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INCIDENCE OF FIBROCAPILLOMAS IN  
HAWAIIAN GREEN TURTLES

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ABSTRACT

Neoplasms identified by the Registry of Tumors in Lower Animals (RTLA) as fibrocapsillomas are being commonly found on green turtles in the Hawaiian Islands. From 5 to 10% of the nesting females seen each year at French Frigate Shoals have these epithelial growths which range from a few millimeters to 30 cm in diameter. They most frequently occur on the neck, eyes, flippers, jaw, tail, and sometimes even in the mouth. Fibrocapsillomas have been recorded in turtles from 45 cm juveniles to adult males and females over 85 cm. However, thus far none have been found in the 35-45 cm range, the minimum size at which recruitment to benthic habitat takes place in Hawaii.

During 1965, 29% of the 56 stranded turtles examined throughout Hawaii had fibrocapsillomas. Local divers and fishermen regularly report seeing green turtles with "tumors" in coastal foraging pastures and at underwater sleeping areas. A considerable increase in these sightings is believed to have occurred over the past 20 years.

Fibrocapsillomas in green turtles were first described in the scientific literature in the late 1930's. Three out of 200 green turtles (60 to 200 lb) examined in 1937 at Key West, Florida, had these growths. Since the RTLA (located at the Smithsonian Institution) began accepting specimens in 1965, fibrocapsillomas from green turtles have been verified from the Florida Keys (RTLA 12 & 65) and Hawaii (RTLA 121, 1767, 1774, 1856, 1863 & 2097). Several neoplasms from Cayman Turtle Farm have recently been submitted but as yet have not been cataloged or histologically identified. Immature green turtles in east central Florida have been reported by Lew Ehrhart to recently show a high incidence of similar fibrous growths. Thus far, no other species of sea turtle except for the green turtle has been documented with fibrocapsillomas.

Fibrocapsillomas on Hawaiian green turtles can result in reduced vision, disorientation, blindness, physical obstruction to normal swimming and feeding, and an apparent increased susceptibility to parasitism by the marine leech, *Gobrosobranchia bronchialis*. Our available evidence also suggests that fibrocapsillomas can cause severe emaciation, increased predation by tiger sharks and humans, and probably a reduced ability to successfully migrate and breed. Entanglement in fishing lines and other gear also appears to be more likely in turtles afflicted with these growths.

The etiology of fibrocapsillomas in green turtles remains unknown. Possible causes that have been suggested include an immune reaction to trematode ova, secretion of hirudin by marine leeches, virus, excessive solar radiation, chemical pollutants that impair the immune system, stress, and a genetic predisposition to neoplasia. Biopsy material from fibrocapsillomas on two Hawaiian green turtles were sent to the RTLA for electron microscopy, but no virus was found.

The growth rate of fibrocapsillomas has been documented in two Hawaiian green turtles. A nesting female with no signs of neoplasia when first seen was recovered 3 years later in an emaciated state with a large fibrocapsilloma along the dorsal base of its tail. Another apparently healthy tagged turtle, an adult male, had numerous growths, including a large mass in the axilla, when seen again just 2 years later. The fact that relatively small turtles can be heavily afflicted with fibrocapsillomas indicates that growth can occur fairly fast under certain conditions.

The experimental treatment of fibrocapsillomas in Hawaii has included surgical removal and strabulation. Neither procedure proved satisfactory due to the large number of growths often present, their highly vascular nature when large, and the apparent presence of nerve bundles that transmit pain, especially in growths associated with the eyes. There is no evidence to suggest that fibrocapsillomas in Hawaiian turtles may spontaneously cease or diminish.

The Hawaiian population of green turtles is geographically isolated and relatively small, consisting of only a few hundred females nesting annually at French Frigate Shoals. A recovery team has recently been appointed to formulate a plan to rehabilitate the population. The occurrence of fibrocapsillomas is viewed as one of several problems that urgently need to be addressed through additional research.

