

# THE STATE OF SWOT

## Ten Years and Counting

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When the first global SWOT map was compiled using data collected at leatherback nesting beaches in 2004, the result showed broad geographical representation, with more than 150 unique sites from 47 countries. Although this impressive display of breadth came at the expense of depth—only a single year of data from each site was included—the initial approach encouraged wide participation by data providers in this volunteer effort. With each subsequent year from 2005 to 2010, a new species was added to the SWOT database, with both ridley species joining in 2009. This one-step-at-a-time approach worked well to develop a global team of data providers—members of the SWOT team—and in 2008, SWOT began to invite contributions of multiple years and multiple species at the same time to add depth to the dataset.

Fast forward a decade to 2014, and SWOT has not only diversified the number of nesting sites in the database but also, as the maps on the following pages show, added several new data layers that aid our understanding of marine turtle distribution, biogeography, and status. In the example of leatherbacks, the numbers of unique records, nesting sites, sites with multiple years of data, and data providers have all increased by more than 70 percent since the first SWOT map was published (see graph and table, p. 47). Overall, the number of records has increased from fewer than 200 to nearly 7,000. The SWOT database has not only grown year by year since that first leatherback map, but also expanded its reach backward in time, adding nesting data going back as far as the 1930s.

Besides including data from nesting beaches, SWOT now also includes maps of global distributions, genetic stocks, and regional management units. SWOT has even taken to the sea by unveiling the Sea Turtle Tracking Initiative, which is collating and displaying satellite telemetry data for future identification of important turtle areas worldwide. All of these additional resources help to put individual sites and datasets in a global context, thereby aiding researchers working on questions of distribution, status, and threats relevant to turtle conservation. For example, SWOT nesting data formed the basis for nesting habitat suitability maps for all species (see maps, and *SWOT Report* Vol. VIII), which are used to evaluate resilience and vulnerability of turtle populations to potential climate change impacts on nesting beaches.

SWOT continues to expand in breadth as well as in depth. To broaden the database, SWOT (with partial support from the National Fish and Wildlife Foundation) is currently collecting time series data for nesting sites already contributed to SWOT and is also identifying gaps in SWOT's global data coverage. Our evaluation of the "State of SWOT" also is revealing regional and population scales on which SWOT's future outreach to data providers should be focused. This work, particularly when combined with SWOT's globally applicable Minimum Data Standards for Nesting Beach Monitoring, will enable researchers to perform abundance and trend estimates for conservation

planning. This is the natural next step for SWOT to fulfill its long-term science goal of being the go-to resource for display and assessment of marine turtle distribution and population status.

SWOT's online application also just received a significant upgrade that enhances the user experience of interacting with available data. OBIS-SEAMAP, SWOT's partner initiative, recently completed an overhaul of the site's user interface, which now allows site visitors broad latitude to visualize all data for all species, to define specific data layers and regions, and even to draw unique polygons for viewing available data within a specific area (see maps, pp. 46–47). The new site also offers several types of basic data analyses, such as temporal trends in data records that can be filtered by year, season, and spatial extent. All of these improvements permit site users to get a much richer understanding of marine turtle distribution data and, we hope, to stimulate ideas about how those data could be used to improve management of marine turtle populations around the world.

Now that we have seen how far SWOT has come in 10 years, what might SWOT look like 10 years from now? Expansion into areas of turtle distribution data beyond nesting beaches will no doubt continue, as the Sea Turtle Tracking Initiative keeps gaining steam. Also other candidate data types could be added, such as locations and severity of fisheries bycatch, strandings data, and beach and nest temperatures for tracking hatchling production and possible effects of climate change. Going hand in hand with this expansion of the data contributed to SWOT, we envision an expanded SWOT team, in terms of more data providers from underrepresented countries and regions, as well as of the sheer number of data providers. But most important, we hope that 10 years from now SWOT will have provided a data foundation—one that is both broad and deep—on which sound conservation decision-making can be made to ensure a healthy future for marine turtle populations around the world. ■

AT RIGHT: Fishermen in Baja California, Mexico, watch the release of a green turtle captured as part of Grupo Tortuguero's monitoring efforts. © JASON HOUSTON / WWW.JASONHOUSTON.COM

