

Marine hotspots revealed outside the breeding season for the Olive Ridley turtles along the Pacific coast of Nicaragua

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Olive Ridley turtles (*Lepidochelys olivacea*) are classified as vulnerable on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Abreu-Grobois, 2008) and are known to migrate between breeding and foraging sites (Da Villa, 2011). Most research studies and conservation efforts focus on nesting beaches, but coastal distribution and habitat use patterns have been poorly investigated (Peavey, 2017). It is unclear where Olive Ridley turtles exactly occur and how their distribution overlaps with anthropogenic activities, especially with fisheries. Nicaragua is a known breeding area for olive ridley turtles, but little is known on their ecology and marine distribution. This study aims to identify hotspots outside the breeding season and critical habitats to ensure effective and successful management plans for the recovery of Olive Ridley turtles.

To reach this objective, sightings of turtles were collected on boat-based surveys initially planned for cetacean research expeditions along the Pacific coast of Nicaragua. Two study sites were considered: Padre Ramos (northwestern site) a pristine area compared to the second site San Juan del Sur (southwestern site) that is facing coastal anthropogenic pressure such as fisheries and unregulated ecotourism. Research expeditions took place between January and April from 2016 until 2020 (except 2019) which are outside breeding season. Whenever a turtle species was encountered, the number of individuals, their behaviour (Surfacing, Swimming, Mating), gender, time, date and the geographic position were gathered. The presence of any type of boats was assessed every 30 minutes during survey effort. The Kernel Density Estimation algorithm of GIS allowed to generate maps of marine hotspots of Olive Ridley Turtles. Our preliminary result shows that turtle occurrence vary between sites. Two hotspots were identified; one in the North further away from the coast and one in the South located closely to a beach known for hosting mass-nesting events (arribada) of Olive Ridley turtles.

Increasing knowledge of turtle distribution will help increase conservation measures in the future. Our research will further investigate the influence of environmental parameters on their distribution patterns and verify whether they overlap with fishing activities, which will give important information for decision makers to reconsider the size of their marine protected areas.

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