Antipodean albatross fisheries overlap 2019

Draft progress report

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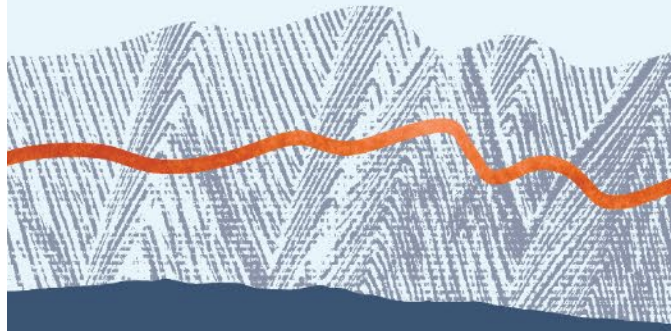
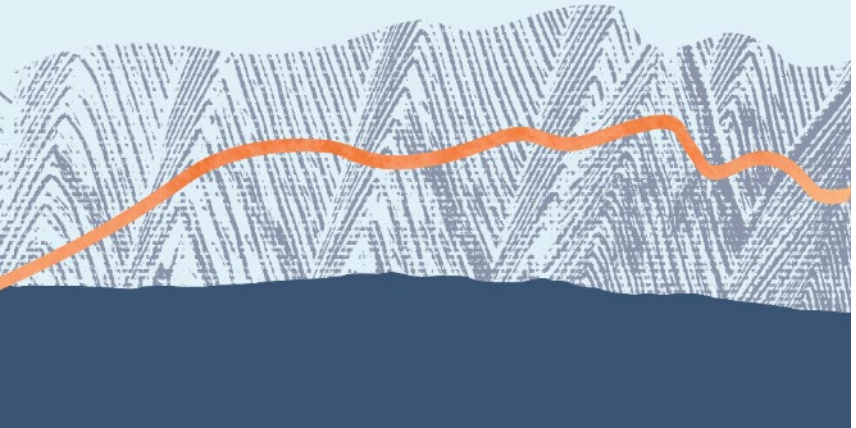
Department of Conservation
Te Papa Atawhai

New Zealand Government



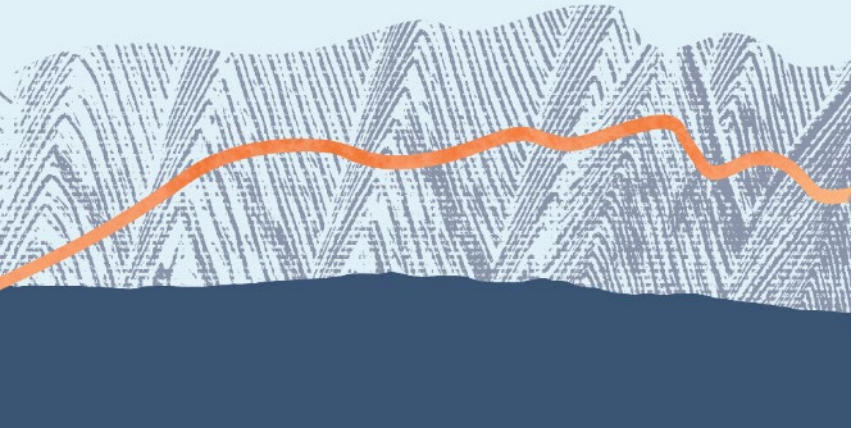
Purpose



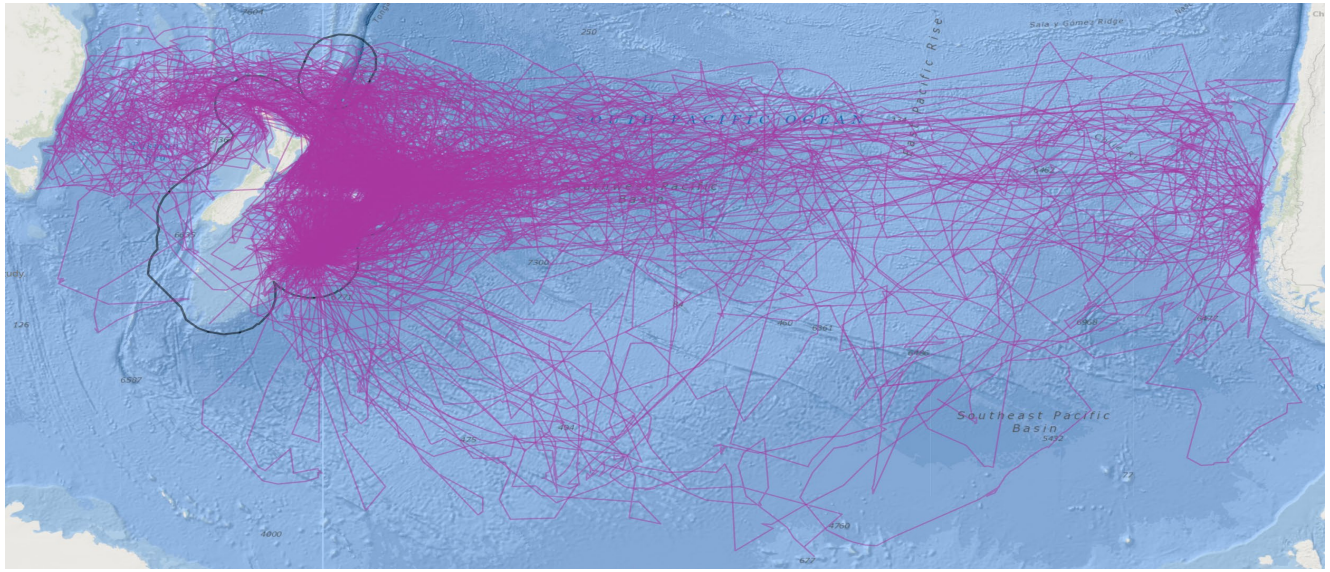
To assess the first year of intensive satellite tracking of Antipodean albatross, in 2019, to describe areas of fisheries overlap

- quantify the overlap of Antipodean albatross distribution with fishing activity
- describe fisheries overlap by bird age class, sex and breeding state
- identify fishing fleets that overlap with bird distribution and quantify the degree of overlap
- identify the ports most frequently used by vessels that fish in areas overlapping bird distribution

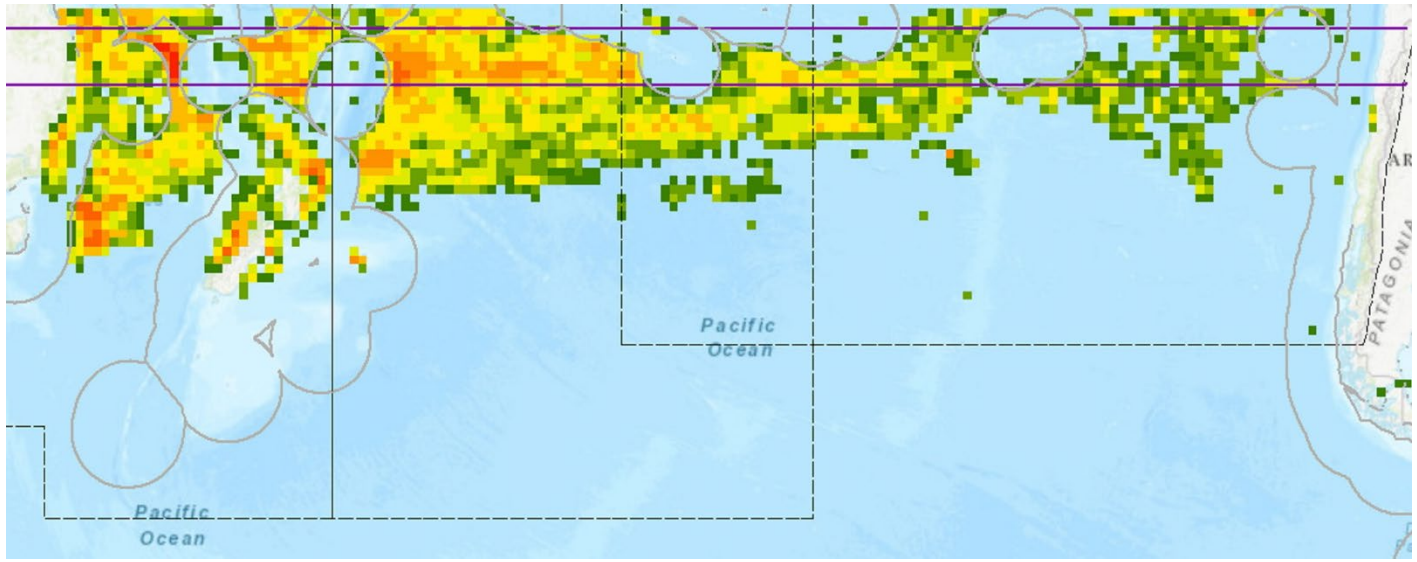
Input data



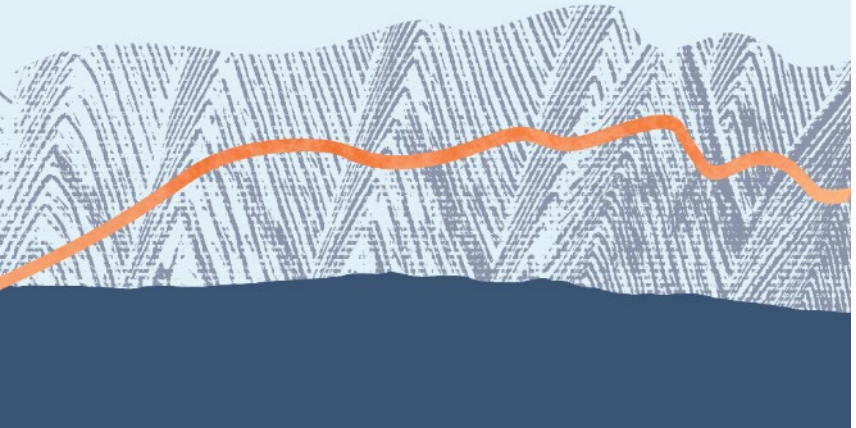
- Bird tracks from satellite transmitting tags



- Global Fishing Watch fishing effort data



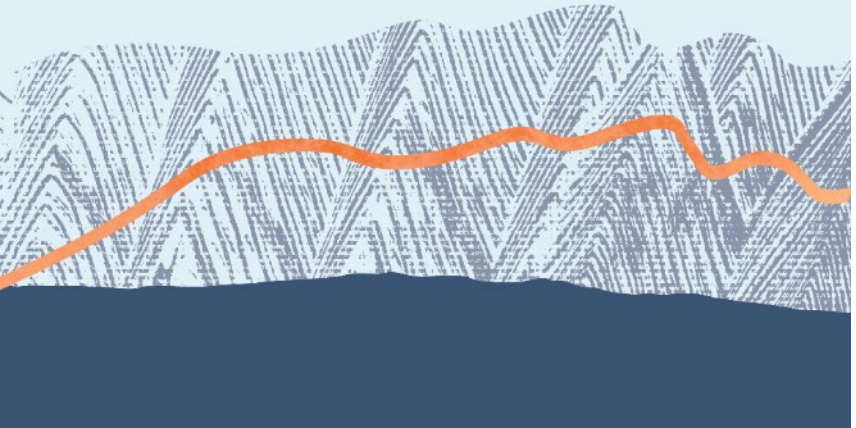
Methods

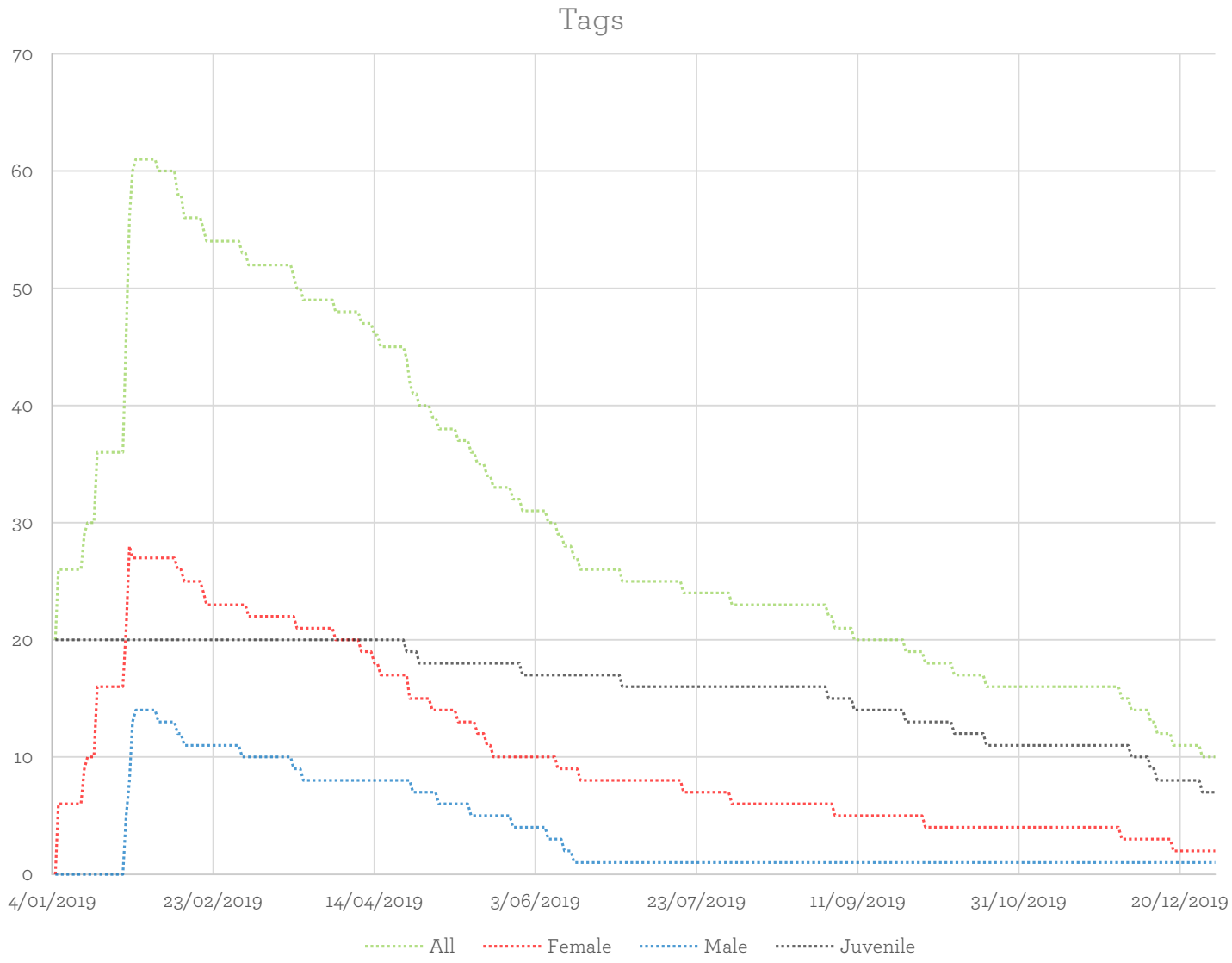


- Fishing effort (fishing hours) summed at 100km x 100km grid scale at daily temporal resolution
- Daily bird occurrence (bird hours) calculated at 100km x 100km grid scale (corrected for sample size and interval between fixes)
- Overlap is the sum total of daily fishing hours in a grid cell corrected by the corresponding daily bird occurrence (bird hours) in that cell
- Maps are colour coded as green (low) to red (high) to show occurrence or overlap
- Charts show summed occurrence or overlap

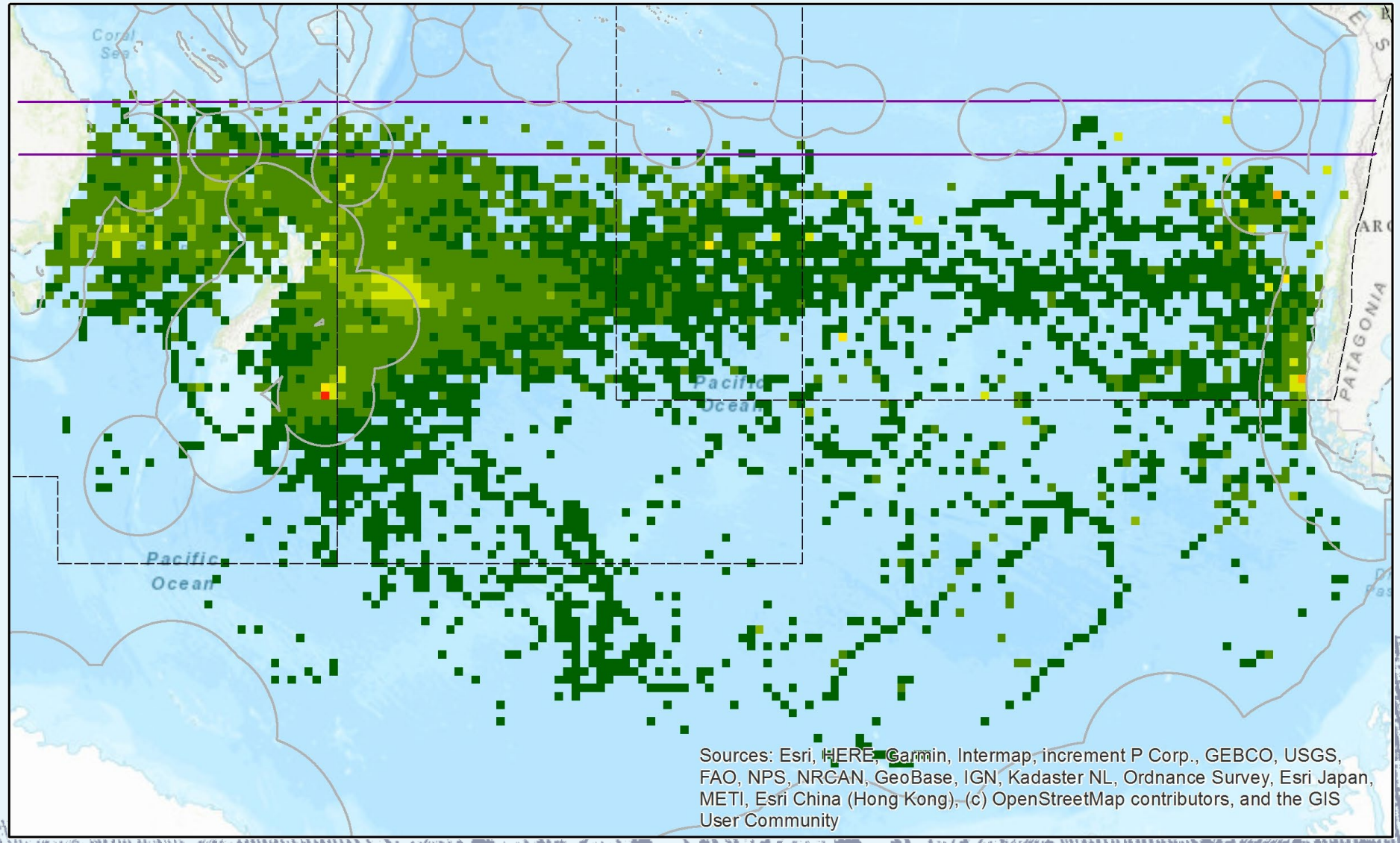
Methods

Sample size

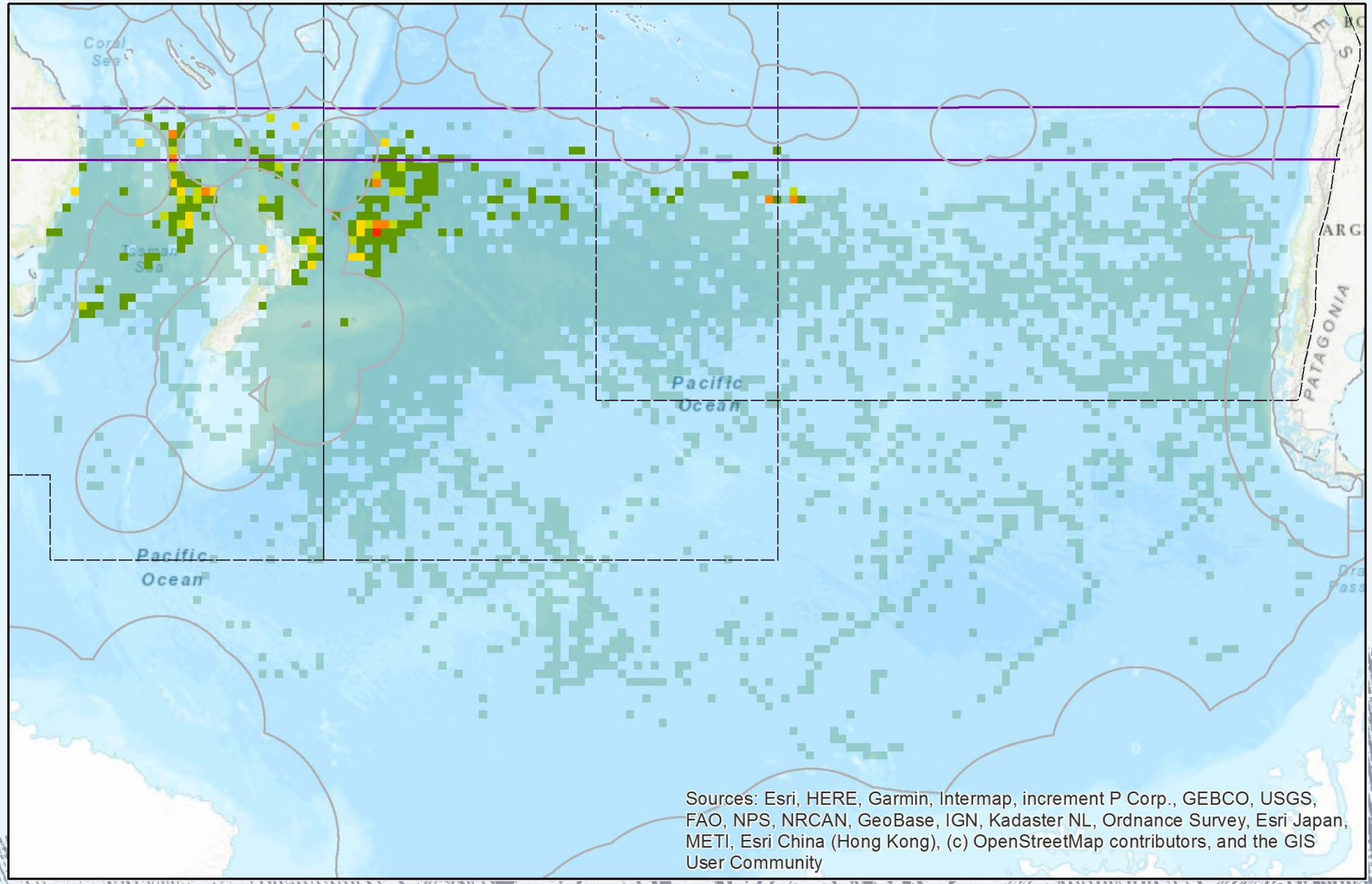




All birds - occurrence

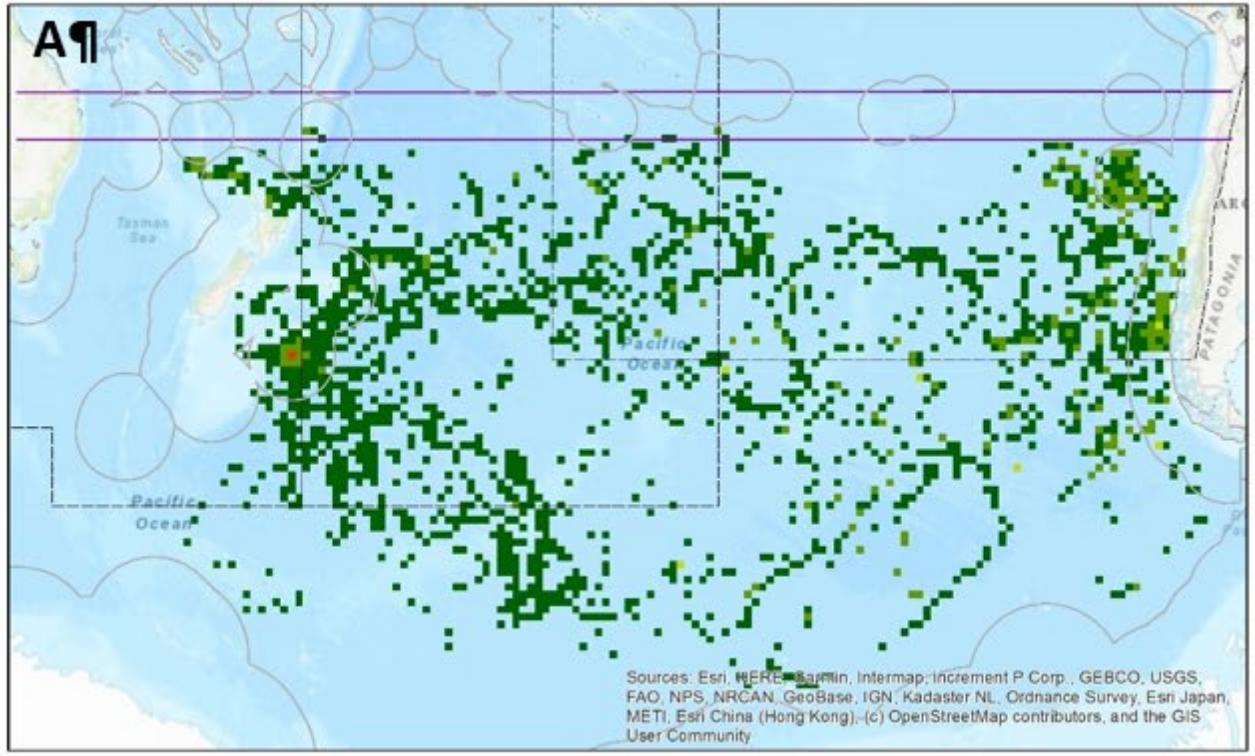


All birds - overlap

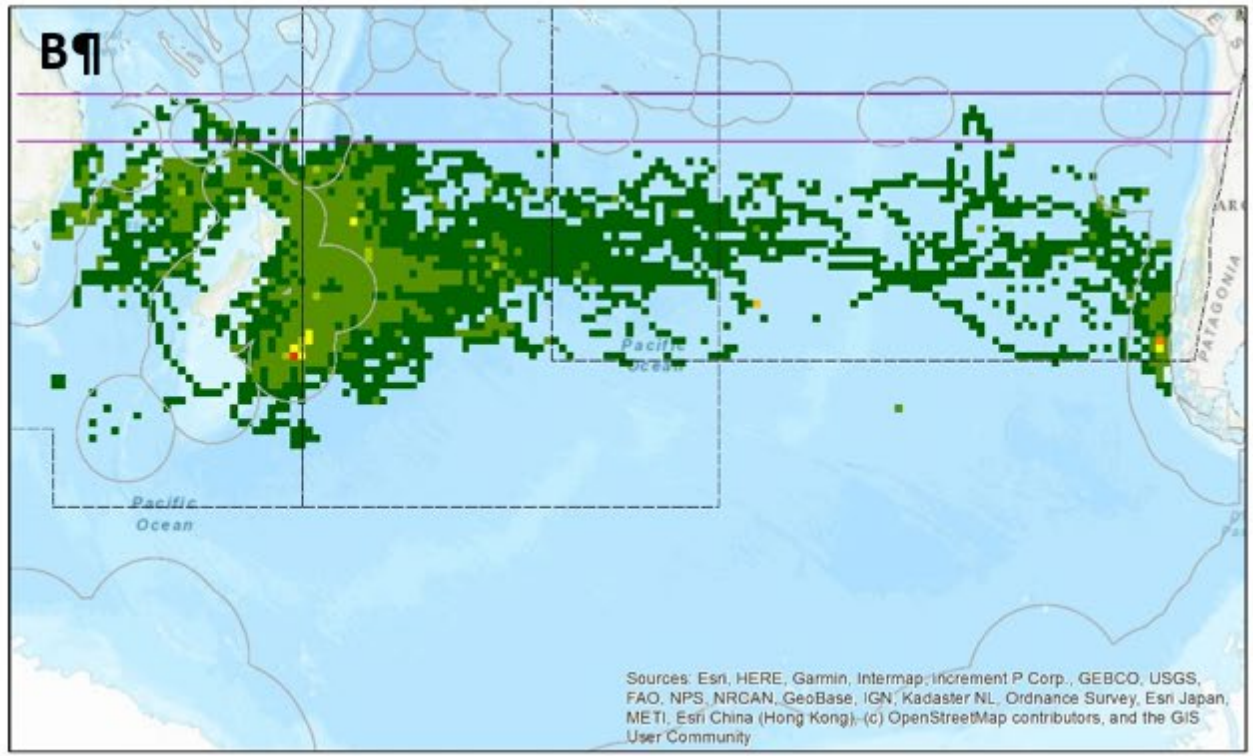


Occurrence

Adult males

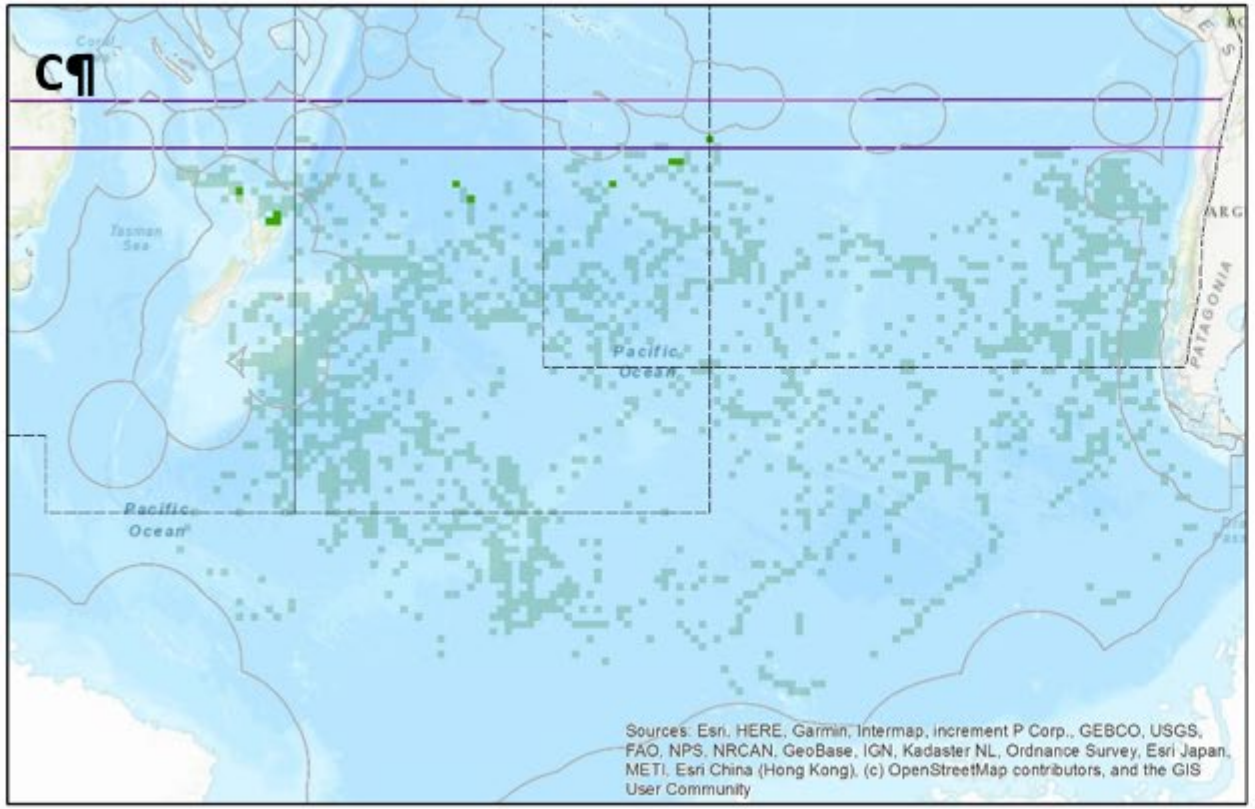


Adult females

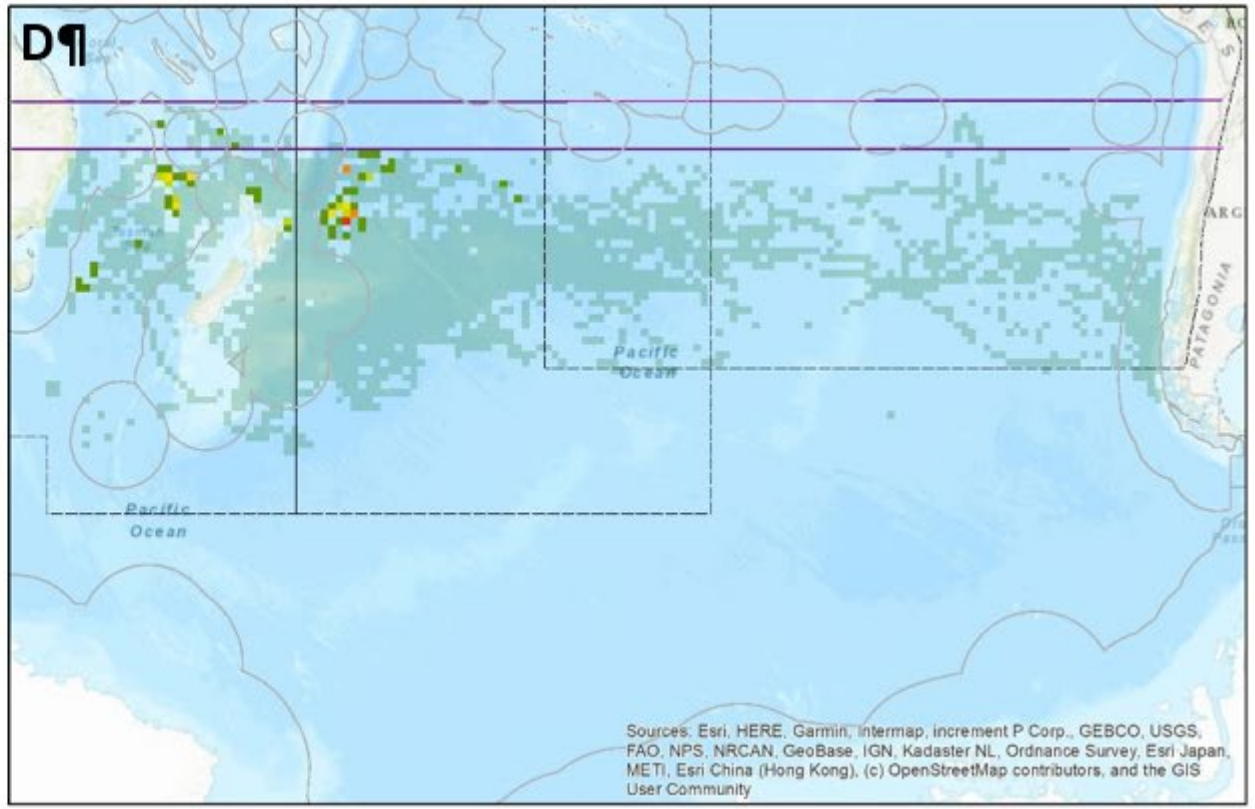


Overlap

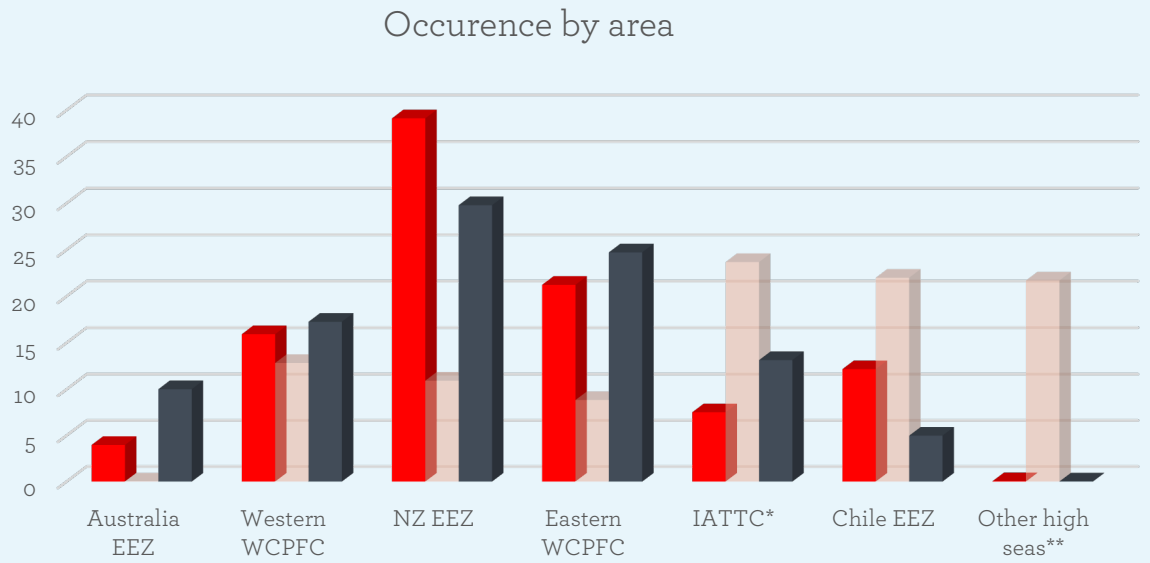
Adult males



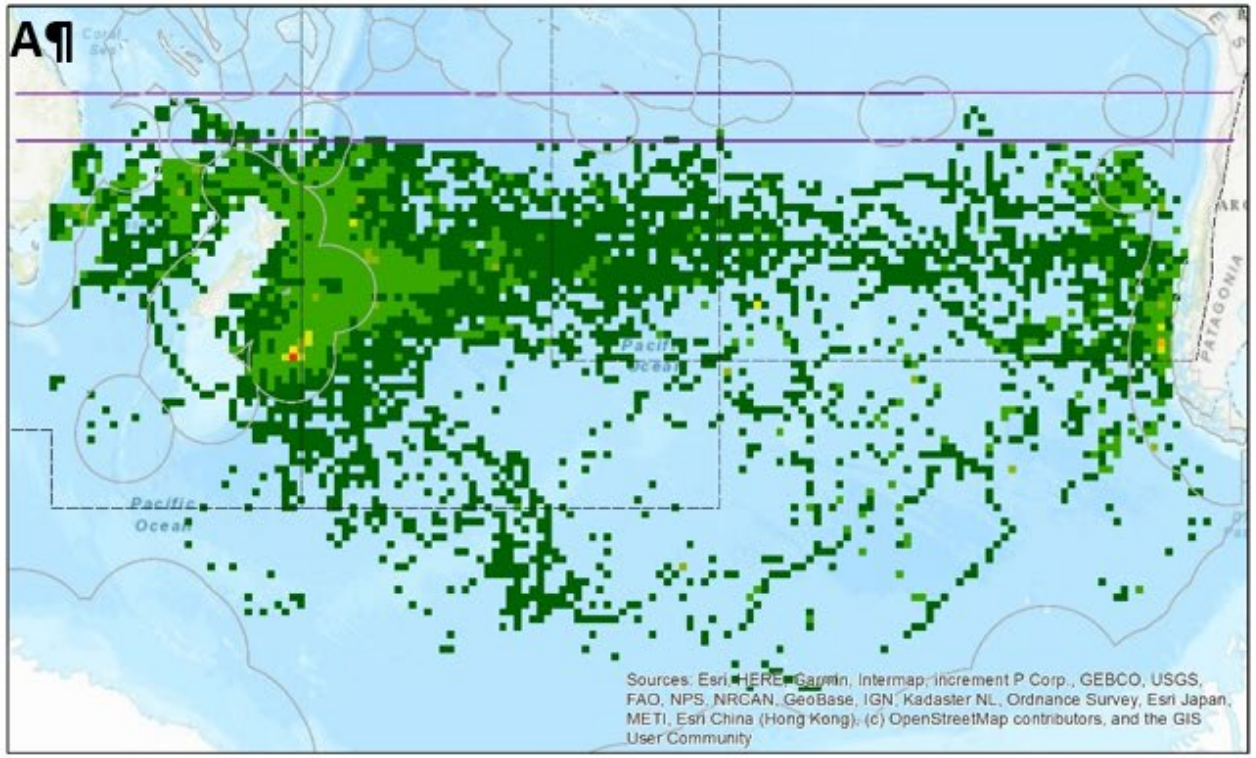
Adult females



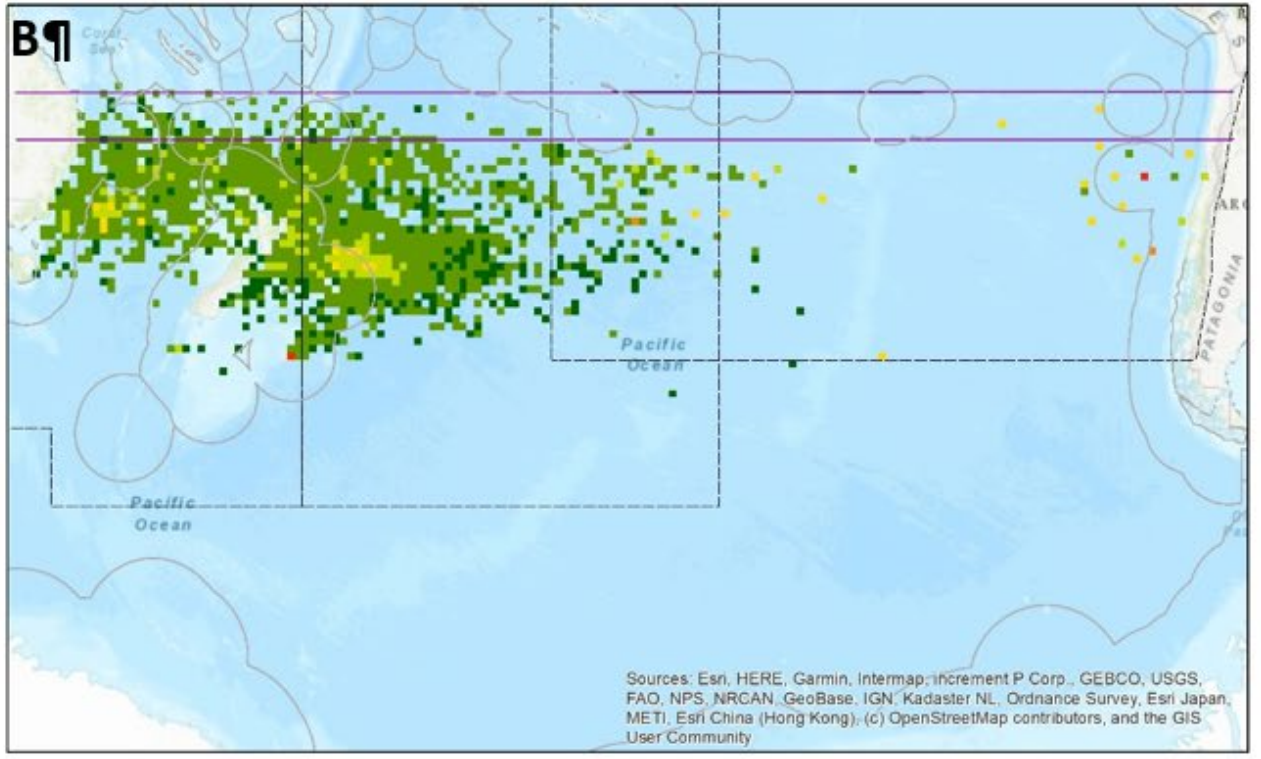
Occurrence



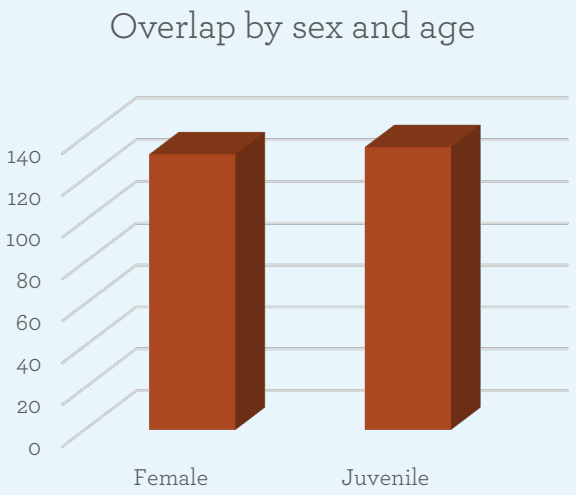
Adults

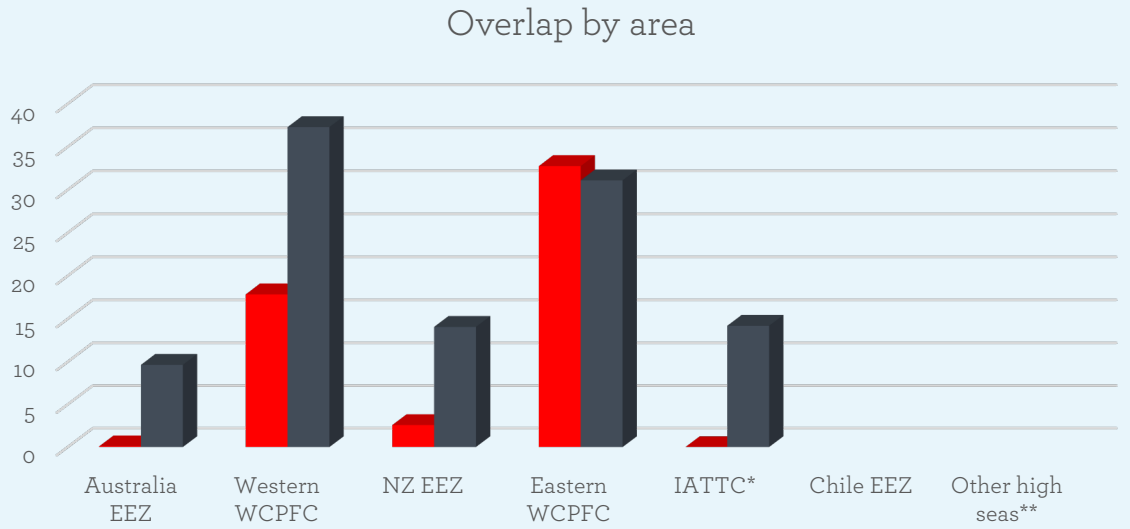


Juveniles

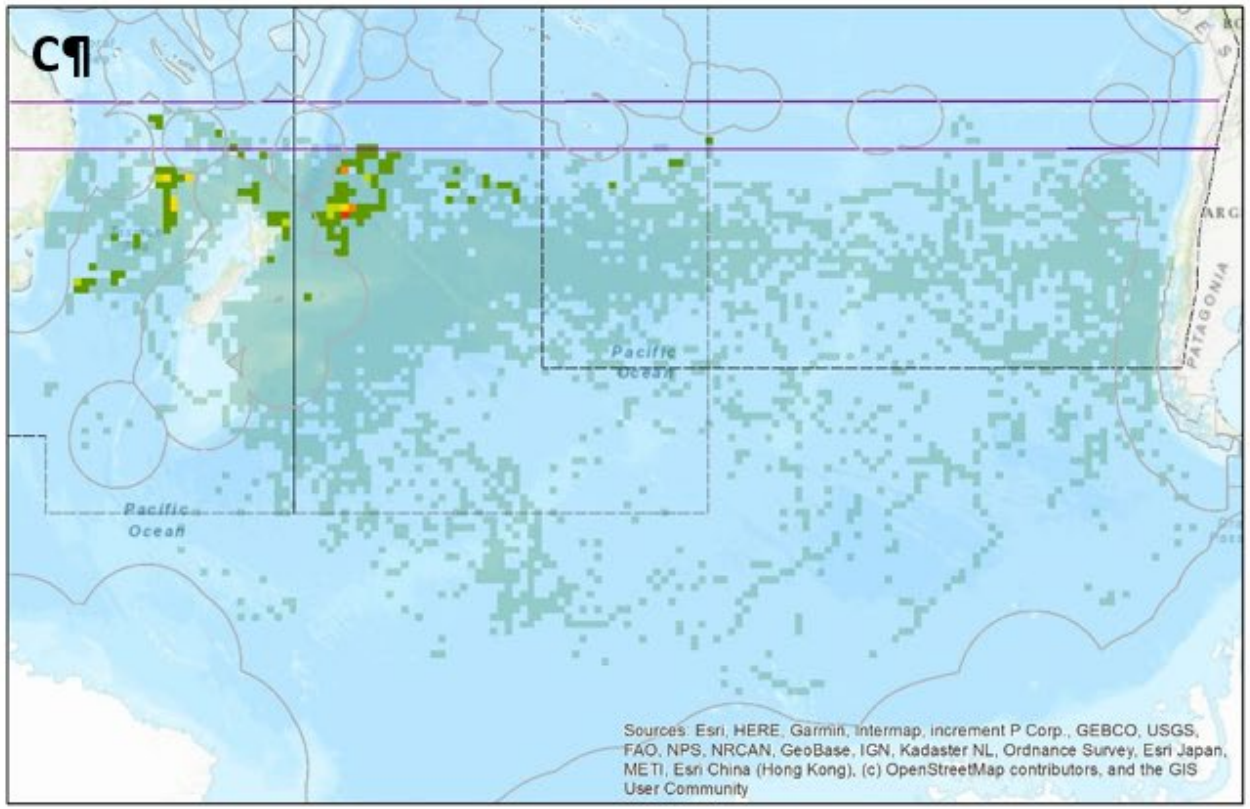


Overlap

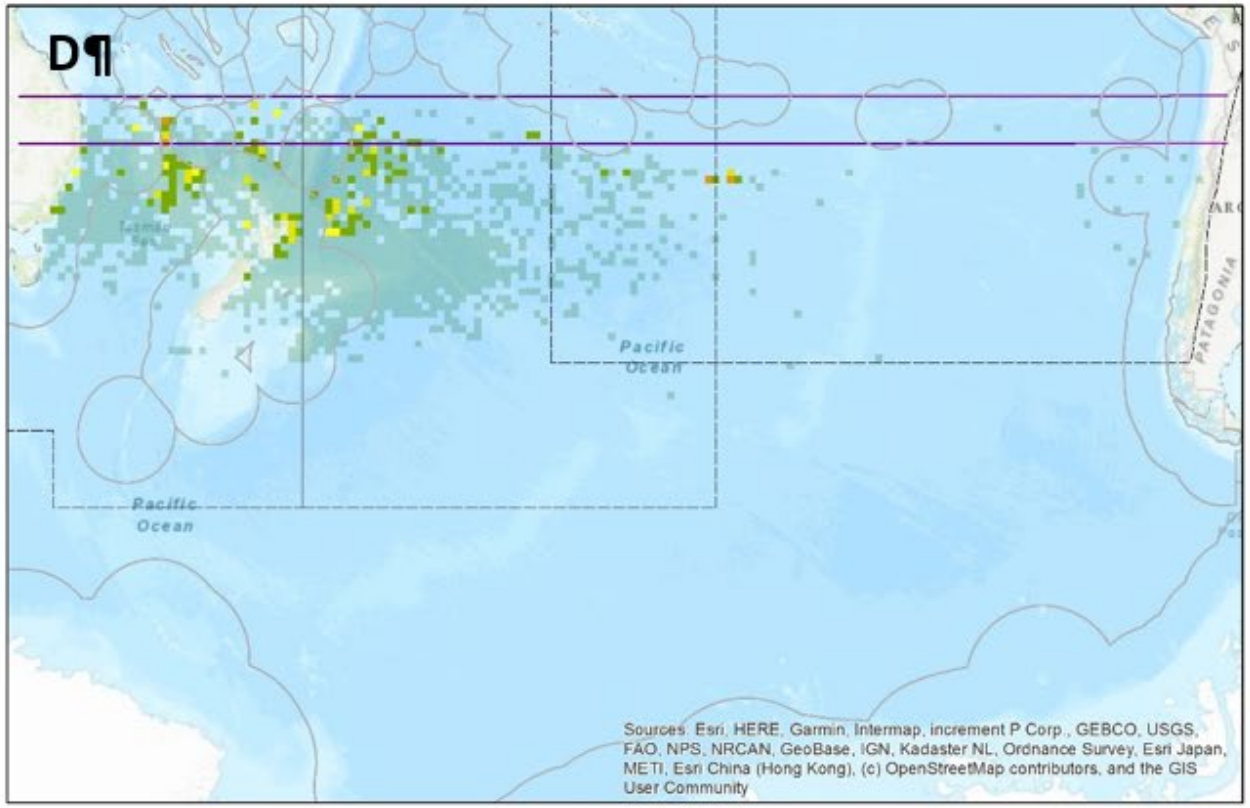




Adults

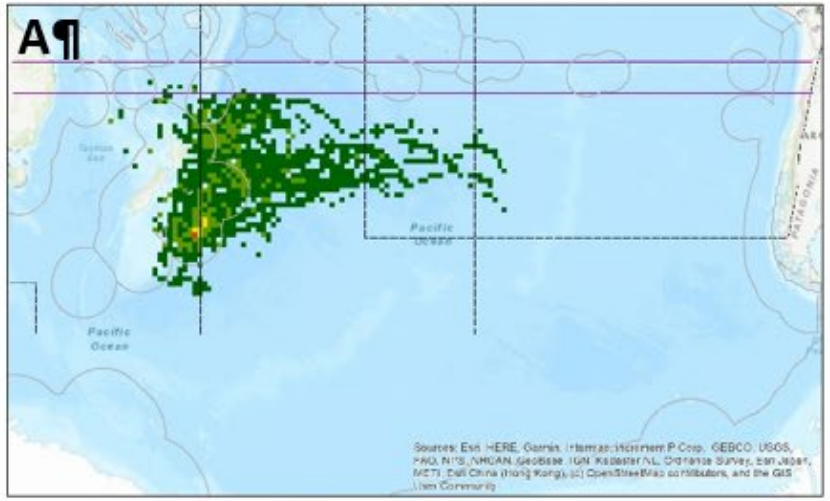


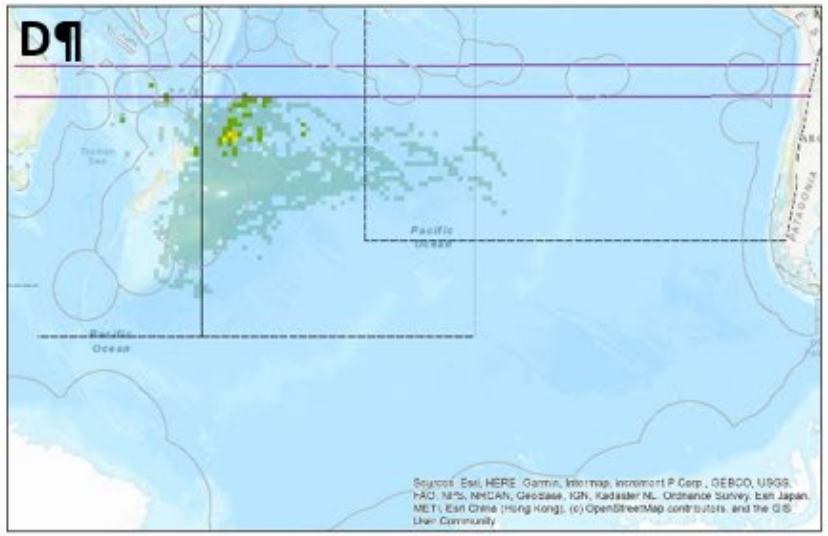
Juveniles



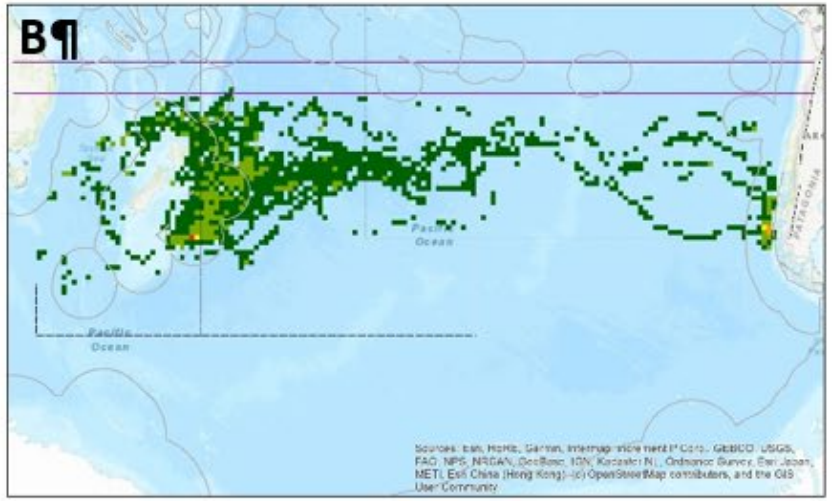
Adult females

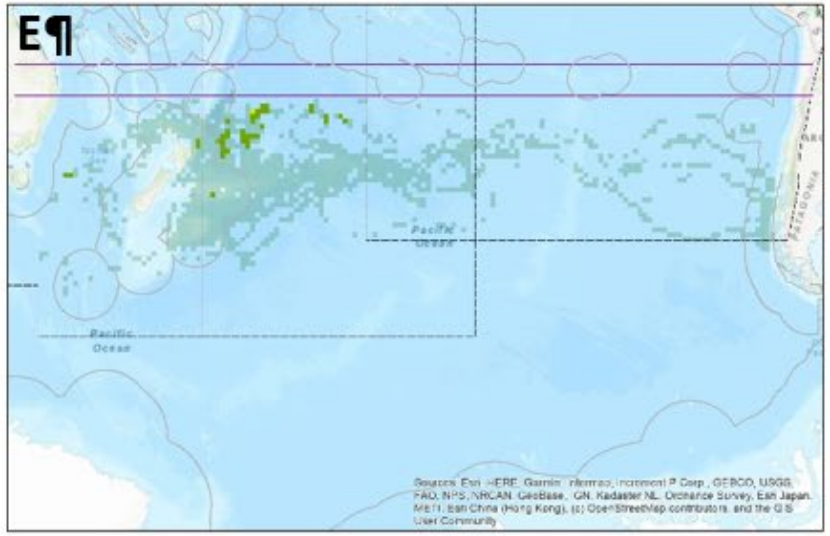
Breeding



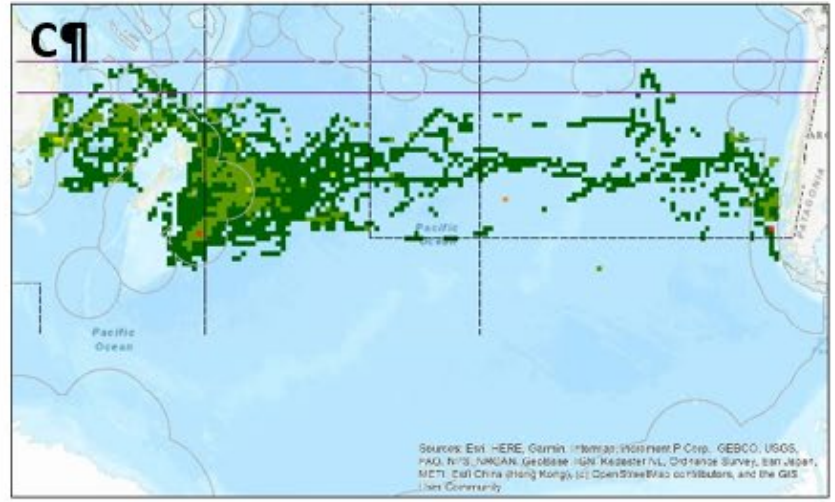


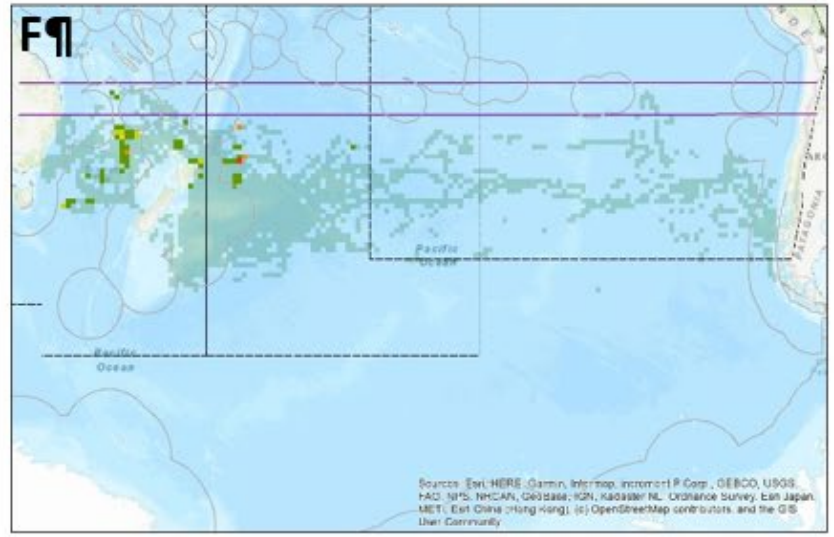
Failed breeding



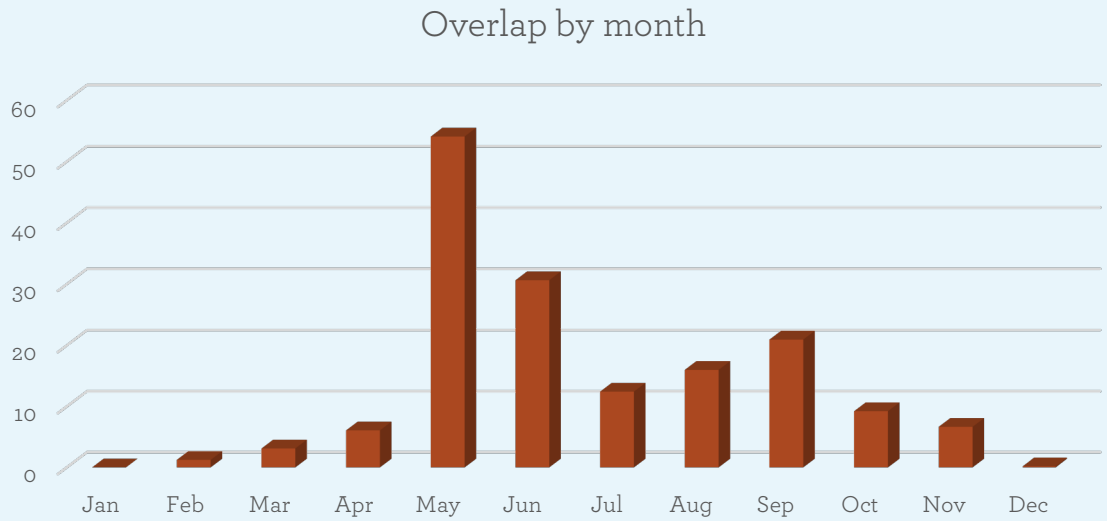


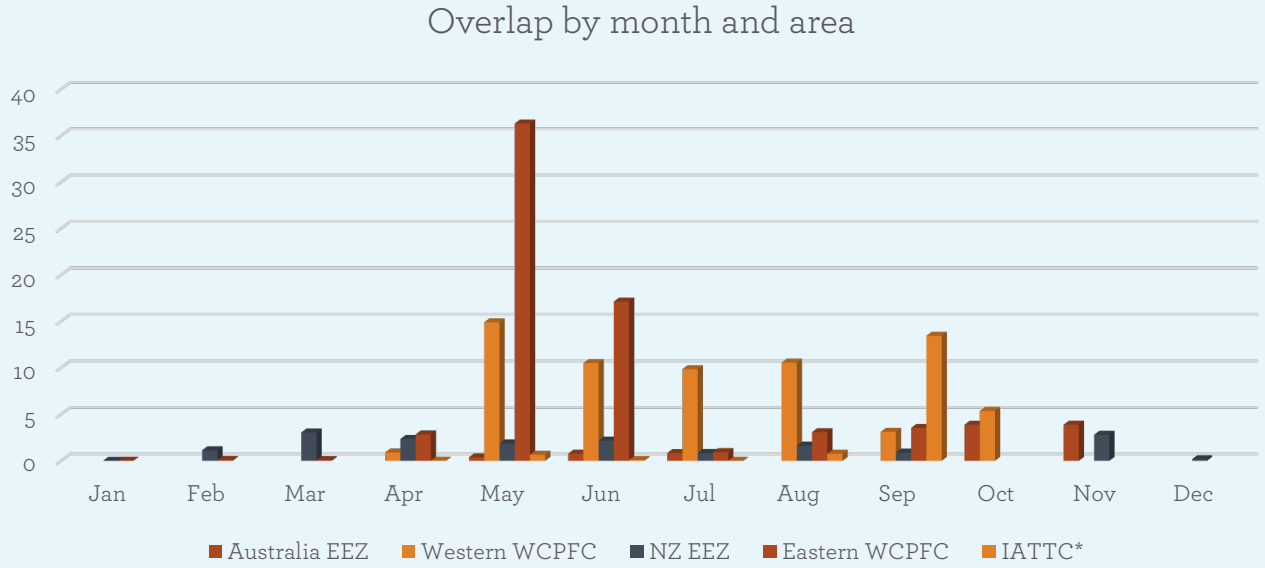
Non-breeding



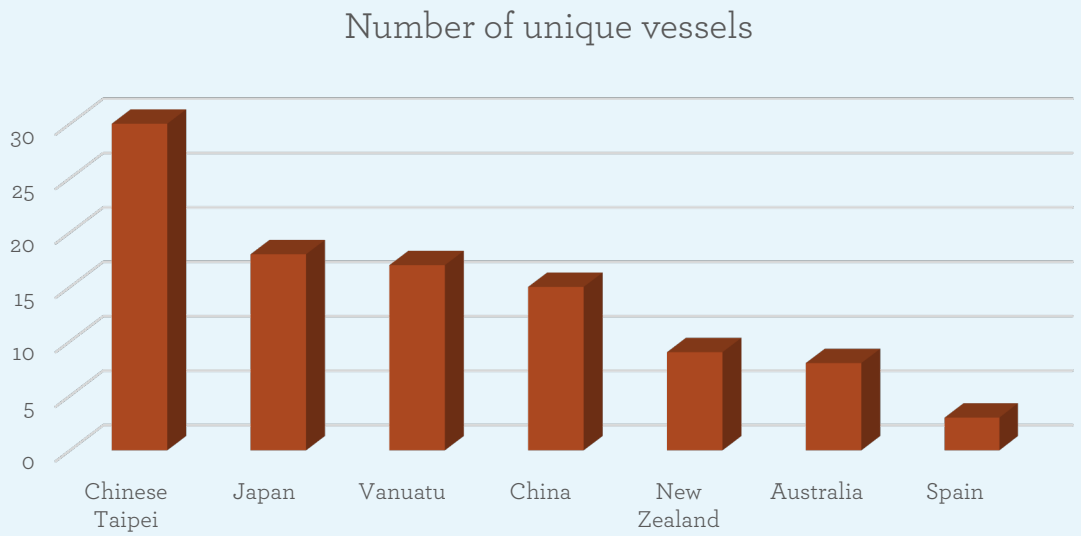


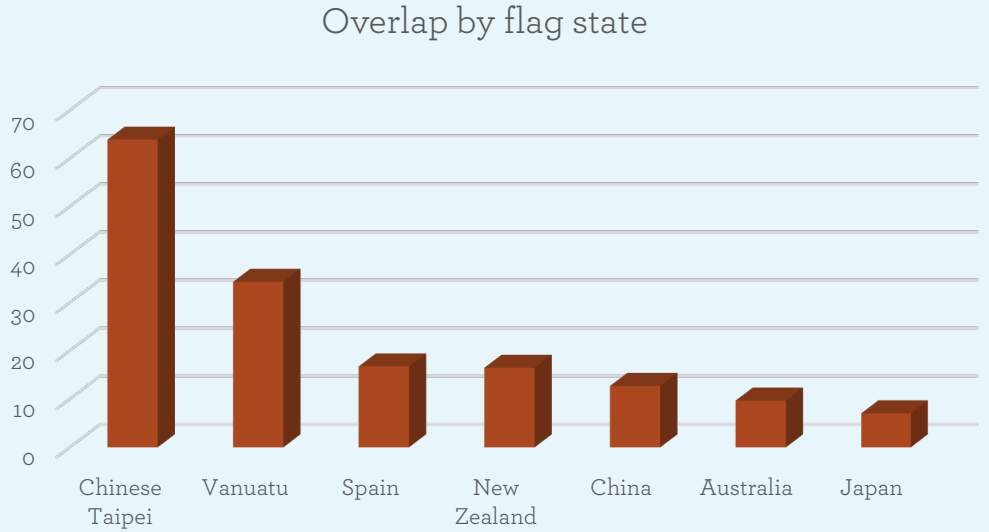
Overlap by month

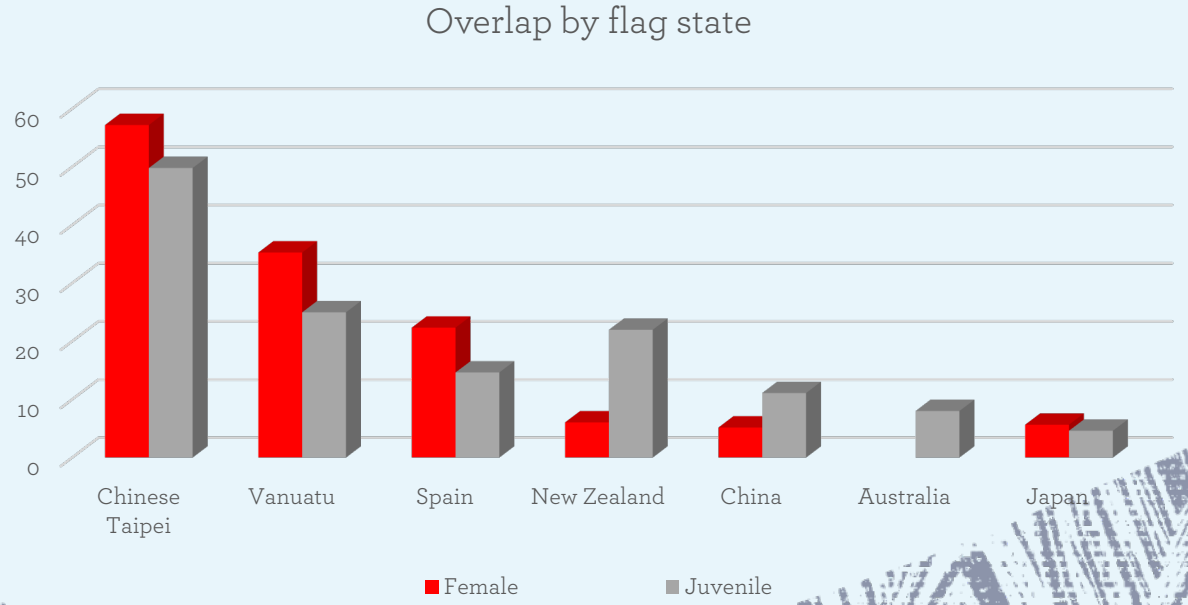




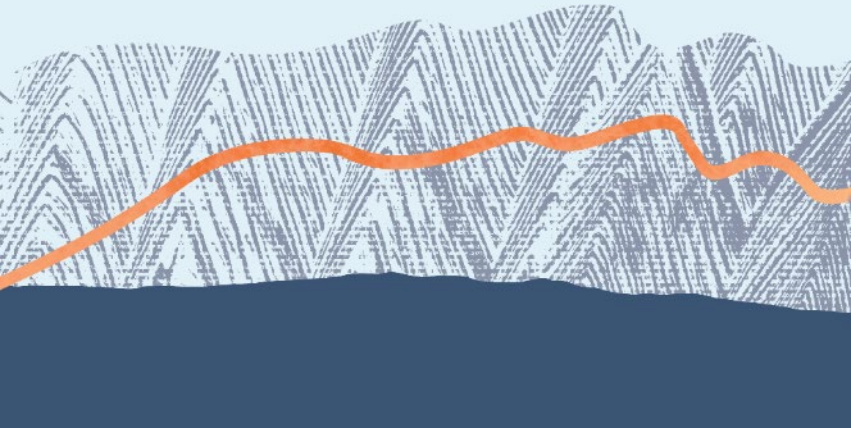
Overlap by flag state







Next steps



- Investigate further the influence of varying tag sample sizes between age/sex classes.
- Test the effect of conducting overlap analyses at different spatial scales.
- Investigate overlap with pelagic longline fishing effort by port used (to be assessed for all birds, adult females and juveniles).
- Investigate overlap with pelagic longline fishing effort by operator/company (to be assessed for all birds, adult females and juveniles).
- Investigate overlap with other fishing methods (trawl and demersal longline; see Figure M7 for comparative historic fishing effort data).
- Compare Global Fishing Watch derived fishing effort data with other data sources (e.g. New Zealand commercial records and RFMO data).
- Investigate the relative utility of the different tags used in this study to inform fishing effort overlap assessments.

Acknowledgements

Field research to deploy tracking devices was funded by DOC and undertaken by Kath Walker and Graeme Elliott using methods approved by the DOC Animal Ethics Committee (AEC 338). Satellite tracking tags were jointly funded by DOC and Fisheries New Zealand, and we particularly acknowledge William Gibson for development of the tracking app. We are also very grateful to the support provided by Global Fishing Watch in facilitating access to relevant fishing activity data.