

Presentation at the First Plenary Meeting
of the Advisory Committee on Acoustic
Impacts on Marine Mammals

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U.S. Fish and Wildlife Service
Marine Mammal Program
Acoustic Impacts to Marine Mammals



Marine Mammal Program

Managing and Conserving Marine Mammals

Under the Marine Mammal Protection Act of 1972, the Fish and Wildlife Service has responsibility for the conservation and management of:

- Polar Bear
- Walrus
- Sea Otter
- Marine Otter
- 3 Species of Manatee
- Dugong

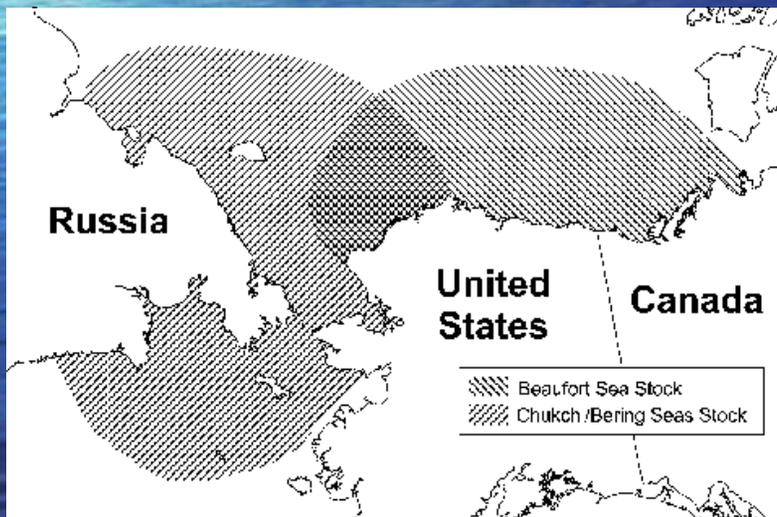


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Polar Bears (*Ursus maritimus*)

- The Service manages 2 stocks of polar bears: the Chukchi/Bering Seas stock and the Southern Beaufort Sea stock.



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Polar Bears (*Denning*)

- There is little information on the potential effects of noise to polar bears.
- Our greatest sound-related concern is potential disturbance to denning bears caused by sounds from human activities near dens.
- Female polar bears entering dens, or females in dens with cubs, seem to be more sensitive to noise.
- To minimize potential disturbances, we stipulate avoidance of known dens by 1 mile.



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Polar Bears (*Deterrence*)

- Loud noise is a passive form of deterrence; however, bears can become habituated when it is not coupled with some negative stimuli.
- Polar bears normally swim with their heads above water; therefore, it is unlikely that underwater noise-producing activities would result in more than temporary behavioral disturbance.



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Walrus (*Odobenus rosmarus*)

- The Service manages 1 stock of Pacific walrus (*O. r. divergens*): the Alaska stock.
- The Atlantic walrus (*O. r. rosmarus*) ranges in the North Atlantic and Arctic Seas.
- Underwater hearing capability, as in other pinnipeds, is binaural with good directional ability.



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Pacific Walrus (*Behavior on Haulouts*)

- Walruses haulout to complete their molt and grow new hair, to whelp, to nurse young, and rest; therefore, even temporary displacement may be detrimental.
- More sensitive to disturbance when hauled out on land or ice than in the water.
- Responses are variable; however, they often flee haulouts in response to the sight, sound, and odors of humans and machines.
- Females with young show the most negative response to noise disturbance.



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Pacific Walrus (*Behavior in Water*)

- During the breeding season, large groups of females are joined by groups of males.
- Walruses are highly vocal at that time; loud noise might interfere with underwater communication.
- Large socially connected groups persist as they travel, feed, and rest; it is theorized that they remain in contact through complex underwater vocalizations.
- At-sea movements and important feeding areas are not well known nor are the effects of noise on walruses at sea.



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Pacific Walrus (*Current Regulations*)

- In Bristol Bay, regulations prohibit fishing for yellowfin sole closer than 22 km to Round Island and Cape Peirce; fishery operations were causing airborne and waterborne acoustic disturbance.
- Access within 22 km is limited at haulout sites in Russia.





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Sea Otters (*Enhydra lutris*)

- The Service manages 5 stocks of sea otter:
- 3 stocks in Alaska: southwest, southcentral, and southeast (*E. l. kenyoni*);
- A Washington State stock (*E. l. kenyoni*); and



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Sea otters (*disturbances*)

- Communicate intraspecifically through vocalizations above water and on land (i.e., vocalizations traveling through air).
- There may be a potential for disturbance caused by sounds.
- Sea otters are most sensitive to high frequencies.



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Sea Otters (*In the Water/On Land*)

- There is uncertainty regarding acoustics; however, there may be an associated pressure component if the animal is too close to the source.
- For example, new pier/dock construction that involves driving pilings has been shown to cause disorientation, the bends, ear damage, and death.
- Anthropogenic noises occurring through the air may affect sea otters causing them to abandon an action or area.



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West Indian Manatees (*Trichechus manatus*)

The Service manages 5 stocks of West Indian manatee:

- 4 stocks of Florida manatee (*T. m. latirostris*); and
- Antillean manatee (Puerto Rico) (*T. m. manatus*).



Jim Reid, USFWS



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West Indian Manatees (*Trichechus manatus*)

- Studies suggest manatees can hear sound within a relatively narrow low frequency range.
- Manatees have difficulty in localizing sound.
- They may have a greater low-frequency sensitivity than other marine mammal species that have been tested.



Jim P. Reid, USFWS



Jim P. Reid, USFWS



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Manatees (*Questions*)

- Many questions have yet to be answered.
- What are the effects of sonar on manatees?
- Seismic activities?
- Do minerals exploration activities pose a threat?
- Is it safe to blast with manatees in the vicinity?



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Marine Otters (*Lontra felina*)

Dugongs (*Dugong dugon*)

West African manatee (*Trichechus senegalensis*)

Amazonian manatee (*Trichechus inunguis*)

- None occur in U.S. waters
- The marine otter is found along the west coast of South America and would be expected to react similarly to the sea otter.
- The dugong (Indo-Pacific Region), West African manatee (western coast of Africa), and Amazonian manatee (Amazon Basin of South America) face acoustic issues similar to those of the West Indian manatee.



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The U.S. Fish and Wildlife Service's Marine Mammal Program

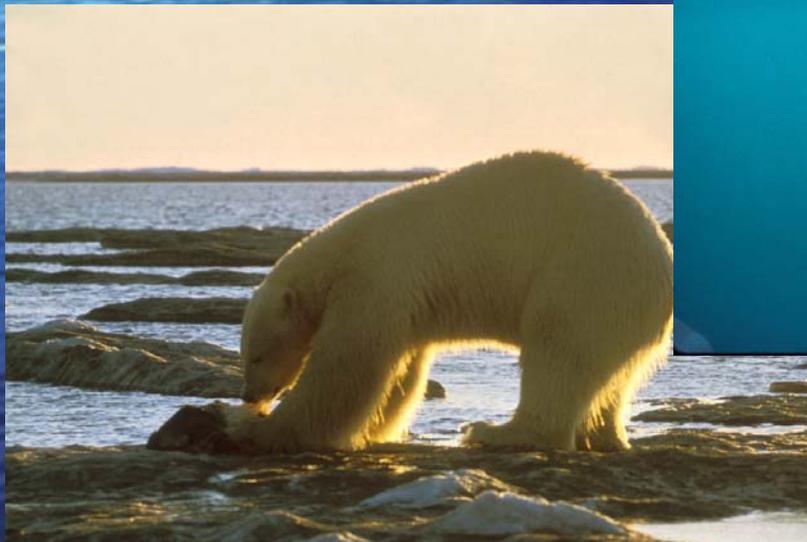
- Small (8 species and a relatively small staff)
- Many competing priorities



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Conclusions

- There are potential impacts to Service marine mammals (in the water and on land) due to anthropogenic sources of sound;
- More information on the impacts of sound is needed for all marine mammal species managed by the Service;
- The Service's Marine Mammal Program is small and we are limited in our ability to assess the impacts of sound on Service trust species.



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