

SEA TURTLE CONSERVATION IN CHINA

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Five species of sea turtle are found in China: the Loggerhead (*Caretta caretta*), Green (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), Olive or Pacific Ridley (*Lepidochelys olivacea*), and the Leatherback (*Dermochelys coriacea*). Most are documented from the South China Sea, with the greatest abundance reported from the Xisha (Paracel) and Islands, the Nansha islands and from the Hainan Island. An estimated 14,000 to 40,000 sea turtles migrate to the Xisha Islands (a group of low coral islands and reefs in the South China Sea ca. 280 km southeast of Hainan Island) and to the Nansha Islands annually, whereas about 2,300 to 5,000 migrate to Hainan Island (including Guangdong Province). These migrations involve mixed species assemblages, as follows: ca. 87% Green, 10% Hawksbill, and 3% other species (Wang, 1993). Sea turtle populations have been sharply reduced in China over the past 50 years. Fifty years ago there were several identifiable sea turtle nesting sites at Hainan Island (Qionghai, Wanning, Ya, Dongfang county) and in Guangdong Province (Nana, Huilai, Haifeng, Huidong,

long-term data from Tortuguero to evaluate if remigration intervals are good indicators. Green turtle remigration interval appears to have increased with nesting since 1971 but results could be confounded by variation in tag loss, encounter and annual survival probabilities as well as by variation in marine productivity on the foraging grounds. Historical declines may explain the shorter remigration intervals of Tortuguero green turtles than for less exploited populations in Hawaii and Australia but the difference could also be caused by Atlantic and Pacific climate cycles creating selection pressures that favor different life history strategies. Tortuguero hawksbill turtles have declined and remigration intervals appear to have decreased but sample size is small. The same confounding factors apply as for the green turtle population. Tortuguero leatherback turtles have shorter remigration intervals than Pacific leatherbacks, probably due to differences in available food quality and quantity, linked to differences in oceanic productivity and climate cycles. We conclude that remigration intervals may indicate how well green and hawksbill turtles fulfill ecosystem roles but they appear less useful as indicators for leatherbacks due to large environmental variation in their foraging habitats. Research of factors affecting the quality and quantity of available food and how these factors differ between ocean basins should help explain variation in remigration intervals and clarify their usefulness as indicators.

SEA TURTLE RESERVE AND SATELLITE TRACKING IN CHINA

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There is only one sea turtle nature reserve in China, the National Guangdong Huizhou Sea Turtle Nature Reserve; located adjacent to Daxiang mount and facing Daya Bay and Honghai Bay of Guangdong Province. The Reserve is situated at 22°33'N, 114°54'E, total area of the Reserve is 1,800 ha. The southern part of the Reserve is the South China Sea other side is surrounded by mountains. The Reserve contains a sandy beach, 1,000m long and 70m wide, on which sea turtles breed annually from June to September. Historically, thousands of sea turtles came to breed, but now, less than one hundred turtles are nesting there. The Reserve was set up in 1986 by the Government of Guangdong Province, China and in October 1992 the Reserve was upgraded to national reserve status. Between 17 and 28 August 2001, three green turtles were equipped with satellite linked transmitters utilizing the Argos location and data collection service. In order to follow the turtles' post-nesting migrations, transmitters were attached to their carapaces after they had nested at the Reserve. The results show that two of the turtles migrated to the South China Sea and the remaining one migrated north to the coastal region of Japan. Due to the limited sample size it is not possible to present a definitive model of sea turtle migration from China. As a representative example of modern biotelemetry, tracking sea turtles by satellite needs the integration of various disciplines and technologies as well as international cooperation. In China, there are few data for tracking sea turtles by satellite. China needs to expand this study in the future to obtain more results and expand the range of the studies. Sea turtles are registered as endangered the world over. Their migrations often cross seas and oceans. Therefore, satellite tracking sea turtles, and successful actions based on the results, require international cooperation with exchange of data and technical expertise etc. In fact, there are not only many international collaborative projects for the tracking of sea turtles, but also many new products are being produced. Other fine electronic telemetry instruments with biophysical sensors as well as new analysis software tools are also under development. In brief, international cooperation is important for the development of modern biotelemetry.

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