



PROCEEDINGS  
OF THE TWENTY-FOURTH  
ANNUAL SYMPOSIUM ON SEA TURTLE  
BIOLOGY AND CONSERVATION



22 to 29 February 2004  
San Jose, Costa Rica

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U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southeast Fisheries Science Center  
75 Virginia Beach Drive  
Miami, FL 33149 USA

January 2008

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For bibliographic purposes, this document should be cited as follows:

Mast, R.B., Hutchinson, B.J., and A.H. Hutchinson, compilers. 2007. Proceedings of the Twenty-Fourth Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-567, 205 p.

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Technical Editor: Lisa C. Belskis

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## Population and health assessment of sea turtles in the Maryland portion of the Chesapeake Bay

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The Chesapeake Bay has been identified as an important region to study sea turtle distribution, habitat requirements, genetic origin, baseline health, sex and growth rates. In 2001, the Maryland Department of Natural Resources (MD DNR) and the National Marine Fisheries Service (NMFS) initiated a sea turtle tagging and health assessment study in the Maryland portion of the Chesapeake Bay. Sea turtles were obtained through the cooperation of commercial watermen and were incidentally captured in pound nets, a type of passive, stationary fishing gear utilized in the Chesapeake Bay to catch finfish. Since 2001, 39 sea turtles (22 loggerheads and 17 Kemp's ridleys) have been examined as part of this study. The loggerheads ranged in size from 52 to 105 cm (ccl) and the Kemp's ridleys ranged in size from 32 to 54 cm (ccl). Each animal was photographed, measured, weighed, sampled for tissue and blood, tagged (flipper and PIT tags) and released. Recaptures of tagged sea turtles have occurred within and between sampling seasons, indicating site fidelity. Blood samples are being analyzed to aid in establishing hematology reference ranges for loggerhead and Kemp's ridley sea turtles, which are currently limited for these species. Analysis of tissue samples will be performed to determine the genetic origin of sea turtles in the Chesapeake Bay. The results of this study will contribute to a more comprehensive understanding of sea turtles on a regional and global scale, which is important for the development of effective management strategies for these endangered and threatened species.

## Nesting hawksbill turtles (*Eretmochelys imbricata*) on the island of Maui, Hawai'i from 1996-2003

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Critically endangered hawksbills predominately nest on Hawai'i Island, but lower numbers also nest on the islands of Maui and Molokai, with a statewide estimate thought to be at least fifty reproductive females. Hawksbill nesting activities were first documented on Maui in 1991, and an organized effort to systematically monitor these occurrences began in 1996. A multi-agency collaboration has been essential for protecting this small population from dangers caused by human disturbance, coastal lighting, non-native vegetation, predators, and vehicular collisions. From 1996-2003, an average of 1.4 nesting females/year have utilized four distinct beaches for nesting. Tagging began in 1997 resulting in the identification of six different females (one/year) ranging in size from 84.5-93.4cm CCL ( $\bar{x}$ =89.1cm) and 78.2-87.0cm CCW ( $\bar{x}$ =83.4cm). No recaptures have been documented, raising the potential remigration interval to two to seven years. The total ratio of nests to aborted attempts was 1.3:1 with 80% of these "false crawls" occurring on the narrow, eroded Kealia Beach (1:1.7). Females laid an average of 4.0 clutches/season, with

a 20.1-day mean interesting interval. All twelve clutches (from three different females) that have been deposited at Kealia Beach since 1997 have had 0% hatching success, whereas in prior years' nests had been productive. Kawililipoa and Oneloa Beaches have been successful, with incubation periods averaging 57.5 and 60.5 days. Four hatchlings, presumably from Maui, have been found in the waters surrounding Molokini crater. Increased survey coverage with heightened community awareness and involvement will continue to broaden our understanding of nesting hawksbills on Maui.

## Distribution and abundance of hawksbill sea turtles (*Eretmochelys imbricata*) on the western bank reef of Barbados, West Indies

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Hawksbill turtles ranging in size from 23.8-97.8 cm CCL ( $n=563$ ) have been caught at 27 reef sites along the west coast of Barbados using SCUBA between 1998-2003. More animals were caught on northern reef segments than southern segments. Most animals captured fell in the size range 45.0 - 49.9cm CCL. The CPUE of sub-adult turtles (i.e. less than 80 cm CCL) was similar year round, but the capture of adult females was markedly seasonal and increased during the nesting season (May-September). The size distribution at all dive sites was biased to smaller sized turtles (30-50cm CCL), suggesting that larger juveniles are generally more scarce on the bank reef. Of the 563 turtles, 253 have been sighted more than once. Smaller turtles were more likely to have been sighted multiple times than larger turtles over the same time period, suggesting that smaller turtles are resident for longer on the reef. The recovery of tagged juveniles from other countries suggests that hawksbills may leave Barbados as large juveniles and seek other foraging grounds in neighboring islands. The unsuitability of the bank reef as foraging habitat for large hawksbills is further supported by the relative scarcity of adults outside of the breeding season.

## Bioaccumulation of metals in tissues of loggerhead sea turtle, *Caretta caretta*, from eastern Adriatic Sea

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Concentrations of Hg, Pb, Cd, Zn, Cu and Se were determined by atomic absorption spectrometry in the soft tissues (liver, kidney, pectoral muscle, heart) and humeri of 40 loggerheads. Among soft tissues analyzed, the highest concentration was found for Zn > Cu or Se > Cd > Hg > Pb, with difference in the concentration pattern in kidney (Zn > Cd > Se > Cu > Hg > Pb). No significant difference was found in tissue distribution of Hg, while the kidney accumulated significantly more Cd than other organs analyzed. Among soft tissues, the highest concentrations of Pb were found in the liver and kidney, which were significantly higher than in muscles. Liver also accumulated significantly higher concentrations of Cu and Se than all other tissues. The mean concentration of renal Cd (60.86  $\mu\text{g/g}$  d.w.) was two fold higher than in other Mediterranean loggerhead populations, whereas the mean Hg in pectoral muscle (1.77  $\mu\text{g/g}$  d.w.) was the highest concentration of Hg found in muscle in all sea turtle species worldwide.