Tumors, Anemia Could Sink Green Sea Turtle Population Comeback

by Leticia Q. Pineda

Green sea turtles were once an abundant species. They have been killed for food, sport, trophies, and by plastic debris they ingested or became entangled in. In 1978, the United States placed green sea turtles on the threatened species list. Hawaii followed suit and also designated them fully protected.

However, green sea turtles from parts of Hawaii, Florida, and the Caribbean now face another threat from within their own bodies. An incurable disease is reducing the turtle population even further.

The scientific name of the disease is fibropapilloma. This "elephant-man like" disease causes tumors to grow on the turtles' soft skin, turning them into grotesque husks. A turtle can be so covered with tumors that they lose their sight and mobility in the sea. Internal tumors can also block air and food passages, drowning or starving a turtle.

"Since a tumor on a green sea turtle is highly supplied by blood, it has extra demands on its vascular system. One would expect all organs to work harder," George Balazs, zoologist and leader of the marine turtle research at the National Marine Fisheries Service (NMFS) Honolulu Lab explained. This would, in turn, likely cause the turtles to have a difficult time diving and holding their breath.

Besides the tumors, scientists have found other irregularities. Affected turtles are anemic compared to normal turtles and have lower serum globulin values.

Sexual maturity for a green sea turtle is reached on the average at around 25 years old. Because of this delayed sexual maturity, more turtles may be dying of the disease than breeding. Thus, scientists race against time to find both cause and cure.

Although occasional cases of fibropapilloma were first reported in 1938 in the Florida Keys, experts do not know why or how the disease has spread so far in the past few years. According to Balazs, of 113 dead turtles known stranded in the Hawaiian islands reported to NMFS in 1989, 56 had tumors.

Recently, a small amount of green turtle feces were found on the beaches of Kualoa Bay. Last year, hundreds of pellets washed ashore in the same area prompting the state Department of Health to close the beach. Balazs gave the department information from parasitologists Dr. Robert Desowitz from Leahi Hospital and Dr. Murray Dailey of University of California at

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An autopsy by NMFS revealed that this frozen maturing male Hawaiian green sea turtle found off the North Shore had 41 tumors, many of which were embedded with leech eggs.
—Leticia Q. Pineda photo

Long Beach who said "humans are not at risk of parasites and diseases specific to reptiles."

The strongest theory for the cause of the disease blames a virus, possibly aggravated by water pollution from chemical runoffs. This comes from studies of other papillomas-type tumors found in other animals, most of which are caused by viruses.

However, a virus is not always the culprit in papilloma diseases. Dailey contends eggs from parasitic flatworms from marine snails may be the cause of fibropapilloma. Much of the time, autopsies reveal that diseased turtles have a large number of internal parasites. The question exists, though, whether parasites play a role in causing tumors or arrive after the formations.

Scientists do not know how, and even if, diseased turtles can contaminate each other. Balazs and his colleagues have found many sea turtles in Molokai and Oahu with early signs of the tumors. Turtles that are strong enough to swim are tagged and released. Weaker turtles near death are cared for or used for scientific studies.

Most experimental treatments for diseased turtles that has been tried involve the physical removal of the tumor. Former Honolulu Zoo veterinarian, Patrick Leadbeater spent hours surgically removing tumors from a diseased turtle only to have the tumors grow back months later. Cryogenics (freezing a tumor) and infusion of dye into the tissue are examples of other techniques tried on individual turtles.

Even if such treatments did work, it would not have any great practical value. "Our principal concern is not to treat individual turtles. We wish to find the underlying factors that cause the disease to be prevalent—growing and spreading—among turtles in the wild," said Balazs.

Much of the research is to keep track of the scope and magnitude of the disease. Without such observational research, scientists would never know turtles in Molokai were also affected, said Balazs.

NMFS gathers more data on diseased green sea turtles through periodic trips to their habitats. Turtles are tagged with a permanent ID number

and a return mailing address stapled to the edge of the flipper.

Through constant observation, NMFS scientists hope to collect statistics on, for example, whether turtles' conditions worsen or improve. So far the evidence suggests that the turtles worsen.

Because the disease is so widespread in Florida—experts say 50% of turtles in the Keys have it—scientists are working on the problem together.

Dr. Elliot T. Jacobson, professor of veterinary medicine at the University of Florida, visited Hawaii last year to collect Hawaiian green sea turtle tumor samples and he still keeps in weekly contact with NMFS.

An invitational planning meeting is cited for early December in Hawaii to establish research strategy. So far, five mainland scientists are slated to attend.

People can aid in the NMFS research by reporting green sea turtles that are unable to swim. Make reports to NMFS by calling 943-1221. In the evenings and on weekends, call the state Conservation and Resources Enforcement hotline, 548-5918..

Although this disease affects only green sea turtles in specific areas, "It may very well be reflective of other troubles in the ecosystem," Balazs said.