

MARINE MAMMAL MONITORING IN THE SOUTHWEST PACIFIC STATE OF GUERRERO, MÉXICO

Andrea J. García Chávez, Terra Hanks, John Calambokidis, Elana Dobson, and Katherina Audley



Marine mammal diversity, abundance and habitat use data are lacking in the southwestern Pacific state of Guerrero, México (N 17 ° 34' W 101 ° 27'). Aggressive behavior from fishing and tourist boats toward marine mammals, exacerbated by the absence of monitoring and enforcement underlies the need for a better understanding of species present. Our intended five-year study aims to document presence/absence of marine mammals, to establish patterns of spatio-temporal habitat use and to identify sensitive marine mammal areas in the interest of improved ecosystem management.

METHODS

Between January-March during 2014-2017, we conducted 200 boat surveys (1,303 hours), covering 50 coastal miles surrounding Ixtapa-Zihuatanejo and extending 10 NM to sea. Our focal species was humpback whales; we collected data on other marine mammals and large marine fauna opportunistically. We sampled acoustically every 30 minutes, recorded behavior and noted resightings inter- and intra-annually. Community members participated in field studies and public educational programs to foster responsible marine stewardship (images on right).

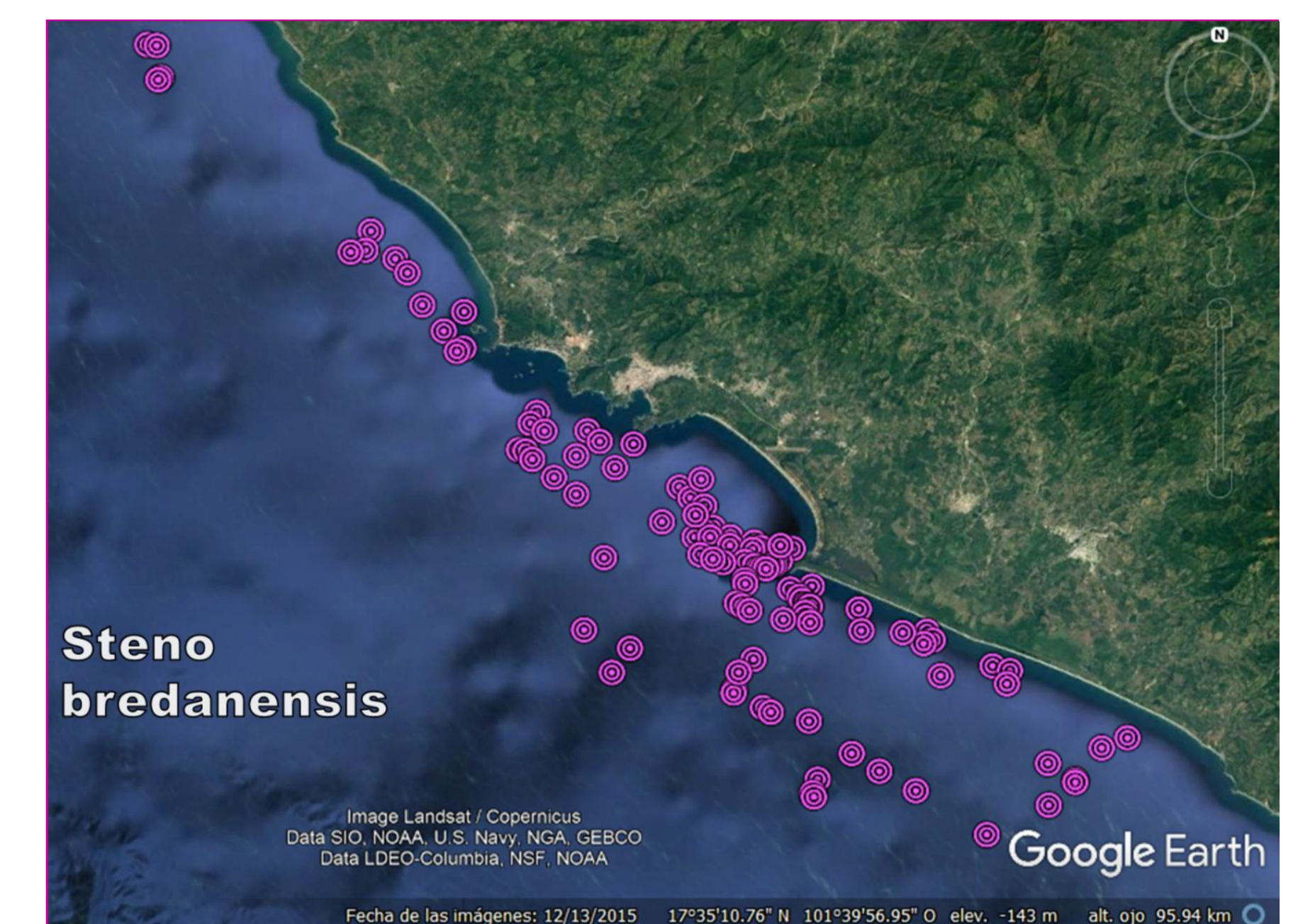
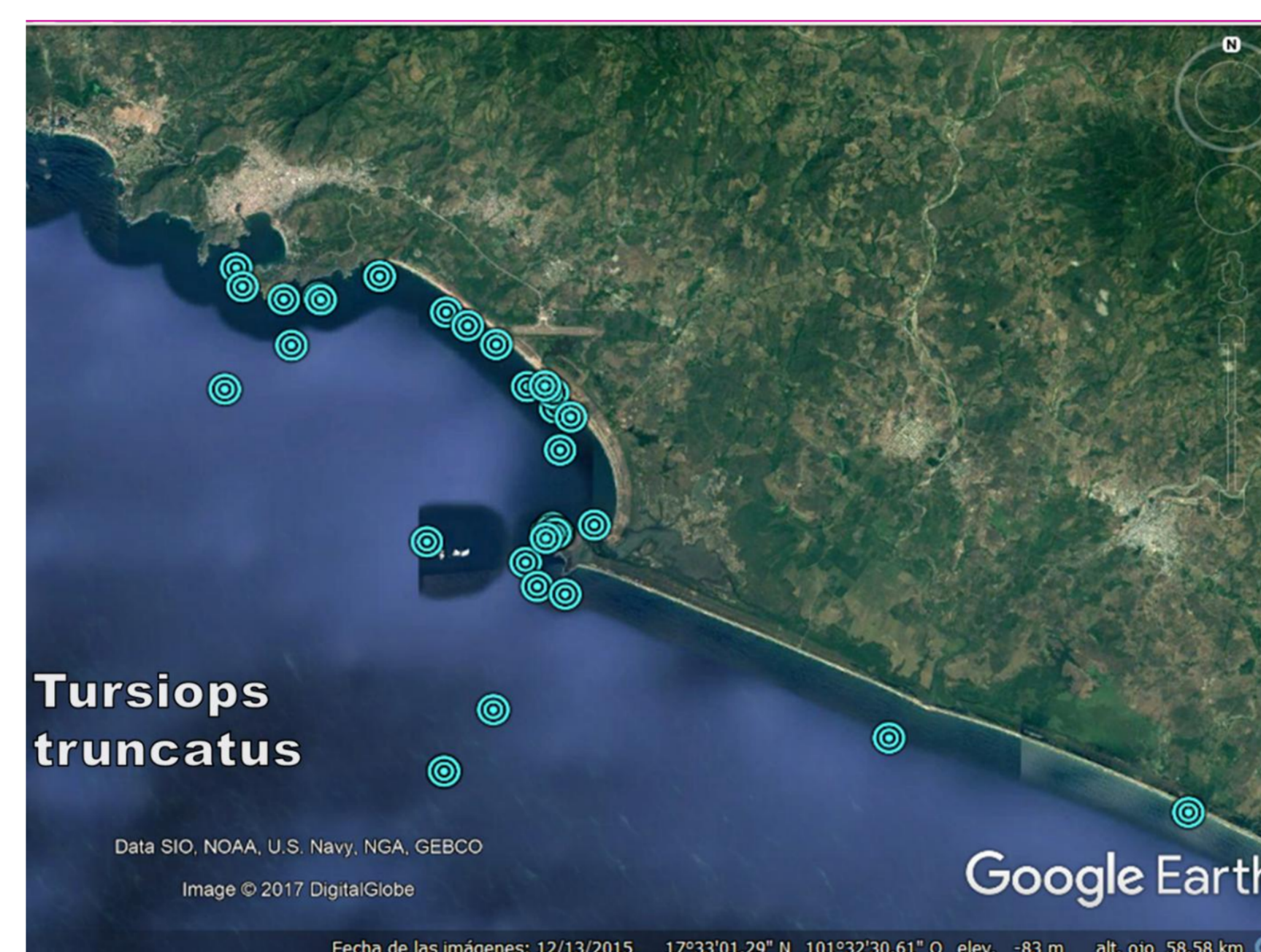
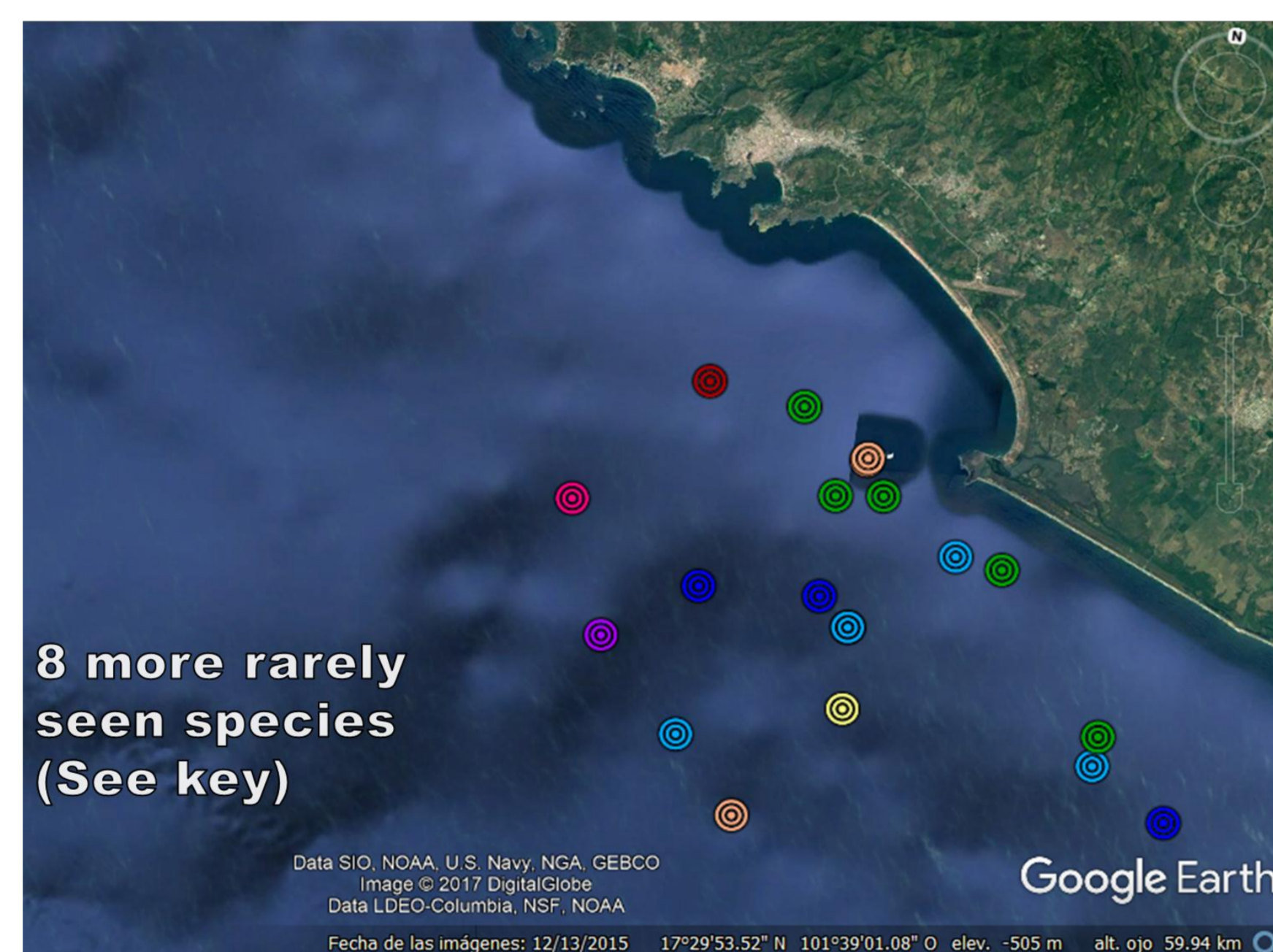
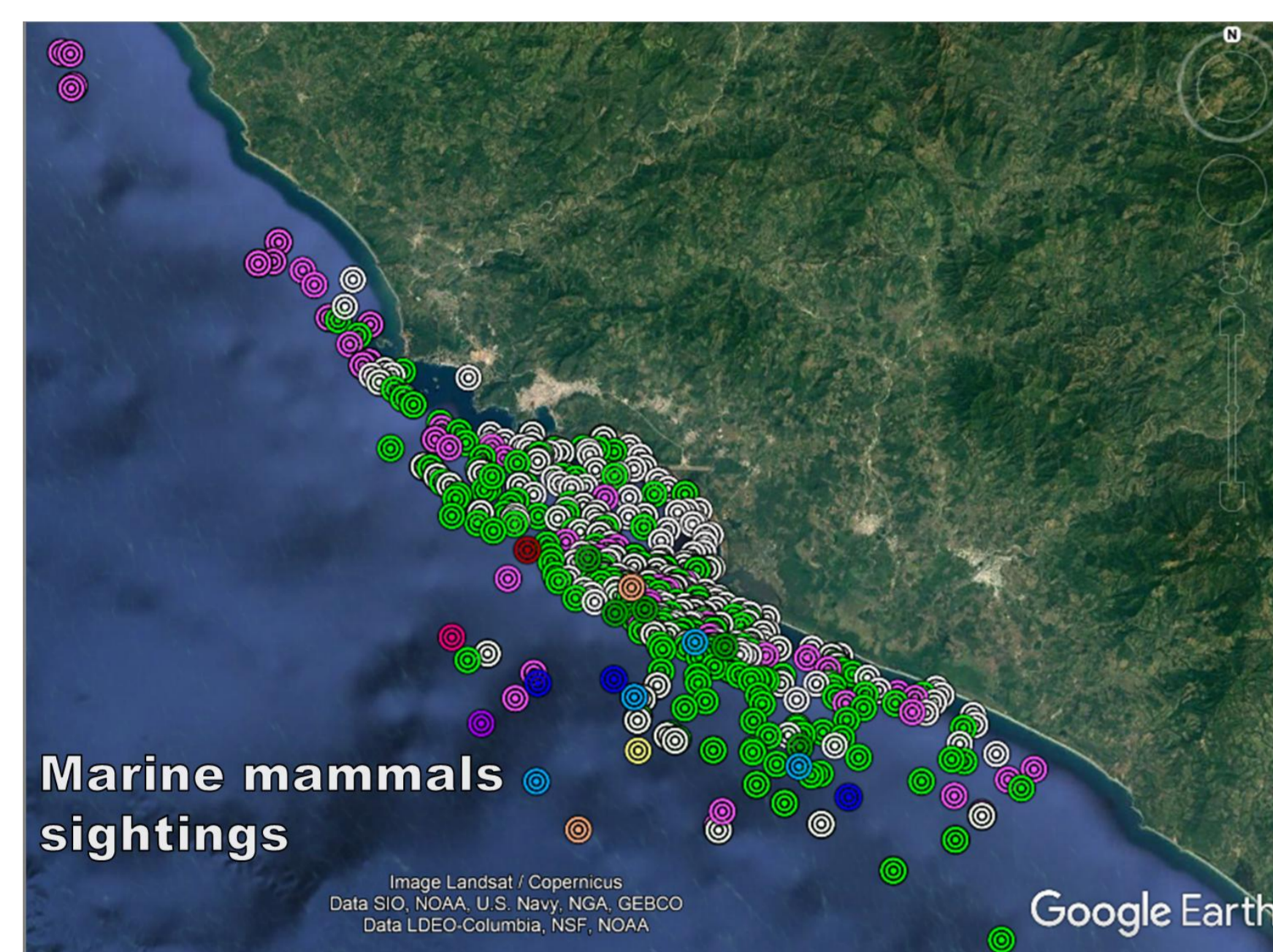
RESULTS 2014-2017

A high percentage of humpback whale calves (11%; 69/611 total animals), courting activity, and frequently detected singing (singing detected 82/181 days; 45%) indicate that Guerrero is a breeding area for this species. Photo-identification matches with other regions suggest that Guerrero humpback whales may be more affiliated with the endangered Central America Distinct Population Segment (DPS) than the main México DPS. We created identification catalogs of humpback whale flukes (275 individuals).

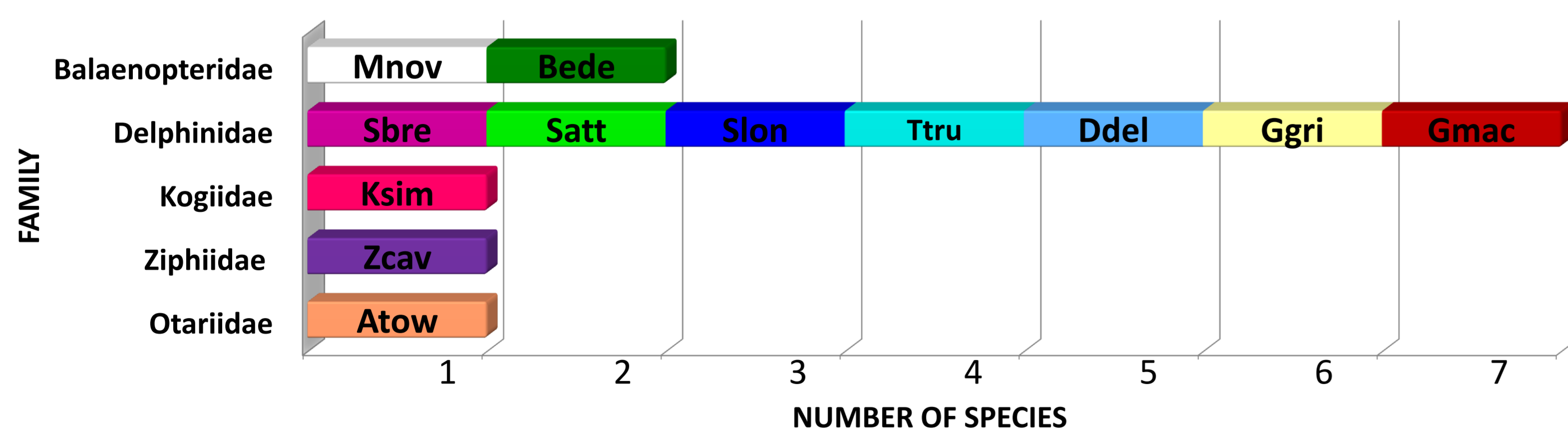
We had 920 total marine mammal sightings and identified a total of 12 species during our surveys (Maps below): 2 species in the Balaenopteridae family (*Megaptera novaeangliae* and *Balaenoptera edeni*), 7 species in the Delphinidae family (*Steno bredanensis*, *Stenella attenuata*, *Stenella longirostris*, *Tursiops truncatus*, *Delphinus delphis*, *Grampus griseus*, and *Globicephala macrorhynchus*), 1 species in the Kogiidae family (*Kogia sima*), 1 species in the Ziphiidae family (*Ziphius cavirostris*) and 1 species of Otariidae (*Arctocephalus townsendi*). 164 individual rough-toothed dolphins have been identified and 69 of them have been resighted.



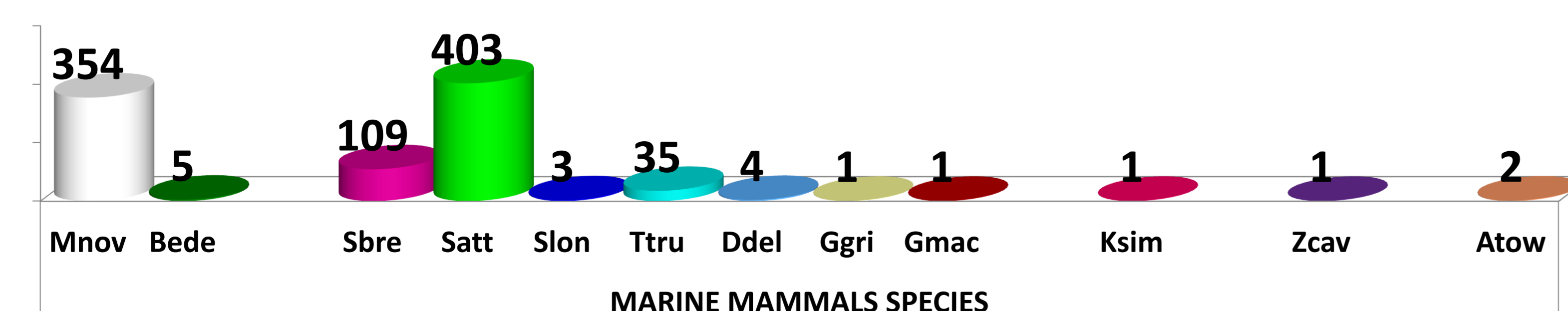
- Key**
- Mnov= *Megaptera novaeangliae*
 - Bede= *Balaenoptera edeni*
 - Sbre= *Steno bredanensis*
 - Satt= *Stenella attenuata*
 - Slon= *Stenella longirostris*
 - Ttru= *Tursiops truncatus*
 - Ddel= *Delphinus delphis*
 - Ggri= *Grampus griseus*
 - Gmac= *Globicephala macrorhynchus*
 - Ksim= *Kogia sima*
 - Zcav= *Ziphius cavirostris*
 - Atow= *Arctocephalus townsendi*



NUMBER OF SPECIES BY FAMILY



NUMBER OF SIGHTINGS BY SPECIES



CONCLUSIONS

Interim results show that Guerrero contains significant marine mammal diversity and may include areas of aggregation for multiple species. Frequently detected singing, courting behavior, the presence of calves, resightings of mother/calf pairs indicate that Guerrero is a likely winter destination for humpback whales from two DPSs containing endangered and threatened populations. Our sightings data was skewed toward a high number of humpback whales due to the fact that our surveys were conducted during humpback whale breeding and calving season (Jan-March) and survey effort was mostly focused within likely humpback whale habitat.

Cumulative sighting information for all species would likely be very different, especially total individual animals and total sightings/species if surveys were conducted year round. The identification of 12 species of marine mammals in the region, including opportunistic sightings of dolphin calves in every species of dolphin observed indicates a need for deeper, more detailed study of all marine mammals in Guerrero, particularly during seasons outside the humpback whale migration and in regions extending beyond the shallow coastal areas.

These study results, along with our concurrent outreach and educational programs will help to guide regional monitoring and protection recommendations and support improved marine resource management in this unmonitored, unregulated region of México.



Thanks to the following people and groups for their generous support and guidance: Universidad Nacional Autónoma de México - Facultad de Ciencias; American Cetacean Society San Francisco Bay Area Chapter; Cetacean Society International; Smultea Environmental Services; Cascadia Research Collective; Oceanic Society; National Geographic; Idea Wild; U.S. Fish and Wildlife Service; Society for Marine Mammology; Norcross Wildlife; Comunidad de Barra de Potosí.

Contacts: Lead Author: Andrea Jacqueline García Chávez: andrea@whalesinmexico.com
 Project Director: Katherina Audley: katherina@whalesinmexico.com
 © Whales of Guerrero Research Project <http://www.whalesinmexico.com> 2017.
 All Rights Reserved.