HIHWNMS NOAA Fisheries Permit #782-1438

SPLASH

A Comprehensive Study of North Pacific Humpback Whales

Structure of **P**opulations, **L**evels of **A**bundance and **S**tatus of **H**umpback Whales

Information Sheet: Biopsy Sampling

Background Information:

Researchers have successfully collected small biopsy samples from thousands of humpback whales worldwide. Collected tissues provide invaluable information on the health and genetic diversity of humpback whales. SPLASH will provide a large and comprehensive collection of tissue samples collected under a standard protocol. These data will be important to the long-term recovery of humpback whales.

Methodology:

Small skin and blubber samples will be collected for genetic analysis, life history studies (e.g., pregnancy), and contaminants analyses using a small stainless steel biopsy dart discharged from a crossbow. Each dart is fitted with a flange or "stop" that regulates penetration of the dart and causes recoil after sampling. Flotation material secured to the shaft of the dart allows it to float on the surface and be retrieved after sampling.

Sampling Design:

The SPLASH study is designed to provide broad geographic coverage of humpback whale summer and wintering areas in the North Pacific over multiple years. The research program plans to collect data in the winter/breeding areas for three years (2004-2006) and in the summer/feeding areas for two years (2004-2005). In all areas, effort will be allocated in a manner that is proportional to the density of animals. This will be the first time that humpback whale photo-identification and biopsy sampling will be done as part of an overall structure and study design throughout the North Pacific. Biopsy samples will be the fundamental source of data for investigating population structure. They can also be used for mark-recapture abundance estimation, and evidence of genetic bottlenecks due to whaling or extreme climatic change.

Objectives:

1. Identify the population structure of the North Pacific stock of humpback whales and how this influences genetic diversity and exchange, helping to understand their resiliency to major impacts.
2. Determine pregnancy rates and measure other health parameters from biopsy samples.
3. Test for concentrations of chlorinated hydrocarbons and other lipophilic contaminants as well as other biomarkers of contaminant exposure.

Key Questions:

1. Is the North Pacific population one large breeding population, or several discrete populations with very little interchange?
2. How many pregnancies survive to birth, and calves to weaning?
3. Are North Pacific humpback whales picking up high levels of toxins in any of their feeding areas?

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Future Applications:

Tissue collected for genetic and other analyses will add to previously archived samples collected from stranded animals and other biopsies. These data will significantly contribute to a better understanding of the species in the future. Since the analyses proposed by SPLASH will not use all of the tissues collected, the remainder will be archived as a baseline for this population at the beginning of this millennium. In that way, as new questions and analyses arise, the SPLASH samples will provide an invaluable legacy.

For More Information go to: http://hawaiihumpbackwhale.noaa.gov