US sea turtle populations difficult to estimate or protect without more data

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The population sizes of six species of sea turtles listed as either endangered or threatened in the United States cannot be accurately determined based on currently available information, says a new report from the National Research Council. The report adds that key data regarding birth and survival rates, breeding patterns, and other information will be required to predict and understand changes in populations and create successful management and conservation plans. The National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS) should develop a national plan to assess sea turtle populations, improve the coordination of collecting data and sharing it with other organizations, and establish an external review of the data and models used to estimate the current sea turtle population and predict future population levels.

In light of the difficulties encountered in assessing sea turtle populations, the National Oceanic and Atmospheric Administration asked the Research Council to examine methods that could improve population assessments carried out by NMFS -- which is overseen by NOAA and responsible for the management of sea turtles in the water -- and FWS, which is responsible for sea turtles on land. The report does not evaluate the cause of sea turtle declines or conduct its own assessment of sea turtle populations.

"The biggest obstacle to assessing the status of sea turtle populations is that we know little about key characteristics of these creatures, such as what size they are at different ages, the average proportion of turtles that

will survive through each year, and their growth rates," said Karen Bjorndal, chair of the committee that wrote the report and professor of biology and director of the Archie Carr Center for Sea Turtle Research at the University of Florida, Gainesville. "Sea turtles can live for many decades, and can take more than 30 years to reach reproductive maturity. When more is known about their ages, distribution, and genetic differences, models can provide better population estimates and help us understand changes in population abundance."

Long lifespans and wide-ranging migrations over different habitats make sea turtles difficult to monitor, the committee emphasized. Current sea turtle assessments in the United States are based heavily on estimates of adult females at nesting beaches, which are inadequate measures to make population assessments because adult females usually skip one or more breeding seasons, and nest counts provide no information on the number of immature turtles, adult males, and nonbreeding females.

Although information on the number of sea turtles at various life stages is essential, this alone is insufficient to understand the causes of sea turtle population trends, develop management plans to protect sea turtle populations, or predict future trends, the report says. The committee found that the most serious data gaps exist in estimates of the number of immature sea turtles, survival rates of immature turtles and nesting females, age at sexual maturity, the proportion of adult females that breed each year, and the number of nests each female creates in a breeding season.

In addition, adequate information is not available for population assessments because data either have not been collected or have not been analyzed and made accessible. The report suggests NMFS and FWS develop plans for the collection and analysis of data to address gaps, create a database that identifies datasets in the United States and territories, and review data being collected now under their agencies and

evaluate the costs and benefits.

Moreover, the committee said, reviews of federal sea turtle population assessments and research plans are not sufficiently rigorous and transparent, and there are unnecessary obstacles to the collection and analysis of critical data, including the process for issuing research permits and inadequate training of scientists. To address these issues, NMFS and FWS should support a program to safeguard and make accessible as many sea turtle databases as possible, ensure that all research plans generated from within federal agencies are reviewed by panels comprised of federal and nonfederal scientists, and convene a working group to evaluate the permitting process for research projects and find ways to expedite the process while safeguarding the species.

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