Project Proposal

Title: Mapping Petrel Sightings via Web-scraping

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Project Summary:

Significance

The Antarctic petrel (*Thalassoica antarctica*) is among the most numerous pelagic seabird species in the Southern Ocean with a total population estimated at 10-20 million individuals.[1] Petrels are pelagic seabirds that are particularly sensitive to environmental changes and are the focus of singular international conservation efforts.[https://acap.aq;2;3] Effective management and conservation policies require robust evidence on the processes driving species distributions and population dynamics. However, only a few studies describe the distribution of Antarctic petrels at sea[3], and the distribution of their breeding colonies on the continent is poorly known. Solid data on which to base such evidence are often lacking from remote polar areas, particularly in Antarctica. Work using satellite imagery to identify colonies of the Antarctic petrel is already being carried out by the Lynch Lab and collaborators, which permit continental-scale studies and monitoring of Antarctic petrel colony distribution and abundance from space. To further support this work, data sourced from publicly available photos opportunistically collected by birdwatchers and tourists can assist with updating the known distribution of the Antarctic petrel, specifically assisting work identifying breeding and feeding sites.

Outcomes

With this project, I am striving to create a map of Antarctic petrel sightings from crowdsourced data. This data will go into a database being built of all known Antarctic petrel sightings that will be the basis of predicting, and later confirming, breeding and feeding sites.

Techniques and Software

To accomplish this task, I plan to use the BeautifulSoup, Pillow, and requests libraries to source EXIF data from photos on eBird, iNaturalist, iGoTerra, Flickr, Project Noah, and iRecord, possibly also downloading and saving a copy of the image itself as well. Once the photos are acquired and geographic information has been acquired and checked over, I will use the MarkerClustererPlus library and Maps Javascript API on Google to create a map of the collected data points.

Literature Cited

[1]Rodriguez, E., Bourassa, M. A., Chelton, D., Farrar, J. T., Long, D., Perkovic-Martin, D., & Samelson, R. (2019). The winds and currents mission concept. *Frontiers in Marine Science*, *6*, 438.

[2]Van Franeker, J. A., Gavrilo, M., Mehlum, F., Veit, R. R., & Woehler, E. J. (1999). Distribution and abundance of the Antarctic Petrel. *Waterbirds*, 14-28.

[3]Tancell, C., Sutherland, W. J., & Phillips, R. A. (2016). Marine spatial planning for the conservation of albatrosses and large petrels breeding at South Georgia. *Biological Conservation*, *198*, 165-176.