Tracking Turtles off Mexico's Yucatán Peninsula

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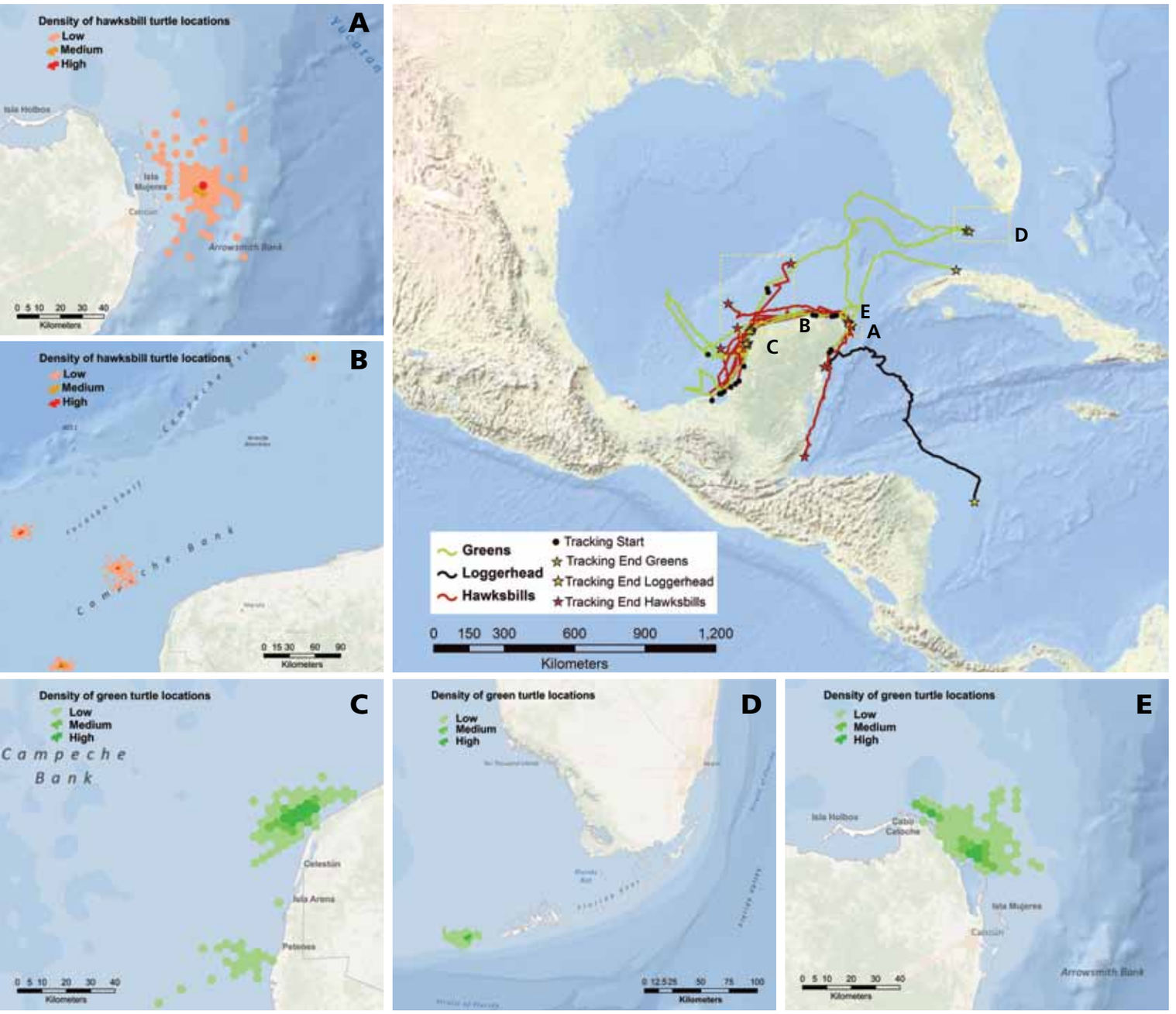
Like most sea turtle monitoring projects around the world, sea turtle work in Mexico's Yucatán peninsula has focused on nesting beach surveillance since the end of the 1970s and has paid very little attention to the basic in-water biology and ecology of sea turtles.

By the 1990s, however, researchers had started to turn their attention toward turtles at sea. Although they laid the groundwork for future research, early tracking efforts studied only a handful of turtles, so findings were insufficient for drawing broad conclusions about migration and foraging patterns. In the early 2000s, sea turtle specialists, in collaboration with Mexican authorities and with national and international funders, ramped up their efforts to describe migration corridors and foraging habitats for greens and hawksbills in the Yucatán.

In 2006 and 2007, in an effort funded by Mexico's Consejo Nacional de Ciencia y Tecnología (CONACYT); the state government of Campeche, Mexico; the U.S. National Fish and Wildlife Foundation; and the U.S. National Oceanographic and Atmospheric Administration Fisheries Service, a total of 10 postnesting hawksbill turtles were tracked by satellite from nine different nesting beaches on the peninsula. Turtles traveled around the Yucatán as if on a two-way road, as those nesting on the western side migrated to the east while those nesting on the eastern side migrated to the west, though always staying within Mexican waters.

In 2011, funded by CONACYT and Mexico's Secretaría de Medio Ambiente y Recoursos Naturales, another study tracked nine green turtles from eight different nesting beaches, along with one loggerhead and two hawksbills. The study provided the first available information on green turtle migratory corridors in the Yucatán and showed hawksbill



Sea turtle movements from nesting sites on the Yucatán peninsula, Mexico. Main map shows tracks of hawksbills, green turtles, and a loggerhead. Inset maps show core habitats used by hawksbills (A and B) and green turtles (C, D, and E). AT LEFT: Green turtle hatchlings race to the sea on Mexico's Yucatán peninsula. © CLAUDIO CONTRERAS

migrations that were different from those observed in previous studies, with one female migrating north to the border of the continental shelf and a male staying close to the nesting beaches.

The analysis of all 22 sea turtles tracked since 2006 made it possible to identify what appear to be 12 different feeding grounds. Two main feeding grounds were identified for hawksbills and another two for greens. Hawksbills appear to forage principally at East Isla Mujeres, an area that ended up hosting 55 percent of the tracked hawksbill females (inset image A), and the Campeche Banks, which hosted 17 percent of the tracked hawksbill females (inset image B). Greens appear to prefer the region known as Petenes-Celestún at the northwestern corner of the Yucatán for foraging, which hosted 42 percent of all tracked green turtles (inset image C), as well as the U.S. Florida Keys, which hosted 22 percent of the tracked green turtles (inset image D). The anaylsis also confirmed a well-known feeding and mating area for greens in the region, the Catoche-Contoy area (inset image E). Overall, the vast majority of turtles used waters to the north and west of the Yucatán peninsula within approximately 15 kilometers (9.3 miles) from shore as migratory corridors, while the remainder used the east coast, showing the high relevance of these zones for sea turtle conservation in the region.

This information not only is important for understanding sea turtle movements in the Mexican Caribbean but also has components that have already been used by Mexican authorities as part of the National Recovery Plans for these species and for the zoning criteria inside protected areas in the Yucatán peninsula. This last effort is particularly significant because the Yucatán hosts a booming tourism industry that could affect sea turtles and their habitats if not managed responsibly.

As projects around the world move from nesting beaches to the ocean in pursuit of new discoveries about sea turtle movements and habitat use, we should keep in mind that integrating management needs in designing, executing, and reporting research studies is fundamental to effective conservation of turtles and their marine environments. ■