SPATIOTEMPORAL ANALYSIS OF HAWAIIAN GREEN SEA TURTLE (*CHELONIA MYDAS*) STRANDINGS ON MAUI, HAWAII (2017-2024)

Robin Cheung, Yoga Korgaonkar

The University of Arizona

Geographic Information Systems (GIS) enable visualization and analysis of datasets to reveal spatial and temporal patterns that inform conservation strategies, identify emerging threats, and improve our understanding of ecosystem dynamics. This study explores spatiotemporal patterns in the Hawaiian green sea turtle (*Chelonia mydas*) strandings and entanglements along the Maui coastline from 2017 to 2024, using data that was collected by the Marine Institute of the Maui Ocean Center (MOCMI) and made available through the National Oceanic and Atmospheric Administration (NOAA) Fisheries. Using this data, 1,297 strandings of Hawaiian green sea turtle were analyzed. Esri ArcGIS Pro was used to conduct Hot Spot analysis using the Getis-Ord Gi* statistic to determine spatial clustering of turtle strandings along the Maui coastline. Counts and percentages by age classes, region, and stranding causes were also calculated using summary statistics tools available in ArcGIS Pro. These results were visualized to create cartographic products that revealed spatial patterns along the Maui coastline. The majority of strandings involved sub-adults (36.1%) and juveniles (36.8%), followed by adults (23.1%). Hot Spot Analysis revealed spatial clustering of strandings with two hotspots along the central Maui coastline, four hotspots along the western coastline, and four hotspots along the southern coastline. Hot Spot Analysis also revealed the age distribution along Maui's coastline, showing a significant cluster of adults, sub-adults, and juveniles in different regions. The central coastline region shows the highest concentration of adult sea turtle hotspots (six locations); the western coastline had the highest hotspot for juveniles (eight locations), while the southern coastline has a mixture of all three age-groups (seven juvenile clusters and six adult/sub-adult clusters). The south region of the Maui coastline exhibited the highest stranding counts across all age classes, especially sub-adult (316) and juvenile (304) turtles. The western region was dominated by juveniles (120), followed by sub-adult turtles (99). The central region showed moderate strandings, especially among adults (75). Only two strandings were recorded along the eastern coastline of Maui. Fishing line entanglement was the leading cause of strandings (48.5%), followed by foul-hooked (22.2%). Overall, GIS tools effectively revealed spatial and demographic patterns in sea turtle strandings, providing actionable insights for conservation planning. These findings can inform targeted conservation actions, habitat protection, public awareness campaigns, and resource allocation. Future work should address data gaps in underreported regions, evaluate long-term injury outcomes, particularly in juvenile and sub-adult populations, and assess the impacts of human activities on turtle health and distribution.

LONG-TERM IMPACTS OF INTRODUCED PREDATORS ON GREEN SEA TURTLE NESTING BEACHES ON ULITHI AND SOROL ATOLLS IN YAP STATE, FEDERATED STATES OF MICRONESIA*

Jennifer Cruce Horeg

University of the Sunshine Coast, Guam (U.S.)

Green Sea Turtle (*Chelonia mydas*) populations nesting on Ulithi and Sorol Atolls, Federated States of Micronesia, face significant recruitment challenges due to nest predation from introduced species, primarily monitor lizards, feral pigs, and rats. Historical nest predation rates on impacted islands have

exceeded 85%. This study uses long-term nesting data (1991–2025) from two beaches on Ulithi Atoll: Loosiep Island, which has been affected by introduced predators, and predator-free Gielop Island to quantify predation dynamics and evaluate the effectiveness of management interventions. Limited nesting observations from Sorol Island collected during 2024–2025 are included to document current nesting conditions and predation presence. The Bennett's Long-tailed Monitor (*Varanus bennetti*), endemic to parts of Micronesia and the Mariana Islands, was introduced to Loosiep and Sorol Islands during the 1940s–1950s. Using nesting data collected on Loosiep Island from 2008–2024, we compare nest predation rates before and after feral pig (*Sus scrofa*) removal and during monitor lizard eradication efforts (2019–2025), integrating predator demography to assess impacts on nest survival. Results indicate that pig removal substantially reduced peak historical nest loss (from ~86% to ~63%); however, overall nest survival remained low where monitor lizards and rats (*Rattus spp.*) persisted. Predation followed a bimodal temporal pattern: an early-incubation phase dominated by V. bennetti acting as a keystone excavator, followed by a late-incubation phase characterized by secondary scavenging. Partial predation by monitor lizards functions as the primary disturbance by opening nests and triggering secondary mortality via microbial contamination, altered nest microclimate, and facilitated access by scavengers (e.g., crabs). Rats further contribute to ecosystem degradation by suppressing seabird nesting, reducing nutrient subsidies that support vegetation, sediment stability, and invertebrate communities that influence the quality of sea turtle nesting habitat. A community-driven Integrated Pest Management (IPM) strategy was implemented on Loosiep Island, centered on targeted removal of nest predators and long-term biosecurity measures to protect nesting habitat. This approach has shown clear initial success: near-complete eradication of the monitor lizard population by 2025 coincided with the absence of detected nest predation and a significant improvement in nest survival. These findings demonstrate the feasibility and substantial conservation benefit of transitioning from short-term predator control to permanent protection of nesting beaches on small, bounded island systems. Extension of this eradication and biosecurity framework to Sorol Island and other impacted rookeries is recommended to enhance hatchling production, improve recruitment potential, and support long-term recovery of green sea turtle nesting populations.

AN EFFECTIVE FRAMEWORK TO UNDERSTAND MARINE MEGAFAUNA BYCATCH IN WEST AFRICA FROM STRANDINGS*

Andrea Fariñas-Bermejo[1], Graham John Pierce[1], Manjula Tiwari[2]

[1]*Institute of Marine Research (IIM-CSIC), Spain*
[2]*Ocean Ecology Network, California, USA*

Bycatch mortality is a major threat to marine megafauna worldwide. The on-going REDUCE project aims to increase knowledge and mitigate bycatch impacts on marine megafauna in the Central-Eastern Atlantic, using a variety of data including fisheries observers, fishers interviews, and animal tagging. Here we present an initiative to assess and, where possible, improve the potential for collecting information about bycatch mortality from stranding events. This initiative aims to establish a robust, effective and independent long-term framework to monitor stranded marine megafauna for a better understanding of the potential threats faced, based on a collaborative effort. Robust data collection will be pursued by creating a strong, stable and extensive network of stakeholders collecting information from strandings. Effectiveness is sought by learning from stakeholders and promoting information exchange, incorporating similar ongoing local and external initiatives, and providing logistical support for data and sample collection. Independence is sought by adapting data collection methods to local constraints, reinforcing capacity building, and strengthening communication. Initial individual and collective meetings with 22 stakeholders from 15 countries in the Central-Eastern Atlantic, have provided information on the current stranding systems, information collected and methods used, and the main limitations. Systematic collection

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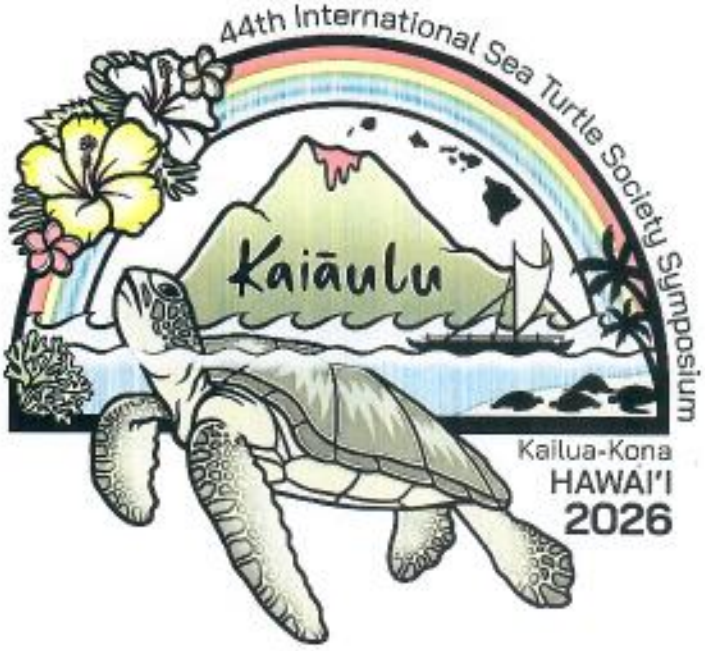

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Paul A. Whittock, Lisa C. Belskis, & Joseph B. Pfaller

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