

# Leatherback sea turtle nests increasing in Florida

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The number of endangered leatherback sea turtle nests at 68 beaches in Florida has increased by 10.2 percent a year since 1979, according to a new Duke University-led study published in the current issue of the journal *Ecological Applications*.

Some beaches posted annual increases of more than 16 percent, others as low as 3.1 percent.

The population boom of turtle nests in the Sunshine State mirrors trends observed for other Atlantic leatherback sea turtle populations and is "very encouraging news," says Larry B. Crowder, director of the Duke Center for Marine Conservation. "It suggests that conservation and recovery efforts mandated under the [Endangered Species Act](#) are paying off region-wide."

The growth has likely been fueled in part by improved monitoring and protection of nesting beaches over the last 30 years, Crowder says, but other less benign factors may also be at work.

"Nesting is increasing even where beach protection has not been enhanced," he says. "Changing ocean conditions linked to climate variability may be altering the marine food web and creating an environment that favors turtles by reducing the number of predators and increasing the abundance of prey, particularly jellyfish."

With plenty of jellyfish to munch on, breeding-age female leatherbacks

may be able to build up fat reserves more quickly, allowing them to nest more frequently, says Kelly Stewart, lead author of the study. Stewart received her Ph.D. from Duke in 2007 and conducted the research on Florida's leatherback [sea turtles](#) as her dissertation research. Crowder was her faculty adviser.

Reduced populations of large predators, including the collapse of shark populations in the northwest Atlantic over the past decade, may be playing an even larger role in the turtle boom by decreasing at-sea [mortality rates](#) for juvenile and young adult turtles, she says.

Despite being a small population – scientists estimate fewer than 1,000 leatherbacks nest on Florida beaches – the increases in nest counts there may help achieve objectives of the federal Endangered Species Act-mandated recovery plan, Stewart says.

News for leatherback populations elsewhere is not so encouraging, however. Populations have plummeted at eastern Pacific nesting beaches in Mexico and Costa Rica, which once hosted thousands of female leatherbacks each year. Extirpation, or local extinction of the species, may be imminent on those beaches.

"The good news here is that while most sea turtles continue to decline, some sea turtles are increasing. We need to understand why they are increasing as much as why they are declining so we can transfer this understanding to other at-risk species, like Pacific leatherbacks," says Crowder.

Stewart, Crowder and their colleagues modeled the 30-year nest counts on Florida beaches using a type of multilevel statistical analysis called Poisson regression, which is frequently used to model counts affected by multiple, often random, factors.

Nest counts are the most reliable way of assessing trends in sea turtle populations because they spend most of their lives in the open ocean, where changes in abundance are difficult to detect.

Stewart is now based at the National Oceanic and Atmospheric Administration's Southwest Fisheries Science Center in LaJolla, Calif., as a National Research Council postdoctoral fellow. Prior to that, she served as a postdoctoral research associate at the Duke Center for Marine Conservation.

Provided by Duke University

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