

Hawaiian Islands Humpback Whale National Marine Sanctuary

Status and Trends of Key Living Marine Resources

Management Issue

Cetaceans are a key living marine resource in the Hawaiian Islands National Marine Sanctuary (HIHWNMS or Sanctuary). The Sanctuary needs to develop and use tools to monitor the health of individual, free-swimming whales through cumulative sampling to assess and track the health of the overall population.

Description

In order to monitor the health of the Hawaiian humpback whale population, the HIHWNMS needs to work with its partners to continue the development of visual health assessment techniques, breath collection and analyses tools, and new assays using small skin and blubber biopsies. HIHWNMS has the established partnerships, as well as the expertise, vessels and access to both healthy and compromised (e.g. entangled) whales, which put it in a unique position to develop and use new tools to assess individual large whale health at sea.



Potential visual indicators of poor health (entangled whale): Sunken flanks (emaciation) and large parasitic loads (pinkish patches of cyamids). Photo credit: HIHWNMS

Questions and Information Needs

- 1) What is the chemical composition of healthy whale breath versus that from compromised whales?
- 2) What pathological assays, using biopsy samples, are the most useful in determining an individual's health (e.g. stress proteins, hormones, metabolic byproducts...etc.)?
- 3) What visual characteristics can be used to rate an individual's health (e.g. body or skin condition, external parasite burden, behavior...etc.)?

Scientific Approach and Actions

- Continue developing systematic tools to rate body condition, by videotaping dive sequences in order to assess the consistency of the "fat roll" behind the blowhole, and its value as an indicator of body fat condition
- Develop systematic photographic techniques to assess skin lesion coverage on the exposed surfaces, and biopsy lesions for pathological analysis.
- Collect biopsy samples from compromised humpback whales as well as a representative control group of healthy whales and, using existing partnerships with the National Marine Mammal Health and Stranding Response Program, analyze the samples for a suite of potentially useful indicators of health.
- Develop, acquire and use new breath collection techniques in partnership with NOAA NMMHSRP

Potential Key Partners and Information Sources

NOAA Fisheries, NMMHSRP, NOAA Fisheries PISC and PIRO, PCCS, IWC (Cetacean Emerging and Re-surfacing Disease, working group), DMWR American Samoa,

Management Support Products

- Suite of tools developed to assess the health of a free-swimming humpback whale
- Baseline table of measurements of healthy whale characteristics
- Development of threshold measurements that indicate poor or decreasing health
- When developed, use to monitor the Hawaiian population.

Updated: 5/26/2011

For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>

Planned Use of Products and Actions

Management needs tools to monitor the health of the population of whales that use the Hawaiian Islands Humpback Whale National Marine Sanctuary. Management response would depend on the diagnostics of the particular suite of health indicators.

Program References

HIHWNMS Management Plan

- RM-1, Activity C. Continue to examine and describe the humpback whale life cycle, and the nature, frequency, and function of humpback whale behavior.
- RM-2, Activity A. Assess and monitor existing and potential threats and impacts to humpback whales and their habitat.

HIHWNMS Condition Report

- What is the status of key species and how is it changing?
- What are the levels of human activities that may influence living resource quality and how are they changing?

Performance Measures

- Number of sites in which select **living marine resources (LMRs)**, based on long-term monitoring data, are being maintained or improved.
- By 2010, five new collaborative projects with either new or existing international partnerships will be initiated and demonstrating protection of the marine environment.
- By 2017, all sanctuaries will have monitoring programs with an observing system component that adequately track the status and trends of sanctuary resource conditions.



*Staff of the Hawaiian Islands Humpback Whale National Marine Sanctuary use an experimental breath collector for the first time ever with free swimming whales.
Photo credit: HIHWNMS*

Updated: 7/26/2010

For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>