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Update on Antipodean albatross tracking and overlap with pelagic longline fishing effort

WCPFC-SC19-2023/EB-IP-06

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Summary

Bycatch in fisheries is the greatest known threat to the endangered Antipodean albatross (*Diomedea antipodensis antipodensis*) population, which has been declining at ~5% per year since 2005. We update findings presented to SC18 on the first two years of an intensive satellite tracking programme, having now deployed 219 tags on Antipodean albatross over four years.

The findings show that whilst the general distribution of tracked birds is consistent across years, stretching across the Pacific from Australia to Chile, there are interannual differences. The year-to-year variation may be driven by multiple factors including the differing sampling priorities in each year as well as potential climatic and oceanographic differences which are yet to be explored.

Our initial assessment of overlap of all tracked Antipodean albatross with pelagic longline fishing effort confirm that the areas of highest relative overlap occur in the WCPFC area, both in the mid-Tasman Sea and to the North-East of New Zealand. The majority of overlap occurs in the High Seas. A key finding is that whilst the area north of 30° South forms only a modest portion of the overall distribution of tracked Antipodean albatross, there is overlap with increased pelagic longline fishing effort in the area between 25° and 30° South in the WCPFC area. Under CMM 2018-03 specifications, only one mitigation measure is required to be used in the area 25° – 30° South, and as such fishing effort poses a higher risk of bycatch.

Further work is currently underway to fully analyse the complete four-year tracking data set which we intend to report to SC20.

Background

Antipodean albatross (*Diomedea antipodensis antipodensis*) is classified as 'Nationally Critical' under the New Zealand Threat Classification System (Robertson et al. 2021), and the Antipodes Island population is recognised as a population of priority conservation concern by the Agreement on the Conservation of Albatrosses and Petrels (ACAP). At the species level (*D. antipodensis*), Antipodean albatross is listed as 'Endangered' on the IUCN Red List (IUCN Red List 2023). Antipodean albatross is essentially a breeding endemic to Antipodes Island in the New Zealand subantarctic region, but it's at-sea range extends across the South Pacific, from Australia to Chile.

The Antipodean albatross population is declining at ~5% per year. Their current population is estimated at around 3200 breeding pairs, and under the current projected decline only about 400 pairs may remain in 2050 (Richard 2021). Antipodes Island is fully protected and free of any potential introduced predators or pests. Bycatch in fisheries, particularly in those outside New Zealand's jurisdiction, has been identified as the largest known threat to Antipodean albatross. At the species level, Antipodean albatross (*D. antipodensis*) was listed on Appendix 1 of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) in February 2020. The Concerted Action plan adopted by CMS focuses on the reduction of fisheries bycatch, supported by research including the deployment of tracking devices to better describe areas of fisheries overlap (Action 3.2). As a result, New Zealand has been undertaking a multi-year tracking project which has recently completed a four-year period (2019-2022, inclusive) of deployment of satellite transmitting devices across various age-classes and breeding states (n = 219).

SC18 was presented with an assessment of the first two years of results from this tracking programme in WCPFC-SC18-2022/EB-IP-10. This paper provides an update to those findings, summarising the data obtained during the period 2021-2022.

Methods

In January 2021, 66 satellite transmitters were deployed and in January 2022, a further 50 satellite transmitters were deployed although transmission from ten of these trackers was lost soon after deployment. Full details of the field work were reported by Walker & Elliott (2022). This paper provides updated outputs using the tracking data following the methods described in WCPFC-SC18-2022/EB-IP-10.

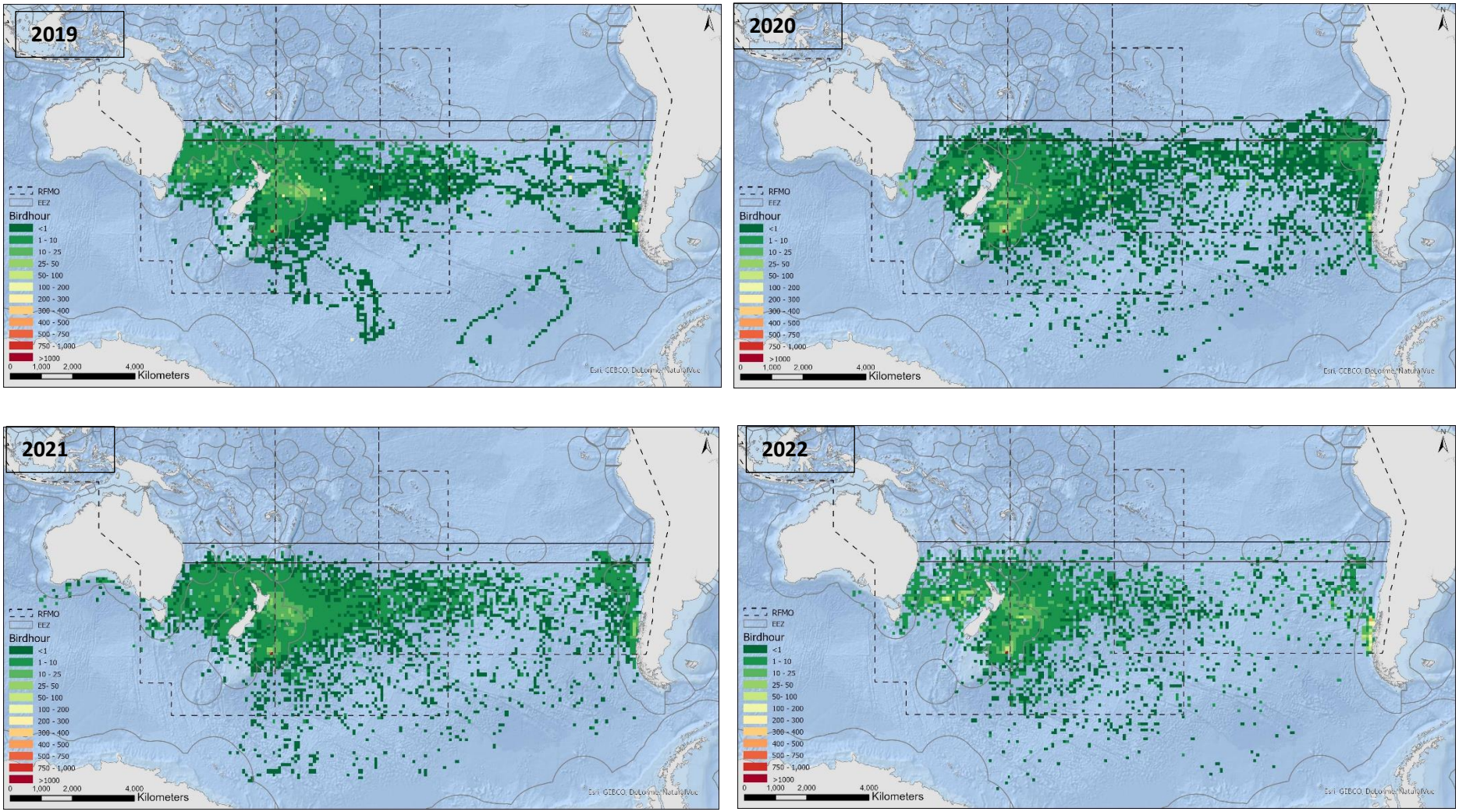

Figure 1. Spatial distribution of all tracked Antipodean albatross in each year 2019-2022 (average number of bird hours per 100 km x 100 km grid cell). Red is highest occurrence, dark green lowest. Dashed lines indicate RFMO boundaries. Lines of latitude are shown for 25° South and 30° South.

Updated bird tracking data

Figure 1 maps the spatial distribution of tracked Antipodean albatross in each of the four years 2019-2022. Whilst the general distribution of tracked birds is consistent across years stretching across the Pacific from Australia to Chile there are key interannual differences. Specifically, in 2019 and 2021, relatively more birds occurred in the Tasman Sea. In addition, the highest relative bird occurrence off South America was in 2020. Finally, more northerly occurrence of Antipodean albatross, particularly in the area north of 30° South, was greatest in 2019 and 2020.

The year-to-year variation may be driven by multiple factors. Most importantly, the sample of birds tagged each year varied considerably by age class (i.e. juveniles vs adults), sex (male vs female) and breeding state (breeders vs failed/non-breeders). There were also differences in timing of tag deployment due. Other factors that may influence year to year distribution of tracked birds and that have not yet been explored include climatic and oceanographic differences.

Overlap with pelagic longline fishing effort

Figure 2 illustrates the cumulative daily overlap of all tracked Antipodean albatross with pelagic longline fishing effort over the entire period 2019-2022. As reported previously to SC18, the areas of highest relative overlap occur in the WCPFC area, both in the mid-Tasman Sea and to the North-East of New Zealand. The majority of overlap occurs in the High Seas, with only the New Zealand EEZ having substantial overlap, as would be expected given their breeding site in New Zealand.

A key finding is that whilst the area north of 30° South forms only a modest portion of the overall distribution of tracked Antipodean albatross, there is overlap with increased pelagic longline fishing effort in the area between 25° and 30° South in the WCPFC area. Under CMM 2018-03 specifications, only one mitigation measure is required to be used in the area 25° – 30° South. There is a greater risk of bycatch as the level of longline fishing effort with limited required mitigation measures means a higher likelihood of baited hooks being available. As noted in WCPFC-SC18-2022/EB-IP-10, a tracked Antipodean albatross was reported bycaught in 2019, and another bird was reported bycaught in 2021 by fishing operations in the waters between 25° and 30° South (Walker & Elliott 2022).

Next steps

Further work is currently underway to fully analyse the complete four-year tracking data set. These analyses will explore the differences between age, sex, breeding status classes, and potential environmental explanatory factors more thoroughly. We will also refine the assessment of fisheries effort overlap in order to better understand key risk areas. We intend to report results from these analyses to SC20.

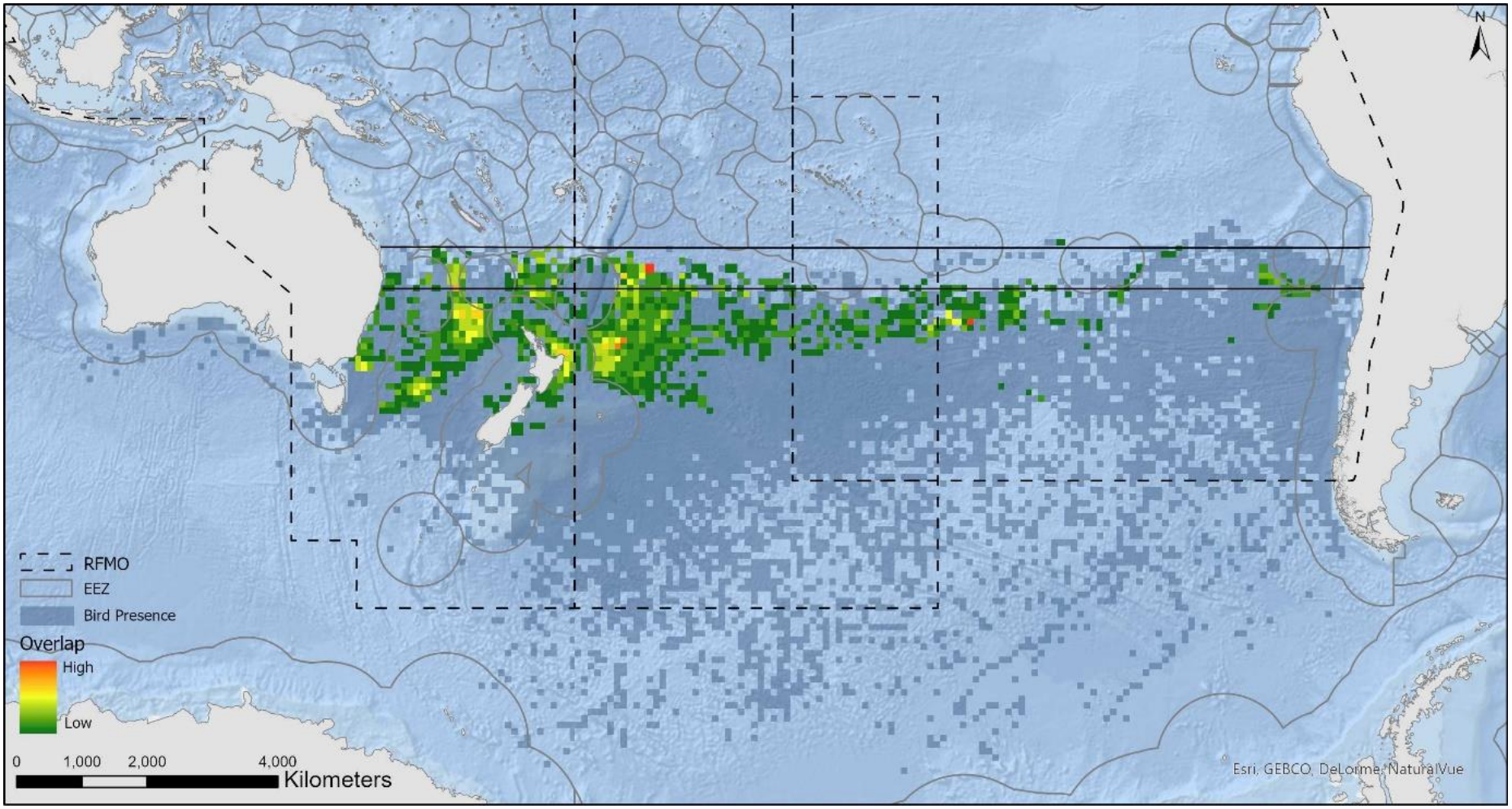

Figure 2. Cumulative daily overlap of all tracked Antipodean albatross with pelagic longline fishing effort over the period 2019-2022 at 100 km by 100 km grid scale. Red is highest overlap, dark green is lowest overlap, and translucent green cells represent bird occurrence with no overlap. Dashed lines indicate RFMO boundaries. Lines of latitude are shown for 25° South and 30° South.

References

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