

National marine mammal contaminant monitoring

Problem statement

Exposure to toxic chemical contaminants has been linked to various biological effects in marine mammals and may contribute to unusual deaths and strandings, as well as to poor health, in these animals.

Critical factors

- Toxic chemical contaminants such as PCBs and DDT are widespread, lipophilic compounds (i.e., those having an affinity for lipids) that are not easily metabolized by marine mammals.
- Such compounds can bioaccumulate in relatively high concentrations in blubber and other lipid-rich tissues.
- Accumulation of contaminants may be influenced by life history parameters (e.g., age, sex, recruitment order) of marine mammals.
- Few studies have assessed relationships between chemical contaminant exposure and certain biological effects.
- There are limited baseline data on chemical contamination in certain marine mammal species.

Status of research

Scientists at the Northwest Fisheries Science Center (NWFS) are examining links between chemical contaminant exposure in marine mammals and various biological effects, strandings and unusual deaths. These studies currently target those species at risk of stranding, species showing evidence of population decline, as well as species that can serve as indicators of marine habitat quality. NWFS scientists are also involved in collaborative studies to determine how contaminant exposure may affect the overall health of marine mammals.

Research is also being undertaken to improve and expand analytical methods that will provide high-quality data for evaluating temporal trends and regional differences in contaminant accumulation, as well as for evaluating how changes in feeding ecology (food habits) affect the accumulation and physiological fate of toxic chemicals. In addition, scientists are improving the dissemination of contaminant information to constituents and resource managers through development and maintenance of an easily-accessible national database.

Future considerations

As the lead research facility for quality assurance and monitoring in NMFS' Marine Mammal Health and Stranding Response Program, the NWFS will collaborate with the National Institutes of Science and Technology to improve the accuracy of contaminant measurements made by federal, state, academic, and private organizations around the country. Researchers at the Center will also develop a diagnostic tool that can be used by resource managers to determine unacceptable levels of contamination in marine mammals, thereby protecting marine mammal health and sustain viable population levels.



Dead gray whale on the Pacific coast

Key Players

Environmental Conservation (EC) Division, NWFS
National Marine Mammal Laboratory, NMFS
Minerals Management Service, U.S. Department of Interior
National Institutes of Science and Technology
Biological Resources Division, U.S. Geological Survey
Alaska Department of Wildlife Management
Cooperative Institute for Arctic Research (CIFAR),
University of Alaska Fairbanks
Texas A&M University at Galveston
Marine Mammal Center, Sausalito, California
North Slope Borough, Alaska

Contact: Dr. John Stein, Director, EC Division (206/860-3330)

