. As stated earlier, this experiment did, however, demonstrate an accurate method for measuring source levels that can be applied to larger boats with more powerful engines to figure out which underwater noises are in fact a concern for the orcas and should be the concentration for conservationists and scientists.

The Cat's Cradle did not show the kind of asymmetry that might change policy either. The experiment was important for finding a method to measure asymmetry. Future experiments should consider that asymmetry is best measured when a vessel runs directly over a hydrophone or at a consistent distance on each side of it, so that the relative positions may be accurately measured from one run. It may be helpful in future work to use hydrophones that are not so close to shore. Using mobile hydrophones that are deployed in a deep area where less echoing and refraction occur could result in more accurate measurements of source levels without the difficulty of the complex sound propagation that seems to occur when hydrophones are right next to rock walls. Another easy way to measure asymmetry would be to physically go around an idling vessel and measure the sound at the front, back and sides with a mobile hydrophone.

Future studies

Experiments such as this one are just the first step in changing policy to protect orcas against possibly damaging boat noise. Andrew Trites, professor at University of British Columbia believes another important step is to observe the sound accumulated from all of the vessels at once. Finding the source level of one vessel may lead to a wider parameter under the "Be Whale Wise guidelines," but knowing what all those boats

sound like together is more important in understanding what the orcas are actually hearing and how much it is disturbing them. My experiment gives a clear method for finding one source level which can be applied in further studies of more vessels.

One University of British Columbia student who studied humpback whales in Hawaii found that the animals were less affected by the actual loudness of the sound and more by the change in engine speeds. A much different experiment with the same motivation might include studying how orcas react to boats when they change their speed.

The pipe experiment shows another variable that may be used in future studies. As shown in the table, the pipe source level was barely louder than the orca pulse call and at a typical distance sounds quieter than an orca call. Yet, past tests have shown that it effectively deters the orcas in situations such as one where protesters banged pipes to keep the animals from being captured. The pipe has a very high frequency (mostly at 1.04 kHz with harmonics up to 6.4 kHz), so it may very well be the tone of the sound and not the loudness that bothers the orcas. Given this, it might be important to include frequency as well as source levels in future experiments of underwater vessel noise. As can be seen, there are many directions for future study to find how engine noise affects orcas.

Acknowledgements

Thanks to Scott Veirs for his teaching, time and the internship opportunity; to Val Veirs for his teaching, equipment and support; and to Erin Bauer, Michael Foley and Patrick Duffy for their help in this project. Thanks also to Joe Olson, Fred Felleman, and Anna Hall for their ideas and interest. Finally, thank you to Michelle Marcott for

organizing and hosting the Student Marine Mammalogy Conference in Vancouver and all the students and professors that shared their ideas.

Reference

Buckstaff, Kara C. "Marine Mammal Science." Vol. 20 Nov. 4, 2004.

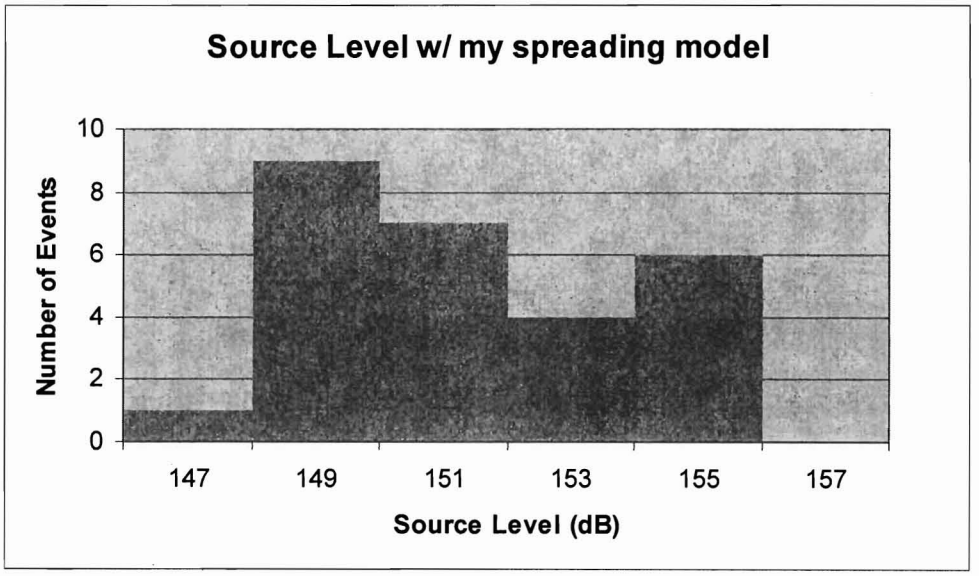
Foley, Michael. "Source Level and Frequency Spectrum of Marine Mammal Deterrent Pipes and Acoustical Similarities with Other Underwater Sounds."

NOAA/ NMFS. "2004 Status Review of Southern Resident Killer Whales (Orcinus orca under the Endangered Species Act." NOAA Technical Memorandum NMFS-NWFSC-62 December, 2004.

Richardson, W.J. et al. "Marine Mammals and Noise," Academic Press 1998.

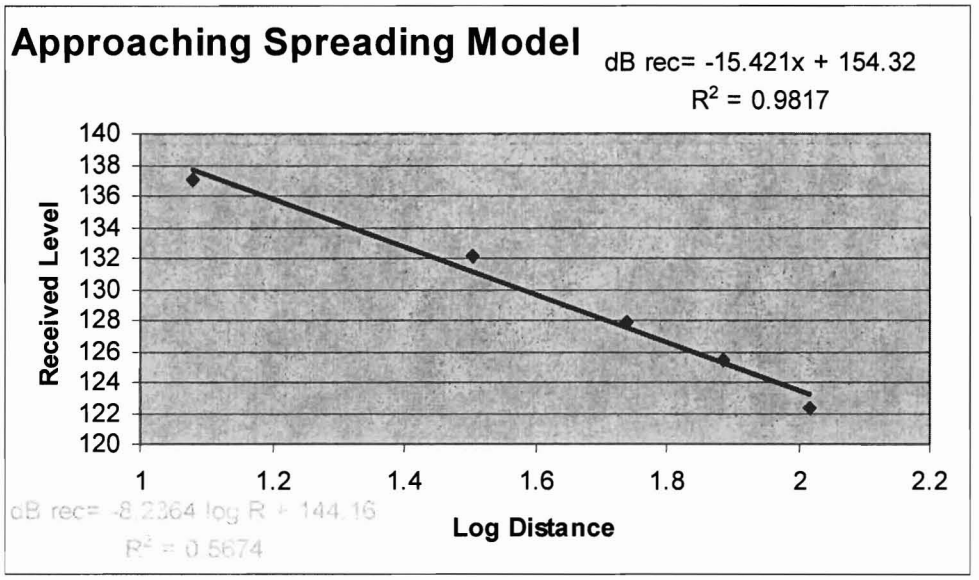
Tables

Graph 1



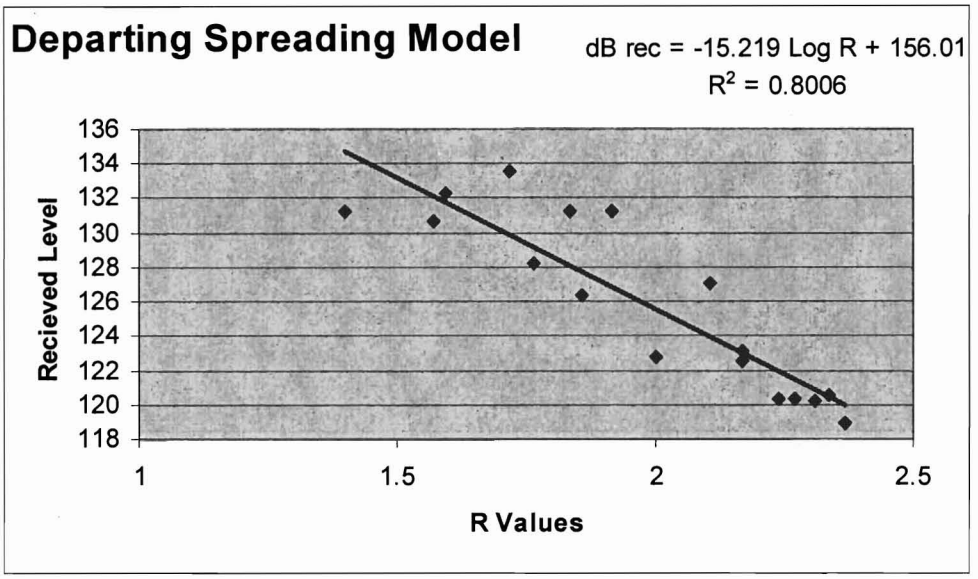
This graph shows the distribution of Source Levels from hydrophone 0, with an average source level of 152 dB re 1μPa @ 1 meter.

Graph 2



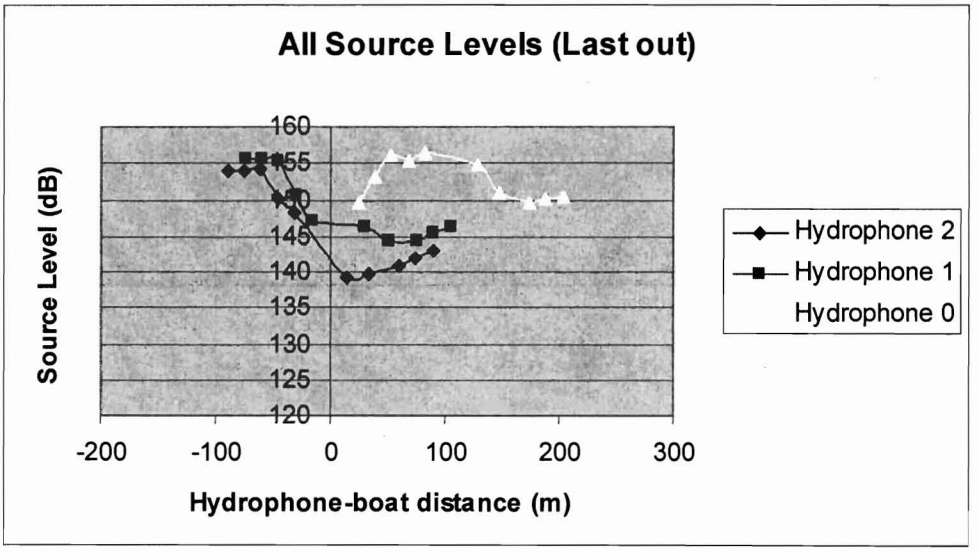
Log distance versus received level when the vessel is approaching hydrophone 0. The line of best fit extrapolates to a source level (y-intercept) of 154.32. The slope of the equation represents the way the sound spread out from the vessel.

Graph 3



This graph shows the variables (R Values=Log Distance) as in Graph 2, but for when the boat was heading away from shore, or "departing".

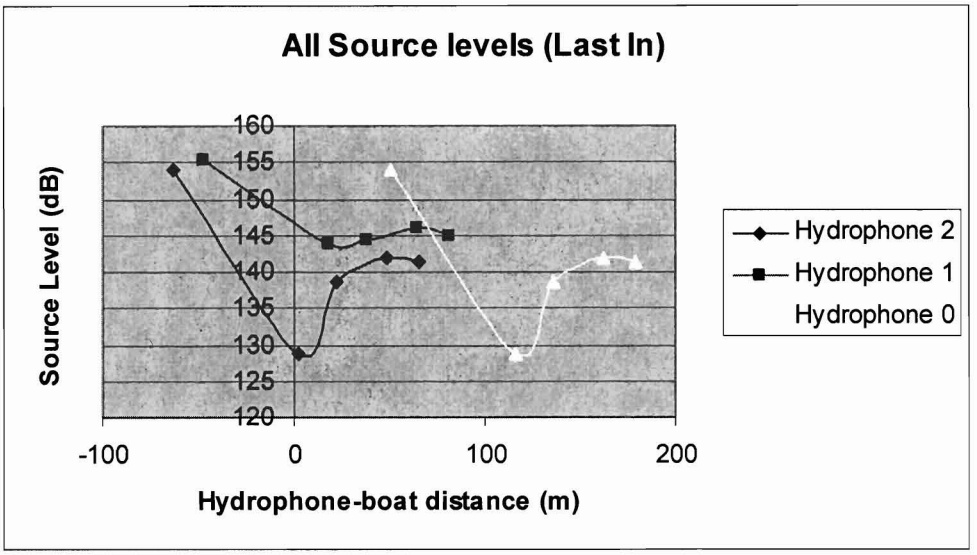
Graph 4



Source levels as a function of distance for a run "out" (away from shore) for all three hydrophones. In this case, negative distances indicate the vessel was heading toward the

hydrophone, while positive distances mean the vessel was heading away from the hydrophone.

Graph 5



Source levels for a run "in" where the vessel is heading toward shore. Positive distances indicate that the vessel was heading toward the hydrophones and negative distances indicate that the vessel was heading away from the hydrophones.

Table 1

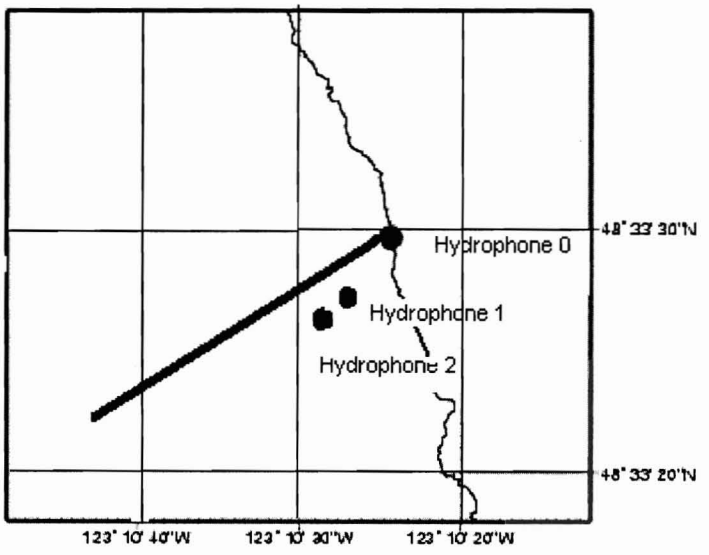
	Cat's Cradle	Pipe	WA State Ferry	Orca
Source Level (dB)	148.5	164	215	160
Distance (m)	100	1,000	10,000	10

Receive Level (dB)	132	134	175	150

This figure shows the average decibel level found for each underwater sound. Assuming a cylindrical spreading and taking the usual distance from the orca of each sound, the received level was calculated from the average source level.

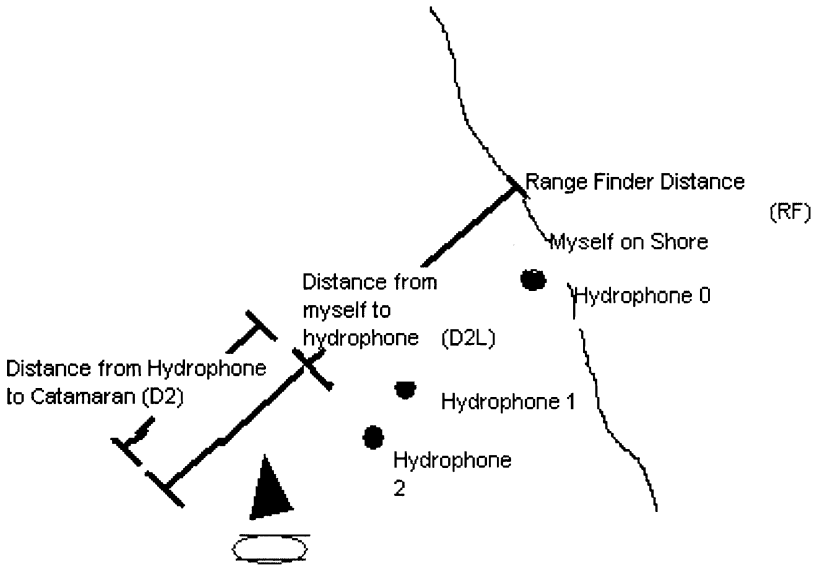
Figures

Figure 1



Map of the study site. The black line represents the coastline, with Haro Strait on the left and San Juan Island on the right. The blue line is the generalized path of Cat's Cradle during its runs in towards and out from shore. Red dots indicate hydrophone locations.

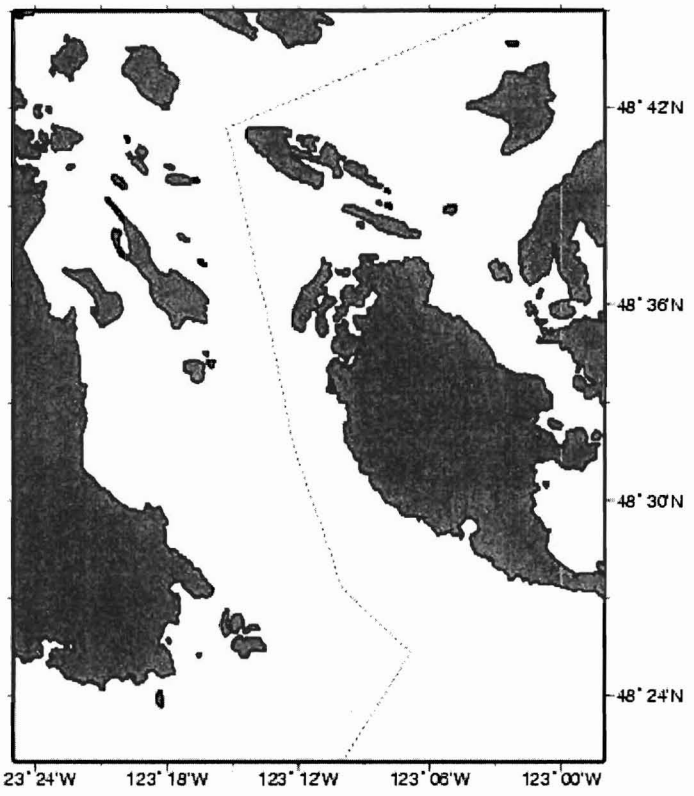
Figure 2



Distance from hydrophone to catamaran= Range Finder distance minus Distance from myself to H2

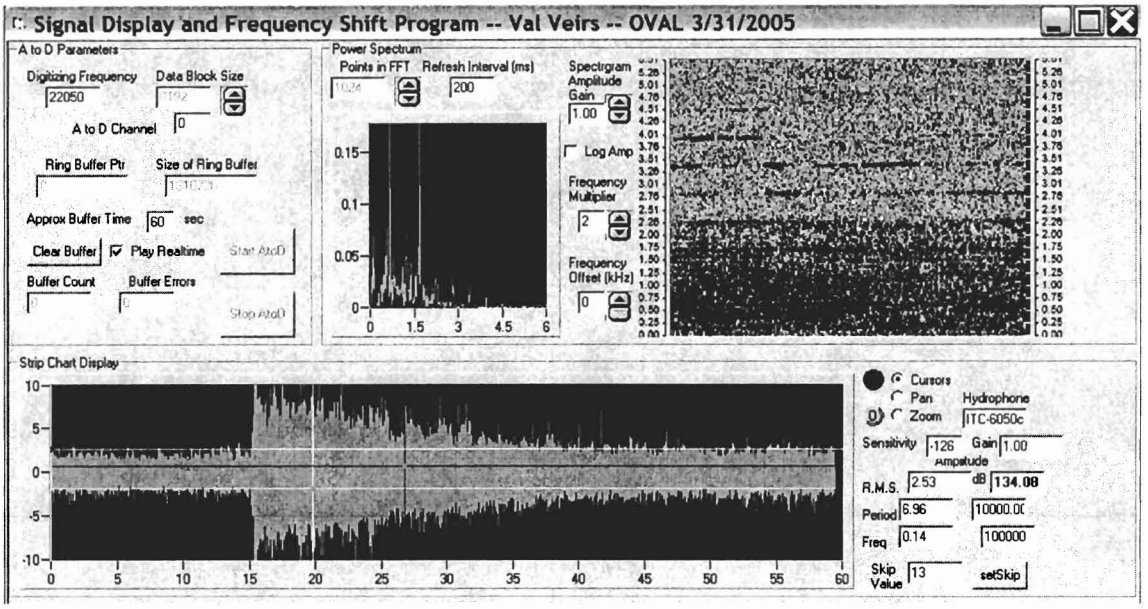
This is a schematic diagram of measured and calculated distances. Vessel position is indicated by red oval hull and sail. Blue dots are hydrophone locations and "M" in "Myself" indicates position from which laser range finder measurements (of distance RF) were made. Distance D2L was known from hydrophone surveys and GPS location of "M." Distance D2 was calculated as described in the methods section. The vessel-to-hydrophone distances are negative when the vessel is inshore of the relevant hydrophone and positive when the vessel is further offshore than the hydrophone.

Figure 3



Map of the orca habitat with the US, Canadian border represented by the blue dotted line, the south eastern tip of Vancouver Island to the west, and San Juan Island in the east. The blue dot on the upper west side of San Juan Island shows the study site.

Figure 4



A picture of the computer sonogram program used to measure decibels. The bottom plot shows the sound in decibels with time in seconds on the x-axis. The red lines in the upper right hand corner show the frequency distribution over time, with the upper red lines showing the upper harmonics as high as 5hKz. Finally, the average power spectrum (the small, square black plot) shows that the frequency of the Cat's Cradle was mainly at 0.8 kHz with a powerful harmonic at 1.6 kHz.

Subject: NOAA Fisheries Service Proposed Vessel Regulations for Southern Resident Killer Whales
From: Vanessa Williams-Grey <vanessa.williams@wdcs.org>
Date: Thu, 14 Jan 2010 22:07:23 +0000
To: Orca.Plan@noaa.gov

Dear Administrator,

Please find attached WDCS's comments in response to NOAA Fisheries Service proposed vessel regulations for southern resident killer whales.

Yours sincerely,

Vanessa Williams-Grey

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WDCS is the global voice for the protection of whales, dolphins and their environment.

Comments on FR74, No144. Southern resident killer whales.doc	**Content-Description:**	Comments on FR74, No144. Southern resident killer whales.doc
	Content-Type:	application/msword
	Content-Encoding:	base64

Administrator, Protected Resources
Division, Northwest Regional Office,
National Marine Fisheries Service, 7600
Sand Point Way, NE., Seattle, WA
98115.

14th January, 2010

Dear Administrator,

Comments on proposed NOAA Fishery regulations re: vessels FR74, No. 144

Established in 1987, WDCS, the Whale and Dolphin Conservation Society, is an international non-government organization with offices in the US, the UK, Argentina, Australia, Germany and Austria and a worldwide network of consultants, researchers and supporters. WDCS is the only global NGO dedicated solely to the protection and conservation of whales, dolphins and their habitats. Our work combines concern for the welfare of the individual animals with efforts to ensure the protection of entire species, populations and their habitats.

WDCS welcomes the opportunity to comment on the proposed regulations. We agree with the opinion of scientists and local experts, namely that the southern resident population of killer whales, or orcas (*Orcinus orca*), is in serious trouble and facing terminal decline unless robust action is taken. Comprising just three social units (J, K and L pods), the southern resident orca population is 'among the most critically endangered marine mammals occurring regularly or exclusively in US waters.' (Reynolds *et al.,* 2009). Previously designated a depleted stock under the MMPA, the November 2005 listing of the population as endangered under the U.S. Endangered Species Act and the subsequent Recovery Plan issued by NOAA in 2007 are testament to growing concern. A population currently numbering only 88 members is clearly in need of better protection than currently afforded.

The question of exactly what measures are necessary to reverse this decline has been the subject of ongoing debate. Opinions are both passionate and polarised; however, it is clear that since a multiplicity of factors – including prey depletion, noise and chemical pollution, vessel interference and the legacy of extensive live-captures during the 1970s – have combined to cause this decline, efforts to promote recovery of this population will, equally, require a range of practical conservation measures.

WDCS would, therefore, like to contribute the following observations and recommendations:

1 Support for restoring Chinook salmon populations

Orcas occupy the top position in a complex marine food web. Although orca populations elsewhere will predate on a wide variety of marine species, both the southern and northern resident orca populations feed exclusively on salmon and other fish. Crucially, the Chinook salmon, the preferred food for the southern resident orcas,

has been in overall decline for decades. Recently-published research analysing 25 years of demographic data demonstrates that orca survival rates are "strongly correlated with the availability of their principal prey species, Chinook salmon (*Oncorhynchus tshawytscha*) and although these killer whales may consume a variety of fish species, they are highly specialised and dependent on this single salmonid species to an extent that it is a limiting factor in their population dynamics." (Ford *et al.*).

Ideally, Chinook would compose around three-quarters of the diet of southern resident orcas and data demonstrates that the fortunes of Chinook salmon and orcas populations are intimately connected; for example, when Chinook populations declined sharply (as they did in the 1990s), the southern resident population also crashed. In 2008, eight members of this population (including two females of reproducing-age) disappeared, feared dead due to malnutrition, starvation and consequent vulnerability to other threats including water contamination.

Orcas develop specialised hunting strategies over time, learning from pod elders. Deeply-engrained cultural traditions thus play an important role in foraging behaviour. Therefore, although the southern residents hunt other fish when Chinook aren't available, they may fail to receive sufficient nutrients from smaller, less oil-rich or harder-to-catch fish species leading to malnutrition and greater vulnerability to disease, etc.

WDCS strongly supports measures to conserve and restore salmon populations and revitalise salmon runs along the entire western seaboard of the US and Canada, from California to Alaska. This may include specific measures such as dismantling the four lower Snake River dams, which currently prevent Chinook salmon from reaching their spawning streams and keep the salmon smolts from reaching the ocean. Urgent consideration should also be given to limiting further construction or farming activity in watersheds and wetlands and instead, to restoring these areas. The findings of Ford *et al.* also strengthen the case for imposing additional limits on salmon fishing (particularly Chinook) in the region.

2 Support for further reducing pollution levels

Pollutants dumped in Puget Sound and other waterways especially during the 1960s and 1970s increased orca deaths and reduced fertility, rendering the southern resident orcas amongst the most contaminated marine mammals in the world. Polychlorinated biphenals (PCBs) and other organic chemicals like DDT and persistent aromatic hydrocarbons (PAHs) have leached into the marine ecosystem and moved through the food chain. Over decades, these contaminants have accumulated in the orca's blubber layers, reducing fertility and increasing mortality rates. Although researchers have documented the arrival of six new calves this season, celebrations are somewhat muted due to the knowledge that as many as 50% of calves – particularly first-born - do not survive their first year. These high mortality rates are blamed upon heavy toxic burdens transferred from the calf's mother. WDCS supports ongoing efforts to reduce toxic pollution and improve water quality.

3. Support for Alternative 8: 200 yard approach regulation; expanded no-go zone and keep clear of the whales' path.

In the final rule announcing the 2005 ESA listing, NMFS identified vessel effects, including direct interferences and sound, as a potential contributing factor in the decline of this population, and the ESA Recovery Plan (2008) includes as a management action the evaluation of current and potential vessel regulations, including consideration of protected areas or time-area closures.

WDCS, therefore, strongly supports promulgation of this package of regulations (incorporating Alternatives 3, 5 and 7, as described in Subsection 2.2.8, Draft Environmental Assessment, January 2009). This regulation package would prohibit vessels from approaching any orca closer than 200 yards; formalise a no-go zone along the west side of San Juan Island, and require vessels to keep clear of the whales' path. This combination of measures would afford the orcas a high degree of protection from vessel strikes, behavioural disturbance and acoustic masking.

We note with satisfaction that under the MMPA and ESA, the proposed regulations would apply to ALL orcas in the region (resident, transient and offshore).

3.1 200 yard approach regulation.

Research has shown dramatic increases in whale watch traffic (Krahn et al, 2002) such that, during the peak season, this population is typically trailed by as many as 126 vessels at a time, for up to 12 hours per day (NMFS, 2008). Considerable research evidence now exists documenting negative vessel impacts upon cetaceans and other marine mammals, including effects upon feeding, resting and social interactions (for example: Lusseau 2003a; Constantine 2004, Bejder 2006); altering travel patterns to avoid vessels (for example: Constantine 2001; Lusseau 2003b, 2006); relocating to other areas (Allen and Read 2000) and changes in acoustic behaviour (Van Parijs and Corkeron 2001). Research specific to the southern resident orcas has shown that vessel presence causes these animals to adopt more erratic swimming paths (Williams *et al*, 2009b) and reduces the time they spend feeding (Lusseau *et al*, 2009).

Researchers believe that the orcas' feeding ability is compromised by increased ambient ocean noise levels caused by high vessel traffic (Erbe, 2002; Foote, Osbourn and Hoezel, 2004). Vessel noise may mask echolocation clicks, or communication calls used by orcas when group hunting (Bain and Dahlheim, 1994). Research further demonstrates almost 100% masking of orca auditory signals from vessels at 100 yards, with this effect tapering off – although still significant - even from vessels as far away as 400 yards (Holt, 2008). Given that the southern residents are a prey-depleted population, it is absolutely essential to regulate vessels such that masking of orca echolocation and communication is minimised.

WDCS, therefore, supports creating a new 200 yard approach regulation. We believe that it is vital that the 200 yard approach distance applies to **ALL** vessels (with the possible exception of large shipping lane traffic if it is unfeasible to reroute these). While it is true that commercial whale watch vessels are focussed on the whales and tend to linger longer in their vicinity than other vessels, we are aware of numerous

instances of infringement of the current 100 yard restriction, for example by both commercial and recreational fishing vessels. We would further request consideration of a 400 yard rule in the case of nursing orcas.

Although some local whale watch operators maintain that their passengers will not accept an increased viewing distance and this will have a negative impact upon their livelihood, we would agree with the contention in the 2009 Regulatory Impact Review that "proximity to whales is not the most important feature of a whale watch experience [and] may not have any economic impact on commercial whale watch trips particularly if the reasons for the increased viewing distance are explained to customers." Our experience, in leading and participating in whale watch trips across the globe, is that passenger satisfaction derives as much from receiving high-quality interpretation from a trained naturalist guide/skipper as it does from the actual viewing experience.

Studies have shown that it is important to passengers that they view whales in a respectful, protective manner (Andersen, 2004; Andersen and Miller, 2007), hence it is likely that the vast majority of passengers would support an expanded viewing distance once the reasons for such a restriction were properly explained. Research centred on viewing northern resident orcas suggested that "passengers' pre-trip expectations play a role in determining their post-trip satisfaction levels." (Malcolm, 2004)

The key is for operators to rebrand their trips, marketing them in a positive, proactive manner as a special/privileged experience (akin to viewing endangered northern right whales off eastern seaboard USA, or mountain gorillas in Rwanda). Operators are no doubt aware that the orcas are in serious trouble, hence the reality is that it may be a question of 'adapt or die': unless operators are willing to play their part in helping to better protect this precious resource, they risk losing it altogether.

3.2 Support for Expanded No-Go Zone

While the 'expanded no-go zone' proposed is larger (at 6.2 square miles) than the current voluntary no-go zone (3.8 square miles), we would strongly support - as a minimum - formalising the slightly larger but still very small candidate marine protected area outlined in a recent paper by Ashe *et al.* (2009).

Their research demonstrates that southern resident orcas are most vulnerable to disturbance while feeding. It is, perhaps surprisingly, rare for behavioural data to be incorporated into habitat conservation plans for marine species, but in this instance, it would appear crucial to identify and protect orca feeding hotspots. Ashe *et al.* identified priority habitat by mapping out those areas most used by orcas for feeding. This data, combined with results of interviews with key local environmental educators, allowed them to identify areas which satisfied overlapping 'orca-related' and 'human-related' needs (this latter referring to an area small enough in practical terms for boat traffic to be excluded).

The proposed MPA identified off the south-west side of San Juan Island covers an area 7.4 square nautical miles. Orcas observed within this candidate area were 2.7

times more likely to be engaged in feeding activity than if observed outside this area. Interviews established that an area extending one nautical mile offshore was considered 'manageable' in terms of monitoring and enforcement of the restricted area.

Ashe *et al.* have confidence that this high-probability feeding area will endure over time: orcas have been observed in the region for over half a century, and several studies have also reported orca feeding activity in this candidate MPA (eg Heimlich-Boran, 1988; Hoelzel, 1993). Therefore, Ashe *et al.* believe that this preferred feeding area will persist over timescales suitable for management action.

Other benefits accruing from highly protected MPAs include acting as 'control areas' for future monitoring and study. In the context of whale watching, it may be useful to compare the behaviour of whales in no-go areas versus whale watch areas. There may also be other previously unforeseen benefits, as has been the case for Robson Bight. (Williams *et al.* 2006, 2009).

WDCS requests that NMFS gives serious consideration to excluding **ALL** (or at minimum, most) categories of vessel from such a protected area during the core season.

3.3 Support for keep clear of the whales' path regulation

A regulation requiring vessels to keep clear of the whales' path within 400 yards of the whales (formalising the current *Be Whale Wise* guideline) would likely reduce both the risk of vessel strikes, and that of acoustic masking. Parking in the path of whales can negatively impact their social behaviour and has the greatest potential to mask echolocation. Since parking in the path is currently the most commonly reported incident, regulating this aspect can only be beneficial for the orcas. Again, this regulation should apply to **ALL** vessels not just commercial and recreational whale watch vessels.

4. Further comments:

4.1 Time and space closures

WDCS further advocates serious consideration be given to incorporating into regulations a practical, precautionary management tool whereby one-third of the 'go zone' area and one-third of daylight hours be kept free from any whale watching activity (Hoyt, 2007). Such restrictions on areas and times would also prove useful as controls for researchers doing comparative studies.

4.2 Limits upon the time a whale watch vessel may spend with orcas

We would advocate that regulations include a stipulation that vessels must not spend more than 20 minutes with each group of whales.

We note that the Draft Environmental Assessment (NMFS January 2009) considers that there may be education and enforcement issues relating to implementation of such restrictions, but we would suggest that a well-targeted education and outreach

programme would reach relevant water users and these measures would undoubtedly give the orcas some much-needed respite.

4.3 Support for land-based whale watching

Land-based whale watching is becoming increasingly popular as an alternative to vessel-based viewing in locations as diverse as Hermanus in South Africa; Byron Bay in Australia, and Chanonry Point in the Moray Firth, Scotland. It offers a safe, free (or certainly low-cost), zero-impact means of watching whales. Notable land-based sites to view southern resident orcas include Lime Kiln Point State Park, San Juan County Park, and South Beach, and we would urge more publicity to be given to land-based viewing of these whales.

4.4 Support for adequate education, licensing, monitoring and enforcement provisions

It is, of course, imperative that the proposed regulations include adequate monitoring and enforcement measures for all vessels. With regards to whale watching, WDCS would like to see licensing of operators, including the phased introduction of a permit system whereby a fixed number of permits are issued for each licensing period, thus restricting the overall number of whale watch operators on the water.

We applaud the efforts to date of the *Soundwatch* programme but note that the programme lacks enforcement power. WDCS, therefore, stresses the importance of developing, as part of the regulatory process, properly-funded education, monitoring and enforcement programmes conducted by, or on behalf of, the responsible government agencies.

In conclusion, the southern resident orcas are at tipping point: malnourished, obliged to swim in polluted water, hounded by vessel noise and activity both above and below the surface, these whales face extinction if prompt action is not taken. Since the ESA and the MMPA prohibit 'take', NMFS has a legal – as well as a moral- obligation to protect these whales from further disturbance and distress. We hope, therefore, that our comments will encourage and support NMFS to enact the brave and precautionary legislation needed to reverse this shameful decline.

Yours sincerely,

Vanessa Williams-Grey

Responsible Whale Watching Programme Manager
WDCS, the Whale and Dolphin Conservation Society

References

Allen, M.C. & A.J. Read. 2000. Habitat selection of foraging bottlenose dolphins in relation to boat density near Clearwater, Florida. Marine Mammal Science. Volume 16 (4), pp 815-824.

Andersen, M. S. 2004. Whale watching and onboard marine environmental education in the San Juan Islands, Washington: Tourists' expectations and evaluations. Master's thesis, School of Marine Affairs, University of Washington, Seattle, WA. 97 pages.

Andersen, M. S. and M. L. Miller. 2007. Onboard marine environmental education: whale watching in the San Juan Islands, Washington. Tourism in the Marine Environment. Volume 2(2), pp111-118.

Ashe, E., D. P. Noren and R. Williams. 2009. Animal behaviour and marine protected areas: incorporating behavioural data into the selection of marine protected areas for an endangered killer whale population. Animal Conservation (2009) 1-8. The Zoological Society of London.

Bain, D. E. and M. E. Dahlheim. 1994. Effects of masking noise on detection thresholds of killer whales. Pages 243-256 *in*: T.R. Loughlin, editor. *Marine mammals and the Exxon Valdez*. Academic Press, San Diego, California.

Bejder, L., A. Samuels, H. Whitehead, N. Gales, J. Mann, R. Connor, M. Heithaus, J. Watson-Capps, C. Flaherty, and M. Krutzen. 2006. Decline in relative abundance of bottlenose dolphins exposed to long-term disturbance. Conservation Biology. Volume 20 (6), pp 1791-1798.

Constantine, R. 2001. Increased avoidance of swimmers by bottlenose dolphins (*Tursiops truncatus*) due to long-term explosure to swim-with-dolphin tourism. Marine Mammal Science. Volume 17(4), 689-697.

Constantine, R., D. H. Brunton and T. Dennis. 2004. Dolphin-watching tour boats change bottlenose dolphin (*Tursiops truncatus*) behaviour. Biological Conservation. Volume 117, pp 299-307.

Erbe, C. 2002. Underwater noise of whale watching boats and potential effects on killer whales (*Orcinus orca*), based on an acoustic impact model. Marine Mammal Science. Volume 18, pp 394-418.

Foote, A. D., R. W. Osborne and A.R. Hoelzel. 2004. Whale call response to masking boat noise. Nature. Volume 428, p910.

Ford, J. K. B., G. M. Ellis, P. F. Olesiuk & K. C. Balcomb. 2009. Linking killer whale survival and prey abundance: food limitation in the ocean's apex predator? Biology Letters.

Heimlich-Boran, J. R. 1988. Behavioural ecology of killers whales (*Orcinus orca*) in the Pacific Northwest. Canadian Journal of Zoology. **66**. Pp565-578.

Hoelzel, A. R. 1993. Foraging behaviour and social group dynamics in Puget Sound killer whales. Animal Behaviour. **45**. Pp581-591.

Holt, M. M. 2008. Sound exposure and southern resident killer whales (*Orcinus orca*): A review of current knowledge and data gaps. NOAA Technical Memorandum NMFS-NWFSC-89, U.S. Department of Commerce, Seattle, Washington. 59 pages.

Hoyt, E. 2007. A Blueprint for Dolphin and Whale Watching Development. Humane Society International (HSI), Washington, D.C.

Hoyt, E. 2008. Whale watching. In *Encyclopedia of Marine Mammals,* 2nd Edition (Perrin, W.F., B. Würsig and J.G.M. Thewissen, eds.) Academic Press, San Diego, CA., pp1219-1223.

Krahn, M. M., P. R Wade, S. T. Kalinowski, M. E. Dahlheim, B. L. Taylor, M. B. Hanson, G. M. Ylitalo, R. P. Angliss, J. E. Stein & R. S. Waples. Status review of southern resident killer whales (*Orcinus orca*) under the Endangered Species Act. NOAA Technical Memorandum. NMFS-NWFSC-54. Seattle: US Department of Commerce.

Lusseau, D. 2003a. Effects of tour boats on the behaviour of bottlenose dolphins using Markov chains to model anthropogenic impacts. Conservation Biology. Volume 17(6, pp 1785-1793.

Lusseau, D. 2003b. Male and female bottlenose dolphins *Tursiops spp.* have different
Strategies to avoid interactions with tour boats in Doubtful Sounds, New Zealand. Marine Ecology Press Series. Volume 257, pp 267-274.

Lusseau, D. 2006. The short-term behavioural reactions of bottlenose dolphins to interactions with boats in Doubtful Sound, New Zealand. Marine Mammal Science. Volume 22(4), pp802-818.

Lusseau, D., D. E. Bain, R. Williams and J. C. Smith. 2009. Vessel traffic disrupts the foraging behaviour of southern resident killer whales *Orcinus orca.* Endangered Species Research. Volume 6, pp 211-221.

Malcolm, C. D. 2004. The current state and future prospects of whale-watching management, with special emphasis on whale-watching in British Columbia. Unpublished Ph.D. dissertation, University of Victoria, BC, Canada.

NMFS. 2008. Recovery plan for southern resident killer whales *(Orcinus orca)*. National Marine Fisheries Service, Northwest Region, Seattle, Washington.

Reynolds, J.E. H. Marsh & T. J. Ragen. 2009. Marine Mammal Conservation. Endangered Species Research. **7**. Pp23-28.

Van Parijs, S. M. And P. J. Corkeron. 2001. Boat traffic affects the acoustic behaviour of Pacific humpback dolphins, *Sousa chinensis*. Journal of the Marine Biological Society of the United Kingdom. Volume 81, pp533-538.

Williams, R., D. Lusseau & P. S. Hammond. 2006. Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). Biol. Conserv. 133, pp301–311.

Williams, R., D. Lusseau & P. S. Hammond. 2009. The role of social aggregations and protected areas in killer whale conservation: the mixed blessing of critical habitat. Biol. Conserv. 142, pp709–719.

[ends]

Subject: Comments on Docket No. 070821475-81493-01
From: Naomi Rose <nrose@hsi.org>
Date: Thu, 14 Jan 2010 10:41:29 -0500
To: Orca.Plan@noaa.gov

image001.gif	**Content-Description:**	image001.gif
	Content-Type:	image/gif
	Content-Encoding:	base64

Orca vessel restrictions rule.pdf	**Content-Description:**	Orca vessel restrictions rule.pdf
	Content-Type:	application/octet-stream
	Content-Encoding:	base64

THE HUMANE SOCIETY
OF THE UNITED STATES

January 15, 2010

Assistant Regional Administrator
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way, NE
Seattle, WA 98115

Dear Assistant Administrator:

On behalf of the 11 million members and constituents of The Humane Society of the United States (The HSUS), I am submitting these brief comments in support of the proposed rule to establish regulations to protect killer whales (*Orcinus orca*, also known as orcas) from vessel effects, as published in *74 FR 37674*. Overall we believe the proposed rule, and the implementation of regulations as opposed to voluntary guidelines, will improve the vessel harassment situation for the Southern Resident population of orcas. However, we do have some suggestions for strengthening the proposed rule.

As an initial comment, we would like to clarify that we believe the main threats to the Southern Resident orcas are pollution and a declining prey base. Southern Resident orcas are among the most contaminated marine predators in the world and the decline in salmon, especially Chinook, which are the orcas' preferred prey, is a serious concern for many sectors in the Pacific Northwest. We believe that the National Marine Fisheries Service (NMFS) must address these threats immediately in order to recover the Southern Resident population. If these threats are not reduced in a timely way, this proposed rule to mitigate vessel harassment will have only minor benefits for the orcas and ultimately will be ineffective at improving the odds for the population's survival. While we support this effort to reduce vessel harassment of Southern Resident orcas, our support should not be taken as acceptance that vessel harassment is the priority threat to the population's recovery.

With this caveat, The HSUS fully supports the proposed no-go zone, the 200-yard approach distance for most vessels, and the prohibition on parking in the orcas' path. In our experience, a quality whale-watching experience is still possible under such restrictions. We support whale watching, for its educational and conservation value to the public, but recognize that unrestricted whale watching can be harmful. We are pleased to see that these restrictions will also apply to recreational boaters and other vessels in some circumstances. It is essential that ALL vessels be controlled around the whales, not just dedicated whale-watching vessels.

However, we also support the idea of establishing a licensing scheme for whale watching, in order to improve compliance with these regulations and also to provide a mechanism to restrict the number of vessels pursuing the whales in a dedicated manner. We do not agree that such a

scheme would require a "large infrastructure to implement" or that there would be "equity issues in determining who is permitted or certified and who is not" (p. 37678). Fishing licenses are issued to recreational fishers, for example, and it seems that key infrastructure requirements to administer a whale-watching license scheme could be shared with the existing infrastructure for other marine licensing schemes. There are after all far fewer whale-watching companies and captains than there are recreational fishers.

There are a number of options for ensuring that initial licensing decisions are random and non-discriminatory. Clearly the first step would be to establish a ceiling on the number of vessels to be licensed for dedicated whale watching. This calculation should be based on science as much as possible, but also common sense. The final result of such an analysis may determine that the ceiling has not yet been reached (the current density of boats surrounding the Southern Resident orcas are as much a result of the high number of recreational boats following them at any time as commercial whale-watching vessels), but if it has been, then a lottery, for example, could be used to determine who among the extant companies would be eligible to apply for a license.

While there would no doubt be resistance to implementing such a licensing scheme, this is not sufficient reason to avoid implementing one. While the proposed rule will *improve* the vessel harassment situation for the Southern Resident orcas, it is not an ideal solution. Licensing commercial whale-watching vessels will provide a mechanism for restricting the total number of vessels following the whales in a dedicated manner (as opposed to the incidental manner in which recreational boaters often follow them). Given that time restrictions (that is, restrictions on the amount of time any one vessel can remain with any one group of whales) are not being proposed (no doubt because enforcing them would be difficult), restricting the number of vessels following whales in a dedicated manner is the next best way to ensure that there will not be too many vessels hovering near the whales (even at 200 yards) for prolonged periods at any particular time.

The HSUS thanks the NMFS for proposing this rule. We believe it will improve the vessel harassment situation for the Southern Resident orcas. However, we strongly urge the NMFS to address the priority threats to the recovery of this population – pollution and prey base declines – as soon as possible. Without effective action on these major threats to the survival of the Southern Resident orcas, reducing impacts from vessel interference and noise will produce only minimal benefits to this beleaguered population of whales.

Thank you for the opportunity to comment on this matter.

Sincerely,

Naomi A. Rose, Ph.D.
Marine Mammal Scientist
Wildlife

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January 15, 2010

National Oceanic and Atmospheric Administration
Protected Resources Division, Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

RE: Vessel regulation proposal for Southern Resident Killer Whales

To Whom It May Concern:

The Seattle Aquarium Society is committed to the conservation of our marine environment and we are grateful for the opportunity to comment on proposed vessel regulations to protect endangered Southern Resident Killer Whales (SRKW). While we support the NMFS proposed regulations, we also urge action in the context of a broader, more ecosystem-based approach. The SRKWs face myriad complex challenges to their recovery beyond boating conflicts, including lack of prey and persistent and increasing levels of bioaccumulated toxins. Salmon habitat – including selected dam removal – and marine pollution must be addressed by NOAA in relation to SRKW recovery. The existing Chinook salmon recovery plan should be incorporated into the orca recovery plan. A population weakened by lack of prey and heavy contaminant loads may be more susceptible to the stress of vessel impacts.

We do not believe that vessel traffic alone is the key to survival of orcas, nor that it is even the primary factor to consider. Never-the-less, action on this issue is warranted because of increasing evidence that vessel proximity and activity can affect whale health and behavior. Vessels appear to have negative effects by interfering with echolocation and communication, polluting air at the water's surface, and by putting whales in danger of a boat collision.

Despite NOAA's best efforts to educate and inform the public, data shows that voluntary *Be Whale Wise* guidelines and Washington state and San Juan County regulations have not been effective at decreasing harassment and harmful interactions between vessels and SRKWs. Enforcement has been particularly ineffective with small and recreational vessels.

The Society supports regulating a 200 yard distance between vessels and killer whales in order to reduce vessel effects on SRKW behavior, decrease acoustic impacts, provide a buffer from noxious fumes at the surface, and decrease the likelihood of a ship strike. In addition, we support the prohibition on parking in the path of killer whales for many of the same reasons.

Second, the Society supports the proposed seasonal no-go zone on the west side of San Juan Island, or other steps to reduce stress on orcas. This area is a small but important portion of the critical habitat defined in the recovery plan.

We strongly support NOAA's efforts to educate the public regarding the impact each of us can have in the survival of this critical species. Thank you for the opportunity to comment on this important topic.

Sincerely,

Robert W. Davidson
Chief Executive Officer

Letter to the National Oceanic and Atmospheric Administration

Re: New Rules for Regulating the (Illegal Pursuit of the) Southern Resident Orca

From:

Orca Relief Citizens' Alliance
P.O. Box 1969
38 Yew Lane
Friday Harbor, Washington 98250

January 12, 2010

I. Introduction

Last spring, most of the Northwest's cetologists gathered at the People for Puget Sound meeting at the University of Washington Marine Laboratory in Friday Harbor. We agreed that the Southern Residents were dying from starvation.

Chemicals do not cause starvation.

The early signs of the last population crash that allowed Orca Relief to properly predict this decline were all related to starvation. In the latest crash, the whales again are showing "peanut" configurations: they are starving.

If the whales are dying of starvation, and they are, chemicals are not the direct cause of death.

Dr. Douglas DeMaster, then the head of the Marine Mammal Laboratory at NMFS, said it clearly during a 1997 public meeting on the subject in Friday Harbor: "The whales are not dying from toxins."

This matches the findings of Von Blaricom and Alvarez from the University of Washington, in the first paper on the cause of Southern Resident mortality. Their conclusion on review of all inputs: toxins had no time correlation with death rates. What did? Chinook decline and increased boat presence – together.

This implies two things, both of which appear to be scientifically correct: increase the Chinook count, and mortality declines. Remove the boat effects, and mortality declines.

Since Orca Relief funded that first scientific study on what is killing our whales, we have gone on to fund X additional studies. Added to those studies by others done in US waters, and by a large number of Canadian studies, the total number of scientific studies done on boat whale interactions is nearing fifty. Of these, not a single one shows positive biologic benefit for the whales; ALL of them describe negative results.

Included in these negatives, as shown by Kriete et. al., are increased respiration and metabolic rates, increased dive times, longer swim tracks, and a subsequent greater need for food per hour, when boats are present.

What is not known? How long do the whales have hearing problems after the fleet leaves the area? If the answer is twelve hours or more, they never recover their hearing, or full sonar capacity, throughout the entire summer tourist season.

What is the effect on fish dispersal of ten or twenty commercial power boats and all the attendant private power boats? Ask any fisherman, one might suggest.

Two landmark studies by Bain show a strong correlation between boat count and whale mortality rate, and the surprising fact that a single outboard motor, at today's legal distance in front of an orca, will completely shut down its sonar.

These negative results are less important when there are enough Chinook. But when the whales are already starving, boat presence accelerates their starvation.

So, what do we know?

We know that the whales are starving, and we know that boat presence accelerates their starvation.

But we know something else, thanks to the NMFS staff who presented the rule finding guidelines at the federal hearing in Friday Harbor: we know that it is illegal to pursue an endangered species.

Surely this is a typo, or a mistake; otherwise, how could so many companies be in business doing just that, pursuing whales?

No, it is not a mistake: it was repeated three times, at our request, in response to the first questions at that hearing, by NMFS biologist, attorneys, and administrators. No mistake, stated three times, verbatim: "it is illegal to pursue the Southern Resident Orca."

If we know that boat presence is contributing directly to whale deaths, and if it is illegal to pursue these animals, NMFS has no cause to pursue incremental changes to a set of whale watch operator guidelines taken from 1950s NMFS regulations on watching grey (baleen) whales. Any cetologist will tell you, the toothed whales (such as orca) separated from baleen whales between 30 and 50MM years ago. Baleen whales, for whom current regs were made, do not have sonar, and they circumnavigate the planet in the longest migration of any animal.

Is it possible one could have less appropriate regulations?

You want to move the goal posts from 100 yards to 200 yards for boats, as though they will obey this impossible rule any better than the last one. To the toothed whales, trying to hear underwater, the difference is not enough to matter.

But since you tell us that pursuit is, in any case, illegal, we suggest that the current rulefinding process itself is out of date, a process that would have made sense, perhaps, before the ESA listing, but which make no sense now.

The purpose of the Endangered Species Act is to save the endangered species. Not to make money from it. Not to experiment with it. Not to use half-hearted or intellectually-dishonest regulations in a biological sham. The sole purpose of the ESA is to save the endangered species, and that is the ONLY legal interest NMFS can now have.

While those making money off the whales can be expected to continue until told to stop, your job is just that: to tell society what the law means, and to enforce it.

Please do.

Addendum 1: Final NOAA Hearing Testimony
Friday Harbor, 7pm, Grange, Oct. 5th

In 1997 we circulated a "stop chasing the whales" petition: it became, and remains, the most popular petition in San Juan County history. In a survey at the post office in Friday Harbor, 96% of residents signed it. I am sorry to say, all those people are not here tonight.

When we announced the completion of our first three studies on orca mortality, we got a call the next day from the Seattle Times, which had carried the story. They said they were afraid for our physical well-being; they had never received so many aggressive and threatening phone calls on a story.

At last week's NOAA hearing in Anacortes, participants were cursing at the moderator, yelling in packs out of turn. A week later, in Seattle, you brought two clearly armed police and recording devices.

Welcome to our world. Please be aware that the vast majority of San Juan County residents are against what has, all along, been illegal: the pursuit of marine mammals, the pursuit of an endangered species. This was illegal in 1980, when even scientific researchers were afraid to go out with the whales without a special permit from NMFS.

The science is now clear: the whales are dying of starvation. We know that the presence of boats accelerates that starvation. We also know that chemicals, bad as they are, do not directly cause starvation. Make no mistake about it, to the best of our scientific knowledge, in times of low Chinook count, the boats are killing the whales.

I think you've missed some important points, which I will list here.

First, you're ten years too late. These meetings, and concerns, should have been aired a decade ago, before the Endangered Species Listing. Even then it was illegal to pursue a marine mammal, for any purpose.

Second, the ESA requires, even more forcefully, that pursuit – or even engaging in an attempt to pursue – is illegal, punishable by heavy fines.

Third, the rules you are incrementally changing were made for baleen whales. Who ever picked 100 meters as a number for orca, or any toothed whale? No one. What if the real starting point is a mile away, or five? We know orca behavior changes with boats at that distance. The operators refer to keeping things at 100m "like the rest of the world." They seem unaware of the biology: the rest of the world is looking at migratory baleen whales.

I doubt that NMFS has ever, in its history, managed a resident toothed whale population.

The law is clear: it is illegal to pursue. Of course it is. The real question is: why aren't you enforcing that law, just as you did back in 1980? What happened to you for the next thirty years?

Fourth, you have constructed an economic study which, like the rest of the process, forgets to ask: what is the impact of the loss of this species? You list a $6.4MM dollar loss for implementing these rules: I will suggest that all of the business of the Northwest will face an infinitely larger financial loss if the species is lost. Is it $500 MM a year, or a billion? You are trading off the cost of two San Juan Island houses, for a decent fraction of the whole northwest tourist (and therefore real estate) industries.

In summary, your refusal to enforce the MMPA is what led to the creation of illegal commercial whale watch businesses today. You have no experience in protecting resident toothed whales, and you are faking it with incremental change of baleen whale regulations. You are focused on the effect of your changes, rather than on the effect of losing these whales altogether.

I think there is a vision that would bring almost all of the people in this room together, from anglers to kayakers to recreational boaters to landowners to enviromentalists and businesspeople. And it is very simple.

Rewind the clock. Enforce the laws. It is, and always was, illegal to pursue these whales. Enforce it. If you only did that, everyone else except whale watch operators could go back about their business, just as they were doing in 1980. They can fish, boat, access their property, kayak.

The only law we need is the one we already have: stop pursuing the orca, which is strictly illegal. (See legal addendum)

II. Comments on Proposed New Rules and Procedures

If NMFS couldn't prosecute 100m violations in court, why should we think NMFS can prosecute 200m violations? Why propose unenforceable laws?

Most of the jockeying we have seen between commercial interests and NOAA would appear, from a very cynical but experienced view, to come down to the former arguing for any rules which NMFS has found unenforceable in court; i.e., distance, speed, harassment.

The yet more cynical argument of No Change, More Enforcement has no chance of reducing whale mortality, in our opinion, and makes a sham of the entire premise of the rule-making process; i.e., the marine mammal scientific community knows that better rules are needed. This is not up for debate among any scientists we know (not employed by commercial operators, or acting as operators).

(We feel compelled to note here that an unfortunate result of this hearing series is the loss of any scientific credibility on the boat/whale issue by Ken Balcomb and his Center for Whale Research. Balcomb's strange and dismissive arguments for "No Rule Change" fit with his history as the first large-scale (Earthwatch) multi-year commercial whale watching operation in San Juan County. It also is consistent with his personal testimony as witness for the unsuccessful defense in the Canadian prosecution of US operator Maya Charters (during which his testimony was literally mocked by the judge); Maya was then convicted and fined for harassment of marine mammals. Worse, Balcomb contradicts himself directly, having earlier published work stating his belief that boats contribute directly to whale death rates. For that reason, his comments, we believe, should be considered Commercial, and not Scientific.)

What is the best solution to the ESA Listing? Enforce the "no pursuit" clause of the ESA and MMPA, at least until such time as the population is no longer listed under the Act.

In other words: Save the population first; fine tune later.

The recent spate of births, while encouraging, is almost meaningless in the story of the population's collapse. Deaths during mortality crises have always been among individuals in their age prime, which adds to concern and confusion regarding cause. And, of course, scientists do not "count" calf births until 6 or 12 months later, depending on method used.

Are we currently at 88? Yes, counting all births. Is this cause for relaxing the rules? No. The population never experienced a fertility issue, and calves have been born throughout both crises. So new births do not provide relief.

Although no one at the hearings has addressed this issue, we would note the details of Southern Resident Breeding: historically, it appears that pods tend to breed inter-pod, vs. intra-pod, with clear genetic benefits. As pods themselves lose the last breeding member of a gender, the dynamics of the whole 3-pod population are further put at risk. This is no longer a numbers game, but a matter of how robust the genome of the population remains.

The first signs of inbreeding, published last year, are therefore even greater cause of concern; certainly increased inbreeding, even without current genetic history, is a leading indicator of population decline or outright elimination.

We appear already to have crossed three key "tripwires" in the population's demise: gross reduction in breeding adults, a reduction in pods capable of healthy breeding, and the first measures of increased inbreeding.

Regarding the NMFS proposal for 200 yard viewing limits: a) it is illegal to pursue these whales, b) by NMFS' own calculations, orca sonar may be fully disrupted even at this distance. Why propose a standard that science tells us is wrong for the animal? Saying it is so that commercial operators can be close enough to make money is NOT an answer.

NMFS' responsibility, as we understand it, is not to protect commercial profits, but to protect the orca – and the larger public's long-term interest in their survival.

Regarding No Go Zones: This is more enforceable than yardage, and would provide welcome physical relief, we suspect, in the whales' prime feeding location (the west side of San Juan). Unfortunately, by including sports fishermen, tourists and kayakers in the proposal, NMFS managed to gain acute lobbyist pressure with no scientific or management trade-off. In other words, there is no demonstrated scientific need to block these groups from that zone, and their opposition (particularly anglers) is well-proved.

Our perspective is relatively simple: orca are acoustic in their hunting, and boat noise is a primary contributor to their starvation in low fish count years (see Bain). We don't see a problem with kayaks, which the whales can easily escape. Perhaps more important, we consider the data regarding private vs. commercial boat violations coming from Soundwatch to be essentially useless: the presence of the commercial fleet draws the private boaters. Without the commercial fleet, as back in the 1980s, private boaters rarely notice the whales, even when among them. They certainly don't gather from miles around to join the spectacle.

So: the private boater problem, we believe, is a red herring thrown up by this causation relationship, and it would need modern measurement to convince us that it is a real problem. For us, tourists and sports fishermen, although less well informed re: orca rules, are much less a threat to orca mortality; the contact is occasional, if uninformed.

It is the non-stop, morning till past dusk, every day constant following of the whales by high-powered boats that represents the sector of boat threat we consider significant in its affect on whale mortality.

We note that the Whale Museum has submitted a proposal which appears to dodge the No Go zone politics, achieving our suggestion above, by imposing a 400 yard limit for all traffic on the west side of San Juan. IF NMFS CAN MEASURE AND CONVICT, this might be a useful alternative, and we would support it, noting that pursuit itself remains illegal.

In summary: it is time for NMFS to do the right thing, not for the loudest shouters in a hearing room, but for the whales, who don't attend hearings, and for normal people who live in the Northwest, who care about this iconic mammal, but don't make money by their exploitation.

After thirty years of essential Zero Enforcement, it is time for NMFS to act. NMFS has direct responsibility for the survival of this iconic species, and if it fails, NMFS will, among all actors and agencies, be held most obviously responsible.

The NMFS legal staff, biologists, and administrators said it clearly in their first rulemaking hearing in Friday Harbor, on the first line of the first slide:

"It is illegal to pursue an endangered species." We think NMFS must enforce their own publicly-stated legal interpretation of the ESA.

Addendum 2. Short selection of scientific papers reporting adverse effects from whale watching:

Bain, et al (2006)
Effects Of Vessels On Behavior Of Southern Resident Killer Whales (Orcinus Spp.).

Bejder (2006)
Decline in Relative Abundance of Bottlenose Dolphins Exposed to Long-Term Disturbance.

Lusseau (2004)
The Hidden Cost of Tourism: Detecting Long-term Effects of Tourism Using Behavioral Information.

Lusseau, et al (2006)
Estimating relative energetic costs of human disturbance to killer whales (Orcinus orca).

Mattson, et al (2005)
Effects of Boat Activity on the Behavior of Bottlenose Dolphins (Tursiops truncatus) in Waters Surrounding Hilton Head Island, South Carolina.

Lusseau (2005)
Residency pattern of bottlenose dolphins Tursiops spp. in Milford Sound, New Zealand, is related to boat traffic.

Lusseau (2006)
The Short-Term Behavioral Reactions of Bottlenose Dolphins to Interactions with Boats In Doubtful Sound, New Zealand.

Lemon, et al (2005)
Response of travelling bottlenose dolphins (Tursiops aduncus) to experimental approaches by a powerboat in Jervis Bay, New South Wales, Australia.

Finneran, et al (2005)
Temporary threshold shift in bottlenose dolphins (Tursiops truncatus) exposed to mid-frequency tones.

Williams & Ashe (2006)
Northern Resident Killer Whale Responses to Vessels Varied With Number of Boats.

Erbe (2001)
Underwater noise of whale-watching boats and potential effects on killer whales (*Orcinus orca*), based on an acoustic model.

Ross et al (2000)
High PCB concentrations in free-ranging Pacific Killer Whales, *Orcinus orca*: Effects of age, sex and dietary preference.

Baird et al (2000)
Bias and variability in distance estimation on the water: Implications for the management of whale watching.

Ylitalo (2001)
Influence of life history parameters on organochlorine concentrations in free-ranging killer whales from Prince William Sound, Alaska.

Addendum 3.

Legal Review: Pursuit, per se, is Strictly Illegal

The following legal points were made by the NOAA team during their initial public hearing in Friday Harbor – including by your legal staff. In fact, it was the first point, on the first slide, and confirmed three times during question period. Why argue about harassment distance, when pursuit, or even an "attempt to engage in" pursuit, is strictly against the law? We have (wrongly) counted on NMFS to enforce these laws over the last 20 years; you have not. Now, more than ever, we need the government to enforce the federal law, and not the commercial operator wish list.

The ESA is not subject to local vote, or the result of ongoing hearings. It's the law -

From the ESA

Definitions(19) The term ''take'' means to harass, harm, [redacted], hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

31 ENDANGERED SPECIES ACT OF 1973 Sec. 9SEC. 9. (a) GENERAL.—(1) Except as provided in sections 6(g)(2)and 10 of this Act, with respect to any endangered species of fish or wildlife listed pursuant to section 4 of this Act it is unlawful for any person subject to the jurisdiction of the United States to—

(A) import any such species into, or export any such species from the United States;

(B) take any such species within the United States or the territorial sea of the United States;

(C) take any such species upon the high seas;

From the MMPA

Take means to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal. This includes, without limitation, any of the following: 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.

Level A Harassment means any act of [redacted], torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild.

Level B Harassment means any act of [redacted], torment, or annoyance which 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 but which does not have the potential to injure a marine mammal or marine mammal stock in the wild.

Addendum 4. Article by Mark Anderson, reprinted in newspapers throughout the Northwest:

The Population Crash of Our Southern Resident Killer Whales

By Mark Anderson

Our orca whales are dying. By treating them like a financial resource, we run the risk of consuming them down to the last one, as we have done with old growth timber and fish. After years of argument driven as much by money as by science, we have reached a moment when the causes and remedial actions are relatively clear.

The whales are starving, and all major agencies and conservation groups agree on this.

What's worse, their numbers are collapsing: the current population crash is almost twice as steep as the last (in 1997-2001), when we lost about 17% of them over five years. All of this comes even after their declaration as "endangered" under the Endangered Species Act. This is the worst "natural" population catastrophe the population has experienced on record, although if it is caused by "loving the whales to death," the cause will not have been natural at all.

When the whales are starving, there are human behaviors which accelerate that starvation. Strangely, their starvation does not correlate cleanly with the downturn in their prey, Chinook salmon, alone. Several studies now seem to show that it is a combination of low fish count and high boat count that correlate, together, with whale death.

Powered boats running to, from and with the whales from dawn to dusk are now known to cause several major problems related to starvation: a) whale metabolic rates, measured by respiration, increase dramatically with boat presence, necessitating more food; b) whales swim faster, dive longer, and travel longer, less direct paths, when boats are present, also increasing food requirements; and c) whale sonar, their primary tool for hunting, is impaired by up to 97% by the presence of a single motorized boat.

Add in the obvious potential that fish are dispersed by the ongoing presence of multiple powered craft, and you likely have further reduced survival chances.

The sum of these boating impacts on a starving population is obvious: the orca need more food per day, and get much less, at a time when food is already extremely scarce.

Many, many papers on the questions of boat / whale interactions have been published in the last decade, and virtually all of them show these to be negative.

Most people know it is illegal to harass marine mammals, but I would guess that readers may not know the simple "pursuit" of our local whales violates federal law. Both the Endangered Species Act and the Marine Mammal Protection Act specifically state that "pursuit" is illegal.

This makes sense. Can you imagine an endangered wolf population, being chased all day every day by tourists on All Terrain Vehicles? The situation with our orca is not much different.

In a recent federal hearing in Friday Harbor, the top administrator and attorney for NMFS both told attendees that the simple pursuit of our whales was against the law, a point they repeated on questioning, and which was highlighted in the first line of their chief biologist's first slide.

Whales have too many man-made chemicals in their blubber; and it is easy to give anecdotal presentations on why pesticides are generally bad. But it is important to point out that no one has shown any correlation between this and their death rates. I recently asked a presenter on this subject for any correlation at all, and she admitted the answer remains negative. Douglas Demaster, then head of the NMFS Marine Mammal labs, specifically stated in a Friday Harbor hearing, "Chemicals are not the cause of whale deaths." Since then, research conducted by the University of Washington found "no time correlation" between pesticides and orca mortality.

Is there no connection at all between pollution and whale death? It is likely that, in the last stages of starvation, as the whales draw down their blubber reserves, they are suddenly exposed to these stored toxins, something that would not happen if they were not starved.

But let's be clear: if the combination of low salmon count and boat presence were not starving them, they would not face this final chemical insult. In that sense, pesticides may contribute to, but are not the primary cause of, death.

If slow-varying pesticides were the primary cause, we wouldn't see the huge variations in population mortality we see today, nor would we likely have just lost two breeding females, the individuals with the lowest pesticide concentrations. The problem lies elsewhere.

What can we do?

There are few natural situations in which the stakes are so high, and the potential answer so cheap or easy. Removing the already-illegal commercial pursuit business is the simplest way of saving these animals. That action alone will have the effect of providing more fish for the whales, at a time when they are starving to death. Not publishing whale locations as they are called in would also be an obvious early step; rather, embargo this data for at least 24 hours, in stead of inadvertently inviting harassment.

Since pursuit of the orca is already illegal, all this means is enforcing the existing Endangered Species Act. One can hope that the change in administrations will also include a change in respect for knowledge and science, and for the law.

Over 90% of local residents are against chasing the whales, based on a petition launched a few years ago by Orca Relief – a petition which became the most-signed petition in San Juan County history. Locals' feelings are both strong and clear: they do not want "their" whales being pursued.

Knowing that whales are again starving, with new science showing that boats accelerate that starvation, and under a new endangered status that further protects the whales from any pursuit, the solution to this problem seems obvious. The real danger to tourist dollars is not that a handful of boat tour operations stop, with visitors instead channeled to land-based watching at the increasingly-popular Whale Watch Park. The real danger to tourist dollars is that the whales starve to death, and are all destroyed.

We should enforce the existing law, and stop pursuing the orca.

Mark Anderson is Chairman of Orca Relief, www.orcarelief.org, and was Founding Executive Director of The Whale Museum in Friday Harbor. He is also CEO of Strategic News Service, www.stratnews.com.

Respectfully submitted,

Mark R. Anderson
Founder and Chair
Orca Relief Citizens Alliance

Subject: Orca Vessel Regulation comments
From: Kyle Loring <kyle@sanjuans.org>
Date: Fri, 15 Jan 2010 17:11:09 -0800
To: Orca.Plan@noaa.gov

Dear NMFS,

Please accept the attached public comment letter from Friends of the San Juans in response to the Proposed Rule for protecting killer whales from vessel effects, Docket No. 070821475-81493-01.

Best,
Kyle

Kyle A. Loring
Staff Attorney
Friends of the San Juans
P.O. Box 1344
Friday Harbor, WA 98250
(: 360-378-2319
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30 YEARS of Protecting the San Juans, preserving our quality of life

FSJ pub cmt NMFS SRKW vessel regs.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

asheetal.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

By Email

January 15, 2010

Donna J. Darm
Assistant Regional Administrator
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

Re: Friends of the San Juans' Public Comment on National Marine Fisheries Service Proposed Rule on Killer Whale Vessel Regulations, Docket No. 070821475-81493-01

Dear Assistant Regional Administrator Darm:

Please accept the following public comments from Friends of the San Juans ("Friends") in response to the National Marine Fisheries Service's ("NMFS") proposed rule ("Rule") to protect killer whales from vessel effects (Docket No. 070821475-81493-01). Friends appreciates NMFS' efforts to decrease vessel impacts that the January 17, 2008 Orca Recovery Plan ("Recovery Plan") identifies as a threat to the continued survival of the severely endangered southern resident killer whales ("SRKW"). Friends specifically applauds the Rule's recognition that proximity to whales, rather than a specific behavior taken near the whales, constitutes a take, and that the existing regulatory context for killer whales does not sufficiently protect them from vessel impacts. Consequently, Friends supports the approach restrictions, prohibition against parking in the whales' path, and the concept of a no-go zone.

Friends does, however, object to the piecemeal approach to orca recovery that the Rule reflects, and the lack of explicit description of the mechanics necessary for its implementation. Nearly two years have passed since NMFS finalized the Orca Recovery Plan on January 17, 2008, yet NMFS has proposed to address only one of at least four substantial concerns identified in that document: (1) habitat deterioration; (2) reduced quantity or quality of prey; (3) increased exposure to pollutants; and (4) sound and disturbance from vessel traffic. National Marine Fisheries Service, Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*) at II-71 (Jan. 17, 2008). Moreover, nearly seven and a half years have passed since August 6, 2002, when a coalition of environmental groups filed a notice of intent to sue to prod NMFS to move toward listing the SRKW as an endangered species.

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The absence of a comprehensive approach to whale recovery undermines the benefit and credibility of the proposed vessel regulations. To have any hope of removing the SRKW from the endangered species list, NMFS must promptly promulgate rules to fully address all threats to the whales' continued existence. In addition, the Rule does not identify the bolstered educational and enforcement mechanisms that will be necessary to stem vessel impacts.

The comments below address the Rule's omissions, as well as those provisions intended to address impacts to whales, and those that need to be augmented. FRIENDS urges implementation of the Rule as soon as possible.

I. Critical Omissions from the Proposed Rule.

The Rule addresses only a small slice of the threats facing the continued survival of the SRKW, and does not adequately describe the necessary mechanics for effectively regulating vessel activity. The Recovery Plan identifies prey availability, toxic chemicals, sound, aircraft and oil spills as significant threats to orcas, yet the Rule fails to address them.[1] Full recovery of the SRKW demands that NMFS promptly address those threats, and that it identify the methods it will use for monitoring, enforcement, and collaboration with other governmental stakeholders.

A. Prey availability.

The Rule and Recovery Plan both recognize that salmon, and Chinook salmon in particular, are a critical part of the SRKW diet. Draft EA, at 3-7. In addition, notwithstanding that the Recovery Plan predicts widespread salmon declines in the absence of substantial lifestyle changes, the Rule does nothing to address these declines. The Recovery Plan notes that notwithstanding planned and implemented recovery efforts, "the long-term prognosis for salmon recovery in the region is unclear" and "continued rapid human population growth and urbanization, along with climate change, will place greater pressure on freshwater and marine ecosystems and challenge the efforts of managers seeking to achieve meaningful recovery." Recovery Plan, at II-86- II-87. Moreover, "[w]ild salmon populations are particularly at risk, with some authors predicting that many, or perhaps most, stocks from British Columbia to California will continue to dwindle throughout the 21st century unless major changes in human life styles occur." *Id.* at II-87.

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[1] Although the Rule states that the Recovery Plan "includes management actions to address each of these potential threats," a review of the Recovery Plan demonstrates that it does not offer any tangible, implementable action items that would alleviate the impacts of non-vessel threats on whales. *See National Marine Fisheries Service, Draft Environmental Assessment,* New Regulations to Protect Killer Whales from Vessel Effects in Inland Waters of Washington, 1-9 (Jan. 2009) (hereafter "Draft EA").

Yet neither the Recovery Plan nor the Rule propose any specific actions that would increase salmon availability for orcas, and the Rule expressly addresses only vessel impacts. Draft EA at 1-9. The Rule states generically that NMFS is currently working on salmon recovery at the local level, and the Recovery Plan suggests that federal, state, provincial, tribal, local, and private efforts for the recovery of endangered salmon may alleviate the need to address declining salmon in the SRKW habitat. Recovery Plan, at V-7. And even though two years have passed since the Recovery Plan noted that salmon restoration efforts may not be effective, the Rule does nothing to evaluate those efforts.

A simple review of on-the-ground permitting activity suggests that salmon recovery efforts are failing to prevent long-term destruction of salmon habitat and that of their forage fish. For example, a statewide exemption permits the construction of marine bulkheads to prevent erosion from threatening single-family residences. Notwithstanding that such bulkheads diminish, and potentially destroy, surf smelt, sand lance, and Pacific herring spawning habitat (all of these fish are critical salmon prey), the Washington State Department of Fish and Wildlife and San Juan County continue to approve bulkheads on identified spawning beaches and above herring spawning grounds.[2] In addition, recent decisions by the Washington State Shorelines Hearings Board and San Juan County Hearing Examiner have allowed the construction of shoreline armoring to prevent erosion from impacting lawns and a small trail.[3] A review of these decisions indicates that bulkheads may be permitted on virtually any shoreline property, and because many more bulkheads are constructed than are removed, the cumulative loss of spawning grounds for salmon prey is likely to be substantial. None of the salmon recovery efforts that NMFS appears to rely upon have proposed the sort of land use regulation changes necessary to protect salmon forage fish spawning.

NMFS must address these flaws in salmon recovery planning to achieve orca recovery. It must first collaborate with state and local entities to prepare and install land use regulations that prevent additional long-term impacts to orca or salmon, including impacts to their prey. In addition, specific actions, such as harvest reductions, could increase Chinook salmon abundance in the San Juan Islands and thus directly increasing the availability of prey.

B. Toxins.

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[2] *E.g.*, Rice, Casimir A., 2006, Effects of Shoreline Modification on a Northern Puget Sound Beach: Microclimate and Embryo Mortality In Surf Smelt, Estuaries and Coasts, Vol. 29, No. 1, p. 63-71.
[3] *Woodman v. San Juan County*, SHB No. 08-032 (May 13, 2009) (Findings of Fact, Conclusions of Law, and Order); In re: Kona Residence Trust, HE25-09 (June 17, 2009) (San Juan County Hearing Examiner decision).

NMFS has identified toxins as a threat to the continued existence of SRKW, yet neither the Draft EA nor the Orca Recovery Plan identifies specific methods for decreasing toxins in the SRKW. For example, the Recovery Plan addresses non-point pollution by stating that "government agencies and the public can do more to meet goals through education, financial and technical assistance, regulation, enforcement, improved watershed planning, and implementation of best practices," yet it offers no solutions for any of those actions. Orca Recovery Plan, at V-12-V-13.

Under the ESA, NMFS must protect the SRKW, and should thus propose methods to reduce toxic inputs to the whales. Such actions could include increased construction or development setbacks from fresh water and marine shorelines, or enforcement of the Clean Water Act's prohibition against discharging a pollutant without a permit. Indeed, NMFS presently has several unique opportunities for addressing toxins. With regard to stormwater runoff along shorelines, NMFS has already prepared a biological opinion that identifies setbacks necessary to avoid a take under the Federal Emergency Management Agency's National Floodplain Insurance Program. NMFS should combine those efforts with its orca recovery efforts to establish appropriate shoreline setbacks that will limit the extent that toxins may reach shoreline or riparian waters.

The Recovery Plan also discusses a source reduction for toxins, but does not propose any testing or evaluation of products prior to their federal approval or introduction into the human and animal environment. Preventing human use of toxins that are harmful to whales would further the obligation that NMFS owes the SRKW under the ESA.

C. Aircraft.

Although the Recovery Plan identified aircraft as a threat to SRKW, the Draft EA declines to address aircraft impacts as "beyond the scope of minimizing impacts from vessels as identified in Subsection 1.4, Purpose and Need for Action." Draft EA, at 2-10. However, the aircraft impacts appear to fall squarely within the purpose that the Draft EA offers for the vessel regulations: "to adopt regulations to protect killer whales from vessel impacts, which will support recovery of the Southern Resident killer whales." Draft EA, at 1-5. The Draft EA supports this purpose on the grounds that NMFS "has determined that existing prohibitions, regulations, and guidelines do not provide sufficient protection of killer whales from vessel impacts." *Id.*

Aircraft fall within the scope of the vessel regulations because they are vessels and because NMFS guidelines already focus on limiting impacts from aircraft. Typical definitions for "vessel" include "aircraft." *See* vessel, Dictionary.com, The American Heritage Dictionary of the English Language, http://dictionary.reference.com/browse/vessel (4th ed. 2004) (last accessed Oct. 9, 2009). In addition, the Recovery Plan states that NMFS' regional whale-watching

guidelines already offer voluntary measures to limit aircraft impacts on whales (maintaining a minimum altitude of 1000 feet above all marine mammals and refraining from circling or hovering over them). Recovery Plan, at II-110. Thus, the Rule must propose measures to avoid aircraft impacts on whales.

To the extent that aircraft impacts may fall outside the stated scope of the proposed vessel regulations, that scope must be revised to include them. Aircraft have impacts that are very similar to watercraft impacts, such as noise and visual obstructions. And NMFS has recognized the dramatic rise in aircraft violations of NMFS' recommendations; these violations now constitute approximately 10% of all observed incidents. Recovery Plan, at II-110. In fact, between 1998 and 2006, aircraft impacts ranged from 2% to 14% of all annual impacts observed. Recovery Plan, at II-111 (Table 12).

Consequently, the Rule must address aircraft impacts. Friends recommends that NMFS install information at ports along Puget Sound regarding aircraft impacts on whales, and that NMFS establish its approach and hovering prohibition as a part of the Rule.

D. Sonar.

The Rule irresponsibly omits regulations to prevent sonar activities from harming the SRKW. The Draft EA states that processes under the Marine Mammal Protection Act and the ESA are currently addressing the potential impacts of sonar on SRKW, but does not identify those processes. Draft EA at 1-8. To the extent that those processes are outside the Navy's proposed Northwest Training Range Complex ("NWTRC"), NMFS should identify them and explain how those processes will secure protection against take for killer whales. To the extent that NMFS is referring to the NWTRC proposal, that proposal does not specifically limit sonar use to protect SRKW, and any reliance on it to do so may be misplaced. Thus, as part of its vessel regulations and orca recovery effort, NMFS must address the potentially severe impact that sonar could wreak upon the orcas.

Moreover, the government exemption should not apply to sonar activities. Mid-frequency sonar, which the Navy uses in its training exercises, has been cited as a likely cause of substantial whale mortality and injuries worldwide.[4] Sonar has also been linked to the displacement of marine mammals, panic responses, and disruptions to essential behavior such as foraging. NMFS itself recognized these

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[4] Military sonar generates intense sound that can induce a range of adverse effects in whales and other species – from significant behavioral changes to injury and death. Advocates for sonar limitation have explained the intensity of sonar as the sound of a jet engine in a court room, multiplied 2,000 times. *See* Supreme Court Sides With U.S. Navy in Dispute Over Sonar Use, Whale Safety, at http://abcnews.go.com/TheLaw/SCOTUS/Story?id=6237114&page=2 (last visited Oct. 9, 2009).

potential impacts when it referenced a sonar incident in Haro Strait in a Draft Biological Opinion. NMFS, Draft Biological Opinion for the Long-Term Central Project and State Water Project Operations Criteria and Plan, 111 (Dec. 11, 2008). That Biological Opinion stated that "observations from an event that occurred in the Strait of Juan de Fuca and Haro Strait in 2003 illustrate that mid-frequency sonar can cause behavioral disturbance," and that "[i]mpacts...can range from serious injury and mortality to changes in behavior." *Id.* at 110.

NMFS must establish sonar restrictions as part of its vessel regulations to prevent take of the SRKW. NMFS should work with the Department of Defense to establish reasonable limitations on sonar use that will protect both the whales and national security.

E. Inter-Governmental Cooperation.

Notwithstanding the Recovery Plan recommendation for transboundary and interagency coordination and cooperation, the Rule does not propose any specific coordination or cooperation actions. See Recovery Plan, at V-24. The Recovery Plan states "[i]t is recommended that recovery plans and research efforts be coordinated within and among responsible federal, state or provincial agencies to ensure that conservation goals are met and that resources for conservation are optimized." *Id.* The Recovery Plan further states that "[i]t should be a goal of resource agencies involved in conservation or recovery planning for Southern Resident whales to communicate and coordinate during the planning process. Recovery plans and recovery strategies, action plans, and site-specific management measures should be complementary to the extent practicable given the nuances and mandates of the legislation under which each plan is prepared." *Id.* at V-25. And the Rule recognizes that the SRKW have been listed as endangered under the Canadian Species at Risk Act in addition to the ESA and that recovery planning and management, including protective regulations, will continue to be coordinated with Canada. Rule, at 1-4.[5]

Yet the Rule omits a full description of specific complementary recovery planning. The Rule does not indicate whether NMFS has communicated or coordinated with Canada's Department of Fisheries and Oceans ("DFO") to ensure that the vessel regulations are sufficiently consistent with Canadian management measures to protect the orcas when they inhabit transboundary areas. The Rule does not identify whether NMFS has worked with DFO in any manner to craft similar regulations that would apply in Canadian waters. The Rule also omits explanation of specific interagency coordination with tribes, the state, or local government entities in addressing vessel regulations. Transboundary and interagency cooperation is

[5] The ESA itself encourages transboundary efforts, stating that "the Secretary [of the Interior or Commerce], through the Secretary of State, shall encourage—(1) foreign countries to provide for the conservation of fish or wildlife and plants including endangered and threatened species listed pursuant to section 1533 of this title." 16 U.S.C. § 1537(b).

particularly essential in the vessel regulation context, where vessels may transit across international lines for whale watching, commerce, transportation, recreation, or other purposes. Consequently, NMFS should identify specific cooperative efforts and results in the final Rule.

II. Support for the Rule.

A. Implementation Scheduled for 2010.

Friends supports NMFS' proposed implementation of the Rule in 2010. The implementation of even this portion of the necessary orca protections thus would have delayed five years from the initial listing of the SRKW.

B. Approach and Parking regulations.

Friends supports NMFS proposed 200-yard approach prohibition and 400-yard parking in the path regulations. These proposals are likely to limit behavioral disturbances to the orcas as they forage, recreate, and rest.

C. No-go Zone.

Friends supports the concept of a no-go zone to limit disturbances to the whales, particularly in foraging areas. The Draft EA notes that killer whales spend 18% less time foraging while vessels are present than when they are absent. Draft EA at 3-21—3-22. The Draft EA also identifies research that indicates that whales spend 3% more energy in the presence of vessels. *Id.* at 3-21. Given these impacts, setting aside an area of limited entry may improve the recovery of SRKW.

Friends urges NMFS to adopt as a no-go zone that area identified by E. Ashe, D.P. Noren, and R. Williams as an excellent candidate for a Marine Protection Area in *Animal behaviour and marine protected areas: incorporating behavioural data into the selection of marine protected areas for an endangered killer whale population.* Animal Conservation (2009) (attached hereto). Those authors propose that area after predicting that killer whales are 2.7 times as likely to engage in feeding there than in adjacent waters. Because killer whales are most vulnerable during feeding activities, this no-go zone would protect the killer whales during their most vulnerable activities.

III. Necessary Improvements for the Rule.

A. Enforcement lacks clear mechanisms.

The proposed rule does not clearly identify the enforcement mechanisms that NMFS will employ to ensure compliance. For example, the Draft EA indicates that NMFS performs active enforcement in inland waters, but does not identify how it does so. Such details could include: (1) whether NMFS itself performs enforcement activity; (2) number of enforcement boats on the water at any given time; (3) location of enforcement activities; (4) annual duration of on-water enforcement; or (5) daily hours of on-water enforcement.

Without adequate enforcement, the proposed regulations will have limited value. As the Draft EA notes, "[f]ear of sanctions is a stronger motivation for compliance with mandatory rules rather than voluntary guidelines...." Draft EA at 4-2. The Draft EA also recognized that economic consequences of noncompliance can compel compliance. *Id.*

In addition, NMFS' voluntary guidelines have proven unable to prevent disturbances to the SRKW. As noted by the Draft EA, public complaints routinely identify motorized, non-motorized, and self-propelled vessels approaching whales at close distances. Draft EA at 1-4. In addition, Soundwatch reports that vessels do not always follow the guidelines, and a simple internet search dredges up advertising images of whale watch endeavors approaching whales at very close distances. Draft EA at 1-4—1-5. Similarly, neither the regulations established by San Juan County in 2007 nor the state regulations that superseded them in 2008 have received adequate enforcement.

NMFS should work with Tribal, State and local governments to develop a collaborative enforcement system that is adequately funded. The responsibility and expense for enforcement of the rule (current, proposed or an alternative) should be coordinated and managed by NMFS. NMFS and other government agencies that conduct enforcement should provide training for enforcement agents so that they model responsible vessel operation in the presence of whales. A visible presence on the water coupled with swift response to violations is critical.

In addition, NMFS should ensure that any fines levied against violators are sufficient to deter similar action in the future. The Draft EA notes that fines and penalties would amount to a negligible fraction of the current economic value of the fishing industry. Draft EA at 4-33—3-35. Consequently, those actors might determine that a violation of the Rule merely constitutes a cost of doing business. To the extent that NMFS establishes defensible regulations that it intends to enforce, it must include in them penalties sufficient to deter future violations.

B. Inappropriate Exemptions.

As demonstrated above, government vessels should be regulated for their ability to impact the SRKW with noise, such as sonar.

C. Education and Marketing.

The Rule does not identify a comprehensive education strategy. The Final Rule should include at least the following as part of such a strategy:

- General guidance for wildlife viewing consistent with the MMPA and ESA;
- Nautical maps and charts identifying the no-go zone;
- Be Whale Wise program implemented in cooperation with commercial operators, whale advocacy groups, US and Canadian government agencies;
- Continued Soundwatch education, including the Kayak Education Leadership Program;
- Educational flyer for DMV to hand out to all boat licenses renewals (San Juan County, Island County, Victoria/Sidney, Everett, Bellingham);
- Flyers at ports and marina's in surrounding area (San Juan County, Island County, Victoria/Sidney, Everett, Bellingham); and
- Collaboration with the state office of tourism and San Juan County Visitors' Bureau to educate visitors about Orca.

D. Monitoring.

The Rule states that monitoring is included in the vessel regulations, but it does not identify a specific monitoring program. NMFS should invest in resources to conduct long-term monitoring to measure the effectiveness of the vessel regulations and their management of those regulations. This monitoring should compare vessel activities and compliance under prior regulations and guideline with new regulations. The results of the monitoring should then be used to review and adjust the regulations periodically to ensure the successful recovery of the SRKW.

IV. Conclusion.

Friends appreciates the efforts that NMFS has made toward recovering the SRKW from the brink of extinction. However, the proposed vessel regulations constitute only a small step toward the orcas' ultimate recovery; NMFS must immediately address prey availability and toxins for the orcas' to have a realistic likelihood of delisting. In addition, the proposed Rule must be augmented to address sonar from vessels, aircraft, adequate enforcement, education, and monitoring.

Sincerely,

Kyle A. Loring
Staff Attorney

Subject: Regulations to protect killer whales from vessel effects.
From: Lifeforce <lifeforcesociety@hotmail.com>
Date: Thu, 14 Jan 2010 17:39:36 -0800
To: Orca.Plan@noaa.gov

To: Assistant Regional Administrator, Protected Resources Division, Northwest Regional Office, National Marine Fisheries Service, 7600 Sand Point Way, NE., Seattle, WA 98115. orca.plan@noaa.gov.

From: Peter Hamilton, Lifeforce Foundation, lifeforcesociety@hotmail.com

Re: DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration 50 CFR Part 224 [Docket No. 070821475–81493–01] RIN 0648–AV15 Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments, and availability of Draft Environmental Assessment on regulations to protect killer whales from vessel effects.

Please find the attached Lifeforce Comments in: Boat Vessel Legislation with the attached online and hard copy petitions.

BOATVESSELLEGISLATION.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

petitonhardcopy.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

Petition To Protect Endangered Orca - Online Petition.pdf	**Content-Type:** application/pdf **Content-Encoding:** base64

To: Assistant Regional Administrator, Protected Resources
Division, Northwest Regional Office, National Marine Fisheries Service, 7600 Sand Point Way, NE., Seattle, WA 98115. orca.plan@noaa.gov.

From: Peter Hamilton, Lifeforce Foundation, lifeforcesociety@hotmail.com

Re: DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration 50 CFR Part 224 [Docket No. 070821475–81493–01] RIN 0648–AV15 Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA),
Commerce.

ACTION: Proposed rule; request for comments, and availability of Draft Environmental Assessment on regulations to protect killer whales from vessel effects.

LIFEFORCE COMMENTS

From sunrise to sunset the endangered orcas are relentlessly pursued everywhere. Under the name of entertainment they are the gold treasure sought after by a multi-million dollar eco tourism industry. When the treasure is found the code word "Contact" is issued to the whale watch fleet.

Lifeforce is a non-profit ecology organization based in Vancouver and WA. From 1993 to 2005 I operated the "Lifewatch Boater Awareness Program" to advise boaters about the guidelines/regulations re: watching marine wildlife such as orcas. This was the first program in Southern BC waters. I developed educational materials such as the "Whale Watching Guidelines for Southern BC & Washington".

In 2008 Lifeforce gathered conclusive evidence of ongoing flagrant disregard for the well being of orcas and the laws. We only had to spend a few days to observe repeated violations. This is common whale watch company practises when they are not watched by enforcement agencies. Pleasure boats imitate the illegal practises. When pleasure boaters are approached and advised of the laws they often respond by saying "We were just doing what the whale watch boats were doing. We thought they knew what to do."

In Part 1 Lifeforce provides some of the more than 1100 violation photos that we took of the Whale Watch Industry and pleasure boaters. The report is at:
http://www.lifeforcefoundation.org/files/INPURSUITORCASJAN2009_sm.pdf

It should be noted that in 2008 WDFW laid three fines – two were based on Lifeforce's photographic evidences.

PROPOSED ALTERNATIVES

I would suggest that there are both ethical and scientific bases for supporting some of the suggested alternatives as previously proposed by Lifeforce and others. These proposals would provide a special level of orca protection by the whale watch industry, with expected spin offs that will have a positive influence on recreational boaters. Many of these recommendations would be simple to administer.

Some of the NOAA comments were that some proposals would be hard to enforce. However some of the regulations will specifically target companies that will know the rules and this will also help reduce pleasure boat violations since they often copy what the companies are doing.

Soundwatch data stated that Canadian and US Whale Watch Companies made up 25% of violations as per their observations (60% of all incidences are from Private boats, 17% are from Canadian Commercial 8% are from U.S. Commercial). That is a very high percentage considering that the industry has a fleet of 60 boats as compared to the thousands of recreational boats.

It has been determined that boat traffic can cause:
1. Direct effects arising from boat/cetacean collisions
2. Short-term effects which include interruption or changes in essential behaviours such as respiration, feeding, resting, socialising, communicating, care of young and group spacing. Repeated disturbance of these behaviours can result in chronic stress and increased use of energy.
3. Long-term effects which can result in changes in distribution, reduced fitness and reduced breeding potential.
(Source: Dolphin Space Programme (DSP)

"Historically, there are few reports of collisions between Killer Whales and vessels. However, from 2003 to 2007 there were six collisions reported in B.C., three of which were fatal for Residents (DFO-CRP unpublished data). In 2005, DFO cetacean research surveys encountered a previously identified Offshore Killer Whale, whose dorsal fin was completely severed at the base (DFO-CRP unpublished data). This individual survived, and its injuries are consistent with those that could be sustained from a propeller blade." **(The final Management Plan for the Offshore Killer Whale has been posted on the SARA Public Registry:**
https://www.registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=1855
https://www.registrelep-sararegistry.gc.ca/document/default_f.cfm?documentID=1855

During Lifeforce studies of boat traffic and the noncompliance of regulations, I have found that there are a higher percentage of company violations versus pleasure boat violations in the Point Roberts area, Rosario Strait area, San Juan Islands, Gulf Islands and north to Vancouver Harbour.

Further, it has also become obvious that monitoring of boat traffic by NGOs have not stopped the harassment of orcas. Future enforcement must be done by government enforcement agencies.

The whale watch companies have stated during this public comment period that they will go out of business if they can't get close to orcas (maintaining a 200 yards boundary) This is the same type of propaganda offered by the aquarium industry that supports captivity with kissing, petting and swim with dolphins programs. This "get up close with nature" marketing ploy can harm bothpeople and wildlife.

Some whale watch companies have started misleading letter writing campaigns to NOAA to oppose any safer boundaries and no go zones. Vancouver Whale Watch states on their web site, "The Pacific Whale Watching Industry and the Public's Education is in Serious Jeopardy!" They and others have letter writing campaigns. These companies have no scientific or other facts that support their claims.

As a matter of fact, over the years, it had been the general policy to stay 400 yards away from nursing orcas and their newborns. So if 400 yards was acceptable then why are they opposing 200 yards? Lifeforce supports a 400 yard boundary.

See "Monitoring Issues in BC and WA: Friendly Persuasion and Aquarium Pets?":
http://lifeforcefoundation.org/files/MonitoringIssuesFinal.pdf

Further, those who have commented that the orcas approach boats do not understand the orcas' behaviours and travel patterns. They are not properly informed. Whale watch companies know the orcas' route and will "position" ahead of them and say that they are coming over to "Hi". Some companies even tell their customers that a tail or pec slap is the orca saying hello or goodbye. None of which is true.

LIFEFORCE POSITION RE: ALTERNATIVE PROTECTION

Re: 2.3.1 Moratorium on All Vessel-based Whale Watching

Presently Lifeforce does not support a total ban for several reasons – some as outlined in the NOAA response. The companies will simply harass other marine mammals as I/ Lifeforce has witnessed those harassing transient orcas, gray whales, sea lions and others. So we must get them to abide by regulations that would protect all species. We do hope that there will be less of a focus on orcas. A broader educational message of the diversity of wildlife and how to protect ecosystems must be part of a new model for ecotourism.

Lifeforce strongly recommends implementing "Whale Watch Go Zones". These would be specific limited areas designated by Longitudes and Latitudes throughout the orcas temporary seasonal home ranges. The companies will choose an area and wait for orcas to pass by at the permitted distance. This will help reduce stress levels of orcas/interference with orca behaviours because it will reduce the continuous pursuit of them throughout the days.

Pleasure boats are attracted to whale watch vessels and will go to where they are located. This would help reduce the negative impact by pleasure craft too.

There would also be a thirty minute time for viewing since this is sufficient time to view them without the present interference of each boat watching them for hours. Engines and sonar equipment must be turned off.

It should be noted the on the East Coast of Canada, there are 30 minute restrictions on some whale watching activities. Worldwide there are similar restrictions as stated in "A REVIEW OF WHALE WATCH GUIDELINES AND REGULATIONS AROUND THE WORLD VERSION 2008", Carole Carlson, College of the Atlantic, Bar Harbour, Maine, USA.

These protection measures are further discussed in: Lifeforce's Model Whale Watch Plan http://lifeforcefoundation.org/files/ModelWhaleWatchPlan.pdf

Re: 2.3.4 Establish a Quota System for Takes and Allocate to Different User Groups

It was stated, ***"This alternative would allocate a certain quota for "takes" of whales to different user groups that may be impacting the whales such as research, whale watching, and fishing groups. The takes would include close approaches as well as other harmful activities. There is no scientific information to identify how many takes from different activities would be acceptable. Consequently, an allocation process for different activities would be arbitrary and not administratively feasible. The MMPA and ESA prohibit takes and do not include exceptions of this prohibition for viewing activities."***

In regards to research activities "takes" and any harassment must not be permitted. Alternative methodologies must be implemented to stop the continuous close approaches and "follows".

The question is whether the ends justify the means. My observations have found that research boats are often on top of orcas looking for prey samples. This invasive action is no doubt highly stressful and put orcas at risk of injury (perhaps jet engines or prop covers should be used). Research boats are on them for long periods – even at times when orcas are travelling and not in foraging mode. (Perhaps it should be restricted to close approaches only when orcas are foraging as seen by circling behaviours etc.). Days are spent conducting close approaches with only a few samples collected.

Will such research result in moratoriums on fishing? In Canada the researchers doing prey sample collection said that it was not their purpose to recommend moratoriums. There is enough data to support that orcas eat endangered fish populations that need protection from humans. It is time to recommend that certain research activities are part of the boat traffic problems and cannot be justified.

In addition, pleasure boat operators will imitate research boats methods. I have personally documented pleasure boaters copying the close approaches by research boats. The public doesn't simply doesn't get the yellow flag and are not being advised by researchers. As with Canadian research permits that I have had any close approaches must not be permitted with other boat traffic in the area. This restriction should be part of boat regulations.

Re: 2.3.5 Certification or Permit Program

Over the past decade the whale watch industry has drastically grown. The lack of proper government actions has led to the chaos on the water.

Lifeforce urges governments to restrict the number of permits and the continued growth of the whale watch industry. An Eco-friendly Certification Program should be implemented with revocation of permits if operators violate regulations. These protection measures are further discussed in Lifeforce's Model Whale Watch Plan.

It was stated, *"A certification program is also not feasible because there is currently no infrastructure to administer, monitor, or enforce a certificate or permit program for whale watching activities."* Lifeforce believes that such infrastructure is needed. A certification program could be done through existing boat operator training courses. Captain licenses would include such training whether or not the individual will work for the whale watch industry. Pleasure boat operator certificates should also include such training.

Other industry, government and NGO cooperative programs should be considered. For example,
"The Dolphin Space Programme (DSP) is an accreditation scheme for wildlife tour boat operators. It is an innovative, co-operative approach to sustainable wildlife tourism, launched on World Oceans Day, 8 June 1995. The aim of the DSP is to encourage people who go out to observe dolphins and other marine wildlife to "watch how they watch" and to respect the animal's need for space.
To avoid these potential impacts the Dolphin Space Programme provides a code of conduct, training opportunities and educational materials to encourage responsible vessel interactions with cetaceans.
Boat operators who join the Dolphin Space Programme accreditation scheme agree to follow an approved code of conduct. This includes training in the best ways to approach dolphins and other cetaceans to ensure minimal disturbance to the animals. In return for joining the scheme, tour operators are offered support and promotional opportunities by the members of the DSP steering group.
DSP accredited operators conduct cruises of high quality and low environmental impact. Passengers on DSP accredited boats are offered an enjoyable experience taking in the beauty and diversity of wildlife found in the Moray Firth, safe in the knowledge that their activities do not threaten the wildlife they are enjoying.
The DSP is run by a steering group of several organisations and agencies which are listed on the steering group page. The scheme is financially supported by Scottish Natural Heritage and the Whale and Dolphin Conservation Society."

2.3.6 Prohibit Whale Watching One Day Each Week

It was stated, *"Under this alternative, whale watching would be prohibited one day each week to reduce harmful impacts to whales for this 24 hour period. It would be difficult to educate recreational boaters regarding when they could or could not watch whales and what vessel activities constitute "whale watching" prohibited on certain days. As described under Subsection 2.3.1, Moratorium on All Vessel-based Whale Watching, it would be difficult to enforce this type of regulation."*

The orcas need a break from the relentless pursuit of boats. The pleasure boaters often find orcas by looking for whale watch companies. No presence of the companies will help reduce the impact by all traffic. It would be simple to advise the fleet of the "orca day off". In addition to educational materials about the new regulations, boat traffic reports could be announced on VHF #16 as with other notices.

Although commercial operations should be prohibited during "bad weather" days the one day within a 7 day period could be coordinated with poor weather and sea conditions. The reason for this weather ban is simple – boats have a difficult time determining where all the orcas are during good weather let alone trying to see them during poor visibility and rough seas. Whale watch companies have operated in dense fog with visibility as low as 75 yards. Under these conditions orcas could be easily hit.

One San Juan Safaris staffer reported to Orca Network on August 24, 2009 that there was heavy fog resulting in "extreme whale watching" and at one point lots of directional changes:

"Residents have returned to our waterways! ...The fog was incredibly thick to the south, masking the Orcas, other boats, and even the island in a damp sock of white. ...this was what I call "extreme whale watching" - after well over an hour of searching and the Orcas continually eluding the boats in the fog we got our first peek at 2 dorsal fins. The calm seas allowed us to hear the blows or breathing of the whales better than we could see them! ...The Orcas were lost again in the fog, we were ready to call it quits and head north to find other wildlife when we were graced with views of at least a dozen Orcas - lots of directional changes, they seemed to be fishing.... "

This type of risky operation must not be encouraged – it must be stopped.

16 2.3.11 Protected Area - No-go Zones Only When Whales are Present

It was stated, *"Under this alternative, vessels would be prohibited from entering an area only when whales were present in that area. It is not feasible at this time to notify boaters in real time when whales are present in a protected area and when they are not. There is currently no infrastructure to monitor an area for presence of whales or to broadcast ORCA RADIO the information to alert boaters that a protected area is in effect. Enforcement would be dependent on boaters being aware of the whales' presence, which would not provide efficient and maximum protection of whales."*

Well the "maximum protection" is limited in many cases due to lack of enforcement by government agencies. It is the responsibility of boaters to operate their vessel in a safe manner and part of this duty knows what is in your travel route. Looking out for orcas should be as common sense as looking out for logs. If there are "no go zones" regulations then if they see orcas they will know that they

must get out of their way. That is better than present situation that we have in waters off Point Roberts.

At this time the proposed no-go zone does not include Point Roberts.

Lifeforce and others urged Governor Gregoire to protect orcas by increasing enforcement and implementing a 1/2 mile voluntary No Boat Zone at Point Roberts. Further details at http://lifeforcefoundation.org/newsitem.php?id=72

Over a 2 day period 101 people signed a hard copy. Most of the 73 people who signed the online petition did it within 2 weeks. (See attachments)

The Petition read:

Whereas, Both the US and Canadian governments have designated orcas as endangered species and have implemented Orca Recovery Plans;

Whereas, Orcas, also known as killer whales, are the largest members of the dolphin family. All family members live together for their entire lives in "pods." The Southern Resident Killer Whales (SRKW) is the J, K and L pods. While Js spend most of their lives in B.C. and Washington waters the Ks and Ls usually return in June and will stay until the winter. There are less than 90 orcas in total. Local waters off Point Roberts are a critical habitat;

Whereas, The population of Southern Resident Killer Whales has been harmed by aquarium captures, human overfishing, boat traffic and human-made pollution;

Whereas, Washington Governor Gregoire took action to sign into law on March 28, 2008 legislation that further bolsters efforts to protect resident orcas. The new law (HB 2514) establishes a 300-foot zone around orca whales that vessels must avoid. The law provides the Department of Fish and Wildlife with enforcement tools. In addition, the new San Juan Island Ordinance No. 35 – 2007 regulates the operation of vessels in proximity to SRKWs and established fines of $750 for violations such as failing to yield to orcas in San Juan County waters;

Whereas, When orcas are present on the west side of San Juan Island, there is a Special Orca Viewing Areas that is a 1/4 mile voluntary no motor boat zone. There is a 1/2 mile zone around the Lime Kiln Washington State Park.

Whereas, Lighthouse Marine Park in Point Roberts is also a popular whale watch park. The Voluntary No Boat Zone would provide the orcas with a protected area around their favourite feeding and socializing areas. The Zone would also provide park visitors with Special Orca Viewing Areas;

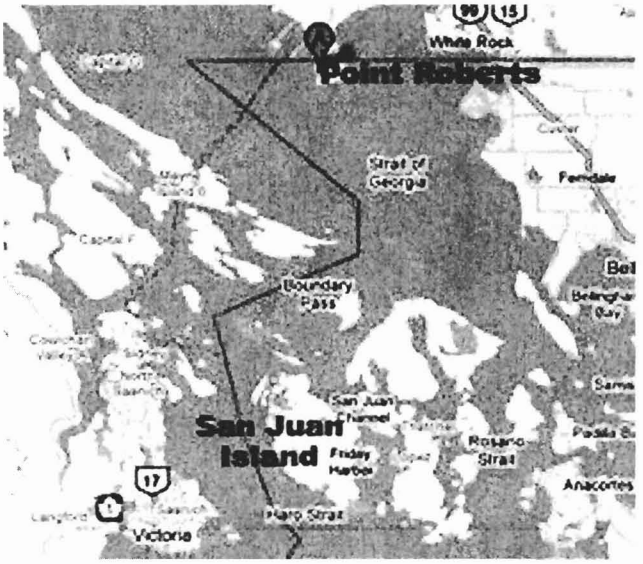
Whereas, The commercial whale watching fleet are still blocking the pathways of orcas, approaching within 100 meters and are positioning themselves between the orcas and the shore. Their self-policing and the system itself are not working;

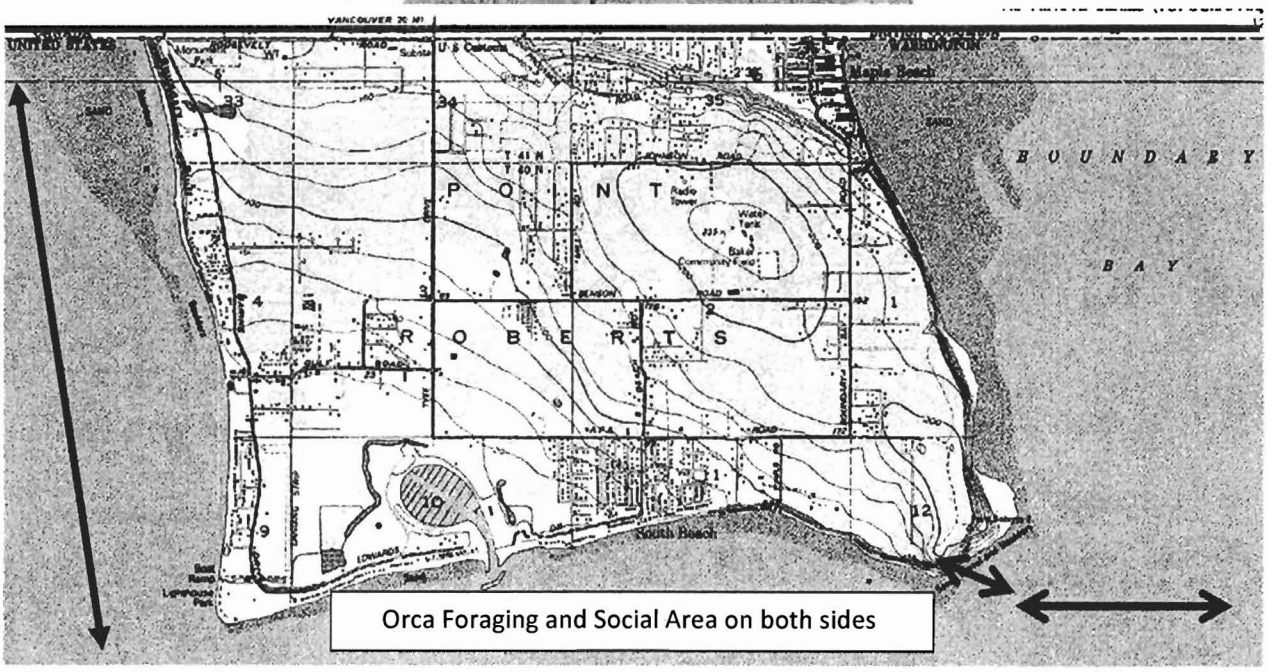
Whereas, Further action is essential in order to guarantee that these magnificent orcas are truly protected;

Be It Therefore Resolved that I urge Governor Gregoire to direct enforcement agencies to enforce marine mammal protection provisions such as HB2514 and to establish a 1/2 mile voluntary boat exclusion zone in waters surrounding Point Roberts.

POINT ROBERTS NO GO ZONE

Point Roberts provides a critical habitat for orcas. Their sanctuary here is constantly intruded upon by whale watch companies and pleasure boats. Our proposed No Go area is along the two shorelines of the Point since the orcas do not go into the Boundary Bay side.

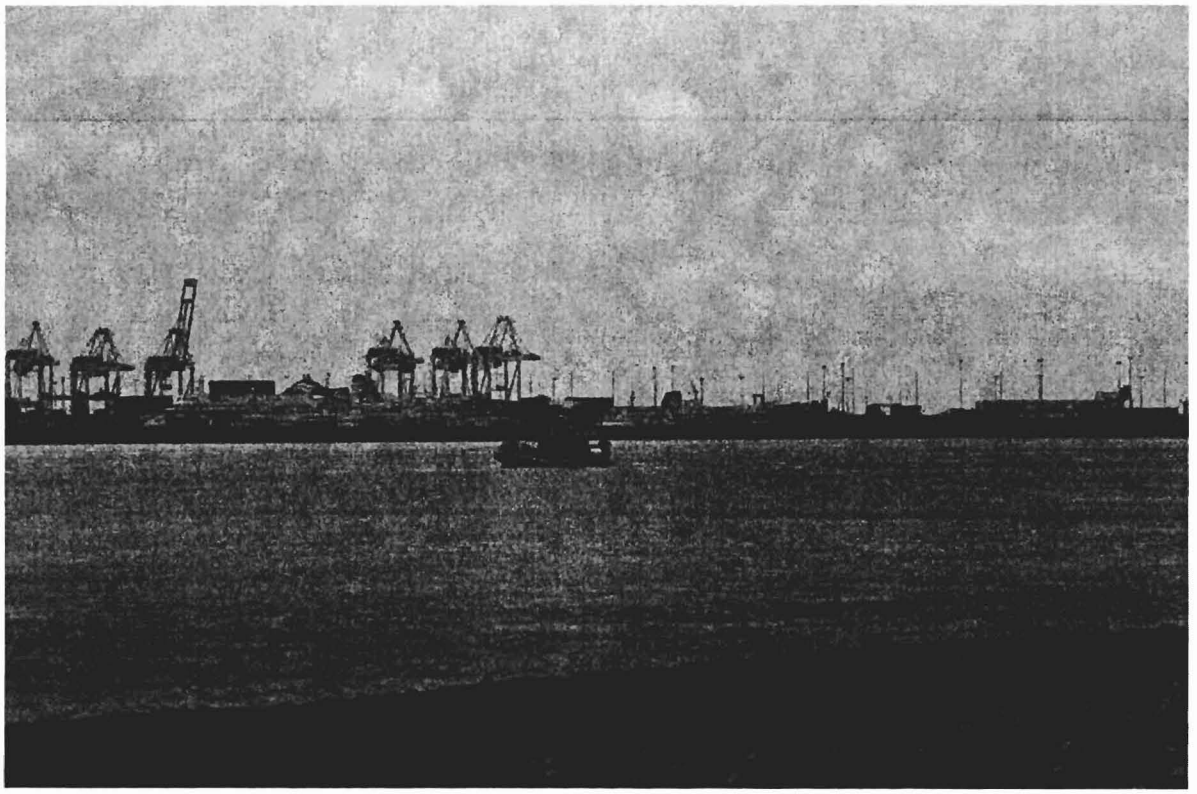


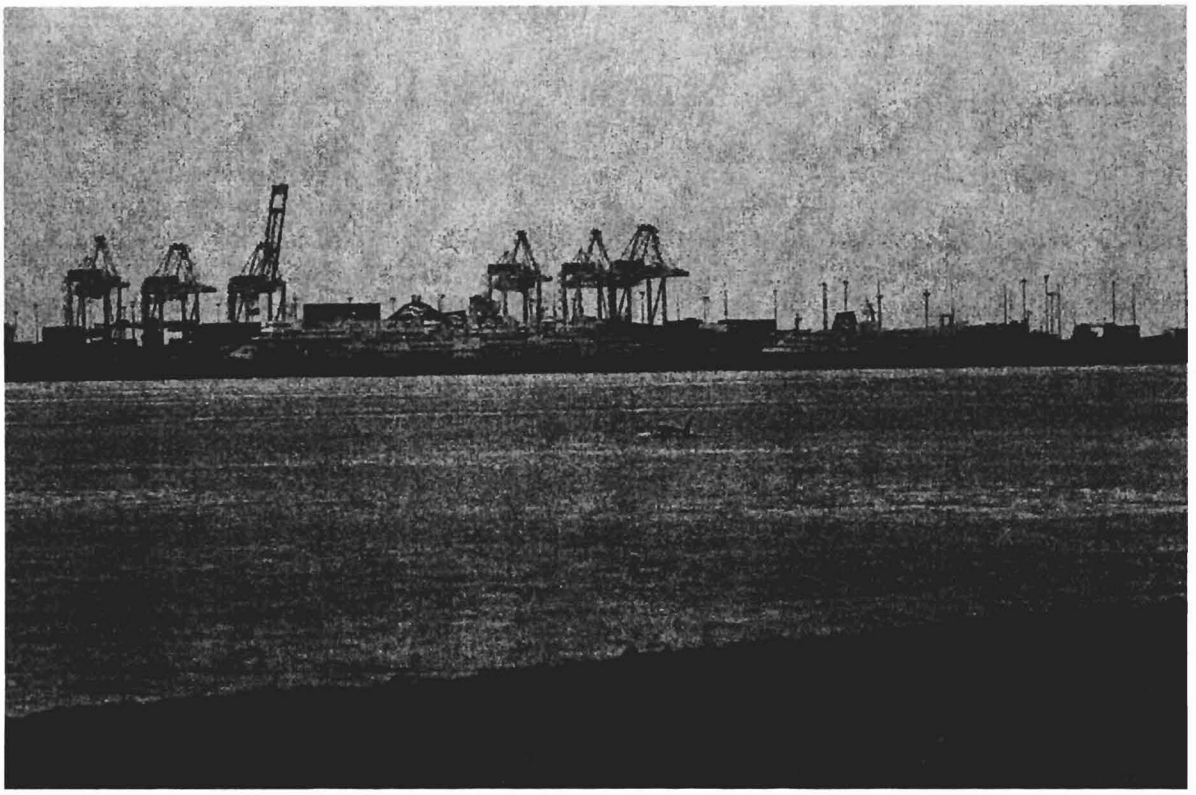


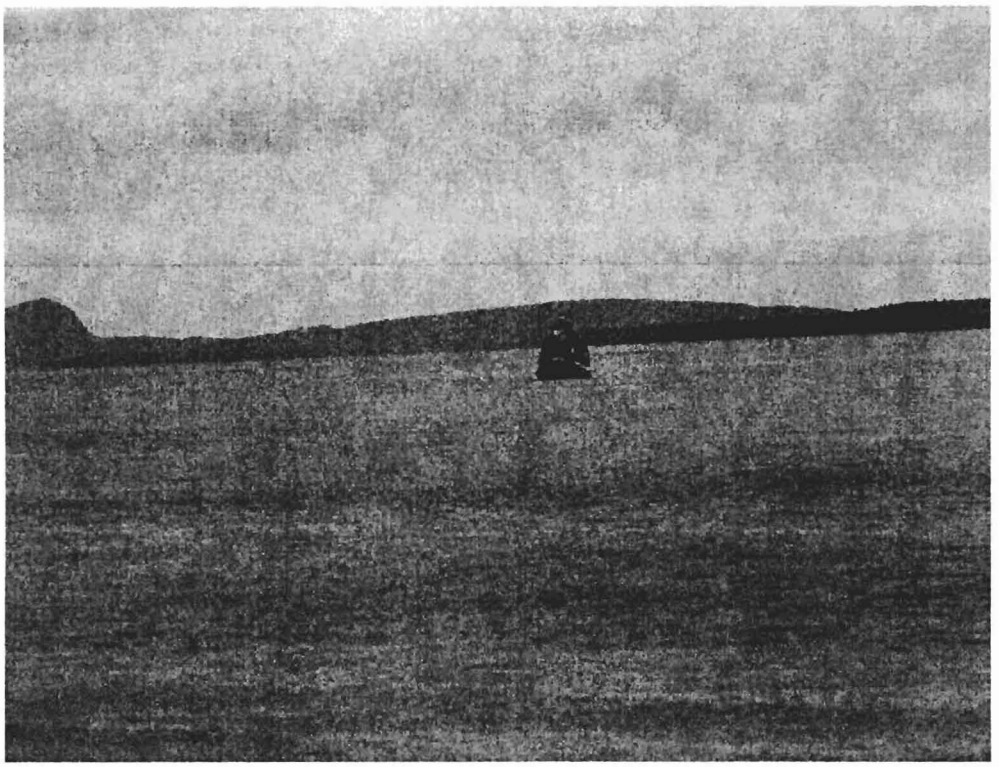
SAMPLE PHOTOGRAPHS (Other photos in the Lifeforce report "Contact: In Pursuit of Orcas")

June 2009: Photos showing orcas close to shore pursued by a whale watch company that also turns to block their pathway. This company and numerous others have been photographed several times in violation of WA legislation. This same company also frequently goes between the orcas and shoreline.

The orcas forage in this area. They catch salmon along the westerly shore and in the South Beach bay and reef area. They can spend long periods if not disturbed.







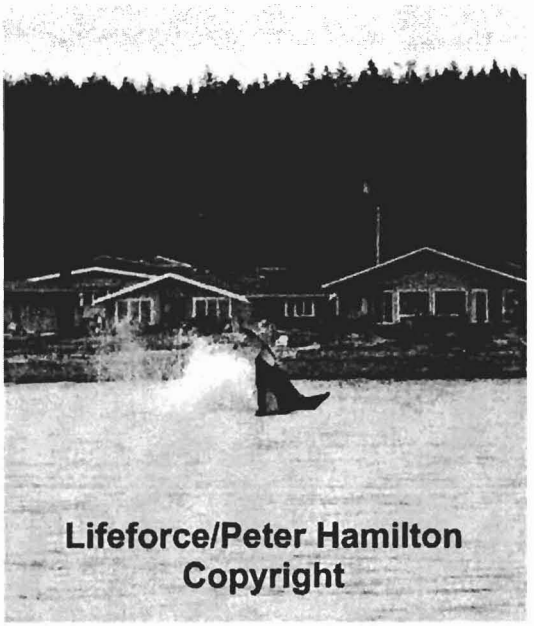
PLEASE WATCH THE NEW LIFEFORCE VIDEO "Stop Orca Cruelty!" to see why a No Go Zone is needed off Point Roberts.

http://lifeforcefoundation.org/newsitem.php?id=111

August 2008

Here is an example of orcas spending more time in the area when not harassed by boats. This one group of eight spent approximately 1 hour socializing close to one side of the Point and then another hour on the southerly side from the park to the reef. Others were spread out for over 1 mile and were also socializing and doing some foraging.

At one time a boat sped through them and they went further offshore. They later returned when it was quiet again.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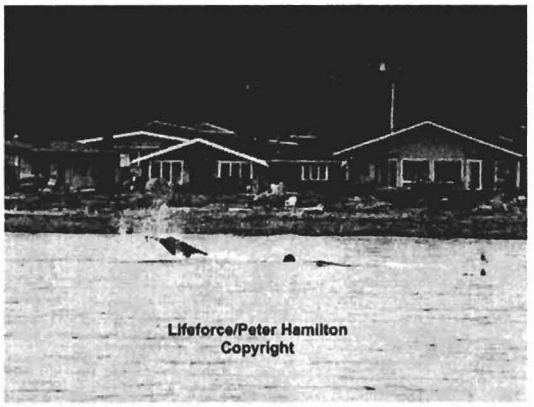
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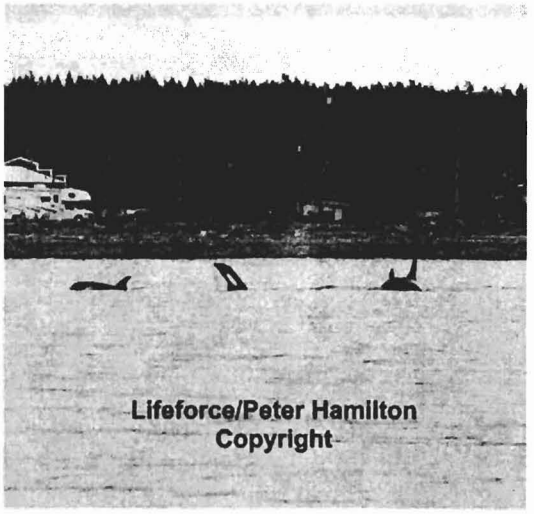
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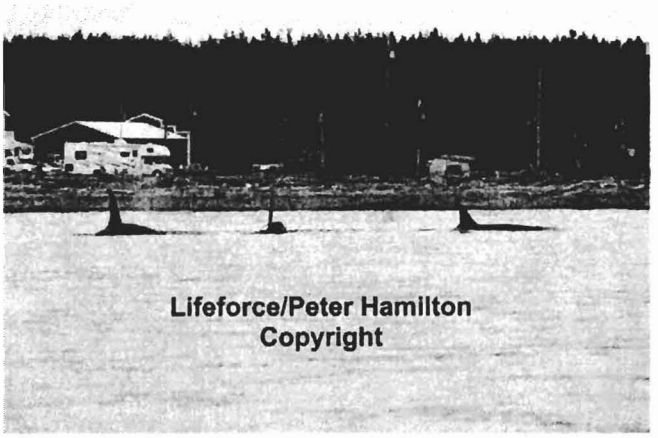
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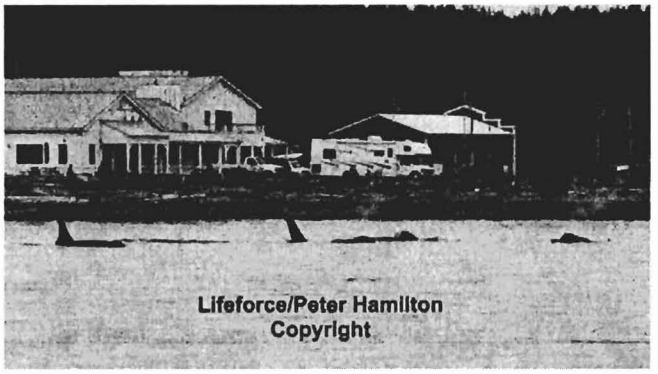
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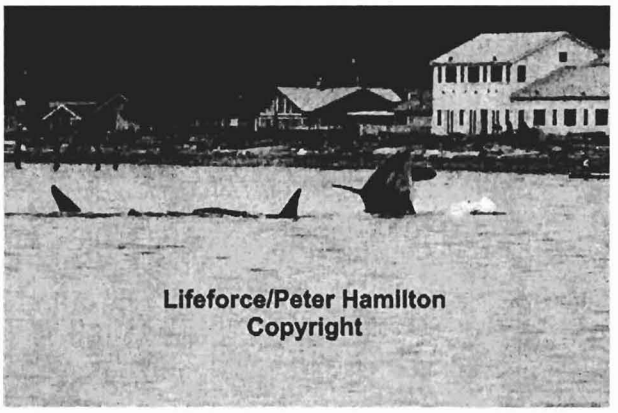
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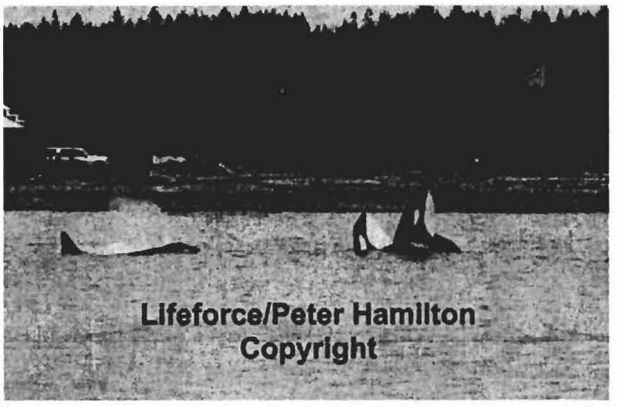
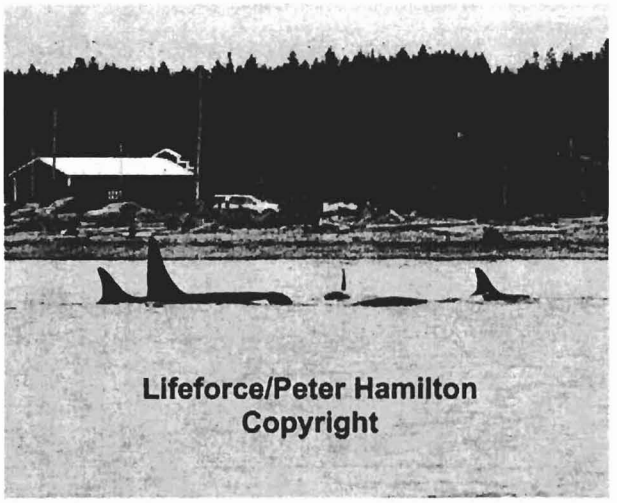
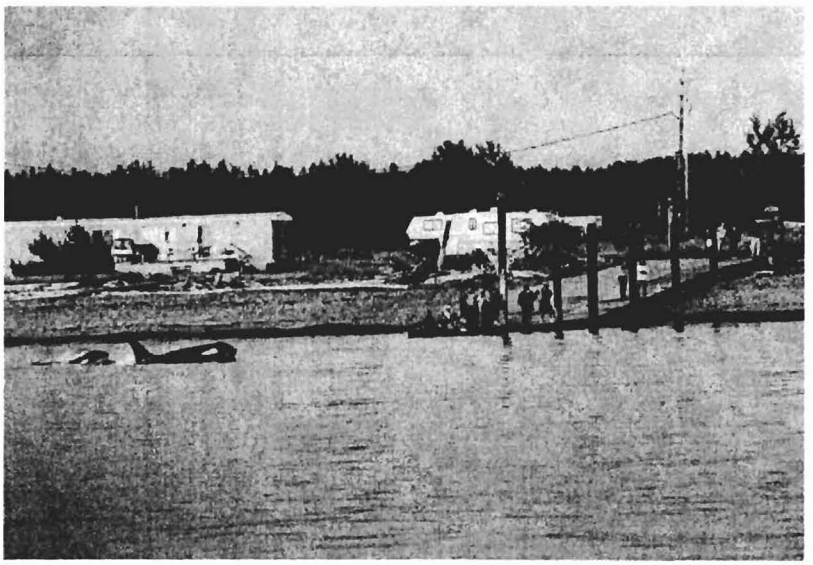




SRKWs heading south passing park on westerly side



SRKWs heading north passing Point Roberts Marina on southerly side

JUSTIFICATION FOR POINT ROBERTS NO GO ZONE

1. Historically the waters surrounding Point Roberts have been a critical habitat for orcas. It provided an excellent fishing area and quiet spot for socializing. This area was not well known by whale watch companies up until 2000 when companies started operating out of the Vancouver area. Vancouver Whale Watch hired spotters to come to Point Roberts and now numerous Canadian commercial boats travel these waters in search of orcas. Once contact is made they notified the US/Canada whale watch fleet. Frequently the entire fleet will travel to Point Roberts and/or the Fraser River.

The number of commercial boats can number up to 20 or more. The area becomes very congested. With all the boat traffic it is chaotic. There has been practically no enforcement by government agencies and only infrequent monitoring by NGOs.

2. During the 90s I operated in the Point Roberts area under a DFO research permit. I started in 1993. My research was the observation of behaviour and travel patterns of *orcinus orca*.

Prior to the invasion of Canadian/US whale watch companies orcas spent long periods in the area. These periods were reduced to pass bys when the commercial fishery was opened.

In general, orcas will spend longer times when no boat traffic or low boat traffic opportunities are present. High boat traffic appears to decrease foraging/socializing times. The decrease of foraging has been observed by Lifeforce when they are pursued by commercial and/or pleasure vessels. When harassed by boats they move on. Foraging behaviour, such as circling, is problematic for orcas with boats buzzing around them so they move on.

(See also video/photograph reports boats inshore of orcas and other harassment as stated above.)

3. In 2009 I recorded six consecutive days of sightings. This occurred twice in September. The more common sighting patterns include a) 2-3 days of sightings then miss one day before returning and b) every other day. In 2002 J pod circumvented the San Juan Islands to the Fraser River to Point Roberts in approximately 26 hours for more than a week.

Group(s) can travel back and forth pass the Point up to three times during a day. Groups can be separated in their travels from 30 mins to 3 hours.

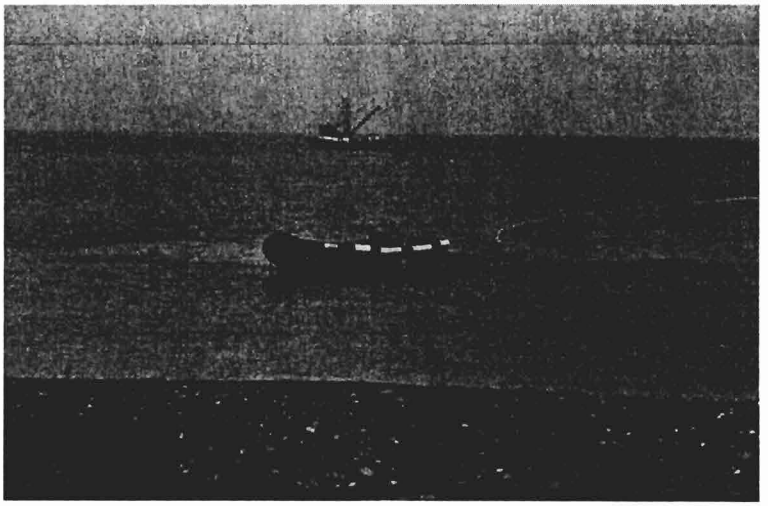
Sightings are more frequent from May to September.

4. The no-go zone regulation would not apply to personal use of private vessels and commercial use for access to the marina adjacent to the no-go zone. Boaters should be required to wait for orcas to leave the area if they are approaching or exiting the marina.

5. The eel grass on the southerly side of the Point is impacted during commercial fisheries. The nets are dragged in shallow waters. Mountains of eel grass wash up on the beach.

Eel grass beds provide needed habitats for a diversity of marine life. They are also important for the recovery of salmon species. "Damage to eelgrass affects whole populations of fish, including threatened salmon, waterfowl, shellfish, and other animals, as well as the stability of our shorelines." (WA Department of Ecology)

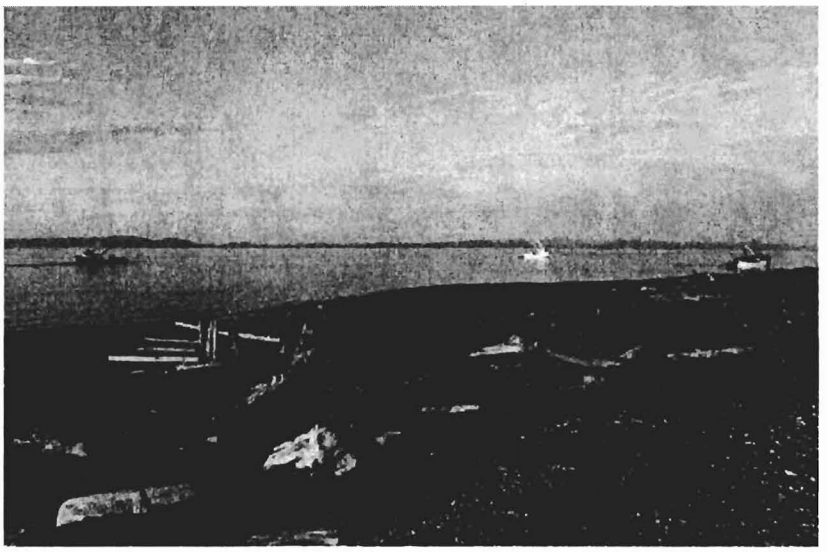
Photo – Commercial tender approaching the shoreline



The commercial fishery can also conflict with orcas who use the same shoreline to forage. Numerous boats and nets are in the pathways of orcas.

Preventive measures should include shutting off engines and sonar. Setting of nets should not be done when orcas are present.

Photo – Pleasure and Commercial fishing off Point where orcas try to forage



RECOMMENDATIONS

2.2.3 Alternative 3: 200 Yard Approach Regulation - Lifeforce recommends 400 yards

Worldwide whale watching is conducted by a variety of methods at a variety of distances. From hotel rooms to sea shores to cliffs. Viewing migratory populations or resident populations the land based whale watching activities are popular, financially viable tourism opportunities throughout the world. There is no factual base for whale watch companies alledging that whale watching from more than 100 yards would put them out of business.

Eco tourism has gotten out of control over the decades. A new norm must be established to respect and protect marine wildlife.

A 400 yards boundary has been recognized by whale watch industry as necessary when orcas are raising newborns. A 400 yard boundary is also defined as areas of special concern in Be Whale Wise.

Whatever the boundary is – either 200 or 300 or 400 yards – all engines must be shut down and all sonar devices turned off.

2.2.5 Alternative 5: Protected Area – Expanded No-go Zone

Lifeforce supports this No Go Zone and a No Go Zone off Point Roberts.

It was stated, *"Under this alternative, NMFS would formalize a no-go zone along the west side of San Juan Island. The area would extend 1/2 mile (800 meter) offshore from Eagle Point to Mitchell Point (Figure 2-2). This is a larger, but simplified area compared to the no-go zone described under Alternative 4 (Figure 2-1). No vessels would be permitted inside the protected area from May 1 through September 30. This area would not overlap with shipping lanes or ferry routes and would not be directly adjacent to the Canadian border. The regulations would not apply to activities, such as scientific research, authorized under permit by NMFS."*

As stated research activities should not be exempted. In addition to my other reasons it will certainly be confusing to pleasure boaters. It would probably lead to boaters entering any No-Go zones.

It was stated, *"The regulations would not apply to treaty fishing vessels lawfully engaged in actively setting, retrieving, or closely tending fishing gear. The regulations would not apply to any vessel where the operator could prove the vessel manoeuvre resulting in a violation was required for safety. The no-go zone regulation would not apply to personal use of private vessels for access to private property by landowners adjacent to the no-go zone. "*

It should be clarified that boaters must wait until it is safe to go outside side of the recommended viewing boundary of 200 or 400 yards and/or enter a no-go zone.

Fishing operations can be like a maze, are extremely noisy and can emit high levels pollution (such as boat exhaust fumes). It should be clarified that engines must be shut down and all sonar devices turned off if safe to do so.

Much needed fishing moratoriums would further help restrict boat traffic.

ENFORCEMENT

It is commendable that the US government is going to implement new regulations but it will have little impact on protecting orcas if the government enforcement is not increased. It must be government agencies with the enforcement powers not NGOs.

Present enforcement plans do not adequately protect orcas. This is especially the case in Georgia Strait from Vancouver to the San Juan Islands. We urge you to take immediate action to help protect orcas by securing funds for government agencies to enforce regulations in the US and Canadian waters.

As stated, our 2008 report "Contact: In Pursuit of Orcas" provides many, many examples of whale watch companies' non-compliance with present rules and legislation More enforcement is needed so existing and any improved laws are adhered to. Lifeforce has been urging all to email US Commerce Gary Locke to increase orca protection by the Washington Department of Fish and Wildlife (Email TheSec@doc.gov). In Canada we also contact Minister Shea (Email Shea.G@parl.gc.ca).

There should be a joint enforcement policy between the US and Canada.

Increased enforcement will be needed in 2010 since any new regs would not be implemented until 2011. It is likely that whale watch companies and others will take advantage of this setback. They will continue to break the rules and existing legislation while the opportunities exist.

REGULATIONS SHOULD PROTECT ALL ORCA POPULATIONS AND OTHERS

All orca populations must be included. In addition to the Southern Residents this would include Northern Residents, Transients, Offshores and any others who may be found in US waters.

The whale watch companies will go after and continue to get close to transients, visiting Northern Community orcas and others if the regs do not include those populations. Lifeforce photographic evidence of whale watch companies following transients with 100 yards is in our 2008 report.

Quite often proper ID is not done – especially by pleasure boaters. Enforcement issues would arise if all orcas are not included. This could make it problematic in laying charges or fines.

If all orcas are not included, the intent of such boat regulations would be somewhat hypocritical. Public perception would be that it is not okay to get close to SRKWs but it is alright to pursue others. The impacts are the same for all orca populations and regulations should reflect this educational message.

The boat traffic regulations must eventually cover grays, humpbacks, Dall's and Harbour porpoises, and others are relentlessly pursued.

In addition to this comment paper my recommendations are below.

APPENDIX A
Summary of Lifeforce Recommendations
Lifeforce recommendations include:
1. Both Canada and the US must implement the same stricter laws.
2. The 200 meters should be 400 meters as recommended when companies are watching nursing orcas.
3. There must be No Whale Watch Zones, such as Active Pass, in high boat traffic locations (Companies were in agreement in 2005 to not enter Active Pass.)
4. There should be Whale Watch Zones where designated locations are defined to stop companies from continuously following them all day long.
5. In addition to the San Juan Islands, No Go Zones should include the Point Roberts, WA shoreline and other critical habits in US and Canada.
6. Time limits of maximum 30 minutes must be implemented. Presently companies can be on the orcas for two hours or more.
7. Weather restrictions must include no whale watching during fog and stormy conditions such as seas greater than 3 feet. Commercial boats can't see the orcas and could hit them!
8. There should be government licensing of whale watch companies. This would include a restriction on the number of licenses issued.
9. There should be training of whale watch operators and ECO Certification of those in good standing.
10. Governments should promote land-based whale watching such as Lifeforce's Orca Trails. The most important action to protect orcas is to promote land-based whale watching that is popular worldwide. Lifeforce's Orca Trails was created in the 90s. We would report to Park Managers when the orcas will pass by marine parks. One such location is Lighthouse Marine Park in Point Roberts (near Tsawwassen) where orcas will pass by as close as 50 feet off the beach. The Orca Center at this site shows photos and provides education information about protecting orcas.
11. All orca populations must be included. In addition to the Southern Residents this would include Northern Residents, Transients, Offshores and any others who may be found in US waters.

APPENDIX B
Petitions – Online and hard copy
See Attachments

Submitted by:
Peter Hamilton
Lifeforce Founding Director
(604)649-5258
lifeforcesociety@hotmail.com
www.lifeforcefoundation.org

Save
Our wild
Salmon

January 8, 2010

Ms. Donna Darm
Assistant Regional Administrator
Protected Resources Division
Northwest Regional Office
National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115

Re: Comments on Proposed Regulations Affecting Orca-Vessel Interactions (74 FR 37674)

Dear Ms. Darm:

Thank you for the opportunity to comment on the proposed rules relating to interactions between vessels and orcas in inland Northwest waters.

The Save our Wild Salmon Coalition consists of more than 50 organizations. Our members include orca advocates, commercial fishing groups, sportfishing groups, conservationists, taxpayer advocates, and groups with a variety of other interests. Our members do not see eye-to-eye on everything and disagree sharply on some things. However, they do agree about one issue that is directly relevant to Southern Resident Killer Whales, and that is the need to recover the wild chinook salmon runs on which these orcas primarily depend for their existence.

Southern Residents face threats from many directions. Those threats need to be addressed. But the most critical threat is the inadequacy of chinook salmon, which is far and away the Southern Residents' primary food source. The abundance of chinook is a population-limiting factor. Without adequate prey, the other measures to protect Southern Residents become close to meaningless.

The one thing that is most likely to assure Southern Residents an adequate supply of chinook is the breaching of the four obsolete Lower Snake River dams.

We do not disagree that vessel-orca interactions might be contributing to problems among SRKWs. But as a recent biological opinion observed, "Although investigators have documented numerous short-term behavioral responses to whale watch vessels, studies have not demonstrated the consequences of these effects on the health of the population. There is ongoing research to evaluate changes in energy expenditure from behavioral responses and effects of sound on echolocation and foraging efficiency, which may translate to fitness effects." Endangered Species Act – Section 7 Consultation, Final Biological Opinion on the Implementation of the National Flood

Insurance Program in the State of Washington, National Marine Fisheries Service (September 2008) (p. 79).

On the other hand, the effects of inadequate prey are serious and widely known. NOAA is aware of – indeed, NOAA funded much of – the recent science:

- The probability of calving drops by half between high and low chinook abundance years.
- Inadequate prey causes dangerous levels of toxins to be released from orcas' fat reserves into their blood stream, and into calves' milk.
- Inadequate prey probably leads to dangerously low thyroid levels.
- Additional research warns against the dangers of malnutrition-caused immunity suppression due to the abundance of bacteria orcas are picking up in the Salish Sea.
- In short, the lack of chinook is a population-limiting factor for SRKWs.

The problems being caused right now by inadequate prey, and the urgent need to move rapidly to remove barriers to chinook recovery, strike us as a far higher priority than addressing potentially harmful interactions with vessels. Our members fear that the proposed regulations will distract NOAA from focusing on the more immediate and important issue of prey adequacy. In an ideal world, the orcas could benefit from a multi-faceted approach. We don't believe that we are in such a world: NOAA's resources are too limited.

Our coalition members urge that NOAA instead focus on restoring salmon populations in our rivers. NOAA did the right thing in that respect with the Central Valley Project Biological Opinion, insisting on important changes to federal water operations to protect chinook and Southern Residents. That biological opinion recognized that there is more to population viability than the sum total of hatchery fish plus wild fish, and it observed that the effects of dams and other water operations can jeopardize SRKW existence even if hatchery fish are produced to replace the wild fish that are killed:

> Although the proposed hatchery production may replace the lost natural production in the short term, over the long term it is uncertain whether the lost natural production can be replaced. *There is also no evidence that a population that is predominantly produced in hatcheries can persist over the long term.*

Biological and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project, National Marine Fisheries Service (June 2009), pp. 573-74 (emphasis added).

On the other hand, NOAA incorrectly reached the exact opposite finding in the Federal Columbia River Power System Biological Opinion in 2008: Namely, that the mortality caused by the hydro dams on the Columbia and Snake has *no adverse effect* on Southern Residents. The result in that opinion turned entirely on hatchery production:

> For purposes of determining whether the Chinook prey base for killer whales is adversely affected by the proposed action, it is not necessary to precisely quantify the mortality resulting from the hydrosystem operations (as distinguished from other causes), so long as it can be reasonably concluded that the decrease in the prey base for killer whales resulting from hydrosystem operations is less than the increase in the prey base resulting from the hatchery programs funded by the action agencies.

Remand of 2004 Biological Opinion on the Federal Columbia River Power System (FCRPS) including 19 Bureau of Reclamation Projects in the Columbia Basin (Revised pursuant to court order, NWF v. NMFS, Civ. No. CV 01-640-RE (D. Oregon)), National Marine Fisheries Service (May 2008), Supplemental Comprehensive Analysis, pp. 9-16 to 9-17.

To our members, whatever benefit may arise from vessel regulation is completely negated by the FCRPS biological opinion's faulty conclusion and the continued, devastating impacts on wild chinook populations that it prescribes. The Adaptive Management Implementation Plan proffered to fix the shortcomings of that decision fails to live up to its billing as "an insurance policy" for both salmon and for orcas for many reasons – among others, it would allow chinook populations to drop to frighteningly low levels before beginning even to study dam removal or any other actions beyond the status quo river operations the plan embraces. We will not recover salmon or the Southern Residents that depend upon them if NOAA continues to approve the same business-as-usual actions that have led to the current critically low levels of these species.

The petition to list Southern Residents included a population viability analysis. That analysis indicated that in the absence of meaningful action, the species would reach the point of no return in 33 years. A quarter of that time has passed. We need to do more than regulate whale-watchers and anglers if we are to put more sand in the hourglass.

Thank you for considering our comments.

Sincerely,

Pat Ford
Executive Director
Save Our *Wild* Salmon Coalition

cc: Dr. Jane Lubchenco
Sen. Patty Murray
Sen. Maria Cantwell
Rep. Jim McDermott

Subject: RE: Comments on Proposed Orca Whale Watching Protective Regulations as set out in 74 Fed. Reg. 37674 and Draft EA
From: "Eugene C. Bricklemyer" <bobrick@igc.org>
Date: Tue, 27 Oct 2009 14:26:08 -0700
To: Orca.Plan@noaa.gov

Please see attached file for comments.

Eugene C. Bricklemyer, J.D., LL.M.
President, Aquatic Resources Conservation Group
Olympic Peninsula Office
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360 385 7679
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ARC Group is a federally registered 501(c)(3) nonprofit conservation firm, licensed in Washington State. For over 25 years it has worked to promote governance processes that foster better management of our planet's water resources.

ARC Group Comments on Proposed Orca Protective Regulations 74 Fed Reg 37674 Oct 27.doc	**Content-Type:** application/msword **Content-Encoding:** base64

Aquatic Resources Conservation Group

October 27, 2009

Protected Resources Division
Northwest Regional Office,
National Marine Fisheries Service
7600 Sand Point Way, NE.
Seattle, WA 98115.

Sent by E-mail: orca.plan@noaa.gov.

RE: Comments on Proposed Orca Whale Watching Protective Regulations as set out in 74 Fed. Reg. 37674 and Draft EA

Dear NOAA:

Almost 30 years ago, when I was working as attorney-advisor for the Marine Mammal Commission in DC, I was concerned about the effects of human disturbance on the socialization and reproductive success of Orcas. I continue to believe that one form of this disturbance, on-the-water whale watching, is having important negative repercussions for Orca populations in the Puget Sound and Straits of Georgia.

Several years ago, I had occasion to have to go to the San Juans on business from my Port Townsend office and found that the quickest way was by whale watching boat. Thus I got to experience how whales were being watched, so memorably that I can still replay today what I saw then. On this event, in US waters, there were 16 power boats participating in actively watching with an even division of 8 running parallel to the group of Orcas on one side and 8 on the other side. Thus for close to an hour, before we left the scene, the whales had constant boat traffic and noise on each side with the 100 yard separation as currently set out in the guidelines (except for one boat, which consistently approached too closely and harassed the whales for its few passengers).

Then, as now, this 100 yard distance clearly, as any observer will relate, does nothing to prevent constant disruption of the state of the wild -- and contributes petroleum and noise pollution which are clearly invasive. And this, from May to October, can result in the gauntlet I witnessed: Only 200 yards of "open space." And this possibly has to be endured, during most daylight hours, of most days, for almost half of the year. The new regulations propose a 200 yard separation – so the open space on a day like I witnessed would be 400 yards: still insufficient to even approximate the context in which the Orca existed in harmony with its habitat for centuries before industrialized humans appeared.

From a naturalist's position (and apparently, looking at the science and population decline, from an Orca's position), even with new rules this is a totally abhorrent situation – that is, unless we are satisfied with turning the Sound into a zoo.

It is argued that by showing people one of the visible marvels of this mostly invisible environment, there is a *potential-for-future-conservation* benefit derived. But I firmly believe that this potential benefit has become outweighed by the explosion in the business. It is the age-old story of killing the goose that lays the golden egg.

Therefore I suggest, if we are serious about creating an environment that will encourage and enable the recovery of this icon of the Pacific Northwest, that we use technology and virtual experience to gain the *potential-for-future-conservation* benefit and we ban actual, harassing, on-the-water whale watching in Puget Sound.

Thank you for considering my comments on this important matter.

Sincerely,

Signed/

Eugene C. Bricklemyer, J.D, LL.M.
President

EVERGREEN ISLANDS

mailing address
P.O. Box 223
Anacortes WA 98221

web address
evergreenislands.org

National Marine Fisheries Service
7600 Sand Point Way NE
Seattle, WA 98115-0070

September 24, 2009

Re: Regulations on Vessel Effects

Dear Fisheries:

Evergreen Islands wholeheartedly supports regulations controlling the harmful vessels effects, including physical interference and sound, which contribute to the decline of our Orcas.

The total population of the Southern Resident Orcas, made up of family pods J, K and L, numbers a dispiriting 85. By comparison, the wee City of Anacortes is has a whopping population of 14,557 (US Census 2000).

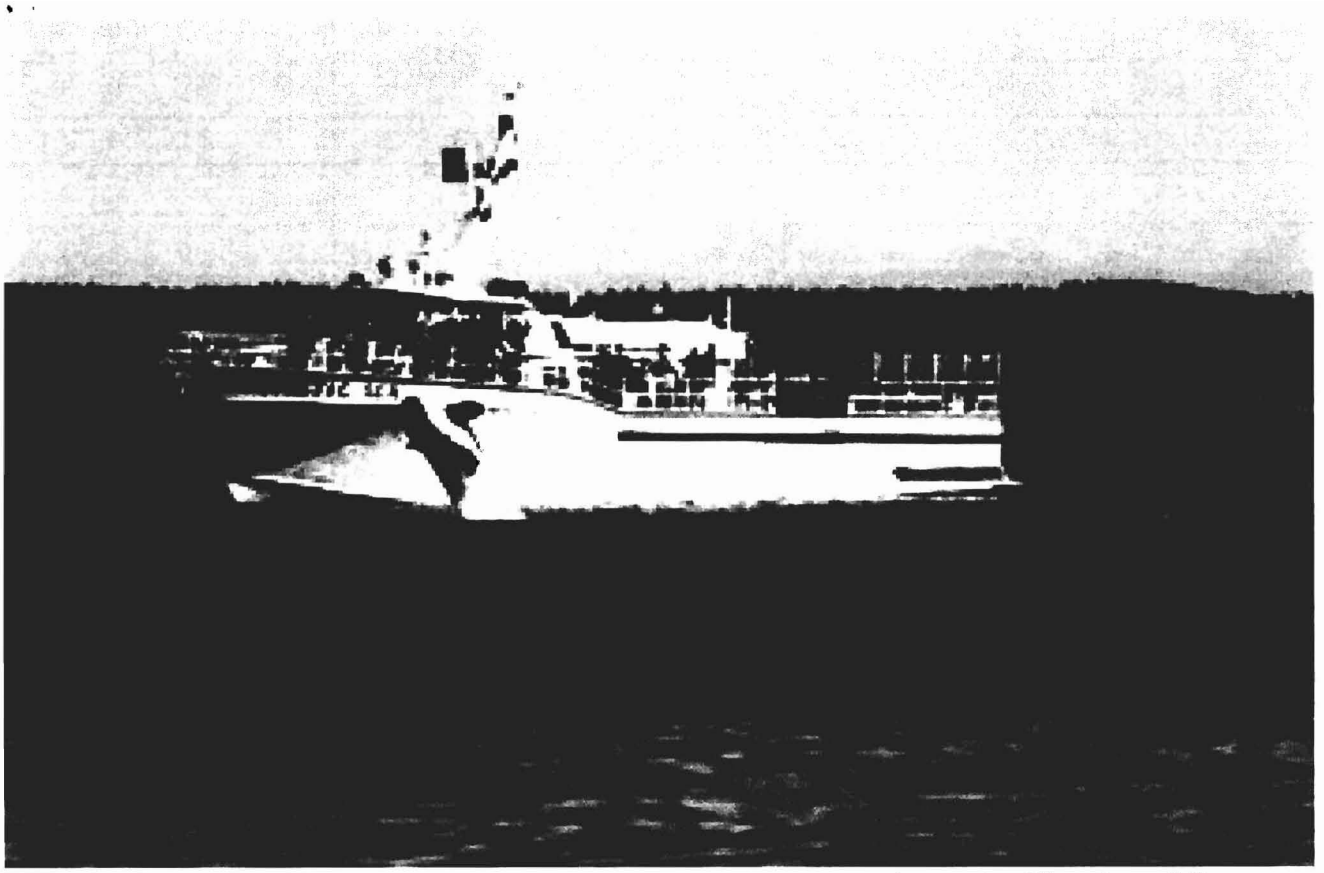
Anacortes Chamber of Commerce

We are also opposed to Fisheries issuing the Navy a permit to use sonar during training off Washington's Pacific Coast, which would allow the "take" of 26 species of marine mammals. Furthermore the US Navy should be pressured to set aside Puget Sound as a protected area or an exclusion area.

Respectfully yours,

Tom Glade

Tom Glade
President, Evergreen Islands



Anacortes Chamber of Commerce

Anacortes Chamber of Commerce

PUBLIC SUBMISSION

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Docket: NOAA-NMFS-2008-0327
Protective Regulations for Killer Whales in the Northwest Region under the Endangered Species Act and Marine Mammal Protection Act

Comment On: NOAA-NMFS-2008-0327-0001
Protective Regulations for Killer Whales in the Northwest Region Under the Endangered Species Act and Marine Mammal Protection Act

Document: NOAA-NMFS-2008-0327-DRAFT-0049
Comment from Kevin Campion

Submitter Information

Name: Kevin Campion
Address:
2400 NW 80th St.
Seattle, WA, 98117
Email: deepgreenwilderness@gmail.com
Organization: Deep Green Wilderness, Inc.

General Comment

To whom it may concern
The last eight years I have made my living on the water as a professional mariner facilitating education and research as captain or engineer. I am acutely aware of the effect of seeing our Orcas, having provided many people their first glimpse of a whale. During 2009 I launched my own business operating sailing charters and an ecology education program. The growth of my business and three jobs rely on students and customers having meaningful encounters with our regions marine wildlife including the Southern Resident Orcas. However an encounter that is detrimental to the whales or impinges on the whale's traditional habits is not an opportunity I care to provide my customers nor is it an experience they would choose to pay for.

The most current research describes a situation where the whales are forced to change their behavior due to vessel density and proximity. As long as there is competition amongst the whale watching fleet operators will provide the closest experience allowed.
It is irresponsible and unsustainable to have an industry dependant upon harming the product it sells. Yet that is apparently the case with the current guidelines. However if all vessels are required to maintain a distance that is undisruptive to the whales I foresee no diminishing of experience for customers or financial harm for operators. If researchers are recommending two

hundred yards as an appropriate distance to maintain between vessels and the whales I am happy to comply.

As stated before my livelihood as well as that of my employees depends on providing encounters with the whales long into the future, I believe giving them the space they require is the least we can do and I strongly support the implementation of the proposed regulations including those concerning the San Juan Island "No Go zone" the Parking in Path and the 200 yard approach.

Captain Kevin Campion
Deep Green Wilderness, Inc.
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Seattle, WA 98117