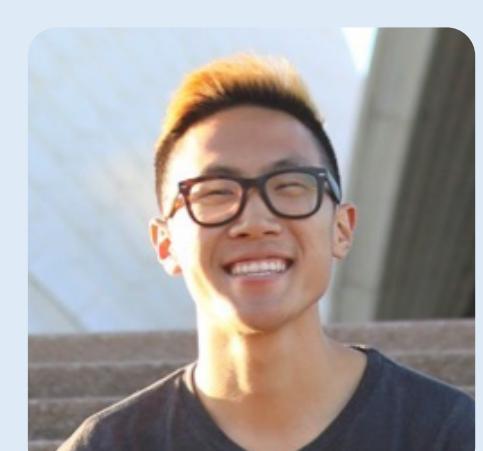


# IDENTIFYING KNOWN UNKNOWNS:

## ADDRESSING FEATURES CONTRIBUTING TO DATA DEFICIENCY IN CONSERVATION STATUS OF SHARK SPECIES



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### INTRODUCTION

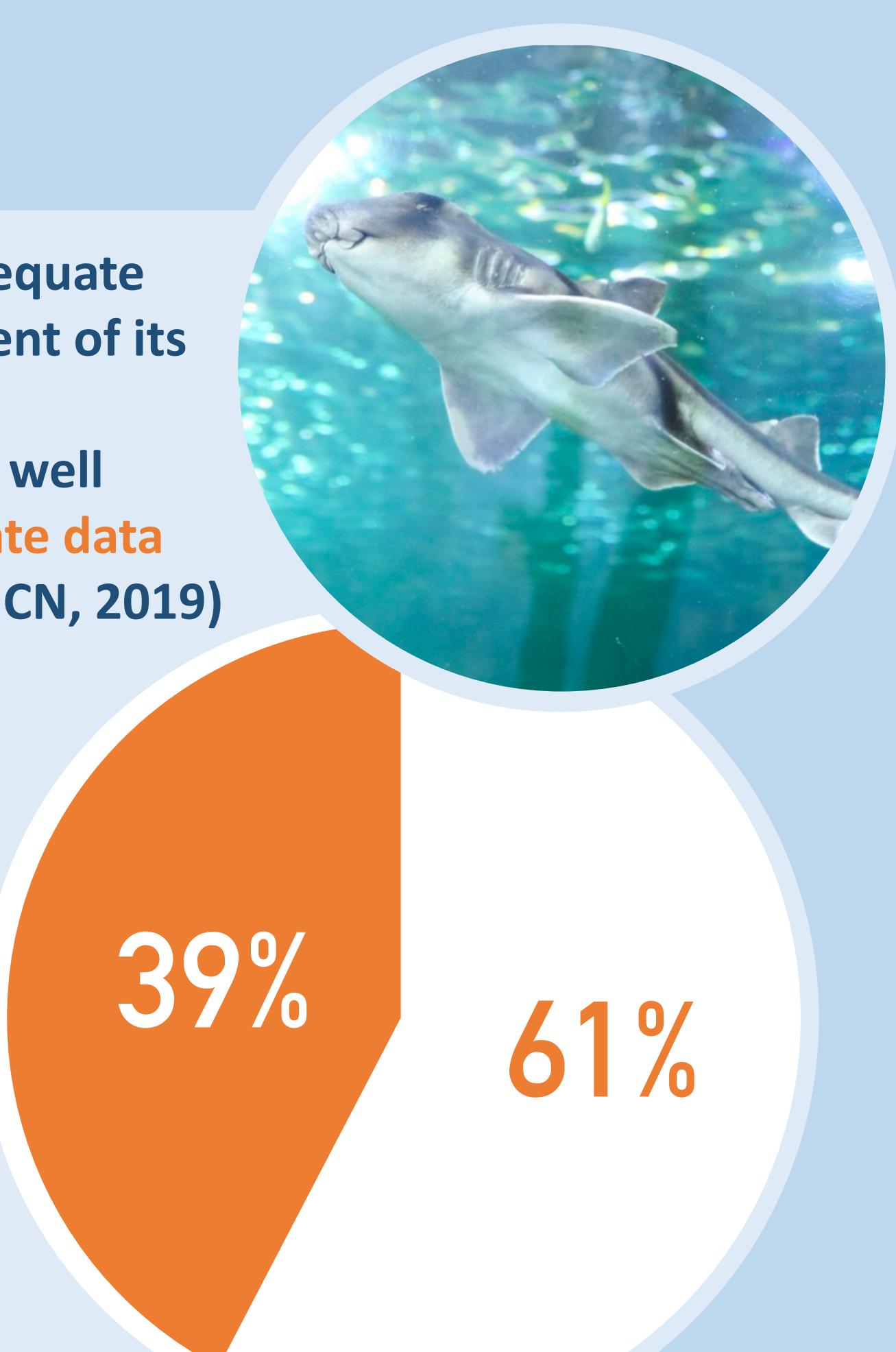
"A taxon is **Data Deficient (DD)** when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but **appropriate data on abundance and/or distribution are lacking.**" (IUCN, 2019)

#### THE FACTS

- Sharks demonstrate a tremendous amount of diversity in life history among taxa, and as such can provide varying ecosystem functions.
- 16.8% of known shark species are currently threatened with extinction; however 38.7% are still data deficient. (IUCN, 2019)
- Given the high number of DD species, proper assessment of shark populations worldwide is challenging.

#### OUR STUDY

- In this preliminary study, we review 501 recognized shark species (Ebert et al., 2015) to analyze potential biological and ecological factors that may contribute to data deficiency.



According to the IUCN Red List, nearly 39% of shark species evaluated were classified as data deficient in 2019.



### METHODS



#### Collecting Data

Relevant information for all shark species identified in the *Pocket Guide for Sharks Around the World* (Ebert et al. 2015) was compiled using the guide and the *Fish Base* online database.



The relevant data for each species included information on biology, human use, and the environment.

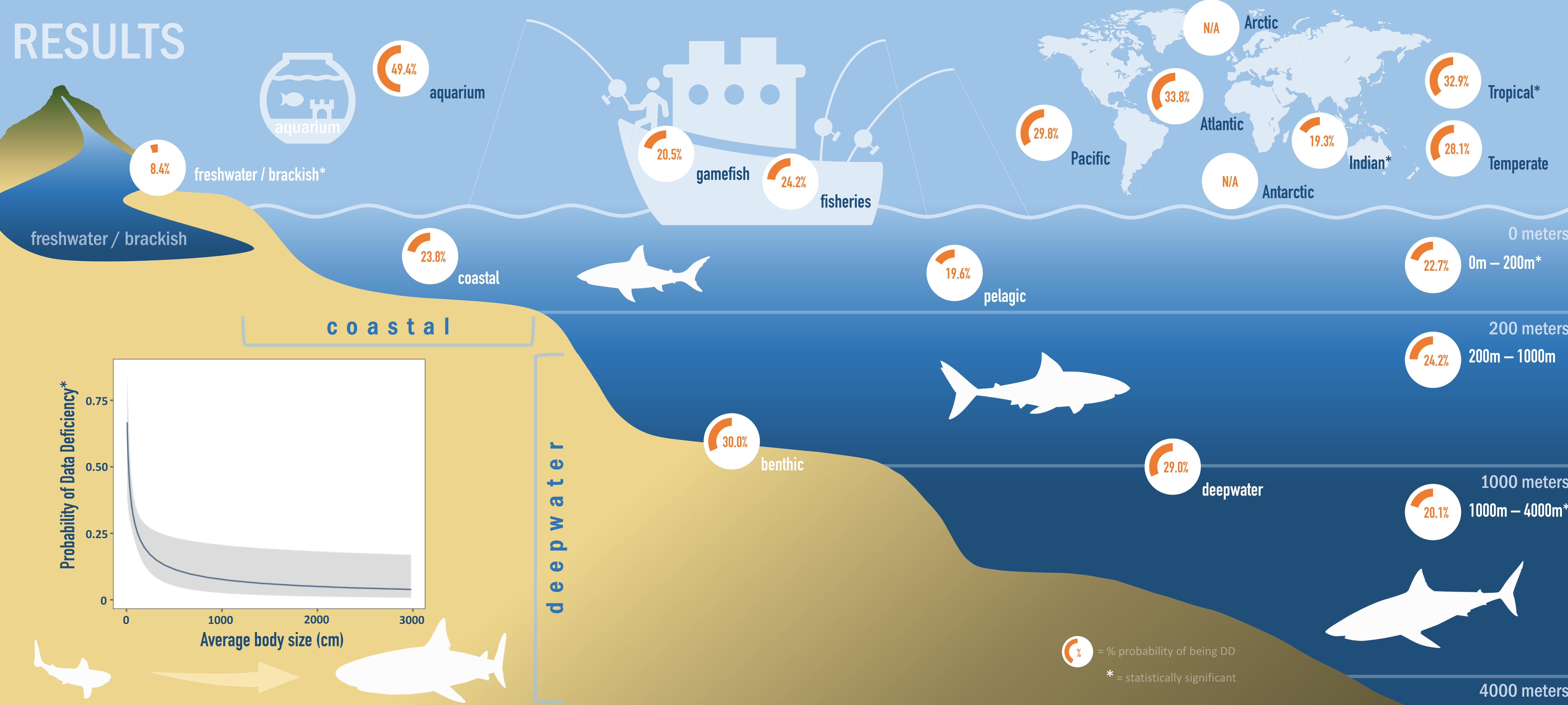
Biology → Size and Reproductive Strategy  
Human Use → Fishery, Aquarium, and Gamefish  
Environment → Geographic Range, Depth, Latitude, and Habitat Type



#### Analyzing Data

The data was post-processed and analyzed using a generalized logistical model to identify variables with a significant effect on data deficiency.

### RESULTS



### DISCUSSION

- Our initial analysis indicates that sharks that are **small** or **tropical** are most likely to be classified as data deficient on the IUCN Red List.
- Habitat type, geographic range, and depth likely also affect data deficiency status.



More Likely

Small | Tropical

Less Likely

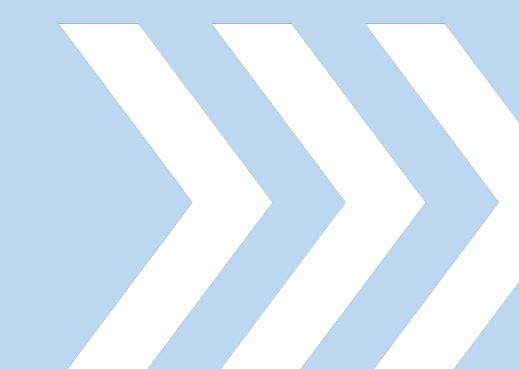
Large | Indian Ocean  
Brackish / Freshwater  
0-200m | 1000-4000m

### Why This Matters?

Ultimately, these results could help target data collection to species with characteristics identified in our analysis to improve conservation measures for their population recovery.



### FUTURE DIRECTIONS



This study has already unveiled a deeper understanding of data deficiency in shark species, and will be **improved** through the following measures:

- Supplementing data from the *Pocket Guide for Sharks Around the World* and *Fish Base* with additional data from peer-reviewed literature
- Updating the species list to account for newly discovered species following the 2015 publication of the *Pocket Guide for Sharks Around the World*
- Controlling for phylogenetic tree variation by considering multiple possible phylogenies
- Generating more specific definition for habitats