

Analysis of tourist and citizen scientist data concerning humpback whales (*Megaptera novaeangliae*) in the Bay of Banderas



San Diego State University

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San Diego State University



Photo from <https://dollysfleet.com/>



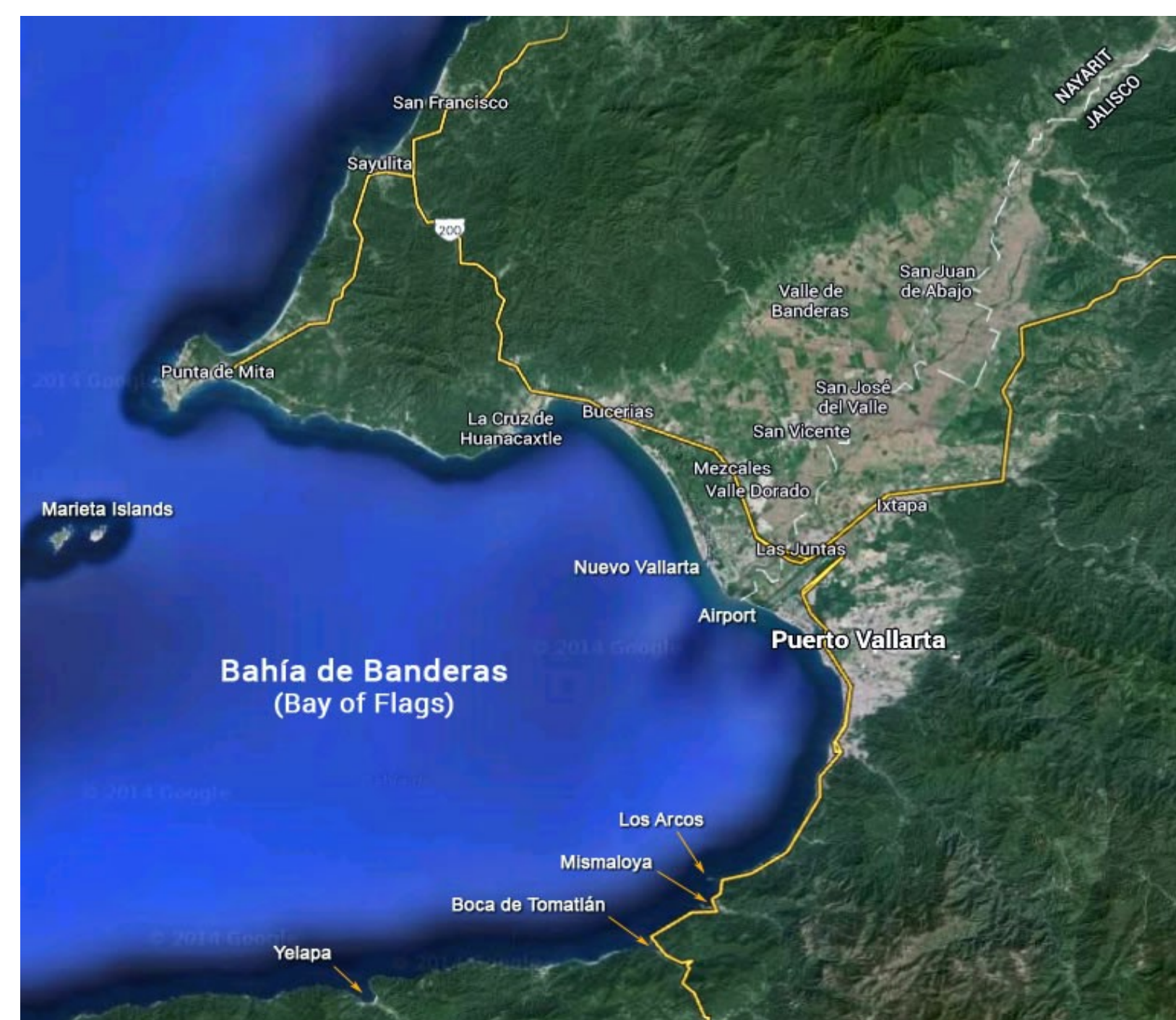
Whale watching guidelines are dictated by the Mexican government (NOM-131-SEMARNAT-2010).



Intern and GRIMMA team on direct observation transects

Background

Humpback whales migrate to Banderas Bay in Puerto Vallarta, Mexico, during the winter for breeding and calving season. The bay is crucial to the humpback whale as it provides a shallow, safe, and warm environment to birth and nurse calves. The growth of whale watching tourism, while great for the economy in Puerto Vallarta, has a relatively unknown effect on the whale population. The PhD research project with which I assisted Iyari Espinosa in partnership with GRIMMA (Grupo de Investigación de Mamíferos Marinos A.C.) is studying such effects via direct observation, citizen science observations, and tourist surveys.



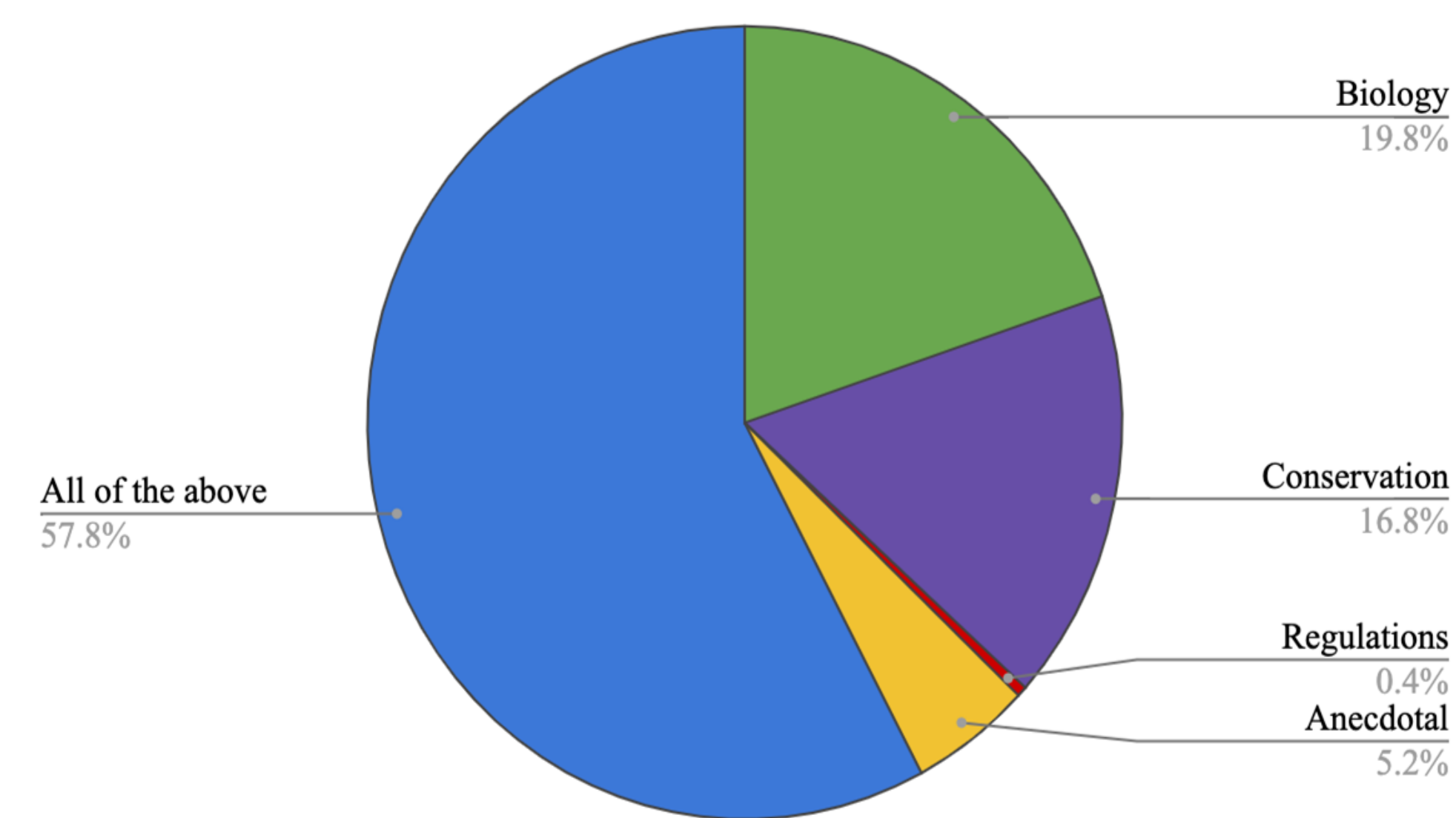
Results

Citizen Scientist Whale Photos Results

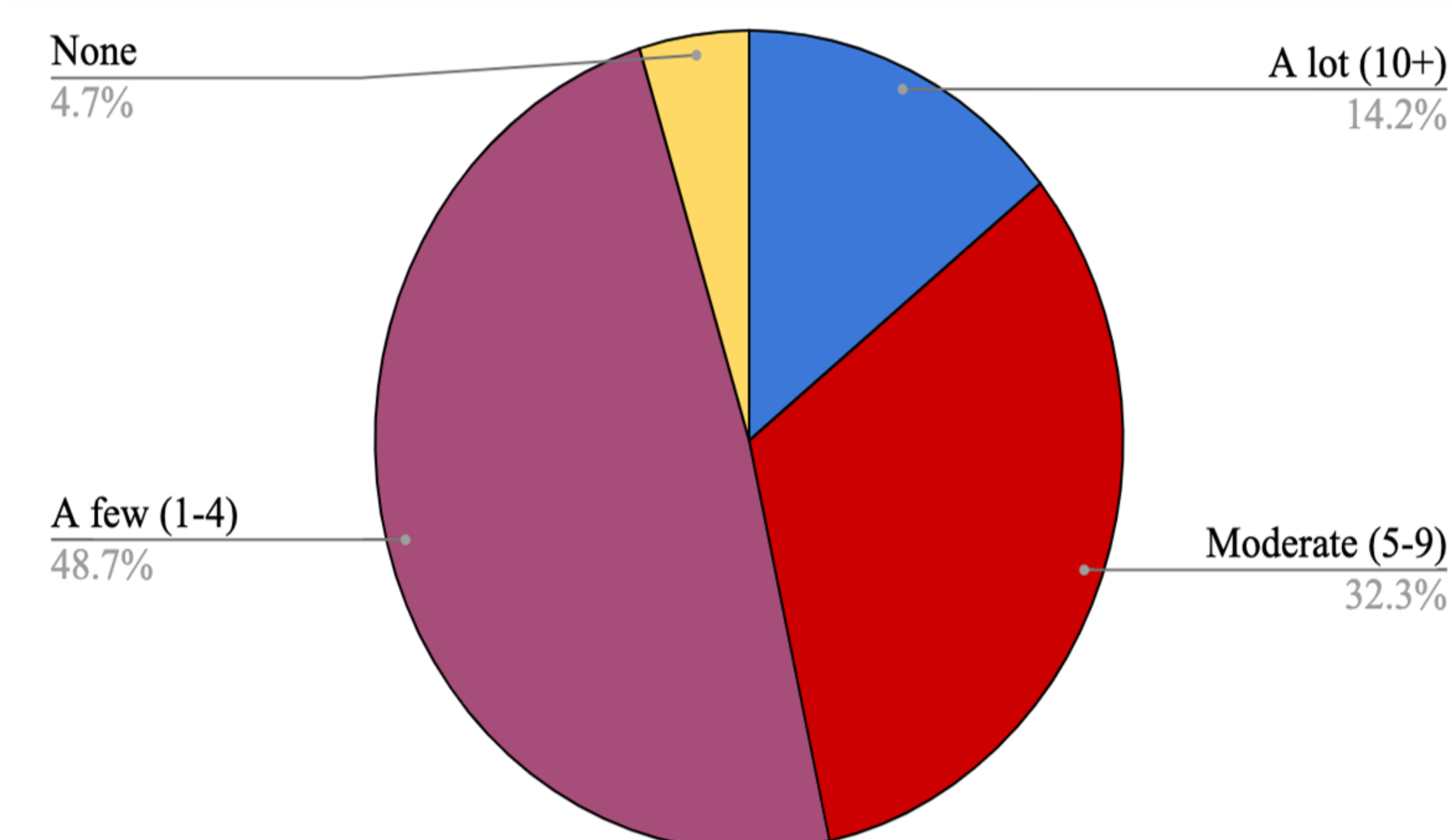
Distance	Miles	Kms	Time	Days	Years
Mean distance between the earliest sighting and our study period n=29	1,869	3,008	Average time between the earliest sighting and our study period n=9	4,014	11.00
Minimum distance between sightings	450	724	Minimum amount of time between sightings	15	0.04
Maximum distance between sightings	2,500	4,023	Maximum amount of time between sightings	11,690	32.03

Tourist Survey Results - Distance to the Whale n=232

38.78%	Tourists got the distance they wanted
95.68%	Tourists thought the distance was appropriate
41.58%	Tourists got the distance they wanted AND thought it was appropriate
54.1%	Thought the distance was appropriate BUT it wasn't what they wanted initially



What tourists wanted to learn before the tour began



Number of vessels surrounding a whale group as perceived by tourists

Conclusions

Banderas Bay is a crucial breeding ground for humpback whales in the winter. With the growth of whale watching and ecotourism, it is vital to make sure that these practices are done in a safe and conservative manner. In general, I found information from citizen scientists very valuable. Tourists perceive there are more boats surrounding whales than legally allowed. Many times the distances I observed were closer than legally allowed, but tourists were mostly satisfied. I felt that tourists were overall less satisfied when they felt they were disrupting or interfering with the whales in any way. For example, over half of the tourists stated that an appropriate distance to whales was more important than the distance they wanted initially; prioritizing whale safety over personal satisfaction. This small study only covers tourist perception and therefore is not an wholly accurate representation of the true data concerning how the whale-watching guidelines are being followed. Such data will be included within the larger PhD study by Espinosa.

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Research Questions

- Of the whales in the 2020-2022 database, how many were also spotted by citizen scientists on www.happwhale.com?
 - How many times was an individual observed?
 - What was the distance (km) between observations?
 - How many days/months were there between observations?
 - Were the behaviors different? How so?
- Of the tourists interviewed in the 2020-2022 database, what opinions did they have about the experience and potential impacts of the whale watching tour?