

Fibropapillomas in Hawaiian Sea Turtles

ERNEST H. WILLIAMS, JR. (Department of Marine Sciences, University of Puerto Rico, P.O. Box 908, Lajas, Puerto Rico 00667-0908) and LUCY BUNKLEY-WILLIAMS (Department of Biology, University of Puerto Rico, P.O. Box 5000, Mayagüez, Puerto Rico 00667-5000)

A circumtropical/subtropical panzootic of fibropapillomas has occurred in the last few years in green sea turtles, *Chelonia mydas* (Linnaeus) (Williams *et al.* 1994). The earliest records for fibropapillomas in the Pacific was in 1958 (Hendrickson 1958, Balazs & Pooley 1991). These tumors were described in the Atlantic 20 years previously (Smith

& Coates 1938). Since no earlier records were known from the Pacific, there was some question whether fibropapillomas occurred in the Pacific when they were first described in the Atlantic. Fibropapillomas occur largely in green turtles, rarely in a few other sea turtles, and have not been reported from hawksbills, *Eretmochelys imbricata* (Linnaeus) (Williams *et al.* 1994). We report here an ca. 10-yr earlier Pacific record and non-histologically confirmed records in the hawksbill.

Materials and Methods

We examined histological slides of fibropapillomas, field notes, and photographs prepared in 1952 by Prof. Charles E. Cutress. We received reports of fibropapilloma-appearing conditions from field researchers. Samples from a biopsy of 1 hawksbill and a necropsy of a second specimen were preserved in 10% histological grade formalin and deposited in the Registry of Tumors of Lower Animals (RTLA).

Earliest Pacific Record of Fibropapillomas

The histological microscope slides prepared and stained by Prof. Cutress that one of us (EHW) examined in 1991 appeared to represent fibropapillomas. These slides could not be located after the death of Prof. Cutress in 1993. Three photographic slides in Cutress's materials dated 1952 appear to be of a green turtle with fibropapillomas (Fig. 1). Cutress recalled in 1991, and his notes confirmed, that green turtles with fibropapillomas in Hawaii had been reported to him since the late 1940s. Thus, these fibropapillomas occurred in the Pacific ca. 10 years after they were described in the Atlantic. This suggests that fibropapillomas probably occurred circumtropically/subtropically in the green turtle when this condition was first described and did not spread from the Atlantic to the Pacific after 1938.

Presumed Fibropapillomas in Hawksbill Turtles

We found internal tumors in green turtles that had external fibropapillomas (Williams *et al.* 1994). These internal tumors technically cannot be called fibropapillomas (multiple mature granulomas) but appear quite similar. We found the same internal tumors in a hawksbill (RTLA 5698, Table 1). We have received reports of 4 hawksbills with growths observed in Hawaii, Florida, and the Caribbean that appeared to be fibropapillomas but were not collected (Table 1). These similar tumors and observations of presumed fibropapillomas suggest that this disease will eventually be histologically confirmed in the hawksbill. Fibropapillomas on hawksbills should be sampled by biopsy or necropsy, preserved in 10% formalin, and sent to the RTLA for confirmation. We emphasize that proper samples are required, because 3 of the 4 observers of hawksbills (Table 1) had handling permits and could have taken samples if they had known the importance of histological confirmation.

Acknowledgments

We thank the late Prof. Charles E. Cutress for allowing our examination of the Hawaiian turtle material, Bertha Cutress for allowing the use of 1 of Prof. Cutress' photographs; Karen L. Eckert, Wider Caribbean Sea Turtle Conservation Network; Zandy Hillis, Virgin Islands National Park, Nancy M. Lee, Dept. of Defense Schools, Benito Pinto-Rodríguez, Dept. of Natural and Environmental Resources, Commonwealth of Puerto Rico, and Richard K. Wallace, Alabama-Mississippi Sea Grant for observations of

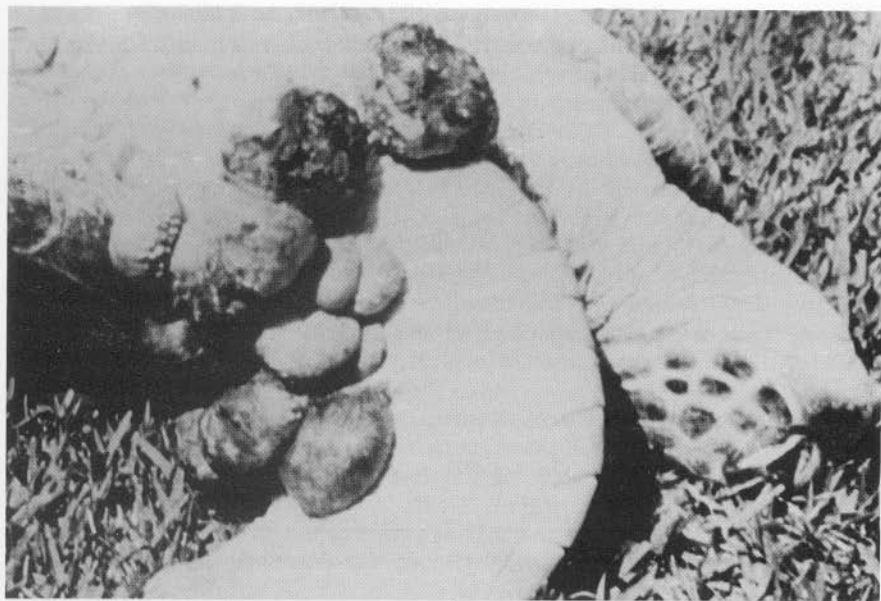


Fig. 1. Green turtle, *Chelonia mydas*, with fibropapillomas collected from Waikiki, Oahu, Hawaii, in 1952. (Photo Charles Cutress)

sea turtles with tumors; John C. Harshbarger, RTLA, for preparing and depositing specimens; and Andrew Bruckner for preparing photograph copies.

Literature Cited

- Balazs, G.H. & S.G. Pooley, eds. 1991. *Research plan for marine turtle fibropapilloma*. NOAA Tech. Memo. NMFS, NOAA-TM-NMFS-SWFSC-156, iv + 113 p.
- Hendrickson, J.R. 1958. The green turtle (*Chelonia mydas*) in Malay and Sarawak. *Proc. Zool. Soc. Lond.* **130**: 456-566.
- Smith, G.M. & C.W. Coates. 1938. Fibro-epithelial growths of the skin in large marine turtles, *Chelonia mydas* (Linnaeus). *Zoologica* **23**: 93-98.
- Williams, E.H., Jr., L. Bunkley-Williams, E.C. Peters, B. Pinto-Rodríguez, R. Matos-Morales, A. A. Mignucci-Giannoni, K.V. Hall, J. Rueda-Almonacid, J. Sybesma, I. Bonnelly de Calventi, & R.H. Boulon. 1994. An epizootic of cutaneous fibropapillomas in Caribbean green turtles: Part of a panzootic? *J. Aquat. Anim. Health* **6**: 70-78.

Table 1. Sea turtles with fibropapillomas and other tumor-like conditions.

Locality	Type of Report ¹	Source
<i>Chelonia mydas</i> , green turtle		
Oahu, Hawaii	M	Cutress pers. comm. ²
Waikiki, Oahu, Hawaii	H	present paper
<i>Eretmochelys imbricata</i> , hawksbill ³		
Waikiki, Oahu, Hawaii	M	Cutress pers. comm. ²
south Florida, USA	M	Pinto pers. comm. ²
eastern Puerto Rico	M	Lee pers. comm. ²
St. Croix, USVI	M	Hillis pers. comm. ²
Playa Sardinera, Mona Island	T ⁴	present paper
National Aquarium, Dominican Republic	T ⁵	present paper
<i>Caretta caretta</i> , loggerhead		
St. Petersburg, Florida, USA	M	Wallace pers. comm. ²

¹Histologically confirmed fibropapillomas (H), observed lesions which morphologically appeared similar to fibropapillomas (M), and other tumor-like conditions (T).

²Prof. Charles E. Cutress, Dept. Marine Sciences, University of Puerto Rico, pers. comm.; Z. Hillis, National Park Service, pers. comm.; Nancy M. Lee, Department of Defense Schools, pers. comm.; Benito Pinto-Rodríguez, Department of Natural and Environmental Resources, Commonwealth of Puerto Rico; R. K. Wallace, Alabama-Mississippi Sea Grant, pers. comm..

³Turtle species not reported to have fibropapillomas

⁴Multiple mature granulomas in internal organs, but not fibropapillomas, RTLA 5698

⁵Parakeratosis, not a neoplasm, RTLA 5396