

15 January 1996

EXHIBIT 216

RECEIVED

JAN 19 1996

The Whale Museum

A center for marine research and environmental education
San Juan County BOARD OF COUNTY COMMISSIONERS



62 First Street North • P.O. Box 945 • Friday Harbor, WA 98250
(360) 378-4710 FAX (360) 378-5790

P7

TO: San Juan County Board of Commissioners.

FROM: Richard Osborne, Curator of Science Services, The Whale Museum.

RE: Preliminary Assessment of Potential Impacts of Personal Water-Craft ("Jet Skis")
on Marine Wildlife in the San Juan Islands.

8

The following is a summary of information currently available concerning "personal water-craft" (PWCs), or "jet skis", in relation to wildlife in San Juan County. This has been compiled in response to a request for information from members of the San Juan County Board of Commissioners and the San Juan County Prosecutor. This is not an official opinion by The Whale Museum or its Directors, it is an employee's preliminary fact-finding assessment. Any mistakes or biases in this report are unintentional and are solely the responsibility of the author.

Personal water-craft (PWC's) are an extremely recent addition to the growing numbers and varieties of vessels plying the marine waters of San Juan County and the Pacific Northwest. The first year a PWC was documented in the vicinity of whale watching activities in the San Juans was 1993, and it was a single incident that year. Prior to that they were not even recorded in recreational vessel inventories (R.E. Otis: pers. com., 1995; Madrona Group, 1992; Osborne, 1991). Even in 1995, following record sales of PWCs in the Pacific Northwest (Terry Doran, WSP: pers.com., 1995) and the establishment of a PWC guided tour service in Friday Harbor, only a dozen or so partially documented incidents of potential wildlife impacts could be proven to exist. This means there isn't enough empirical data available on actual impacts of PWC's in our regional marine waters to produce local scientific findings.

It is beyond the scope of this inquiry to predict if PWCs will exponentially increase in San Juan County in the years to come, but by necessity, the analysis that follows will assume PWCs do become more numerous (50-100 operating in San Juan County waters during mid-day, May-September), so that the potential impacts can be assessed. The decision before you now will determine the future necessity of developing funding for professional studies of the issue. The best we can do at this point is to rely on what little findings there are from places analogous to our area, and systematically apply that information to hypothetical impacts in San Juan County.



PORT of LOPEZ

Route 1, Box 2259
Lopez, Washington 98261

EXHIBIT A

RESOLUTION NO. 1995-06

**A RESOLUTION OPPOSING THE PROPOSED ADOPTION OF
A SAN JUAN COUNTY ORDINANCE RESTRICTING THE USE OF PERSONAL
WATER CRAFT WITHIN EXTERIOR BOUNDARIES OF SAN JUAN COUNTY**

WHEREAS, The Board of County Commissioners of San Juan County proposed to adopt an ordinance which would restrict the use of personal water craft within exterior boundaries of San Juan County; and

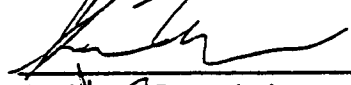
WHEREAS, the proposed ordinance has the potential to limit the basic individual rights of island resident and visitors; and

WHEREAS, the San Juan County government resources available to enforce the proposed ordinance are limited and need to be used in the most efficient way, and established San Juan County departments are restricted in their ability to fulfill their responsibilities under the proposed ordinance by financial resources;

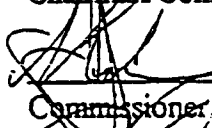
NOW THEREFORE BE IT RESOLVED that the Board of Commissioners of the Port of Lopez oppose the proposed San Juan County ordinance restricting the use of personal water craft within the exterior boundaries of San Juan County.

ADOPTED this 9th day of November, 1995 at a regular meeting of the Board of Commissioners of the Port of Lopez.

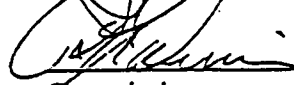
PORT OF LOPEZ



Chairman/Commissioner



Commissioner



Commissioner

Wildlife and PWCs in Other Areas:

Studies on the effects of PWCs on wildlife have primarily been collected in river and lake habitats, where impacts have centered around the disturbance of nesting and foraging activities of birds (York, 1994). Marine water studies of wildlife impacts from PWCs includes some findings on the impacts of PWCs on coastal bottlenosed dolphins in the British Isles (Evans, 1991), a systematic assessment of PWCs on birds and mammals for the Monterey Bay National Marine Sanctuary (U.S. Dept. of Commerce, 1990; Dornbusch & Co., 1994; U.S. Court of Appeals, 1995), and research on the impacts of Para-sails on wintering humpback whales in Hawaii as part of the Hawaii Humpback National Marine Sanctuary (Green, 1991). In all instances the habitats under investigation were open coastal areas with lower densities of surface-dependent birds and mammals, and without the number of narrow channels and protected estuarine bays characteristic of San Juan County. In Monterey Bay and Hawaii wildlife impacts from PWCs were considered significant enough to warrant restrictions on their use that completely excludes them from critical wildlife habitat areas. Due to the enclosed nature of San Juan County's marine waters, it would be difficult to find areas that are not "critical wildlife habitats" if we were to use the same standards as the coastal sanctuaries in Monterey Bay and Hawaii (U.S. Dept. of Commerce, 1990).

The waters of San Juan County are primary habitat for 12 species of seasonally resident marine mammals (Table 1; Osborne et al, 1988; Calambokidis and Baird, 1994) and about 37 species of birds who either require critical shoreline habitat for feeding or reproducing, or are common year-round with critical breathing/resting habitat at the air-water interface (Table 2; Wash. St. Dept. Nat. Res., 1985; Lewis and Sharpe, 1987). Not included in this inventory are an additional 61 species of migratory marine birds which are either: a) fairly rare, b) only here for a few weeks out of the year, or c) are non-nesting gulls, terns, or shore birds which have a relatively low sensitivity to vessel traffic. Of the marine mammals in Table 1, all but the river otter are protected under the U.S. Marine Mammal Protection Act, and 3 are currently listed under the U.S. Endangered Species Act: Stellar sea lions, harbor porpoise, and humpback whales. Of the birds in Table 2, all are protected under the Migratory Treaty Act to some extent, and 4 are protected under the Endangered Species Act.

The ways which PWCs appear to be different from most other vessels include: 1) speed (up to 60 mph), 2) maneuverability, which facilitates erratic, unpredictable travel paths, 3) their function, or primary use, and 4) both air and underwater noise frequencies and amplitudes. All of these variables have implications in terms of their potential for impacting our water surface-dependent wildlife in the San Juan Islands, specifically: diving birds, shoreline nesting birds, open-water flocking birds, and marine mammals.

Speed:

Speed presents a problem for wildlife, because animals have less time to respond to the oncoming PWC. This can result in fatal collisions or startle reactions that lead to nesting disturbance or parent-offspring separation. Wildlife rely on the sound of on-coming vessels, and their past experience of vessel trajectories, to determine when and where it is safe to come to the surface and breathe. PWCs travel at speeds that wildlife around here have not had a chance to adapt to, if indeed they can. Each year about 2% of dead harbor seals that are investigated by the San Juan County Marine Mammal Stranding Network show clear signs of a boat collision. We are fairly confident that boat collisions are more often a cause in mortality in the many instances where postmortem examination does not reveal an obvious cause of death. Furthermore, these deaths are also likely the result of collisions with the small percentage of boats that do travel at high speeds equivalent to PWCs.

Maneuverability

Maneuverability creates similar problems to speed, and especially when combined with speed as a variable. The ability of PWCs to change direction over a very short time and distance makes it difficult for marine birds and mammals to determine when and where it is safe to come to the surface to breathe. PWCs are also able to maneuver at high speeds in much shallower water than other motorized vessels, creating a major disturbance potential for resting marine mammals and nesting birds. It is also doubtful that marine birds and mammals would ever be able to habituate to, or adapt to this characteristic of PWCs.

Function

Except for water skiers and a small number of high performance boats, most vessel traffic in the San Juan Islands is relatively slow and predictable for wildlife. PWCs are not driven for the purpose of being relatively slow and predictable. Their function, as advertised and exhibited by the over-whelming majority of users, is for high speed and maneuverability in an unpredictable manner. From a wildlife perspective this again makes them significantly different from any other type of vessel.

Sound Frequency and Amplitude

PWCs are driven by a jet stream of water, rather than a propeller, and this results in a significantly different noise profile for PWCs as compared to most vessels currently in use in San Juan County. Research on the sound characteristics of PWCs was conducted in Great Britain in order to determine their potential impact on coastal bottlenosed dolphins (Evans, 1992). It was found that because of the lack of a propeller and the sounds of cavitation associated with propeller movement, PWCs do not produce as much low

frequency noise in the range below 2000 Hz., but they do produce very loud high frequency noise at close distances. Low frequency sounds travel much farther than high frequency sounds, making PWCs quieter from a distance. However this is even worse for wildlife because they have no warning that the vessel is coming until it is practically right on top of them, at which point it becomes instantly very loud. This increases the PWC's tendency to startle wildlife, as well as make it more difficult for surfacing wildlife to find a safe breathing space.

SUMMARY

If PWCs were numerous in San Juan County waters they would logically present a negative impact to 49 species of seasonally resident marine birds and mammals. These negative impacts would be in terms of: a) collisions, due to their high speeds, unpredictable trajectories and lack of low frequency long distance sound, which does not allow enough warning for avoidance when birds and mammals come up to the surface to breathe, and b) their loud high frequency sound both in the air and underwater at close distances, which would logically startle and cause flight behavior more readily than other types of motor powered craft. These disturbances can have significant impacts on both coastal and aquatic species that reproduce or raise their young here (i.e. orcas, harbor seals, Dall's and harbor porpoise, oyster catchers, cormorants, rhinoceros auklets, common murre, and marbled murrelets) especially when added to increasing trends for wildlife vessel interactions with all the other existing types of vessels that ply these waters. It would seem prudent to develop a regulatory strategy to avoid these impacts on local wildlife if at all possible.

References:

- Calambokidis, J. and R.W. Baird, 1994. Status of Marine Mammals in the Strait of Georgia, Puget Sound and the Juan de Fuca Strait and Potential Human Impacts. *Canadian Tech. Rept. in Fisheries and Aquatic Science*, Vol. 1948, pp. 282-300.
- Doran, Terry, (N.W. Regional Dir., Wash. State Parks) 1995. Personal communication at the San Juan Islands Working Group meeting on March 8th, 1995 at the Orcas Hotel (sponsored by The San Juan Preservation Trust and The Nature Conservancy).
- Dornbusch, David M. & Company, Inc., 1994. *A Review of Existing Information on Recreational Boating Activity and Its Potential Impacts to the Resources of the Monterey Bay National Marine Sanctuary*. David M. Dornbusch & Co., Inc., San Francisco, CA.

Evans, P.G.H., P.J. Canwell, and E. Lewis, 1992. An Experimental Study of the Effects of Pleasure Craft Noise upon Bottled-Nosed Dolphins in Cardigan Bay, West Wales, in: P.G.H. Evans (Ed), *European Research on Cetaceans, Vol 6*, Proceedings of the 6th Ann. Conf. of the European Cetacean Society, San Remo, Italy, Feb., 1992 (pp.43-460).

Green, Marsha L., 1991. The Impact of Parasail Boats on the Hawaiian Humpback Whale (*Megaptera novaeangliae*). Paper presented at the *Annual Meeting of the Animal Behavior Society*, Wilmington, NC, 11p.

Johns, Ruth, 1995. *Minutes of the March 8th, 1995 San Juan Islands Working Group Meeting*. San Juan Preservation Trust/The Nature Conservancy, 6 p.

Lewis, M.G., and F.A. Sharpe, 1987. *Birding in the San Juan Islands*. Mountaineers, Seattle, WA.

Madrona Group, 1993. *San Juan County Tourism Plan*. Prepared for San Juan County Board of Commissioners, Friday Harbor, WA.

Osborne, R.W., 1991. Trends in Killer Whale Movements, Vessel Traffic, and Whale Watching in Haro Strait. In: T.W. Ransom (Ed.), *Puget Sound Research '91*, Puget Sound Water Quality Authority, Seattle, WA., pp. 672-688.

Osborne, R.W., J. Calambokidis and E. Dorsey, 1988. *A Guide to the Marine Mammals of Greater Puget Sound*. Island Press, Anacortes, WA.

Otis, Robert E., (Visiting Scientist, The Whale Museum 1990-95) 1995. Personal communication concerning his scientific findings on whale watching interactions.

U.S. Court of Appeals, District of Columbia Circuit, Circuit Judge Randolph, 1995. *Opinion on the Appeal of Personal Water Craft Regulations for the Monterey Bay National Marine Sanctuary*, (93cv 1381), 11 p.

U.S. Dept. of Commerce, 1990. *Monterey Bay National Marine Sanctuary, Draft Environmental Impact Statement/Management Plan*. U.S. Govt. Printing Office.

U.S., Environmental Protection Agency, Puget Sound Water Quality Authority, and U.S. Army Corp of Engineers (1987). *Puget Sound Environmental Atlas*. EPA Region 10, Seattle, WA.

Washington State, Department of Natural Resources, 1985. *Your Public Beaches: San Juan Region.*, Olympia, WA

Washington State, Department of Natural Resources, 1986. *San Juan Islands Trust Land Management Plan.*, Olympia, WA.

York, Darryl, 1994. Recreational-boating Disturbances of Natural Communities and Wildlife: An Annotated Bibliography. *Biological Report 22*, U.S. Dept. Interior, National Biological Survey, Wash., D.C.

* * * * *

Table 1:

COMMON MARINE MAMMALS SENSITIVE TO VESSEL TRAFFIC IN THE SAN JUAN ISLANDS

(Prepared by Rich Osborne, The Whale Museum, Fall 1995)

Common Name	Scientific Name	Distribution and Habitat	Protection
1. River Otter	<i>Lutra canadensis</i>	Year-round / coastal areas	None
2. Harbor Seal	<i>Phoca vitulina</i>	Year-round / all waters	MMPA-only
3. Elephant Seal	<i>Mirounga angustirostris</i>	Year-round / all waters	MMPA-only
4. Stellar's (Northern) Sea Lion	<i>Eumotopias jubatus</i>	Seasonal / all waters	Threatened
5. California Sea Lion	<i>Zalophus californianus</i>	Seasonal / all waters	MMPA-only
6. Harbor Porpoise	<i>Phocoena phocoena</i>	Year-round / all waters	Threatened
7. Dall's Porpoise	<i>Phocoenoides dalli</i>	Year-round / all waters	MMPA-only
8. Pacific White-Sided Dolphin	<i>Lagenorhynchus obliquidens</i>	Seasonal / main channels	MMPA-only
9. Orca (Killer Whale)	<i>Orcinus orca</i>	Year-round / all waters	MMPA-only
10. Minke Whale	<i>Balaenoptera acutorostrata</i>	Seasonal / main channels	MMPA-only
11. Humpback Whale	<i>Megaptera novaeangliae</i>	Seasonal (rare) / main channels	Endangered
12. Gray Whale	<i>Eschrichtius robustus</i>	Year-round / all waters	MMPA-only

MMPA = Marine Mammal Protection Act.

"Threatened" & "Endangered" = Endangered Species Act.

Table 2:

COMMON MARINE BIRDS SENSITIVE TO VESSEL TRAFFIC IN THE SAN JUAN ISLANDS

(Prepared by Rich Osborne & Barb Jensen, for The Whale Museum, Fall 1995)

Common Name	Scientific Name	Distribution and Habitat	Protection
1. Common Murre	<i>Uria aale</i>	Seasonal / open water diving species	None
2. Pigeon Guillemot	<i>Cephus columba</i>	Year-round / open water diving species	None
3. Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Year-round / open water diving species.	Threatened
4. Ancient Murrelet	<i>Synhlaboramphus antiquus</i>	Seasonal / open water diving species	None
5. Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	Seasonal / open water diving species.	None
6. Tufted Puffin	<i>Fratercula cirrhata</i>	Seasonal / open water diving species	None
7. Common Loon	<i>Gavia immer</i>	Seasonal / open water diving species	Threatened
8. Pacific Loon (formerly "Arctic")	<i>Gavia pacifica</i>	Seasonal / open water diving species	None
9. Red-Throated Loon	<i>Gavia stellata</i>	Seasonal / open water diving species	None
10. Western Grebe	<i>Aechmophorus occidentalis</i>	Seasonal / open water diving species	None
11. Red-Necked Grebe	<i>Podiceps grisegena</i>	Seasonal / open water diving species	None
12. Greater Scaup	<i>Anhva marila</i>	Seasonal / open water diving species	None
13. Horned Grebe	<i>Podiceps auritus</i>	Seasonal / open water diving species	None
14. Pelagic Cormorant	<i>Phalacrocorax pelagicus</i>	Year-round / nesting / open water diving species.	None
15. Double-Crested Cormorant	<i>Phalacrocorax auritus</i>	Year-round / nesting / open water diving species.	None
16. Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	Seasonal / open water diving species	None
17. Great Blue Heron	<i>Ardea herodias</i>	Year-round / nesting / surface- near-shore	None
18. Canada Goose	<i>Branta canadensis</i>	Seasonal / open water flocks	None
19. Brant	<i>Branta bernicla</i>	Seasonal / open water flocks	None
20. Barrow's Goldeneye	<i>Bucephala clangula</i>	Seasonal / open water diving species	None
21. Common Goldeneye	<i>Bucephala islandica</i>	Seasonal / open water diving species	None
22. Bufflehead	<i>Bucephala albeola</i>	Seasonal / open water diving species	None
23. Harlequin Duck	<i>Histrionicus histrionicus</i>	Year-round / open water diving species.	None
24. Oldsquaw	<i>Clangula hyemalis</i>	Seasonal / open water diving species	None
25. White-Winged Scoter	<i>Melanitta fusca</i>	Seasonal / open water diving species	None
26. Black Scoter	<i>Melanitta nigra</i>	Seasonal / open water diving species	None
27. Surf Scoter	<i>Melanitta perspicillata</i>	Seasonal / open water diving species	None
28. Rudy Duck	<i>Oxyura jamaicensis</i>	Seasonal / open water diving species	None
29. Red-Breasted Merganser	<i>Merqus serrator</i>	Seasonal / open water diving species	None
30. Hooded Merganser	<i>Loophodnes cucullatus</i>	Seasonal / open water diving species	None
31. Common Merganser	<i>Merqus merqanser</i>	Seasonal / open water diving species	None
32. Black Oystercatcher	<i>Haematopus bachmani</i>	Seasonal / open water diving species	None
33. Glaucous-Winged Gull	<i>Larus glaucescens</i>	Year-round / nesting / surface: near-shore & open water	None
34. Bald Eagle	<i>Haliaeetus leucocephalus</i>	Year-round / nesting / surface: near-shore & open water	Threatened
35. Osprey	<i>Pandion haliaeetus</i>	Seasonal / nesting / surface: near-shore & open water	None
36. Peregrine Falcon	<i>Falco peregrinus</i>	Seasonal / nesting / surface- near-shore	Endangered
37. Belted Kingfisher	<i>Ceryle alcyon</i>	Year-round / nesting / surface- near-shore	None