

# Pinniped Stranding Patterns in The Long Island Bight



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## Introduction

Our study aims to understand the impact of human intervention on marine mammal stranding patterns in the Greater Atlantic Region, focusing on the Grey, Harbor, and Harp seal species. Approximately 5% of pinniped (seal) strandings are caused by human interaction which can vary from touching the animal without supervision to vessel strikes and other fishing related injuries. Our research aims to identify the main causes of strandings and develop a plan to help Pinnipeds due to their high levels of strandings along shorelines in the Atlantic Region to be able to better educate the public in order to reduce strandings and the severity of stranding injuries seen in pinniped.

## Methodology

- Analyzed data collected Atlantic Marine Conservation Society (AMCS) from 2017-2022. This data was collected under an authorization permit from National Oceanic and Atmospheric Administration (NOAA).
- Using Google Earth Pro we plotted the coordinates points
- Cross-referenced it with other aspects of the collection data and other pertinent maps.
- The use of a mapping system enables us to compare data and assess whether certain areas are more prone to strandings and if so by what cause.
- By examining these correlations we learned about the geographical distribution of stranded animals based on their species and compared it with environmental and human induced factors such as global warming, disease, and shipping routes.



Figure 1: Seal being studied at the beach



Grey Seal



Harbor Seals



Harp Seal

Figure 2: Three common seals encountered in our research

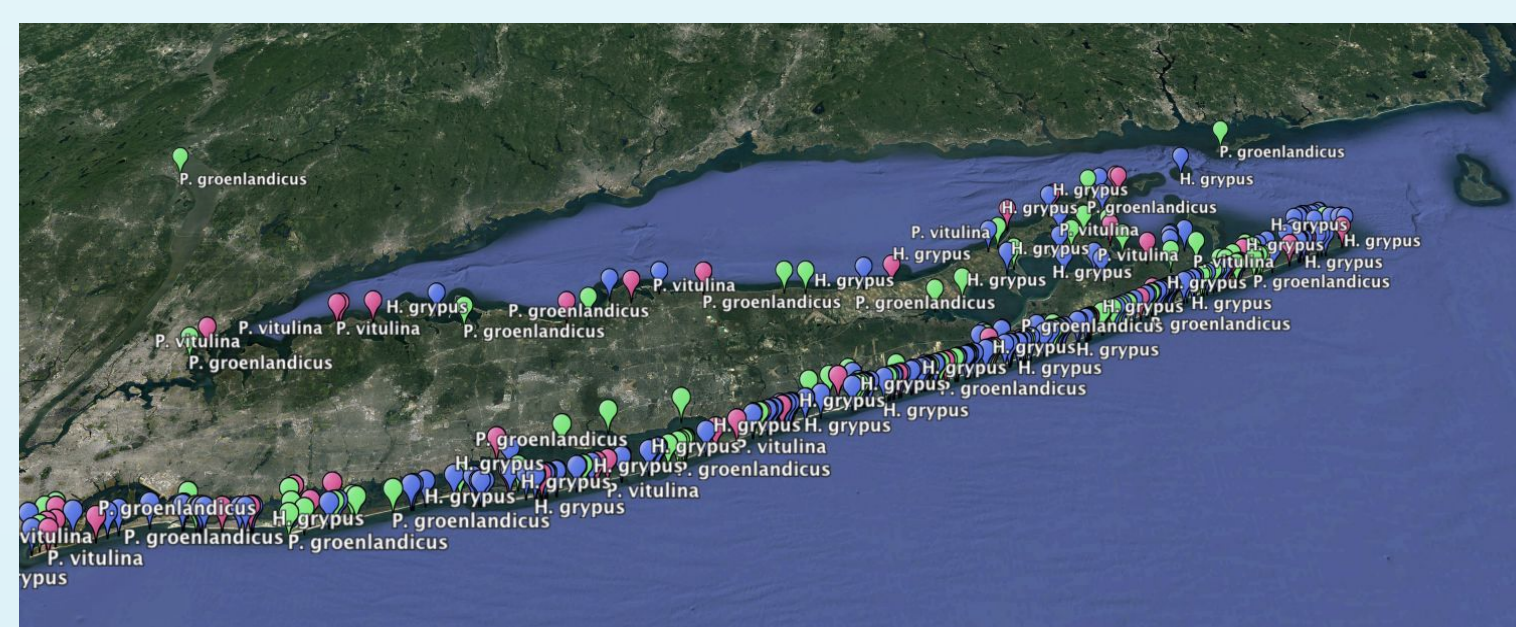


Figure 3: top: map of shipping routes concentrated around Long Island Bight; bottom: a map of all seal strandings, showing an increased stranding density

## Results

- We found significant data supporting the fact that human interaction was a notable contributor to Pinniped strandings.
- 5% of of all pinniped strandings were due to human interaction with 59% "CBD" or inconclusive
- We found that 48% of all strandings being seals from 2017-2022
- In more recent data, pinnipeds remain the most stranded marine mammal in 2022 in NY, according to AMCS
- However, due to lack of public knowledge on how to properly react to a stranding, the quality of most cadavers was severely impacted.
- 75% of all seal stranding performed in the past 5 years to be beyond properly examinable

Counts of human interactions

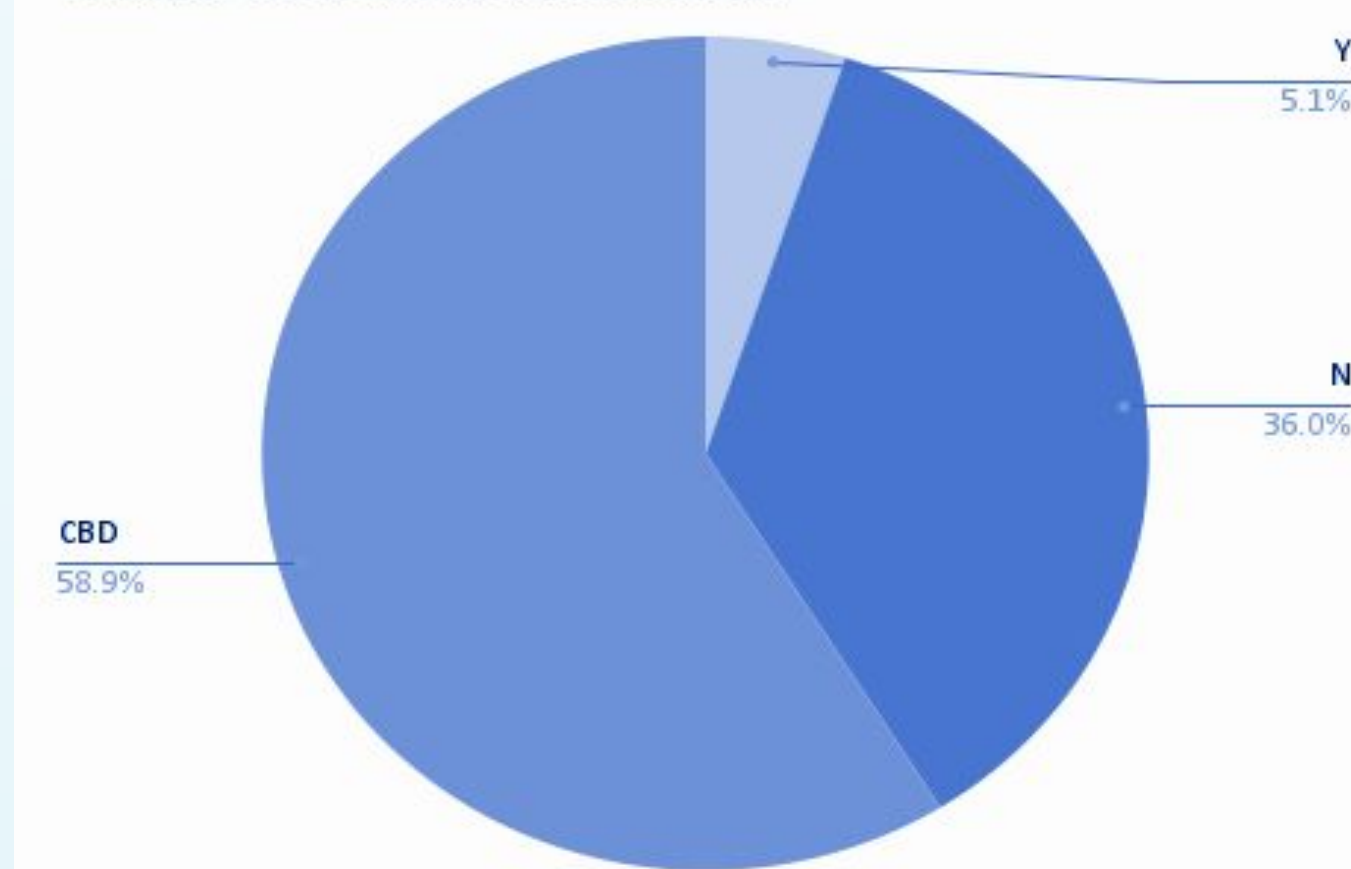


Figure 4: Pie chart showing counts of human interactions.

Species Distribution

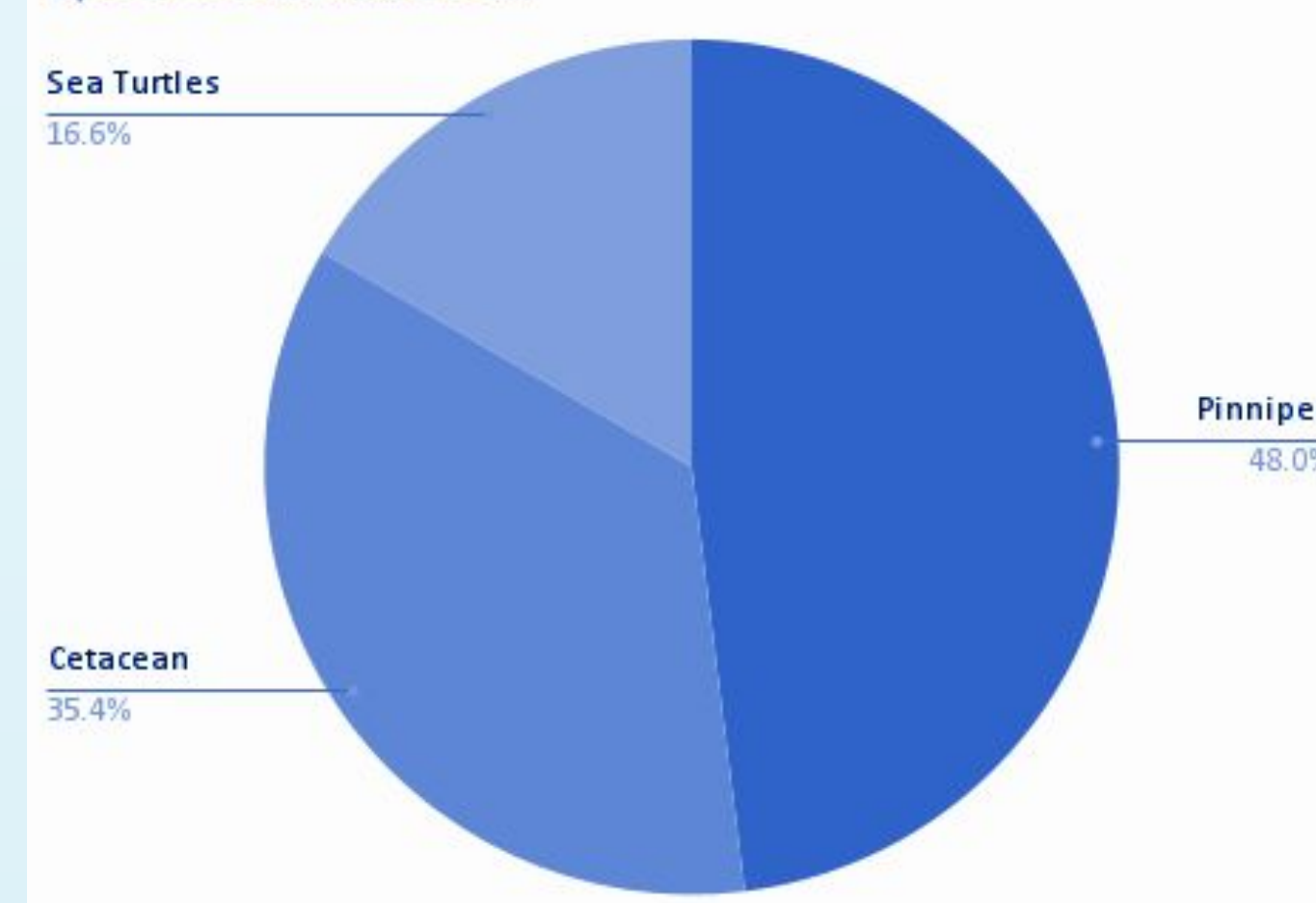


Figure 5: Pie chart showing species distribution.

## Discussion

- The condition and frequency of the strandings imply increasing threats such as over-fishing, ocean warming, and pollution.
- We also found that of the strandings that were conclusively determined to be due to human interaction were mainly caused by entanglement, and ingestion; showing pollution to be a major and observable cause.
- Furthermore, the data showed a clear pattern of strandings occurring in areas heavily impacted by human presence, such as beaches or areas with high levels of fishing activity.
- Though one should note that strandings marked "N" or "CBD" were very likely indirectly influenced by human interaction in the form of causes that cannot be observed from the body alone and instead via correlation.
- Understanding that the bodies were often decayed past an acceptable condition implies that an even larger percentage of strandings may have been caused either directly or indirectly by human activity than recorded.
- The ability to better educate the public on the importance of quickly reporting strandings to the proper avenues available is paramount as over 50% of the data gathered was from specimens significantly decomposed.
- Further research and thorough investigation are necessary to accurately determine the extent of human impact on Pinniped strandings.

## Acknowledgements

Thank you to our mentors Alli Deperte, Thaliyah Fraser, Erica Perrea and to Alana and the team at RISE

## Works Cited

- 2018-2020 Pinniped Unusual Mortality Event Along the Northeast Coast. (2022, March 31). NOAA. <https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along>
- This is an incredible visualization of the world's shipping routes. (2016, April 25). Vox. <https://www.vox.com/2016/4/25/11503152/shipping-routes-map>

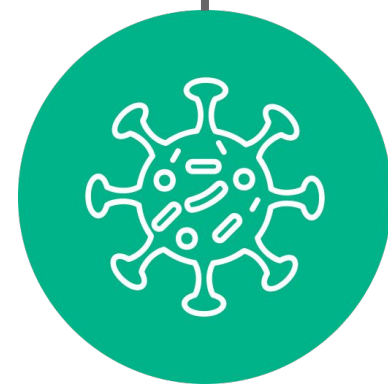
# A suggested layout for methodology that adds iconography and removes some sentences

## Methodology

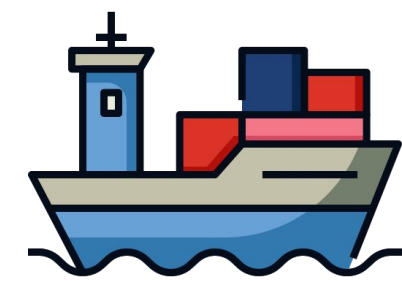
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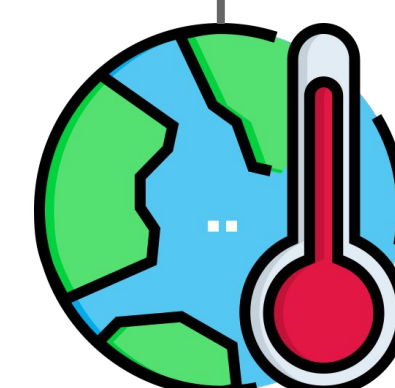
Pinniped stranding data



Disease



Freight Routes



Global warming

Figure: Schematic of human factors correlating to seal strandings

- The use of a mapping system enables us to compare data and assess whether certain areas are more prone to strandings and if so by what cause.
- By examining these correlations we learned about the geographical distribution of stranded animals based on their species and compared it with environmental and human induced factors such as global warming, disease, and shipping routes.

- The condition and frequency of the strandings imply increasing threats such as over-fishing, ocean warming, and pollution.
- We also found that of the strandings that were conclusively determined to be due to human interaction were mainly caused by entanglement, and ingestion; showing pollution to be a major and observable cause.
- Furthermore, the data showed a clear pattern of strandings occurring in areas heavily impacted by human presence, such as beaches or areas with high levels of fishing activity.

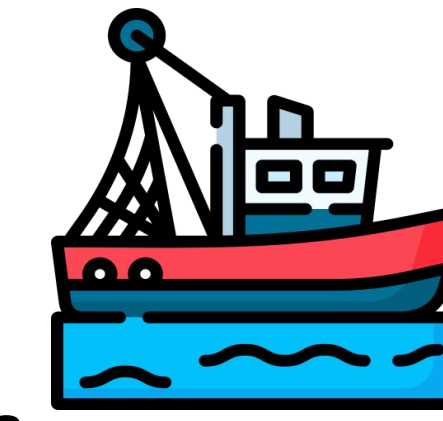
the same information in your bullet points is summarized into the lines and images on the left. do you agree? what would you change?

## Discussion



pollution is a major factor

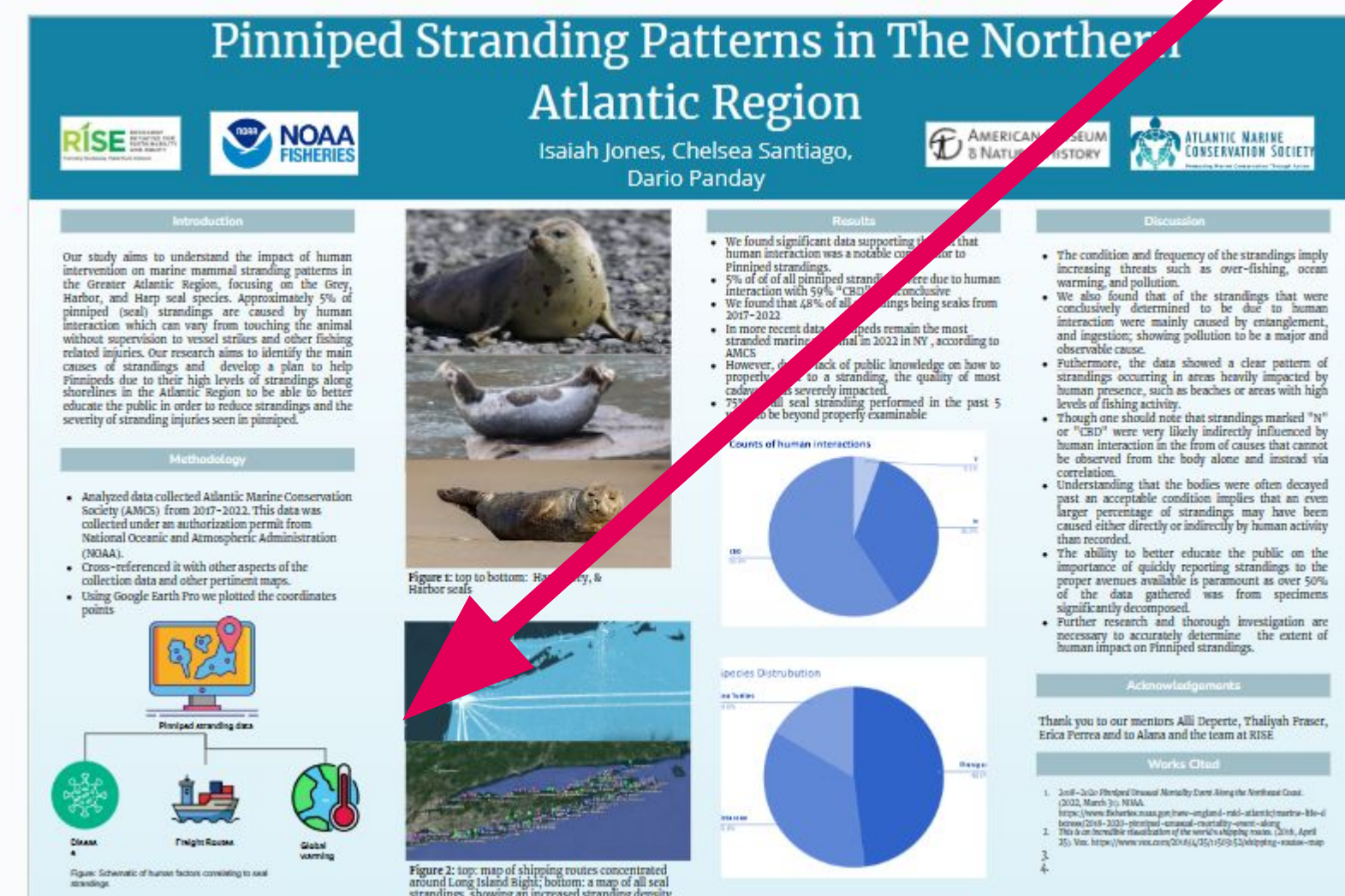
Anthropogenic (human) sea turtle deaths may continue to increase alongside human presence



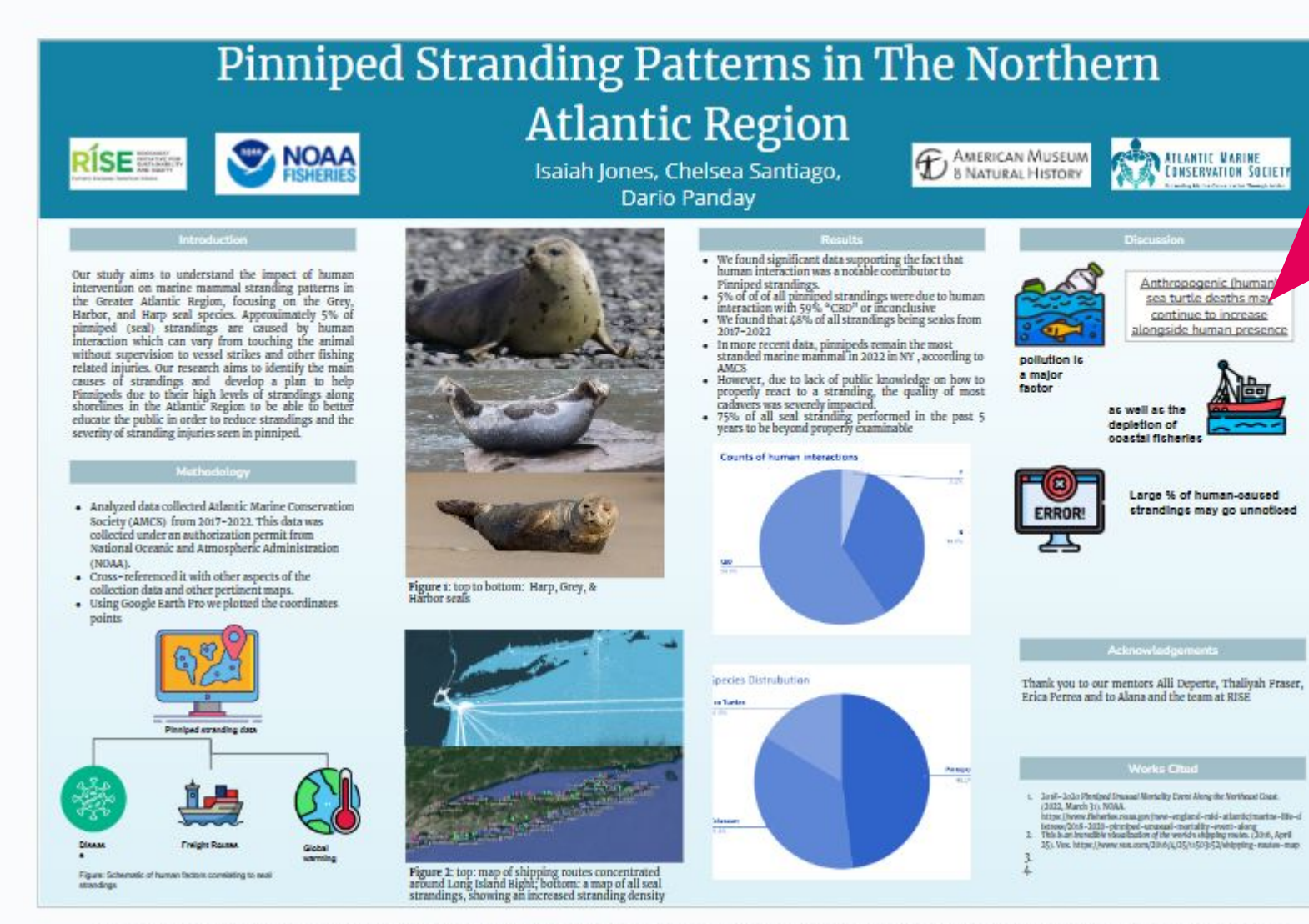
as well as the depletion of coastal fisheries



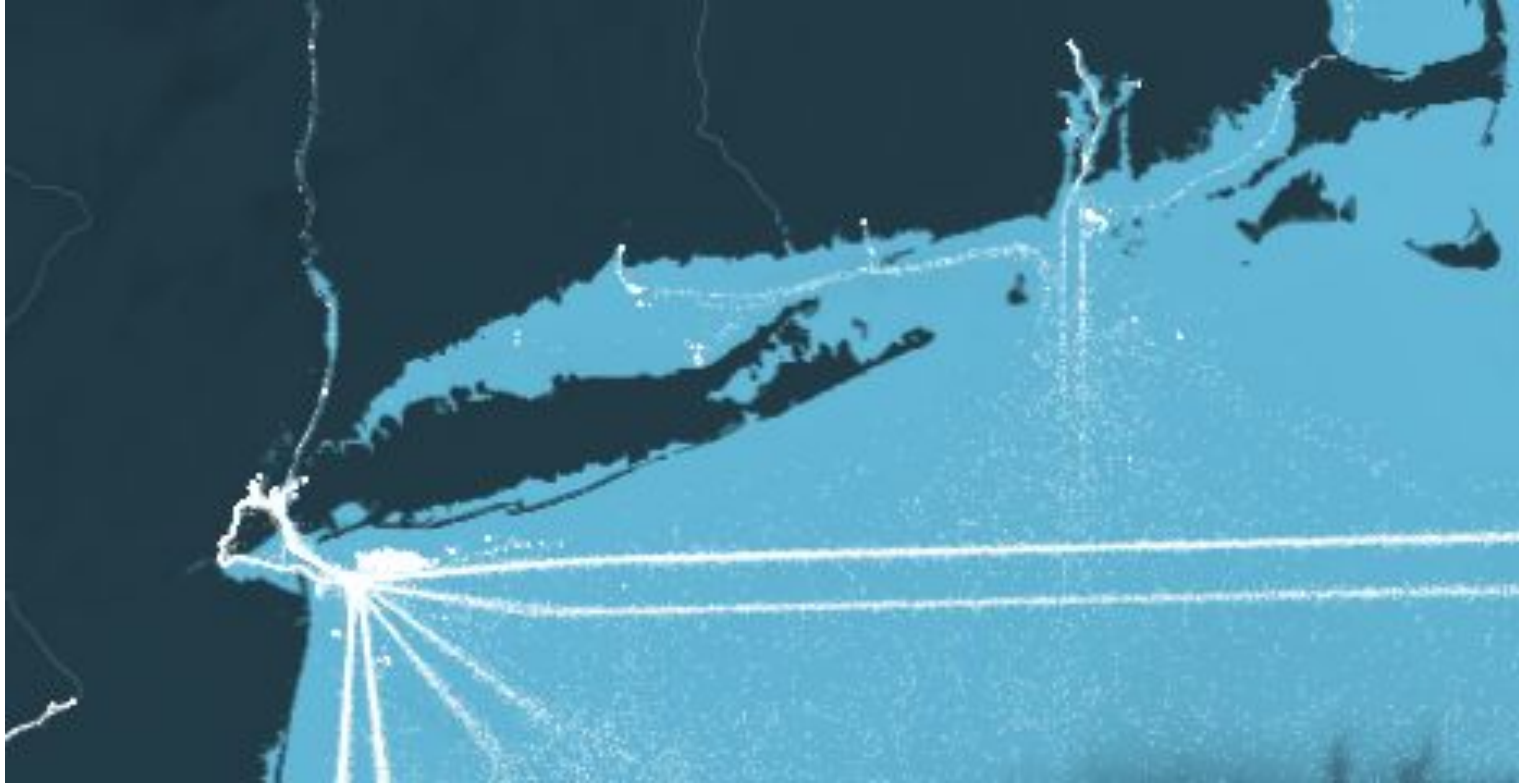
Large % of human-caused strandings may go unnoticed



might look something like this....



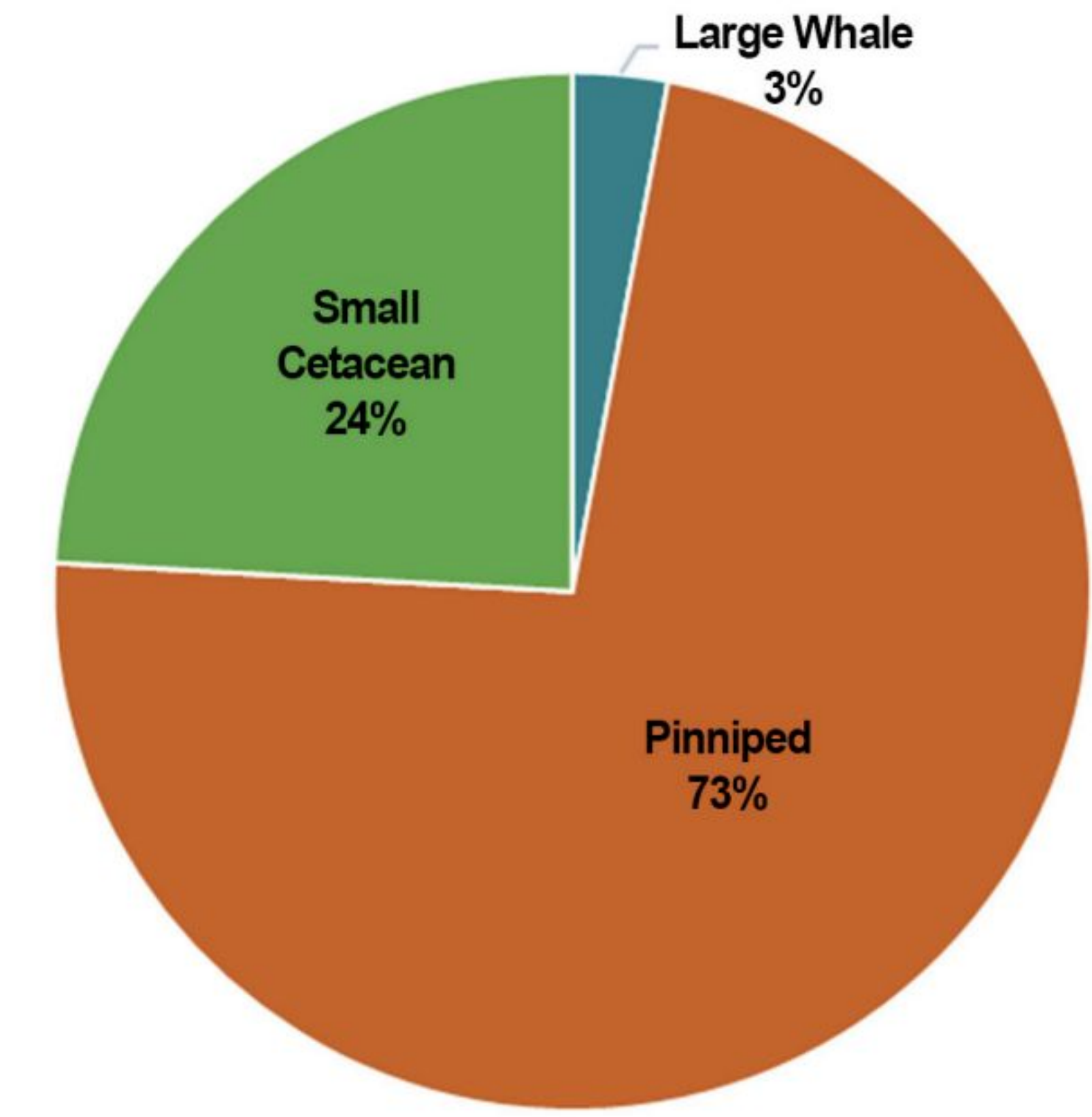
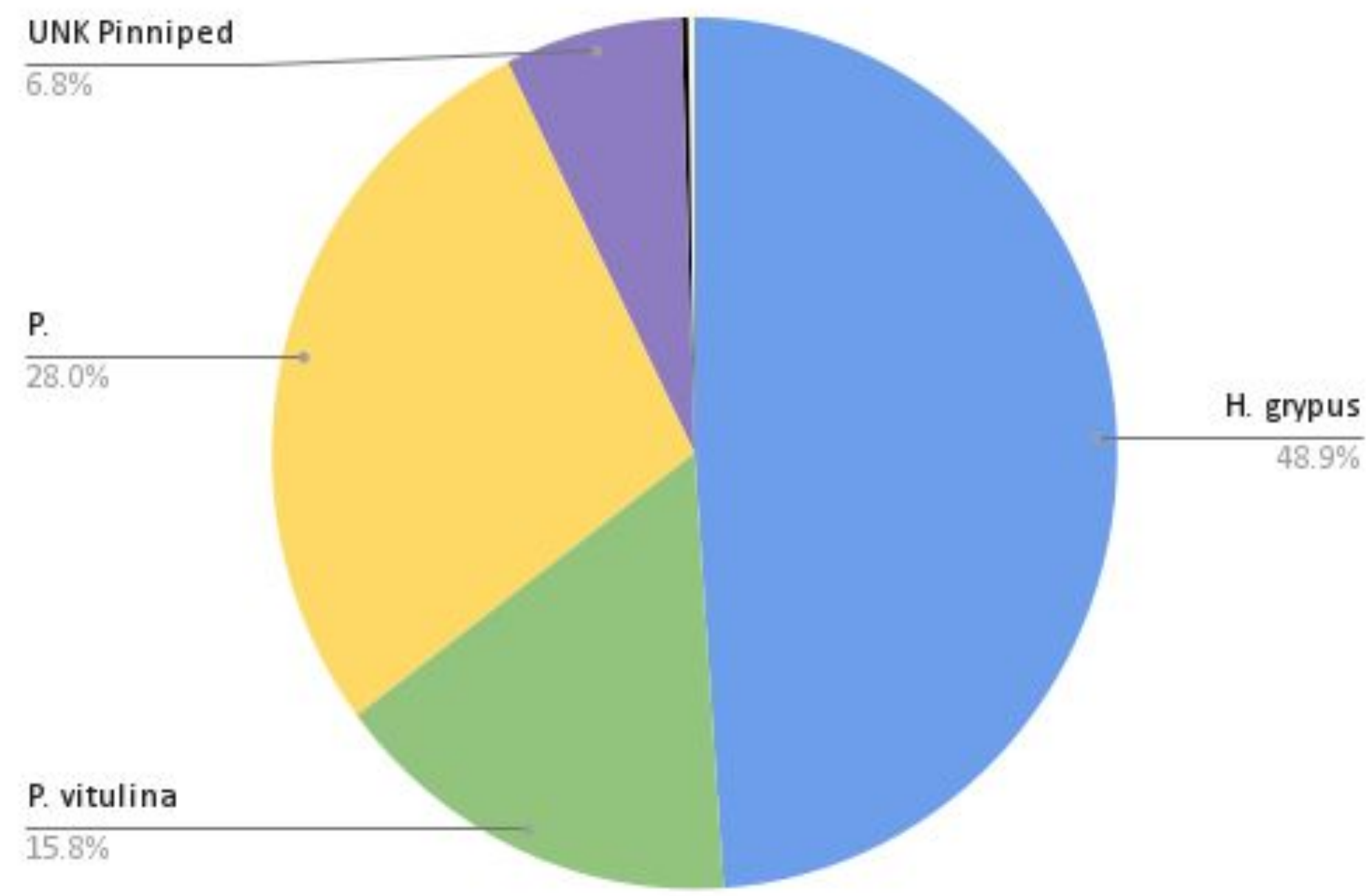
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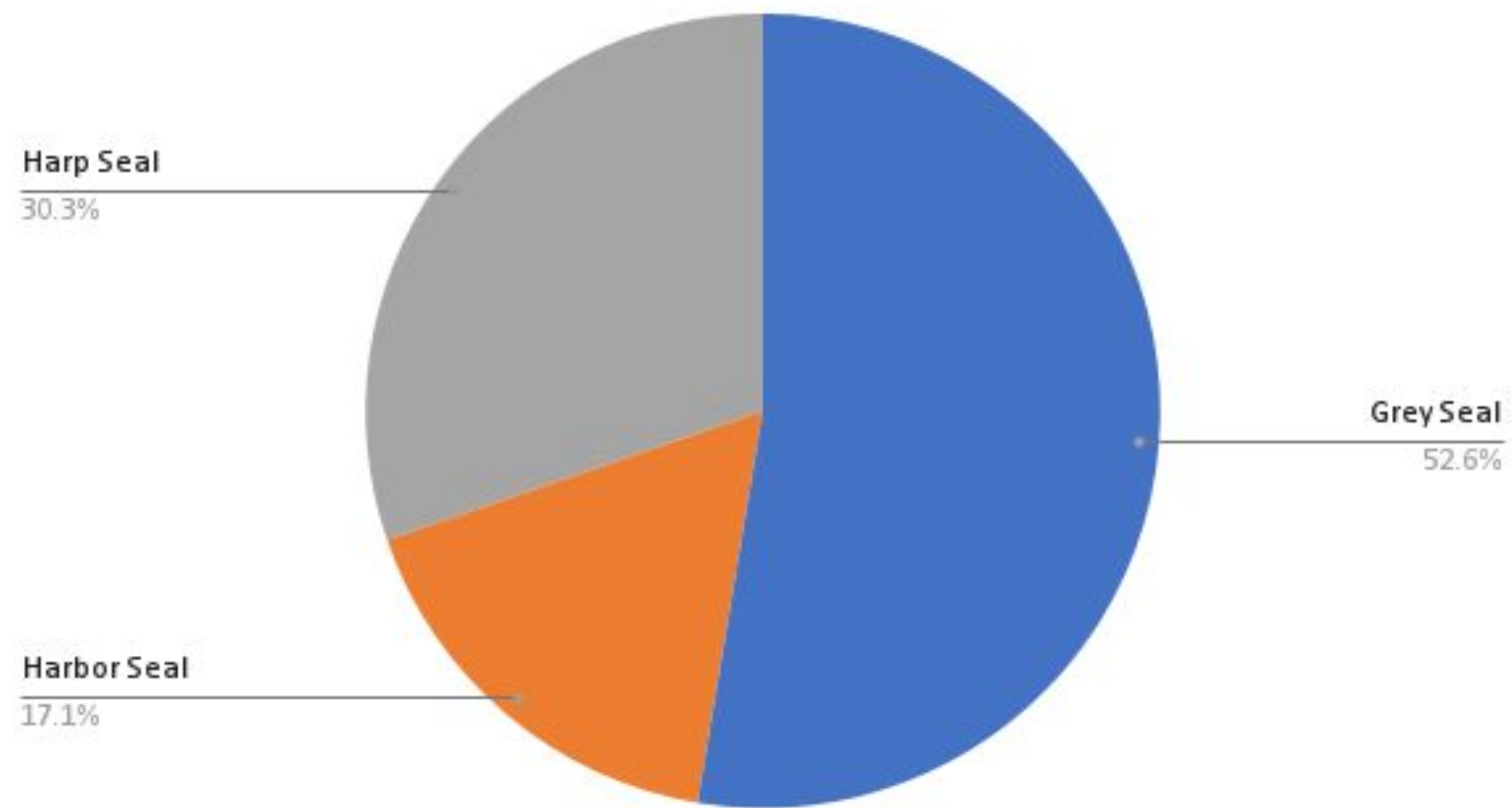
*I'm applying for [type of role] with [type of company] and am pulling together a few letters of recommendation to emphasize why I'm a qualified fit for this kind of position.*

*I really enjoyed our time working together at [Company]—particularly when we were able to collaborate on [project]. With that in mind, I thought you'd be a great*

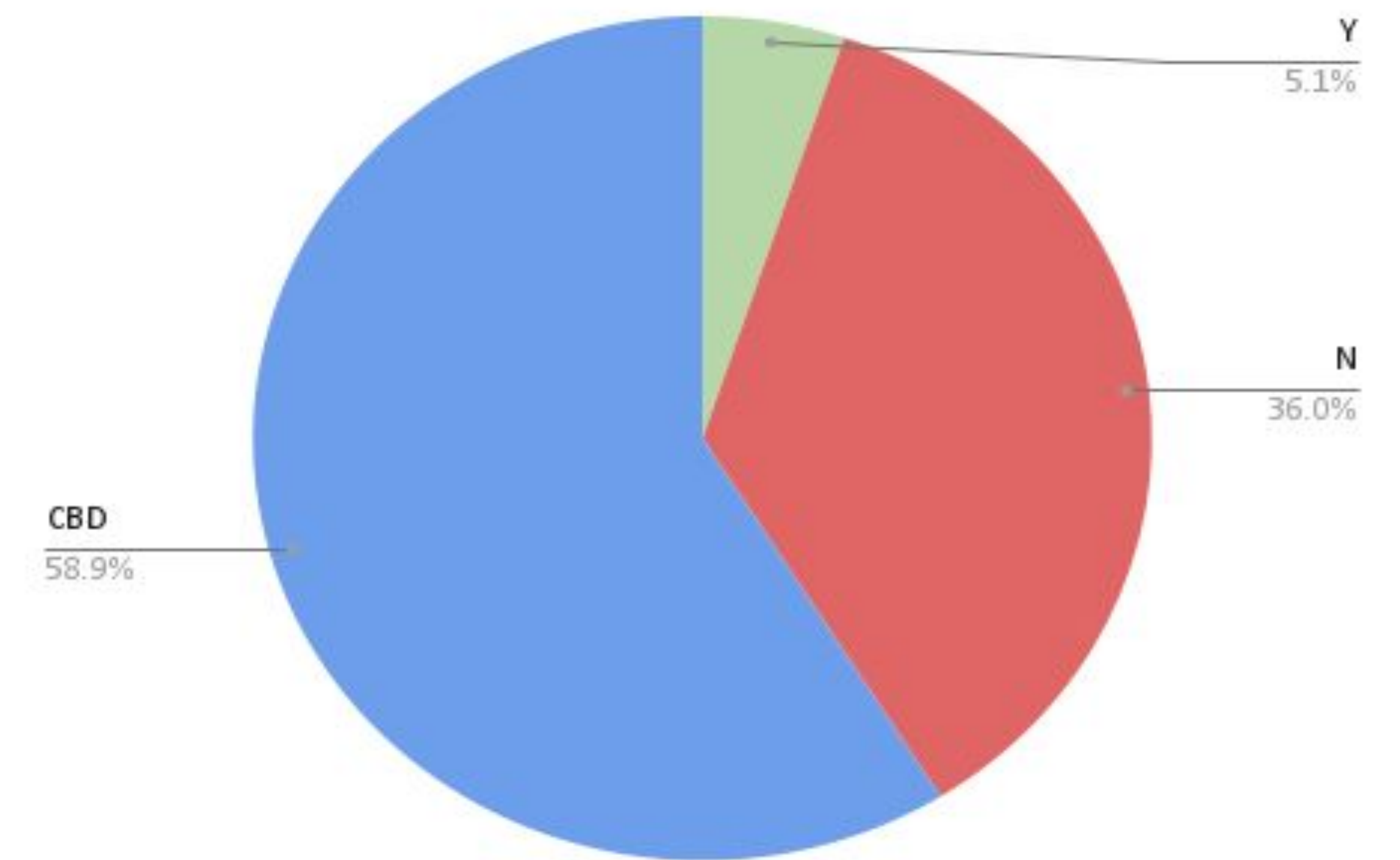
Species with the most to least of strandings



Distribution of Seal Strandings



Counts of human interactions



- <https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along>
- <https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along>
- <https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-life-distress/2018-2020-pinniped-unusual-mortality-event-along>