

# Painted Turtles

**Calls to lift protections for the iconic Hawaiian green sea turtle may be premature, according to a new study led by a Stanford researcher.**

Although the number of Hawaiian green sea turtles has increased since 1978 when the species was listed under the U.S. Endangered Species Act, the population may still be only a fraction of historic levels, the research shows.

“It’s critical to compare the animal’s population level to its historic abundance, not just to recent levels,” said study coauthor John N. “Jack” Kittinger, an early career fellow at Stanford’s Center for Ocean Solutions (COS).

Kittinger and his collaborators compared contemporary (1973-2012) and historical (1250-1950) nesting records of Hawaiian green sea turtles from fishery logs, archeological sites, Hawaiian-language newspapers and first-hand historical accounts. The researchers also gathered current nesting data from the National Oceanic and Atmospheric Administration’s green turtle field monitoring program run by its Pacific Islands Fisheries Science Center.

The work yielded extensive data sets on the occurrence, abundance, geographic distribution and harvest of sea turtles in Hawaii spanning hundreds of years.

Analysis of these records and other archival sources revealed that 80 percent of major historic green sea turtle nesting sites have disappeared and many others have shrunk greatly in size. The only remaining significant nesting site, which accounts for 90

percent of green sea turtle nesting in the Hawaiian Islands, is vulnerable to sea level rise and other threats.

“Hawaiians were able to sustainably coexist with nesting green sea turtles as recently as the early 20th century, when nesting sites could still be found on the main Hawaiian Islands,” said Kittinger, a coauthor of the study who conducted much of the research before joining COS as an early career fellow.

“After traditional harvesting restrictions gave way, we see evidence for population depletion” he said. “This needs to be considered for sustainable management of the species moving forward, including a potential harvesting program should the species be delisted.”

The green sea turtle is an important cultural symbol in Hawaii and performs vital marine functions such as controlling the spread of algae in coral reefs.

“Research such as this study, based on historic and socioeconomic data, adds an important perspective that has been missing from population assessments of endangered animals,” said Larry Crowder, COS science director and a sea turtle expert,

who was not involved in the study. “The paper shows that Hawaii’s current green sea turtle population is significantly reduced from historic levels and, due to the conservative approach of these scientists, these numbers may underrepresent that decline.”

The study was published online May 22 in the journal *Ecography*. Collaborators conducting the research included Kittinger, NOAA and the NOAA Pacific Sea Turtle Historical Ecology Working Group.

