

Bight and, in particular, coastal North Carolina may reveal much about the physical locations of mortality and the probability of stranding as a function of spatial location. Population biology and physical oceanography have, until recently, been scientific fields with little crossover. Hopefully, collaborative projects such as this

will continue in the future. Though qualitative, this research a.) provides a starting point for more robust analyses and b.) demonstrates that stranding research requires an understanding of ocean physics in addition to sources of mortality.

FOLLOWING REDWOOD LOGS, RUBBER DUCKS, AND DRIFT BOTTLES: TRANSOCEANIC DEVELOPMENTAL MIGRATIONS OF LOGGERHEAD TURTLES IN THE NORTH PACIFIC OCEAN

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New technologies now allow us to answer some standing questions regarding the life history of Pacific loggerhead turtles. Mark and recapture data, combined with results from satellite telemetry, remote sensing, oceanography, and molecular genetic studies, provide a fundamental understanding of the distribution and movements of loggerhead turtles as they make a vast developmental migration around the Pacific Ocean.

Previous studies indicate that the majority of loggerhead turtles occurring along the coasts of California, USA, and the Baja California peninsula, Mexico, are immature and of Japanese origin. Their movements follow patterns that can be partially explained through comparisons with surface currents, primary productivity levels, and water temperatures.

Wild-captured and captive-raised loggerhead turtles were tracked along the west coast of the Baja California peninsula using satellite telemetry. These results combined with mark-recapture data, demographics, diet analysis, and oceanographic patterns suggest a general pattern for the life history of loggerhead turtles utilizing the eastern Pacific Ocean.

Generalized Life History of North Pacific Loggerhead Turtles

1. North Pacific loggerhead turtles are born primarily on nesting beaches in southern Japan.
2. The strong Kuroshio Current, which runs from south to north along the east coast of Japan transports hatchlings and juvenile turtles into the North Pacific.
3. Over the course of two to six years, loggerhead turtles move from west to east, feeding along convergence and frontal zones (based on recent tag returns). Counter-current movement has been recorded during this pelagic developmental phase.
4. Drift bottles, satellite-linked buoys, surface current models, and debris have been used to document the surface current patterns in

the North Pacific. These flow patterns are similar to those of the developmental migrations of Pacific loggerhead turtles.

5. Loggerhead turtles are encountered along the coast of the Californias at a minimum SCL of 27 cm. Turtles larger than 85 cm are rare.

6. Along the Baja California coast loggerhead turtles feed primarily on pelagic red crabs (*Pleuroncodes planipes*), which are extremely abundant nearshore during the spring and early summer months.

7. At maturity, loggerhead turtles begin a homing migration, returning to natal beaches in Japan, which may span an entire year. The homing migration crosses a region in the central Pacific known as the "garbage patch" where marine debris is known to accumulate. The transpacific track approximates a simulated, two stage track using a constant swim speed of 29.5 cm/s and an initial headings of 270° (due west) and a secondary heading of 295°.

8. Mature loggerhead turtles appear to remain in the western Pacific, migrating annually between nesting beaches and feeding grounds in the South and East China Seas.

This synopsis emphasizes the importance of upwelling and convergence areas along the central Baja California coast and throughout the Pacific as pelagic feeding areas and migratory corridors for Pacific loggerhead turtles, underlining the importance of these regions to the recovery of Pacific loggerhead stocks. Loggerhead turtles utilize virtually the entire North Pacific Ocean during their lifetimes. Anthropogenic impacts and conservation efforts in one region will affect distant ecosystems. For example, the proposed fishery for pelagic red crabs along the Baja California coast may interfere with foraging loggerhead turtles, resulting in declines in loggerhead turtle numbers on western Pacific nesting beaches and reefs. Likewise, a reduction in mortality rates in Baja California may result in marked gains on Japanese rookeries. These connections emphasize the importance of international collaboration and communication among researchers.

LONG-TERM SEA TURTLE NESTING CYCLES IN THE GUIANAS

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Sea turtle biologists and conservationists sometimes find themselves in the position of having an opportunity to visit a remote sea turtle nesting ground for a relatively short period. While on site, they seek to maximize the information that can be obtained, which usually includes counting and identifying the turtles that nest each night.

Ideally, they will publish a short report, documenting what they have learned. If the site is extremely difficult of access, this report may be the only window of information on the turtle colony in question for decades to come, and the implicit assumption is made by all parties that the nesting activity documented in that brief



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