

Hawaiian Islands Humpback Whale National Marine Sanctuary

Health Assessment of Key Living Marine Resources

Management Issue

Cetaceans, including the humpback whale, are key and iconic living marine resources throughout the Hawaiian Islands. In order to continue managing and conserving these key resources, the Hawaiian Islands Humpback Whale National Marine Sanctuary (Sanctuary) needs to not only determine their population abundance and habitat usage, but also monitor the overall health of individuals and populations throughout the Sanctuary and nearby waters.

Description

Tools and techniques towards monitoring the health of individual, free-swimming whales include: visual health assessment, breath collection and analyses, and bioassays using skin and blubber sampling. Information on the health of a population and that of its individuals is an important part towards conserving the resource. The Sanctuary needs to continue its efforts and pursue new techniques and tools to better monitor the health of Hawaii's humpback whale population, and other cetacean species. The Sanctuary has the established partnerships, expertise, vessels and access to both healthy and compromised (e.g. entangled) whales, putting it in a unique position to develop and use new tools to assess individual large whale health.



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

- What is the chemical composition of healthy whale breath versus that from compromised whales?
- What pathological assays, using biopsy samples or others, are the most useful in determining an individual's health (e.g. stress proteins, hormones, metabolic byproducts, bacteria ...etc.)?
- What visual characteristics can be used to rate an individual's health (e.g. body or skin condition, behavior, external parasite and fouling burden ...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 and analyze the samples for a suite of potentially useful indicators of health.
- Develop, acquire and use new breath collection techniques in partnership with the NOAA National Marine Mammal Health and Stranding Response Program

Potential Key Partners and Information Sources

NOAA National Marine Fisheries Service, NOAA Protected Resources Division, NOAA Marine Mammal Health and Stranding Response Program, NOAA Pacific Islands Fisheries Science Center, NOAA Pacific Islands Regional Office, Provincetown Center for Coastal Studies, International Whaling Commission, and University of Hawaii.

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

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Management Support Products

- Suite of tools developed to assess the health of free-swimming humpback whales
- Baseline table of measurements of healthy whale characteristics and physiology
- Development of threshold measurements and criteria that indicate poor or decreasing health

Planned Use of Products and Actions

Management agencies need tools and techniques to monitor the health of the population of whales that use the Hawaiian Islands Humpback Whale National Marine Sanctuary and nearby waters. Management responses may 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 is the condition or health 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?



*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*

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