Stingray spines (or barbs) are located on the caudal tail along the dorsal edge of most cartilaginous fishes. They are modified dermal denticles composed of vasodentin (a strong cartilaginous material) with venom-secreting cells that run along the ventral side of the barb and with reverse serrated "hook" edges (Figure 1). Marine mammals have been observed feeding on or interacting with stingrays, sometimes with fatal consequences (Visser 1999, Duigan et al. 2000, Hocking et al. 2020). Killer whales in Brazil and New Zealand had stingray remains in gut contents (Castello 1977, Duigan et al. 2000) as did a bottlenose dolphin in South Carolina (Conway and McFee 2017). Injuries and mortalities have also been documented in bottlenose dolphins in Florida, South Carolina and the Red Sea (Walsh et al. 1988, McFee et al. 1997, Burdett and Osborne 2010, Spanier et al. 2000, Weisbrod et al. 2000).

The long-term resident dolphins of Sarasota Bay (a shallow, partial seagrass estuary with barrier islands and inlet passes into the Gulf of Mexico on the west coast of Florida) share their habitat with a variety of Myliobatiform fishes such as whitespotted eagle rays, cow nose rays and southern rays (Bassos-Hull et al. 2014). We investigated how dolphins from this area are impacted from encounters with these stingrays and how the spines from these encounters caused injury and mortality.

**Methods**

Dolphins in Sarasota, Florida USA were examined for stingray spine puncture wounds and presence of stingray spines during health assessments 1984-2019. Wound location on the body was scored as presented in Figure 2. Mote Stranding Investigations Program recovered carcasses of Sarasota resident dolphins and noted presence of stingray spines during necropsy and if spine was potential cause of death (COD).

**Results and Case Studies of Injuries/Mortalities**

- Thirty-one dolphins had confirmed or possible stingray spine wounds when examined during CZS-SDRP health assessments. Body region 1 (dorsal anterior portion of body) had the most spine wounds compared to other body regions (Figure 2). Case studies from four of these dolphins are presented in Figures 3-6.

- Twenty dolphins recovered by Mote SIP had stingray spines present - 11 were determined to be cause of death. Spines were found in musculature, organs, cavity, and post-cranial skeleton. Case studies from five of these dolphins are presented in Figures 5-9.

**Discussion**

- Stingray barbs cause injury and mortality to Sarasota resident dolphins. Evaluating shifting baselines of predator and prey and natural mortality causes is important for management of this species.

- Stingray spine punctures occur most often on the dorsal anterior portion of body likely as a result of dolphins flushing stingrays up and over the top of their body as they forage or travel in shallow seagrass or sand/mudflat areas.

- Veteranarian removal of spines during health assessments probably prevented more serious injury or death from stingray spines migrating in or penetrating vital organs in some of the presented case studies.

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