

# The Sea Turtle Stranding Research Network in the Hawaiian Islands

by

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April 2006

## Overview

In the Hawaiian Islands, immediate management considerations are often instrumental in necessitating a response to stranded sea turtles. These factors can include 1) turtle carcasses occurring along coastlines with high human use, especially recreational areas for tourism, 2) the public's concern for threatened and endangered sea turtle species, and 3) humane aspects when turtles strand alive as injured, diseased, or near death and therefore are in need of veterinary diagnosis and treatment. For sea turtle scientists of the NOAA Pacific Islands Fisheries Science Center, the salvage of dead and live stranded sea turtles offers an array of special research opportunities that are impossible or difficult to pursue by other avenues. The NOAA Pacific Islands Fisheries Science Center conducts research of sea turtles in support of the NOAA's strategic goal to recover protected species. An integral component of this research in the Hawaiian Islands includes a sea turtle stranding and salvage network initiated in 1982. This activity is carried out in partnership with the State of Hawaii Department of Land and Natural Resources, the NOAA Sanctuary Program on Maui, the Hawaii Preparatory Academy, and the University of Hawaii through the Joint Institute for Marine and Atmospheric Research and the Marine Option Program, both at Maui Community College and University of Hawaii-Hilo on the island of Hawaii. Reports of sea turtle strandings from the public, as well as from county, state, and federal personnel on six major inhabited Hawaiian Islands (Kauai, Oahu, Maui, Molokai, Lanai, and Hawaii) form the basis for initiating a response to collect data and/or acquire the turtle for research or rehabilitation purposes.

The primary objective of the stranding research program is to obtain information relevant to cause of stranding, species, gender, year-class, spatial distribution, and the epidemiology of the tumor-forming disease known as fibropapillomatosis. This disease has emerged as an important issue for sea turtles and their habitats at certain sites worldwide including Hawaii, Florida, Barbados, Australia, and the Pacific coasts of Mexico and Costa Rica. In addition to epidemiological data, sea turtle strandings in the Hawaiian Islands provide valuable specimens for disease-related research involving histopathology, virology, parasitology, bacteriology, immunology, molecular genetics, diagnostic testing, and forage utilized by turtles at discrete coastal habitats. Biological samples are also collected for skeletochronology to estimate age for use in computerized sea turtle simulation models developed by collaborators of the NOAA Pacific Islands Fisheries Science Center. The NOAA Pacific Islands Fisheries Science Center currently maintains one of the most comprehensive and robust long term sea turtle stranding databases of any program worldwide.

## Important Points about the Stranding Research Network

- Information on sea turtle strandings has been collected in Hawaii since the mid-1970s, although a database was begun in 1982 that contains the most comprehensive information on sea turtle strandings.
- 97% of the strandings are green sea turtles that are nearly all derived from Hawaiian nesting beaches. Other sea turtle species (3%) that strand include hawksbills, olive ridleys, and very rarely leatherbacks and loggerheads.
- Flowcharts provide standard protocols to follow when a sea turtle strands in the Hawaiian Islands. Phone number contacts are an important part of the network.
- Approximately 200-300 sea turtle strandings presently occur each year.
- 25% of the sea turtles are alive when stranded
- 28% of the sea turtles that strand have fibropapilloma tumors
- 5% of the sea turtles that strand are entangled in gillnets
- ~3% of the sea turtles that strand are due to boat collision
- ~3% of the stranded sea turtles are shark attack victims
- 7% of the sea turtles that strand are due to coastal (shoreline) recreational hook and line fishing
- An expert sea turtle veterinarian, Dr. Robert Morris, works under contract to the NOAA Pacific Islands Fisheries Science Center to diagnose and, when possible, treat and rehabilitate live stranded sea turtles
- A modest sea turtle rehabilitation research facility with seawater tanks is operated by the NOAA Pacific Islands Fisheries Science Center
- Sea turtles that strand alive and are subsequently released receive PIT (passive integrative transponder) tags in both hind flippers and are temporarily marked with lightly etched moto-tool number and paint in their carapace
- There are two levels of necropsies, as follows:
  - ✓ Euthanized and fresh dead sea turtle necropsies by research collaborator Dr. Thierry Work
  - ✓ Frozen sea turtles that were not fresh when salvaged are necropsied by NOAA Pacific Islands Fisheries Science Center personnel
- During necropsies of previously frozen turtles the following minimum information, data and samples are collected:
  - Comprehensive body measurements and weight
  - Gender (sex)
  - Injuries and other evidence of trauma
  - Condition of carcass (fresh or decomposing)
  - Skin sample for mtDNA analysis
  - Stomach contents sample
  - Presence and number of external and internal tumors
  - Humerus bone aging for skeletochronological research
  - Presence and numbers of external barnacles and parasites (such as leeches)
  - Estimation of cause of stranding