Overview of *Mobula birostris* sightings in Aotearoa New Zealand and initial observations from a suspected critical foraging area

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RESEARCH HIGHLIGHTS

- Aotearoa New Zealand's offshore and inshore waters are known to seasonally support a significant population of oceanic manta rays *(M. birostris).*
- Combining citizen science and dedicated research efforts, 360 verified sightings and 50 ventral photographic IDs spanning 1994 to 2021 have now been recorded and catalogued.
- Critical foraging areas are seasonally utilised along the North Island's northeast coast, one such aggregation site has been identified in Tikapa Moana / Hauraki Gulf .

INTRODUCTION

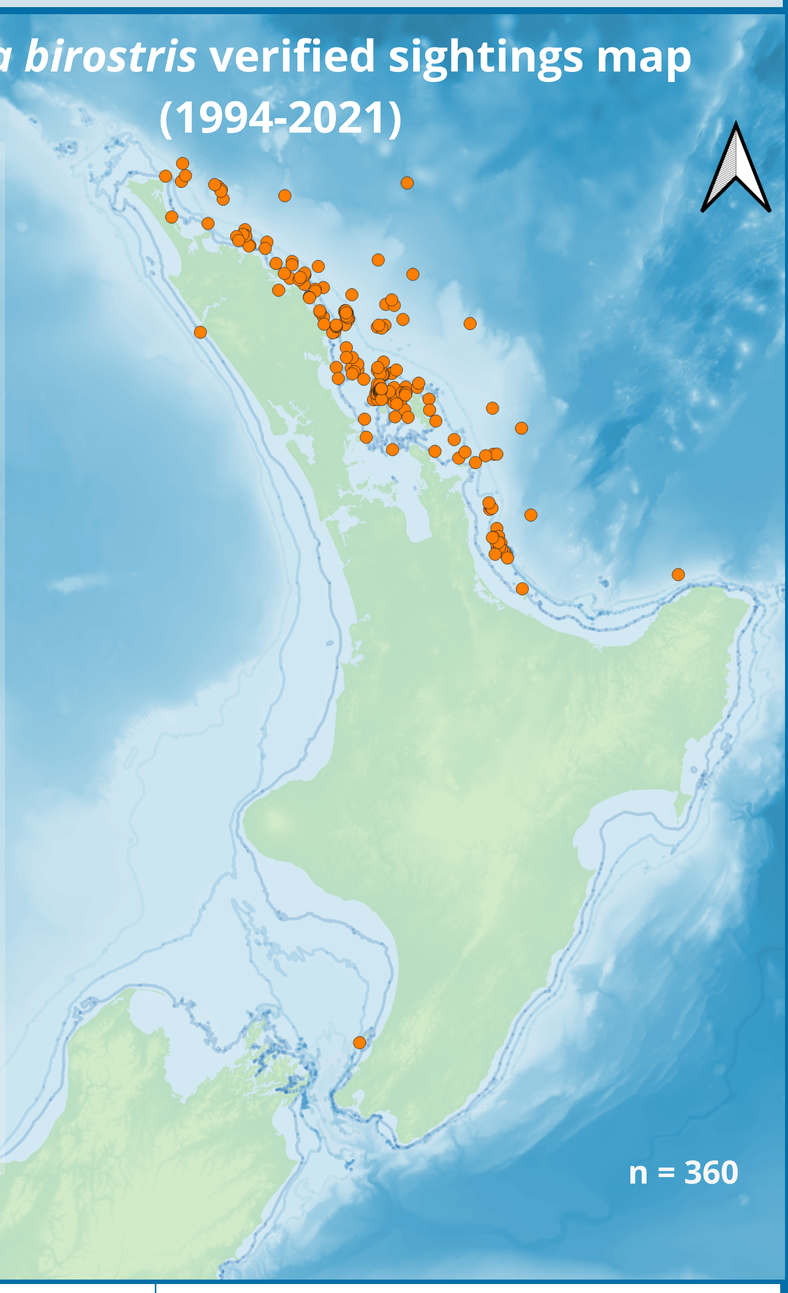
- Historically data deficient, a focused effort to better understand Aotearoa's oceanic manta ray *M. birostris* population has resulted in a significant increase in knowledge of this species' spatial ecology and foraging behaviour.
- Sightings have been concentrated along the North Island's east coast from Cape Reinga to Bay of Plenty, with several individuals having been recorded as far south as East Cape and Kapiti Island.
- Oceanic manta rays have conservative life histories and are highly vulnerable to any form of exploitation. Reclassified as globally Endangered on the IUCN Red List in December 2020, understanding the intricacies of Aotearoa's *M. birostris* population has never been more critical.

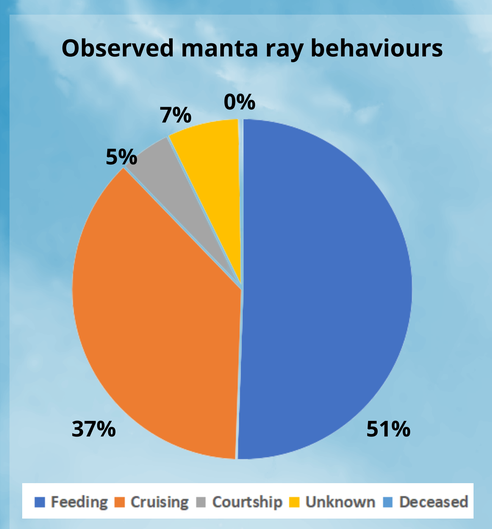
METHOD

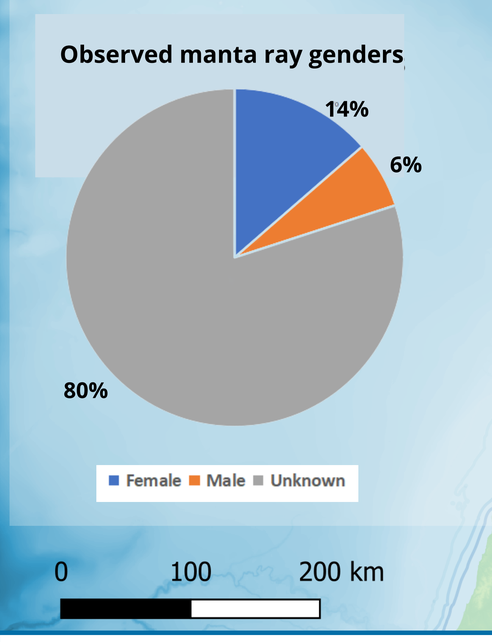
- Georeferenced verified *M. birostris* sightings data sourced from citizen science and dedicated surveys was collated and mapped using QGIS.
- Ventral images and videos of individual mantas were processed and catalogued creating an ID database. Additional data recorded for each individual manta included gender, sexual maturity, pregnancy, disc width, and injuries present.
- Locations of consistent manta activity over time were identified and built the basis of dedicated survey effort.
- Combining visual observations and aerial drone photogrammetry, a suspected key foraging area "hot spot" was identified in the outer Tikapa Moana / Hauraki Gulf and became the focus of targeted surveys.

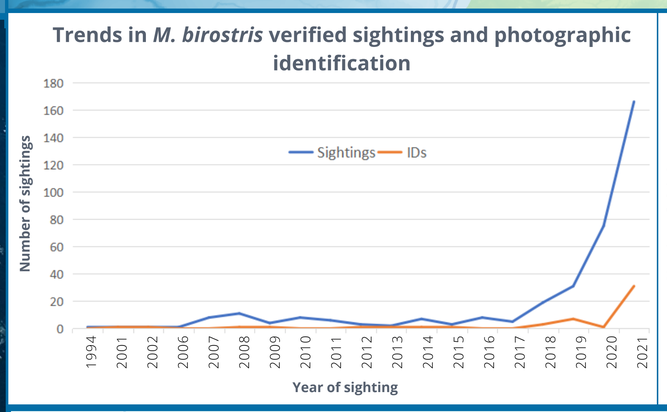
RESULTS

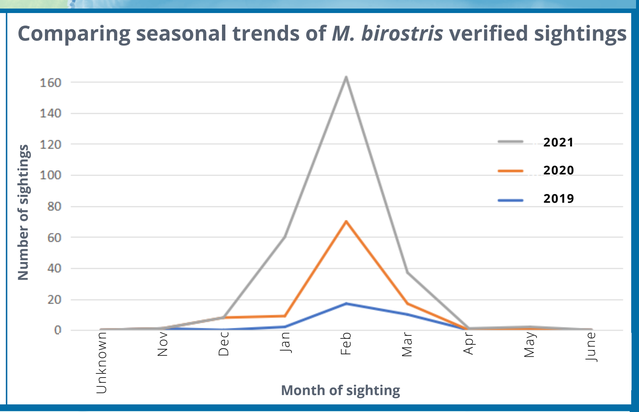
Mobula birostris verified sightings map (1994-2021)



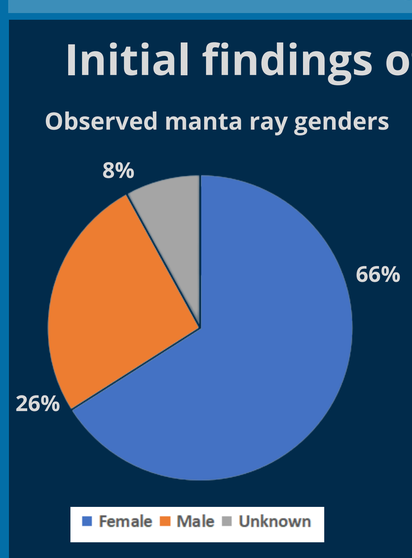








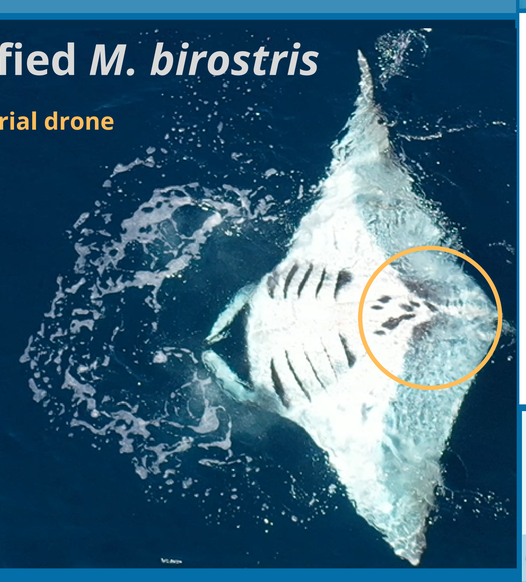
Initial findings of ventrally identified *M. birostris*



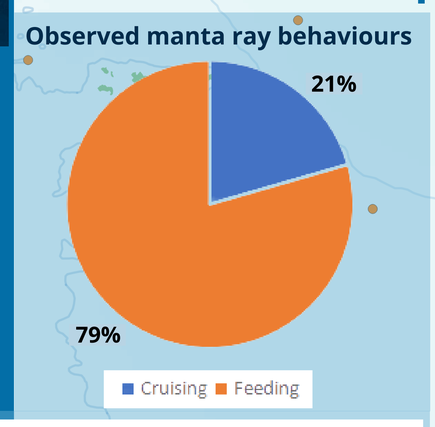
Ventral ID captured by aerial drone

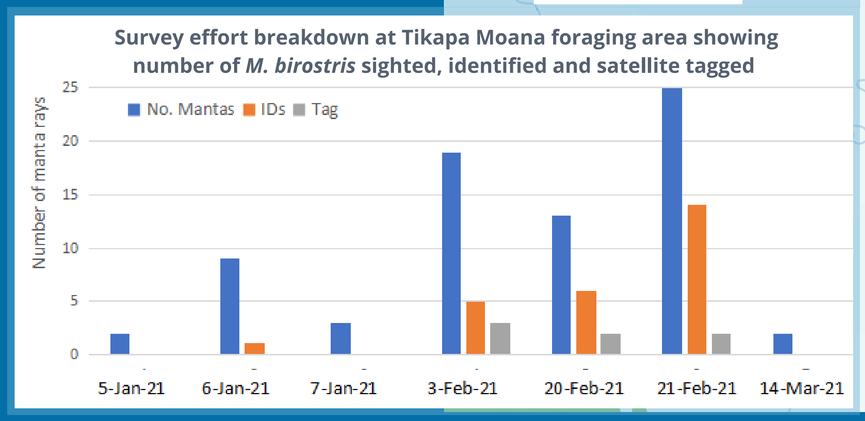
Manta rays have unique markings on their ventral surface, much like a human finger print.

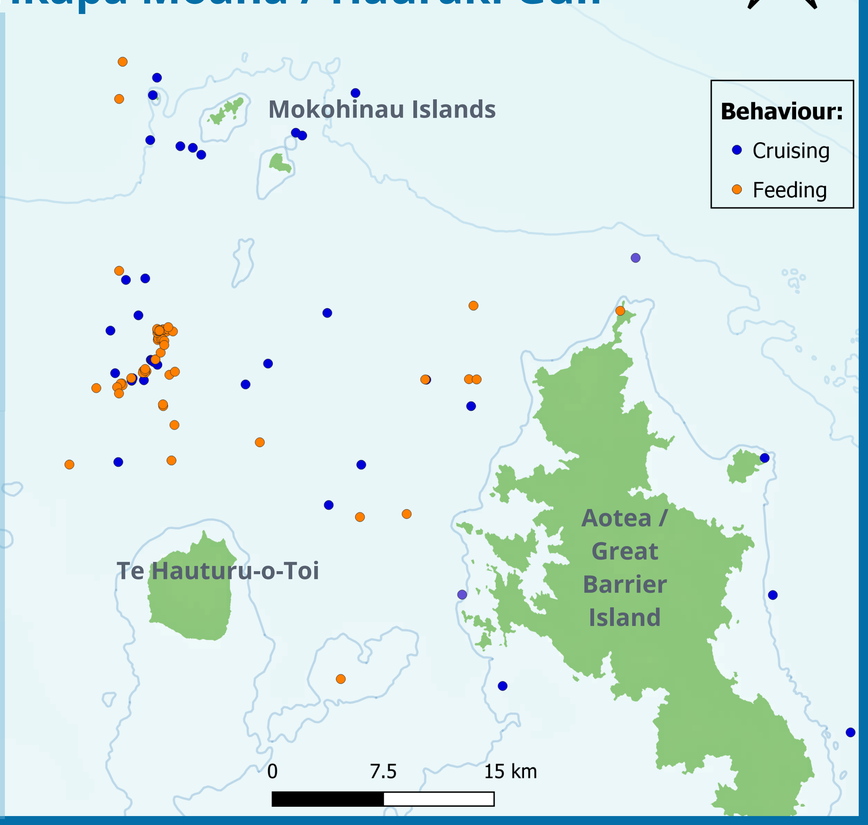
Cataloguing these "photo-ID" images can track an individual's movements and life history overtime whilst helping to estimate overall population size.



Suspected critical foraging habitat in Tikapa Moana / Hauraki Gulf







CONCLUSION

- Current verified sightings and ventral ID data vastly under represents Aotearoa's *M. birostris* population.
- Targeted surveys of the Tikapa Moana hot spot confirmed that these critical habitats attract significant numbers of *M. birostris*, ranging from subadult males (2.8m disc width DW) through to heavily pregnant females (6.2m DW).
- A major research effort on this endangered species (encompassing citizen science, satellite and acoustic telemetry, aerial photogrammetry and biological oceanography components) is planned for 2022.