

CLASSIFYING INJURIES OF OLIVE RIDLEY (*LEPIDOCHELYS OLIVACEA*) SEA TURTLES DURING SOLITARY AND ARRIBADA NESTING IN THE SOUTHERN NICOYA PENINSULA, COSTA RICA

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Abstract

Sea turtles maintain their commitment to reproduction even after a traumatic injury event, yet there is no systematic approach for recording injuries during nesting nor any data on the types of injuries observed along nesting beaches. The Rescue Center for Endangered Marine Species (CREMA) operates on nesting beaches along Costa Rica's southern Nicoya Peninsula and works primarily with olive ridley (*Lepidochelys olivacea*) turtles. Until 2019 the protocol for both solitary and mass nesting (arribada) events documented the injury's location on the turtle with an observation. This practice was highly subjective and difficult to quantify. The percent cover system for severity and classifications for specific causes of injuries implemented in 2019 aim to standardize data collection and enable comparison of injuries for both reproductive strategies. Two nesting seasons were investigated: 2018 with non-standardized data collection; and 2019, when a classification system was initiated for new data (i.e. variables) recording. The classifications consist of a code for each major cause of injury observed: *Fishing Gear (FG)*, *Vessel Strikes (VS)*, *Shark Attacks (SA)*, *Natural Deformations (ND)* and *Unknown (UN)* sources of injury and a percent cover system to assess severity which will be noted in the field observations and classified as: *Indeterminate*, *Mild (<25%)*, *Moderate (<50%)*, *Severe (<75%)*, *Missing, or Extensive (>75%)* and *Many* to account for more than 3 moderate or higher injuries. 2018 did not include severity recording in the protocol so keywords were assigned to specific severities from the observations. A total of 455 olive ridley turtles were observed nesting with injuries over the 2 years of study; 337 during solitary nesting and 118 during arribada events. The most common cause of injury was *UN* for both solitary (n=289, 86%) and mass nesting (n=94, 80%) events, with the second most observed cause of injury as *SA* (n=17, 5%) for solitary and *ND* (n=15, 13%) in arribadas. Injuries with identifiable causes were primarily due to natural deformities (n=29, 6.37%) and shark attacks (n=20, 4.39%). Shark attacks and vessel strikes

caused the most extensive injuries. During solitary nesting the majority of turtles had *Mild* (n=128, 38%) or *Indeterminate* (n=83, 25%) severities. In arribadas, severity was fairly even between *Indeterminate* (n=38, 32%), *Mild* (n=32, 27%) and *Missing/Extensive* (n=21, 18%). Most injuries were seen during solitary nesting highlighting that solitary nesters should not be overlooked when collecting data on Olive ridley turtles as is often done with this species, even though *Mild* injuries were the most common. This could be due to the non-standardized language used and conversion methods implemented for severity. Unsurprisingly then, the main cause of injury throughout the study for both nesting strategies was *Unknown*; due to insufficient observations to determine probable cause and severities. Implementation of the new standardized reporting method is also expected to eliminate the large number of *Unknowns*. This standardized injury reporting will be an essential tool in future research on nesting success, injury distributions, and injury response during nesting.

Key words: Eastern Pacific population, classification system, conservation

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