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Hawaii's Environment



JAN TENBRUGGENCATE

Turtle nests give beaches nutrients

Green sea turtles and hawksbill turtles need sandy beaches for nesting, but new evidence shows the relationship works both ways: Turtle nesting may actually help protect beaches and dunes.

Florida researcher Sarah Bouchard has studied turtle nesting's effects on beaches, following up on a concept identified nearly 20 years ago by Hawaii turtle researcher George Balazs of the National Marine Fisheries Service's Honolulu Laboratory.

In a 1980 paper, Balazs suggested that the organic material left by unhatched eggs "represents a valuable contribution to the soil fertility of the islands."

Bouchard studied beaches at Melbourne, Fla., where loggerhead turtles lay eggs annually. She studied beach nutrients, including nitrogen and phosphorus, and found they are increased by the presence of turtle nests.

Sandy beaches normally are comparatively poor in fertility, but the addition of the turtle-egg material could provide the fertilizer for beach shrubs and grasses, which in turn can protect sandy shorelines from erosion.

Even if hatchlings escape into the ocean, they leave behind eggshells and fluids that can help improve the fertility of the beach, Bouchard said. That nest material can be spread around the beach in numerous ways. Crabs and birds do some of the spreading.

Balazs said it's not clear how much value the turtles' nesting has for Hawaii beaches. It may be quite important on the small Northwestern Hawaiian Islands, but even there, seabird deposits may be a larger factor in fertility, he said.

In the main islands, there is probably not enough turtle nesting left to have much effect.

Could the absence of nesting contribute to coastal erosion? Balazs would not make such a statement, partly because there is no firm evidence that nesting was ever a major activity on Hawaii beaches.

Certainly, specific beaches were prime nesting habitat, he said, such as Polihua on north Lanai. Turtle nesting was so common there that it was known as a place for travelers to catch turtles to eat. One reference said some turtles there were so large that three people could ride on their backs.

Polihua is no longer believed to be a major nesting site. Balazs said two key factors have changed the beach's character. One is the intrusion of roots from the introduced kiawe tree. "You dig through the surface and you find this mat of roots. If a turtle were trying to dig a nesting hole with its flippers, it couldn't get through."

Another problem at Polihua is silt eroded from the bare Lanai hillsides. Dense layers of silt have also made the sands of Polihua less conducive to nesting.

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