RECORDS OF STRANDING SEA TURTLES IN THE NESTING BEACHES OF THE SOUTHERN NICOYA PENINSULA, COSTA RICA

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Accurate assessment of sea turtle and other large marine vertebrate mortality rates based on the spatial distribution of dead animals is challenging. Even though sea turtle stranding data represents a fraction of actual mortality, it can provide useful insights on mortality trends. Understanding this mortality, especially if the origin is anthropogenic, is vital to assess the population status and implement the necessary measures for effective conservation. This study presents sea turtle stranding records collected from 2013-2019 along a strand of five nesting beaches of the Southern Nicoya Peninsula, Costa Rica (North to South: Corozalito, Bejuco, San Miguel, Costa de Oro and Caletas). Data was gathered through night patrols and censuses, including location, date, species, sex, potential cause of death (visual inspection), Curved Carapace Length (CCL) and Curved Carapace Width (CCW). A total of 132 sea turtles stranded over the 6-yr period, mostly during the rainy season (August-October). Of the three species identified, Olive Ridleys (*Lepidochelys olivacea*) were the most abundant (97.0%), followed by Hawksbills (*Eretmochelys imbricata*) (1.5%) and Green turtles (*Chelonia mydas*) (1.5%). Stranded Olive Ridley turtles were mainly adults, with an average CCL of 65.1cm ± 13.1 (range 46.5-71.5cm, n=102), and average CCW of 69.8cm ± 16.4 (range 60.0-76.0cm, n=102). Only one Hawksbill was measured, and it was considered an immature individual (CCL=53.2cm, CCW=45.6cm), whereas both Green turtle were adults (CCL=72.0cm and 100.7cm, CCW=68.4cm and 97.8cm, respectively). It was not possible to record sex in 38.6% of the cases, when possible males were predominant (39.4%). Cause of death could not be determined for the vast majority of carcasses (77.3%), anthropogenic factors (20.5%); mainly boat strikes (13.6%) were the principal cause. Most strandings were reported for Costa de Oro (40.2%), San Miguel (34.8%) and Bejuco (10.6%), whereas events were less frequent at the northernmost (Corozalito, 7.6%) and southernmost (Caletas, 6.8%) beaches, precisely where multiple use marine protected areas had been created by the Ministry of Environment limiting shrimp trawlers operations. Reports of stranded turtles have become less frequent over the years, in spite of increased monitoring efforts, with 2013 leading the count (30.3%). The results of this study are consistent with the demographic structure of the Olive Ridleys that mate and nest year round with a higher nesting activity during the rainy season. Juvenile Hawksbills are known to inhabit the abundant rocky outcrops of the region, and adult Green turtles to use the area as a "stop over" site during their migrations. Boat strikes were the most common identified cause of death, although a greater cause of death could be forced immersion during shrimp trawl operations, hence the lower number of stranding reports near marine protected areas where the activity is banned. The reported drop in strandings since 2013 may be attributed to the phase out of the shrimp

trawl industry that initiated in 2013 and finalized in 2019. It is important to keep monitoring these cases as they provide insights regarding population structure and main sources of mortality, allowing for adaptive management.