

Presenting Author: Marsha Wright  
Author's e-mail: mkwright@llu.edu  
Fax: (909) 558-0259  
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QUANTIFICATION AND IMPACTS OF NAUTICAL TRAFFIC ON HAWKSBILL  
PRESENCE IN A HONDURAN MARINE PROTECTED AREA: A PROGRESS REPORT

Wright, Marsha<sup>1, 2</sup>  
Baumbach, Dustin<sup>1, 2</sup>  
Trujillo, Daniel<sup>3</sup>  
Cruz LeDuc, Justin<sup>4</sup>  
Salinas, Lidia<sup>5</sup>  
Dunbar, Stephen G.<sup>1, 2, 4, 5</sup>

<sup>1</sup>Marine Research Group, Department of Earth and Biological Sciences, Loma Linda University, Loma Linda, CA 92350

<sup>2</sup>Protective Turtle Ecology Center for Training, Outreach, and Research, Inc. (ProTECTOR Inc.), Loma Linda, CA 92350

<sup>3</sup>Department of Biological Sciences, Walla Walla University, College Place, WA 99324

<sup>4</sup>ProTECTOR Inc. Internship Program, Loma Linda, CA 92350

<sup>5</sup>Protective Turtle Ecology Center for Training, Outreach, and Research, Inc. (ProTECTOR - Honduras) Tegucigalpa, Honduras

Marine protected areas (MPAs) have been implemented to help reduce negative impacts of human activities on marine organisms. However, many MPAs overlook specific threats, such as nautical traffic. Boat presence has been shown to alter typical activity patterns, increase stress, and lead to physical injury in marine animals. The Sandy Bay West End Marine Reserve (SBWEMR) was implemented to protect the northwestern shore and marine environments of Roatán, Honduras, and the organisms that inhabit them, including the hawksbill sea turtle. However, there are many dive centers, hotels, and marinas in the SBWEMR, all of which generate boat traffic. To evaluate the variation in boat traffic, and its relation to hawksbill presence throughout the SBWEMR, we divided the reserve into 3 zones: West Bay (WB), West End (WE), and Sandy Bay (SB). We further divided these zones into sectors for counting purposes. The WB, WE, and SB zones were comprised of 4, 5, and 5 sectors, respectively. Boat counts took place over a period of 70 days, with observations in each sector lasting 20 minutes within three time periods: morning (8:30-10:30), midday (12:00-14:00), and late afternoon (14:30- 16:30). Boat counts in each time period were used to calculate boat intensity (i.e. the number of boats

passing through an area per hour). A total of 2,957 boats were counted. Our data did not show a difference in boat intensity between the WB and WE zones. However, boat intensity in the SB zone was significantly lower than both the WB and WE zones. We also found no difference between the morning (WB = 44, WE = 44, SB = 11), midday (WB = 36, WE = 37, SB = 5), or late afternoon (WB = 38, WE = 43, SB = 9) time periods. A total of 93 in-water hawksbill surveys were completed using SCUBA in the WB and WE zones in the morning (WB = 30, WE = 14) and late afternoon (WB = 18, WE = 31). During the surveys, hawksbill sightings were recorded in WB and WE in the morning (WB = 22, WE = 12) and late afternoon (WB = 15, WE = 24). Sightings were normalized to account for unequal observations, with no differences in hawksbill sightings observed between zones or time periods. These preliminary results suggest there is no difference in hawksbill presence in the WB and WE zones. However, more data collection is needed from the SB zone to complete the analysis of turtle presence throughout the SBWEMR. Preliminary in-water observations of hawksbills in the presence of boats suggest that they are indifferent to boat traffic. However, other factors, such as maturity and near-encounters with boats, could affect their responses. Further studies of juvenile hawksbills in the presence of boats will help clarify the impacts of boat traffic on hawksbill behavior and their resulting distribution throughout the reserve. Data collected from this study can be used to determine the adequacy of the marine reserve and if boat traffic should be monitored and regulated.

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