NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Contact: Scott Benson (831) 771-4154
Jim Milbury (562) 980-4006

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Researchers Map Long-Range Migrations and Habitats of Leatherback Sea Turtles in the Pacific Ocean

Endangered leatherback sea turtles migrate and forage across vast areas of the Pacific Ocean and Indo Pacific seas and require greater international collaboration for their protection, according to a recent study conducted by NOAA Fisheries Service and western Pacific research and conservation scientists. The study, published today in the journal *Ecosphere*, is based on data from 126 leatherbacks tracked by satellite and supports continuing research to improve conservation efforts for this endangered species by better understanding how oceanographic features influence their migration and foraging behavior.

Leatherbacks (*Dermochelys coriacea*) are the largest of all marine turtles, weighing up to 2000 pounds (900 kg) and measuring almost six feet (2 m) in length. The demise of several leatherback populations around the Pacific has been caused by extensive harvesting of eggs and breeding females on the nesting beaches by indigenous populations, as well as accidental capture in fishing operations. Some of the last remaining Pacific nesting populations are found in the western Pacific in Indonesia, Solomon Islands and Papua New Guinea.

Female leatherbacks lay their eggs on tropical nesting beaches before migrating to foraging areas around the world to feed on jellyfish. Leatherbacks are seasonal visitors to the west coast, including the central California coast, traveling across the Pacific and arriving in late summer and fall to forage on large aggregations of brown sea nettles (*Chrysaora fuscescens*).

Lead author Scott Benson and senior author Peter Dutton, both with NOAA Fisheries Service, began tracking leatherbacks from their California foraging grounds in 2000 and, after documenting that the California turtles came from nesting beaches in the western Pacific, expanded the study there.

The combined results have fundamentally changed the scope of conservation efforts for Pacific leatherbacks by demonstrating the need for many nations and communities around the Pacific Ocean to conserve the species. “Tracking the turtles on their extraordinary migrations over the years has allowed us to finally piece together the complex linkages between their breeding areas and feeding areas,” said Dutton. “The leatherbacks have acted as international ambassadors, leading us to join with partners on both sides of the Pacific in a concerted effort to conserve leatherbacks.”

Protecting and rebuilding leatherback sea turtles has been a priority for NOAA since it listed them as endangered under the Endangered Species Act in 2000. NOAA Fisheries Service restricts commercial fishing in large areas north of Hawaii and off the United States west coast because of concern over accidental bycatch of leatherbacks, and has been working to revise which areas are designated as critical habitat for the

turtles.

“Our telemetry data will help us develop better analytical models to help fisheries managers predict when and where leatherbacks might be found in areas targeted for fishing,” said Tomoharu Eguchi with NOAA Fisheries, a co-author of the paper.

The western Pacific nesters foraged not only in distant temperate ecosystems of the North Pacific, but also in temperate and tropical Large Marine Ecosystems (LME’s) of the southern hemisphere and Indo-Pacific seas.

“We discovered a much greater diversity of foraging behavior than previously thought for Pacific leatherbacks,” Benson said. “The foraging areas we identified exhibited a wide range of oceanographic features, including mesoscale eddies, coastal retention areas, current boundaries, or stationary fronts, all of which are known mechanisms for aggregating leatherback prey.”

The paper also identifies foraging areas in the East Australia Current Extension and the Tasman Front, drawing attention to the potential threat from the intense fishing by international fleets in these waters.

“The turtles nesting at Papua Barat (Indonesia), Papua New Guinea, and other islands in our region depend on food resources in waters managed by many other nations for their survival,” said Ricardo Tapilatu from the State University of Papua (UNIPA). “It is important to protect leatherbacks in these foraging areas so that our nesting beach conservation efforts can be effective.”

Photos and a description of the transmitter attachment method are available here.

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