Introduction

Recreational diving is traditionally viewed as an ecologically sustainable activity.

Little is known about the effects of recreational diving on sea turtle populations.

Goal: To determine if differences in dive site use and habitat composition can affect the rate of Hawksbill sea turtle (Eretmochelys imbricata) sightings in a marine protected area.

Hypothesis: Hawksbill sightings rates will be higher for sites with heavy diving pressure.

Methods

Turtle Sightings and Dive Logs

- We distributed turtle sightings survey forms to 14 dive operations over 4 months.
- Dive logs were collected from 2 dive operations for 3 months.
- Hawksbill sightings rates were mapped against diver density using ArcMap GIS.

Habitat Assessment

- Habitat surveys were conducted of 12 hawksbill foraging sites.
- We photographically surveyed 5–7 transects at each site using a 30 m transect and 1 m² quadrate.
- We analyzed habitat using CPCe 14 software (Fig. 1).

Results

Turtle Sightings and Dive Logs

- 666 hawksbills, 420 greens, 4 loggerheads, and 22 unknown sightings from 701 dives.
- Dive logs at 46 sites for 5342 divers on 1014 dives (Multiple divers on each dive).

Spatial Distribution (Fig. 2)

- No relationship between turtle sightings and number of divers at each site.
- No relationship between turtle sightings and number of divers per dive at each site.

Monthly variability

- Total hawksbill sightings peaked in July and was lowest in September (Fig. 3).
- Sightings survey effort peaked in July and was lowest in September (Fig. 4).

Habitat Assessment

- 5 sites: Algae abundance high (>60%).
- 12 sites: Algae abundance moderate (<60%).
- 3 sites: Coral abundance low (<10%).
- 9 sites: Coral abundance moderate (>10%).
- High coral abundance did not correlate with low algae abundance.

Conclusions

Habitat

- Heavily dived sites did not significantly differ in habitat composition from sites that were not heavily dived.

Turtle Sightings and Dive Logs

- Recreational diving did not impact hawksbill sightings rates over a 4 month period, suggesting that hawksbill abundance is independent of diver presence.

- Additional sightings and habitat studies should be conducted to determine if recreational diving effects hawksbill sightings rates over multiple seasons.

References


Acknowledgements

This research was funded by ProTECTOR and Loma Linda University. We would like to thank Giacomo Palavincini, Nic Bach and the Roatan Marine Park for providing us with equipment and transportation, ISTS, Kelly Stewart, and all the travel grant sponsors for their support, Lidia Salinas for help with logistics, DIGIPESCA and SAG for research permits, Ed Santos and Lance Pomper/Merdivoort for ArcGIS® support, West End Divers, Coconu Dive Divers, and Splash Inn for providing us with dives, Jimmy Miller for transportation, and the many volunteers who helped us with data collection.