Precipitous Declines in Caribbean Leatherbacks

By Karen Eckert and Katharine Hart

In 2013, the leatherback turtle was categorized on the IUCN Red List of Threatened Species as vulnerable globally, and its seven subpopulations were separately assessed for the first time (see *SWOT Report*, vol. XI, pp. 28–31). The Northwest Atlantic (NWA) subpopulation was initially listed as least concern, but in 2019 it was reassessed to be endangered following work done the year prior by the NWA Leatherback Working Group, which noted precipitous declines in major nesting assemblages in the southern Caribbean.

The NWA leatherback subpopulation ranges throughout the northern Atlantic Ocean (and, rarely, into the Mediterranean Sea), from nesting areas in the Wider Caribbean Region (WCR) to foraging areas that extend northward into temperate latitudes. The Wider Caribbean Sea Turtle Conservation Network's (WIDECAST) most recent atlas reveals that of the nearly 500 known leatherback nesting beaches in the WCR, only six, in French Guiana, Panama, and Trinidad, host more than 1,000 crawls per year. Twelve more beaches with 500–1,000 crawls per year are distributed in Colombia, Costa Rica, the Dominican Republic, French Guiana, Grenada, Panama, Puerto Rico, Suriname, Trinidad, and the United States (Florida). The remaining smaller aggregations, with fewer than 25 crawls per year, comprise 63 percent of the total.

Regional trends in nest counts have declined significantly at both local and regional scales. Moreover, in shorter-term (2008–2017) and longer-term (1990–2017) periods, declines have exceeded 90 percent in French Guiana (at Awala-Yalimapo), as well as in Suriname since the mid-1990s. Those dropoffs are particularly alarming in French Guiana, which at the turn of the twenty-first century hosted the largest nesting assemblage of leatherbacks in the region and an estimated 40 percent of the world's total. In Trinidad, which is now home to the region's largest nesting colony, the number of nesting females at Matura Beach experienced a smaller but sustained decline of 4.7 percent per annum between 2006 and 2017.

Fisheries interactions in nearshore waters are implicated in those declines in both Trinidad and the Guianas (see *SWOT Report*, vol. XVI, pp. 6–7), but insufficient knowledge of other potential drivers and possible synergistic effects have stymied efforts to identify conservation priorities at scale. In an attempt to fill this gap, WIDECAST collected information from stakeholders in 33 of the 34 WCR countries where leatherbacks nest. The survey compiled best estimates on the frequency and magnitude of threats to leatherback nests and adults on nesting beaches, as well as in nearshore inter-nesting habitats, offshore waters, and the high seas, thus offering the first comprehensive overview of potential drivers of observed declines. Experts were asked to characterize the frequency of a particular threat as well as its magnitude and the proportion of the turtle population that was mortally affected by it.

Results showed that abiotic factors (including flooding, beach erosion/accretion, and climate-related risks), pollution, egg collection, and habitat loss were the most prevalent and impactful threats to leatherbacks on land. In as many as one in four countries, those threats can have an impact on the survival of 20 percent or more of the nests. For nesting females, the most prevalent and significant threats were habitat loss, the *sargassum* influx, and harassment, which sometimes affected more than 20 percent of the annual nesting cohort. Smaller numbers of countries reported artificial lighting, beach obstacles, sand mining, human killing of adult turtles, and beach armoring as "frequent" threats.

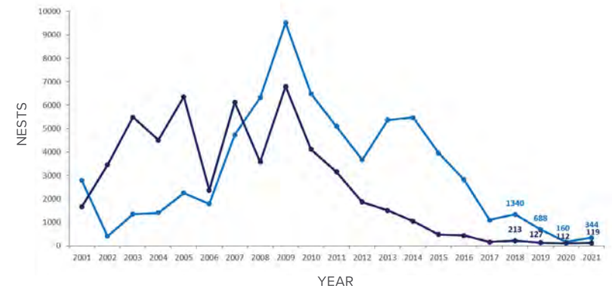
At sea, the threat landscape is dominated both in frequency and magnitude by net fisheries, pollution, and entanglement, which in some countries could threaten the survival of 20 to 50 percent or more of adult (typically gravid) leatherbacks every year. Fishery interactions were particularly pronounced in Trinidad and the Guianas, where three of the four countries (75 percent versus only 15 percent of regionwide countries) cited net fisheries as a "frequent" threat in inter-nesting habitats. The survey also highlighted significant levels of uncertainty. Although 25 to 50 percent of respondents were unable to accurately characterize the frequency of threats in nearshore waters, the number rose to 55 to 85 percent in offshore waters, and 90 to 100 percent in international waters.

Synergies among threats can also dramatically influence a turtle population's status and dynamics. A greater understanding of such synergies—for example by evaluating the impacts of individual threats in a population-level context—can help guide the allocation of conservation resources. Sustained recovery of the NWA leatherback subpopulation will require strategic investment that integrates considerations of those priority threats with population size and stock diversity. A regional action plan designed to guide such an investment is currently moving through an extensive stakeholder-led process and will be released later this year. •

AT LEFT: A severely entangled leatherback turtle in Grenada. Fisheries interactions are implicated in the decline of Caribbean leatherback populations. © Ocean Spirits Inc. / www.oceanspirits.org

Why Are French Guiana Leatherbacks Declining?

By Michel A. Nalovic, Laurent Kelle, Audrey Chevalier, Benoit de Thoisy, Mathilde Lasfargue, Ronald Wongsopawiro, and Damien Chevallier



Graph showing leatherback nests recorded on French Guiana's eastern (light blue line) and western (dark blue line) beaches from 2001 to 2021. Figure courtesy of the authors.

Understanding the decrease in leatherbacks nesting in the Guianas, particularly in French Guiana's once booming population at Awala-Yalimapo, is an ongoing challenge to turtle conservation efforts. With the exception of a slight rise over the past two years, the number of nesting leatherbacks has plummeted since the mid-1990s.

Although many imperfectly quantified threats are to blame, the most significant and intractable threat is the sheer level of fishing effort occurring in all the world's oceans, and the collateral toll fishing extracts in the form of bycatch. From high seas industrial fleets to coastal artisanal vessels, there are more boats, hooks, floats, ropes, and nets operating simultaneously than ever before.

Complicating the matter for leatherbacks navigating the waters of the Guianas is the high degree of illegal, unreported, and unregulated (IUU) fishing activity. Such IUU fishing effort in French Guianese waters was estimated in 2012 to be twice that of legal fisheries, thereby negating all of the well-intentioned advances made by regional, national, and international authorities to minimize fishery impacts through gear improvements, time or area closures, stock management schemes, and other efforts.

Threats posed by feral dog predation of eggs and by cyclical beach erosion have also been underestimated in the past. A recent study by Damien Chevalier suggests that up to 40 percent of leatherback nests were lost to erosion at Awala-Yalimapo between 2012 and 2014 alone, something that undoubtedly added to the nesting declines observed there from 2001–2018.

The World Wide Fund for Nature (WWF), the French Guiana Regional Fisheries Committee (CRPM Guyane), and their Guiana Shield partners have begun work to prevent the further expansion of IUU fisheries, as well as to address the issue of nesting beach erosion. Much work is left to be done—and *must* be done—to eliminate IUU activities and to reduce fishery bycatch if we humans are to ensure the long-term survival of the majestic leatherbacks in the Guianas.