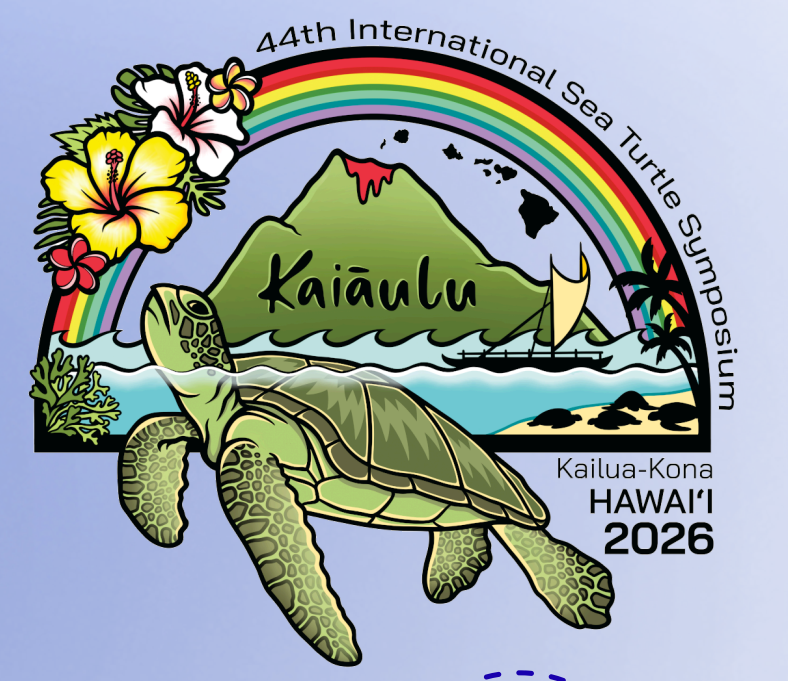




TWO DECADES OF CITIZEN SCIENCE DATA REVEAL HABITAT USE, POPULATION STRUCTURE, AND MOVEMENTS OF SEA TURTLES IN THE EGYPTIAN RED SEA

SOFIA PIROLA^{1,3}, AGNESE MANCINI^{2,3}, MICOL MONTAGNA^{3,4}, VALERIA ROMA³, REBECCA MONTANARI³, TOKA ELDAKAMAWY³, ABDALLAH R. TAHER^{3,4}, MAHMOUD H. HANAFY^{5,6}

¹ UNIVERSITA' DEGLI STUDI DI MILANO, IT ; ² GRUPO TORTUGUERO DE LAS CALIFORNIAS, MX ; ³ TURTLEWATCH EGYPT 2.0, EG ; ⁴ MARINE LIFE CONSERVATION AND PRESERVATION FOUNDATION, EG ; ⁵ SUEZ CANAL UNIVERSITY, EG ; ⁶ HEPCA - HURGHADA ENVIRONMENTAL PROTECTION AND CONSERVATION ASSOCIATION, EG



INTRODUCTION

The Egyptian Red Sea hosts five sea turtle species, with green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles most commonly observed feeding and nesting on coral reefs. Their frequent overlap with recreational divers enables effective citizen science. Turtlewatch Egypt 2.0, established in 2011, is the first and longest-running citizen science sea turtle project in the region. In this poster, we describe how, using photo-identification, we were able to generate long-term data on habitat use, population structure, and short-term movements of green and hawksbill turtles, contributing to regional conservation and ecosystem management.

OBJECTIVES

- 1 Describe habitat preferences per species
- 2 Describe population structure
- 3 Identify site fidelity and short term movements of green and hawksbill turtles

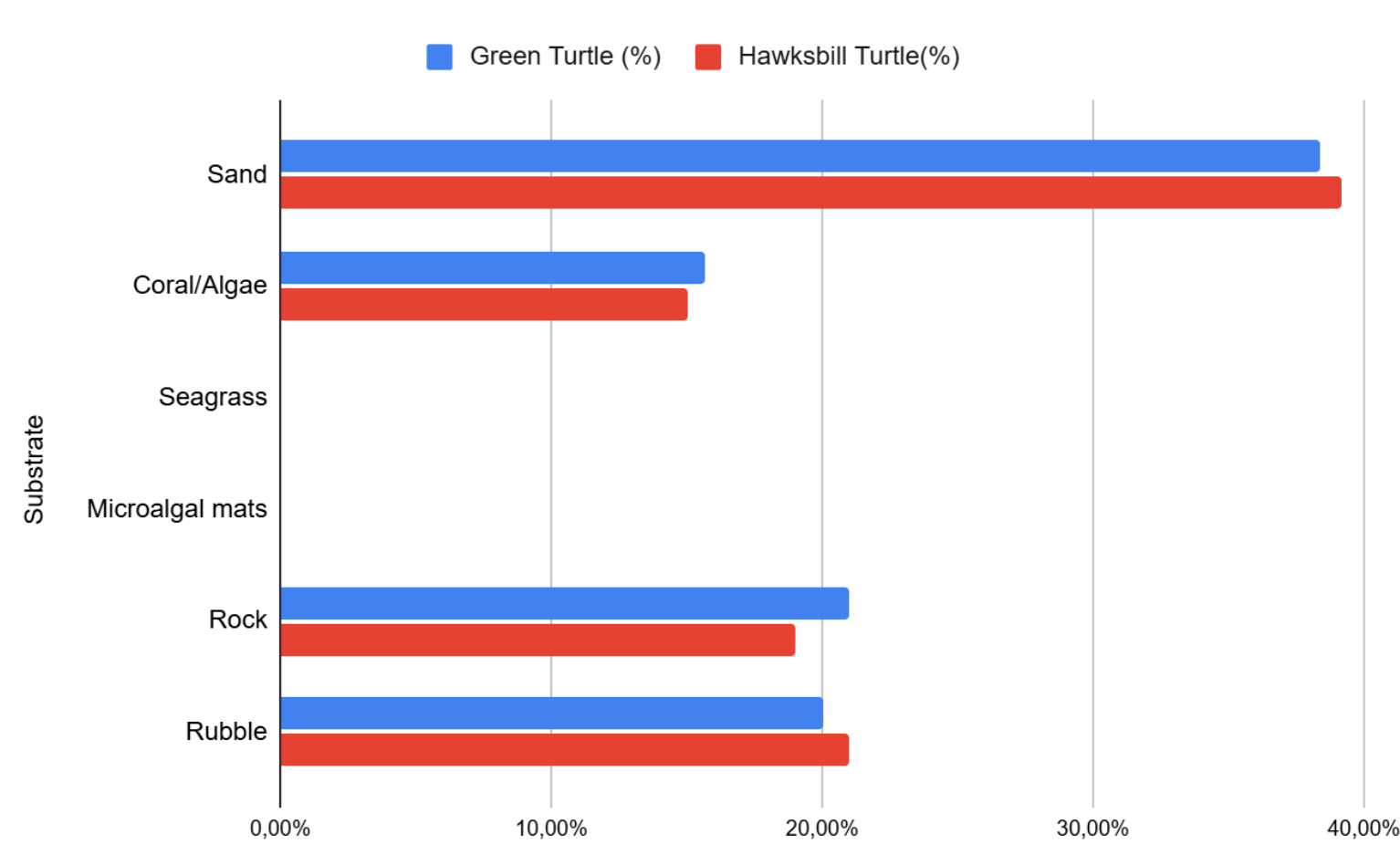
METHODS

TWE 2.0 relies on data provided by citizen scientists who report videos and pictures of the turtles they observe during their visit to the Red Sea. Using photo identification, specifically the facial profiles, TWE team is able to identify individual turtles using citizen science reports and therefore follow individuals over time. The current TWE database contains more than 9,000 reports, and span over a period of about 20 years including archive images dating back to 2003 (or whatever the oldest record is). Up to now, a total of 562 individual green and 308 individual hawksbill were identified across more than 200 sites covering the Egyptian Red Sea, Jordan, Djibouti, Sudan, Saudi Arabia.

RESULTS & DISCUSSION

Objective 1. Habitat preferences

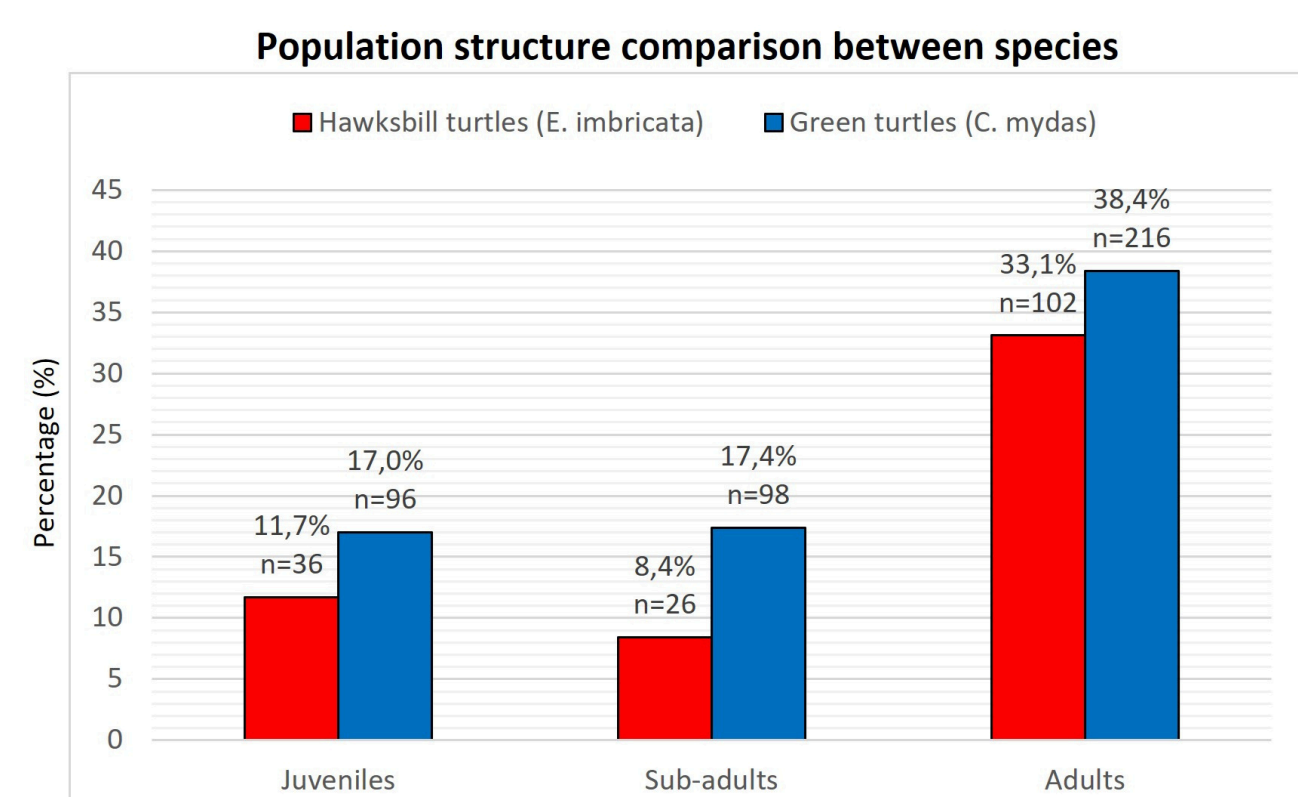
Sand was identified as the preferred substrate for both species. This is primarily due to its dominance in the study area and the high frequency of turtles observed in active transit or inter-patch displacement



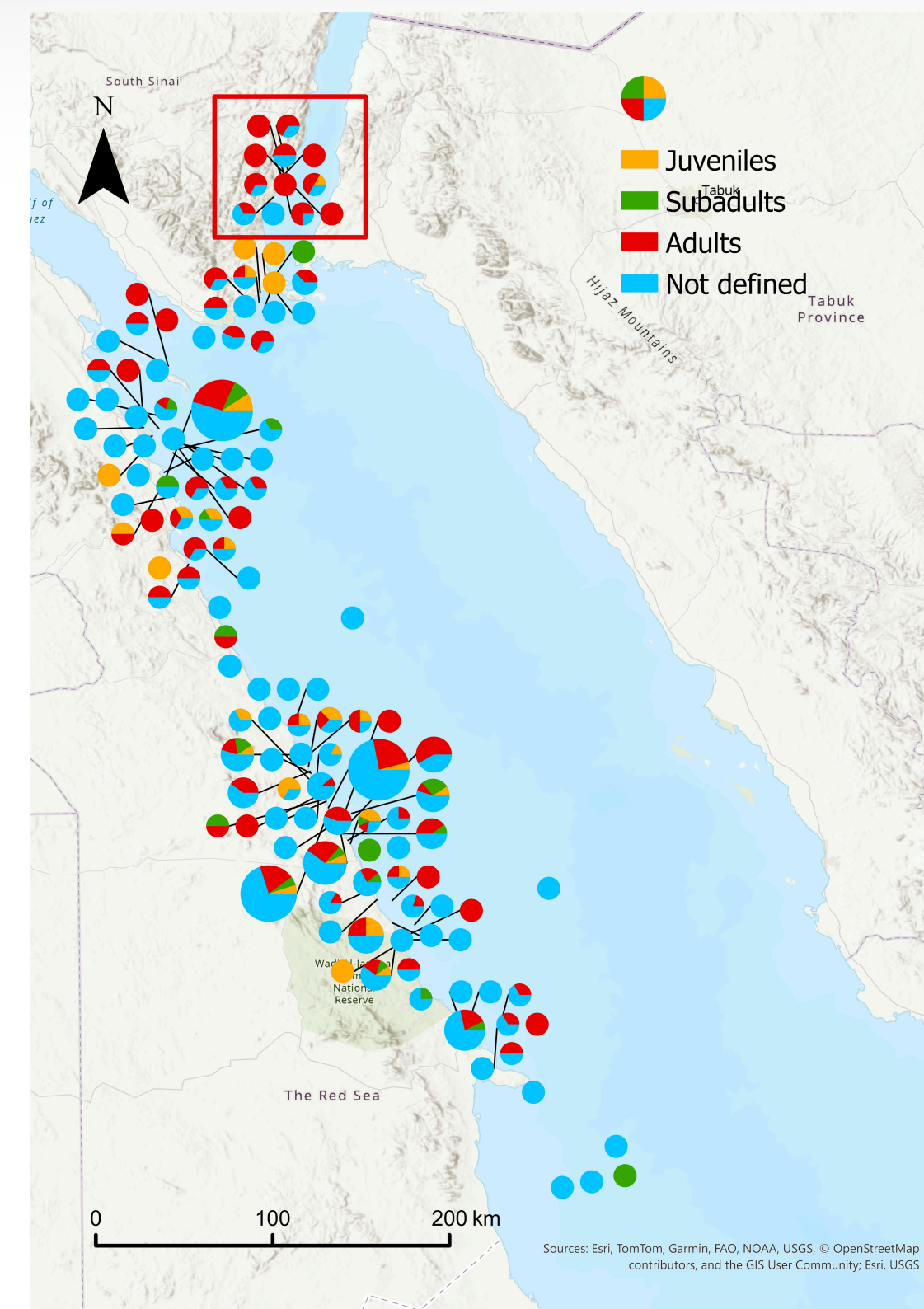
Substrate preference by species. Percentage distribution of sightings for Green (*Chelonia mydas*) and Hawksbill (*Eretmochelys imbricata*) turtles across different substrate types. Bars represent the relative frequency of encounters per category

Objective 2. Population structure

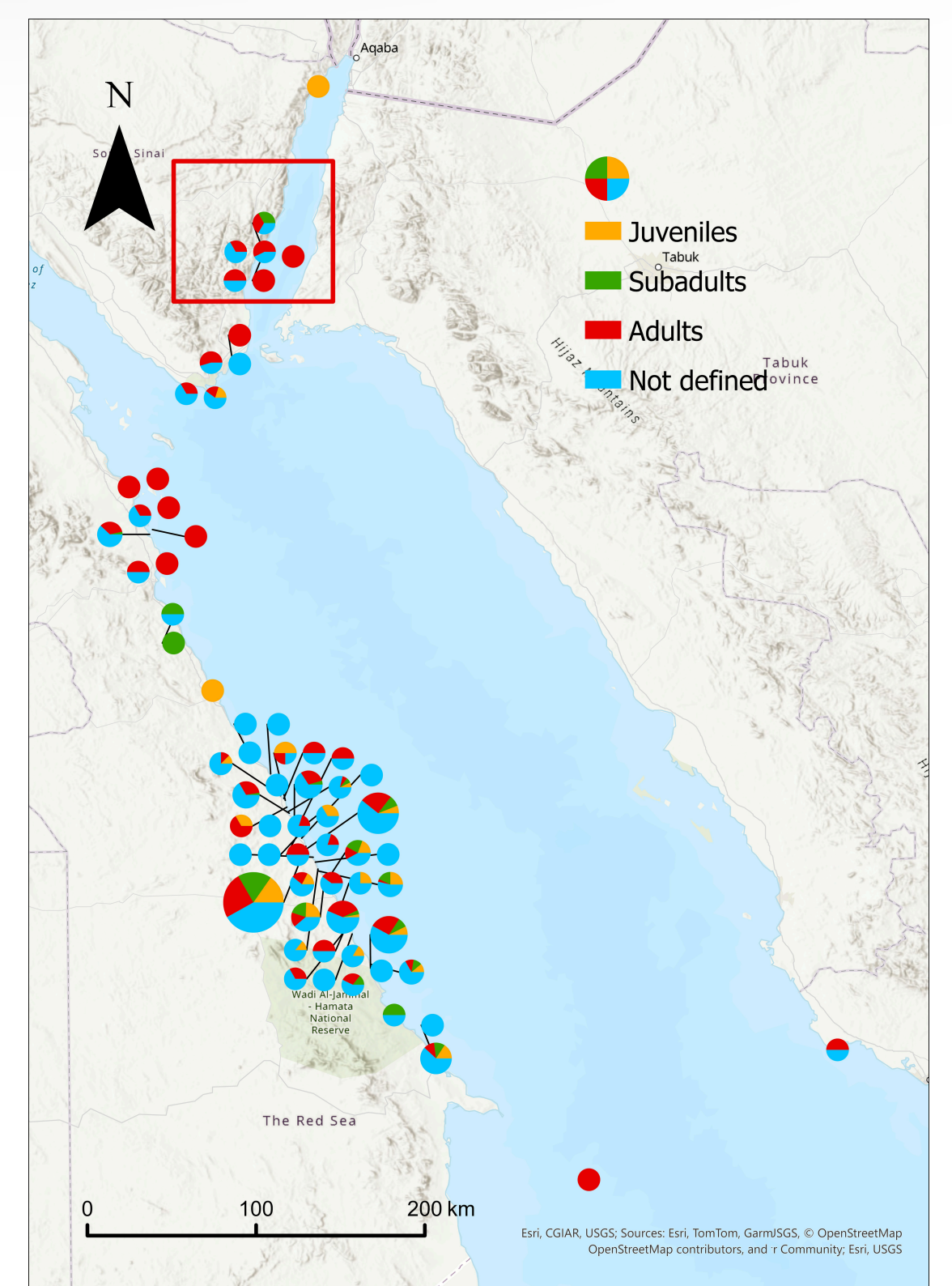
Green and hawksbill adults dominate northern sites, while juveniles are more common in the south, revealing a clear north-south population gradient.



Population structure of green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*) by age class (juveniles, sub-adults, adults).



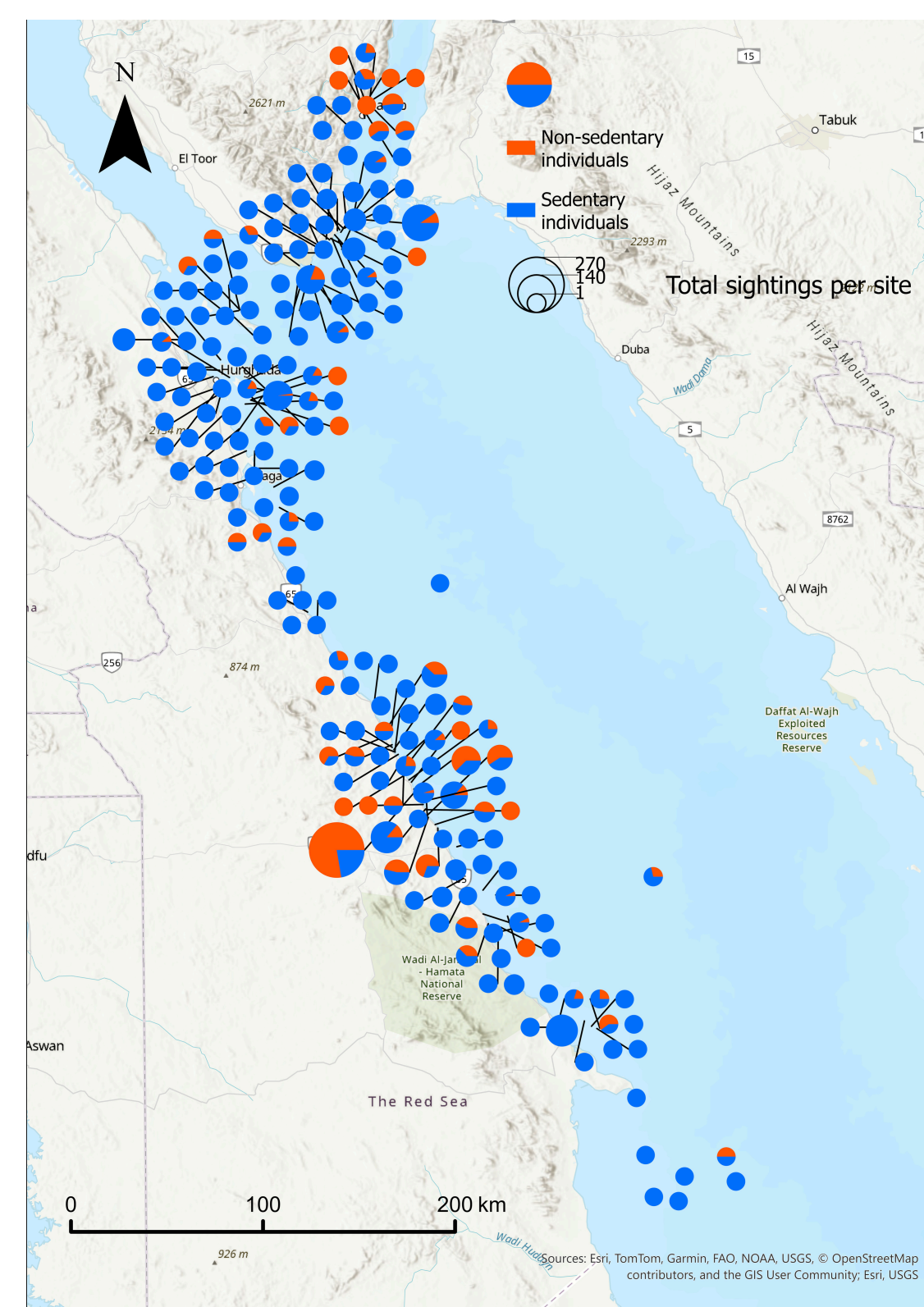
Percentage distribution of age classes of known hawksbill turtle (*Eretmochelys imbricata*) individuals by site. Pie chart size represents the total number of known individuals recorded at each site. The highlighted area corresponds to the Dahab region, where adults are predominant.



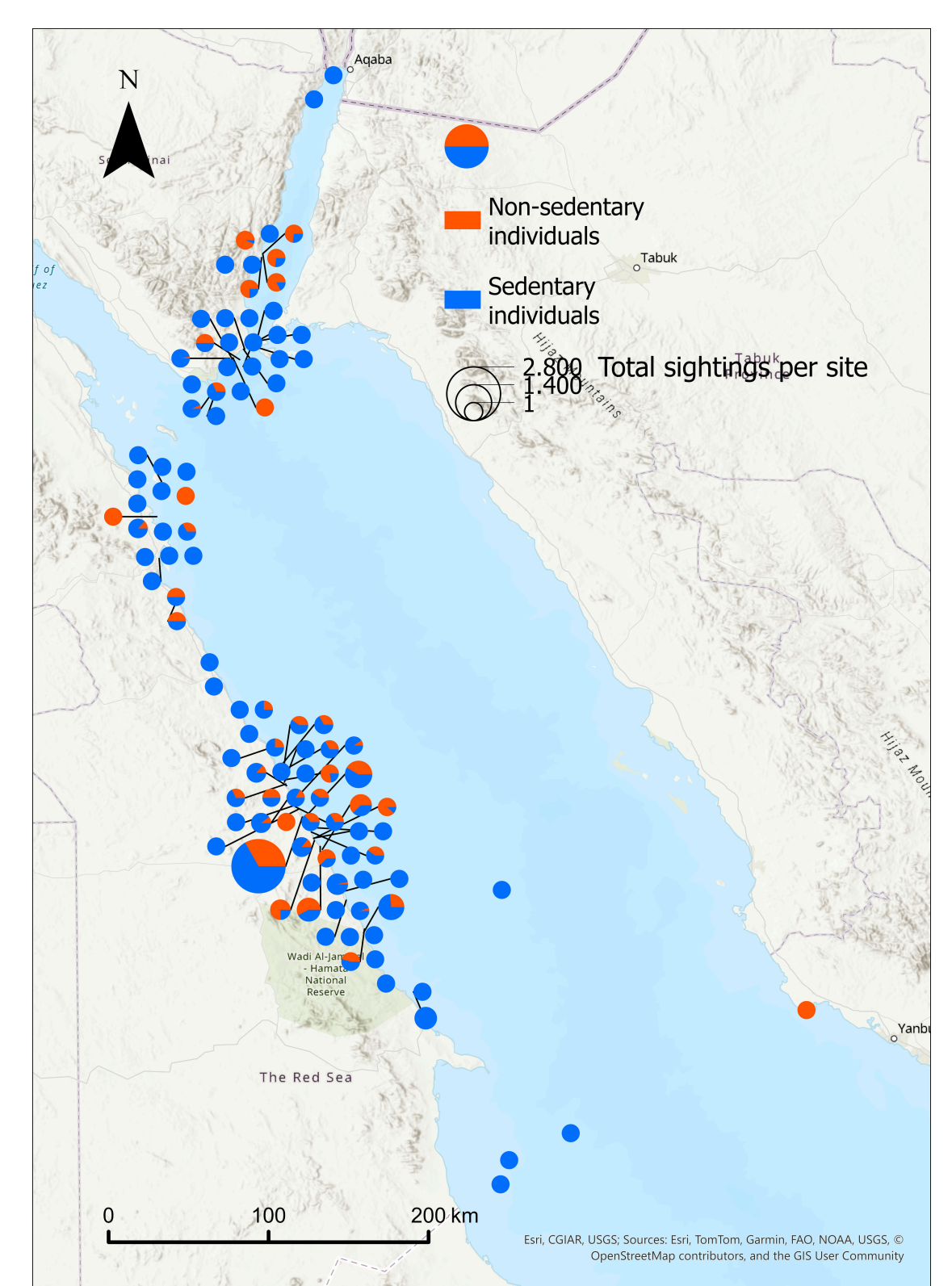
Percentage distribution of age classes of known green turtle (*Chelonia mydas*) individuals by site. Pie chart size represents the total number of known individuals recorded at each site. The highlighted area corresponds to the Dahab region, where adults are predominant.

Objective 3. Site fidelity and movements

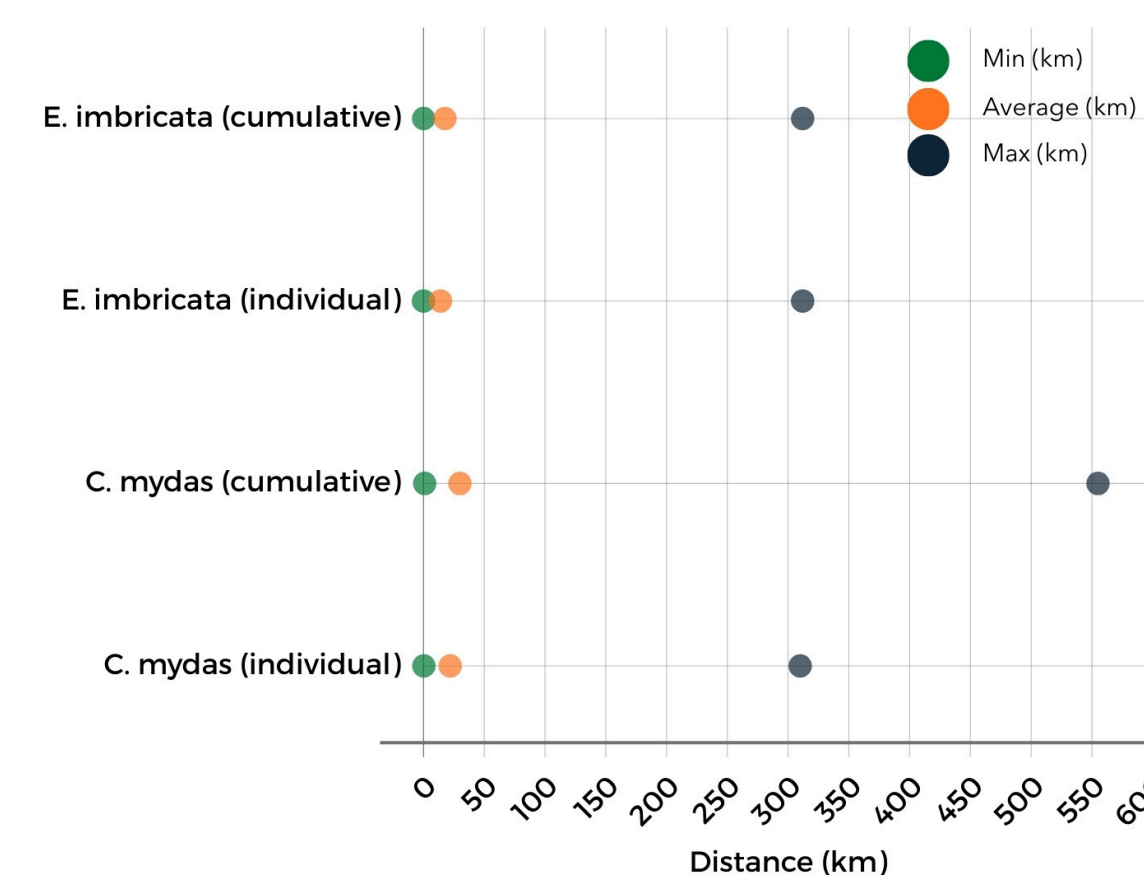
Our findings reveal high site fidelity for the vast majority of individuals, with only limited short-term movements recorded. Notably, areas with peak turtle densities overlap significantly with high-tourism zones. Given the prolonged residency of turtles in these hotspots, mitigating anthropogenic threats, specifically vessel-related injuries, is critical for local population recovery.



Percentage distribution of sightings of known sedentary and non-sedentary hawksbill turtle (*Eretmochelys imbricata*) individuals by site. Pie chart size represents the total number of sightings recorded at each site.



Percentage distribution of sightings of known sedentary and non-sedentary green turtle (*Chelonia mydas*) individuals by site. Pie chart size represents the total number of sightings recorded at each site.



Cumulative and individual minimum, maximum, and average movement range of green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*), based on photo-identification records.

NEXT STEPS

- Continue our study and expand number of identified individual turtles
- Work in collaboration with partners in Djibouti, Saudi Arabia and Jordan to better follow up on turtle movements
- Identify high risk areas and threats to sea turtles and work on collaborative strategies with park rangers and local groups to improve conservation



ACKNOWLEDGMENTS

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