

Blue lines indicate the area meeting the ISRA Criteria; dashed lines indicate the suggested buffer for use in the development of appropriate place-based conservation measures

BREAM KNOLLS SHELF ISRA

New Zealand & Pacific Islands Region

SUMMARY

Bream Knolls Shelf is situated off the northeast of the North Island in New Zealand. Primary and secondary production in the region is among the highest around the country, with the narrow continental shelf (<40 km wide) promoting upwelling in the area. Bream Knolls Shelf sits within the North Eastern North Island (offshore) Key Biodiversity Area. Within this area there are: **threatened species** and **feeding areas** (Spinetail Devil Ray *Mobula mobular*).

CRITERIA

Criterion A - Vulnerability; Sub-criterion C2 - Feeding Areas

NEW ZEALAND

0-300 metres

2,043.7 km²





DESCRIPTION OF HABITAT

Bream Knolls Shelf is situated off the northeast of the North Island in New Zealand. The waters here are temperate, with sea surface temperatures along the northeastern coast generally ranging between 15°C in the austral winter to 22°C in summer (Stevens et al. 2021). Nutrient-rich coastal waters are bordered by the warm seaward, nutrient-poor East Auckland Current which flows southeastward from the East Australian Current and the Tasman Front (Zeldis et al. 2004). Primary and secondary production in the region is notably high, with the narrow continental shelf (<40 km wide) promoting upwelling (Bradford-Grieve et al. 2006; Bury et al. 2012; Gaskin 2021). Upwelling events are common in early spring to early summer (Zeldis et al. 2004).

The area is located within the North Eastern North Island (offshore) Key Biodiversity area (KBA 2024).

This Important Shark and Ray Area is benthic and pelagic and is delineated from inshore and surface waters (0 m) to 300 m based on the bathymetry of the area.

ISRA CRITERIA

CRITERION A - VULNERABILITY

One Qualifying Species considered threatened with extinction according to the IUCN Red List of Threatened Species regularly occurs in the area. This is the Endangered Spinetail Devil Ray (Marshall et al. 2022).

SUB-CRITERION C₂ - FEEDING AREAS

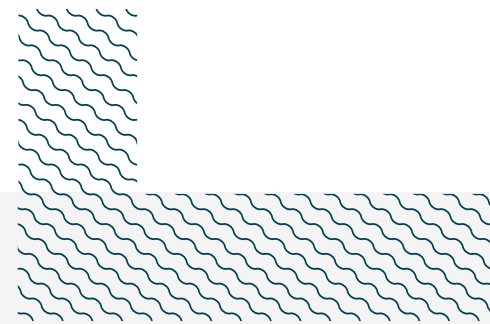
Bream Knolls Shelf is an important feeding area for one ray species.

Between 2004-2021, 317 records of Spinetail Devil Rays were collated using a combination of observer program records (n = 304) and citizen scientists (n = 13) (Ozaki 2023). Records from the Ministry of Primary Industries observer program were reported from the tuna purse seine and longline fisheries, related to devil ray (*Mobula* spp.) incidental catch, whereas citizen science reports were observations of free-swimming animals. All fisheries interactions reported that Spinetail Devil Rays were closely associated with the target schooling species likely foraging on smaller schooling fish (i.e., anchovies) and larger zooplankton such as euphausiids (Ozaki et al. 2024). Historic stomach content analysis of Spinetail Devil Rays killed in skipjack purse seines in the area have confirmed they were feeding on euphausiids (Bailey 1983). In addition, mobulids are known to target euphausiids in other locations (Rohner et al. 2017), adding support to foraging being the primary driver of aggregations in this area.

Between 2008-2024, 264 Spinetail Devil Ray interactions with fisheries (n = 447 individuals) were recorded in New Zealand waters (Finucci et al. 2021). Spinetail Devil Ray observations were largely during the summer (88% in January and February; Finucci et al. 2021). Almost all observations were from purse seine fisheries (94%) targeting Skipjack Tuna *Katsuwonus pelamis* and Blue Mackerel *Scomber australasicus* (Finucci et al. 2021). The other 6% of Spinetail Devil Ray observations were from surface longline fisheries targeting Bigeye Tuna *Thunnus obesus* or Swordfish *Xiphias gladius*. Spinetail Devil Ray interactions occurred at depths of 85-400 m (median = 252 m; Finucci et al. 2021). Comparative to the Bream Knolls Shelf, Spinetail Devil Ray interactions with fisheries in the Eastern Tropical Pacific are associated with areas of high productivity (Lezama-Ochoa et al. 2019). Primary

and secondary productivity in this region is among the highest around the country, with the narrow continental shelf (<40 km wide) promoting upwelling in the area (Bradford-Grieve et al. 2006).

Only 10 records of Spinetail Devil Rays have been recorded on the west coast of the North Island of New Zealand (Ozaki 2023), highlighting the importance of the area for this species.



Acknowledgments

Lydia Green (Manta Watch New Zealand Charitable Trust), Rikako Ozaki (University of Auckland), Clinton AJ Duffy (Museum of Auckland), Brittany Finucci (National Institute of Water and Atmospheric Research), Malcolm P Francis (National Institute of Water and Atmospheric Research), Emiliano García-Rodríguez (IUCN SSC Shark Specialist Group - ISRA Project), and Asia O Armstrong (IUCN SSC Shark Specialist Group - ISRA Project) contributed and consolidated information included in this factsheet. We thank all participants of the 2024 ISRA Region 10 - New Zealand and Pacific Islands workshop for their contributions to this process.

This factsheet has undergone review by the ISRA Independent Review Panel prior to its publication.

This project was funded by the Shark Conservation Fund, a philanthropic collaborative pooling expertise and resources to meet the threats facing the world's sharks and rays. The Shark Conservation Fund is a project of Rockefeller Philanthropy Advisors.

Suggested citation

IUCN SSC Shark Specialist Group. 2024. Bream Knolls Shelf ISRA Factsheet. Dubai: IUCN SSC Shark Specialist Group.

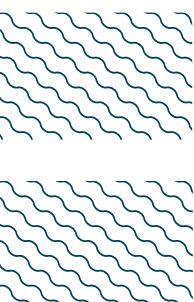
QUALIFYING SPECIES

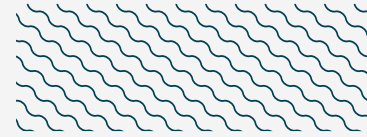
Scientific Name	Common Name	IUCN Red List Category	Global Depth Range (m)	ISRA Criteria/Sub-criteria Met									
				A	B	C1	C2	C3	C4	C5	D1	D2	
RAYS													
<i>Mobula mobular</i>	Spinetail Devil Ray	EN	0-1,112	X			X						

SUPPORTING SPECIES

Scientific Name	Common Name	IUCN Red List Category
SHARKS		
<i>Alopias superciliosus</i>	Bigeye Thresher	VU
<i>Alopias vulpinus</i>	Common Thresher	VU
<i>Carcharhinus brachyurus</i>	Copper Shark	VU
<i>Carcharhinus longimanus</i>	Oceanic Whitetip Shark	CR
<i>Carcharhinus obscurus</i>	Dusky Shark	EN
<i>Carcharodon carcharias</i>	White Shark	VU
<i>Galeocerdo cuvier</i>	Tiger Shark	NT
<i>Isurus oxyrinchus</i>	Shortfin Mako	EN
<i>Lamna nasus</i>	Porbeagle	VU
<i>Prionace glauca</i>	Blue Shark	NT
<i>Rhincodon typus</i>	Whale Shark	EN
<i>Sphyrna zygaena</i>	Smooth Hammerhead	VU
RAYS		
<i>Bathytoshia brevicaudata</i>	Smooth Stingray	LC
<i>Mobula birostris</i>	Oceanic Manta Ray	EN
<i>Pteroplatytrygon violacea</i>	Pelagic Stingray	LC

IUCN Red List of Threatened Species Categories are available by searching species names at www.iucnredlist.org Abbreviations refer to: CR, Critically Endangered; EN, Endangered; VU, Vulnerable; NT, Near Threatened; LC, Least Concern; DD, Data Deficient.





REFERENCES

- Bailey KN. 1983.** Food and feeding habits of fish associated with skipjack tuna in New Zealand. Unpublished MSc thesis, Victoria University of Wellington, Wellington.
- Bradford-Grieve J, Probert K, Lewis K, Sutton P, Zeldis J, Orpin A. 2006.** Chapter 36. New Zealand shelf region. In: Robinson AR, Brink KH, eds. *The Sea: Ideas and Observations on Progress in the Study of Seas Volume 14. Interdisciplinary Regional Studies and Syntheses. Part B.* New York: Wiley, 1451-1492.
- Bury SJ, Zeldis JR, Nodder SD, Gall M. 2012.** Regenerated primary production dominates in a periodically upwelling shelf ecosystem, northeast New Zealand. *Continental Shelf Research* 32: 1-21. <https://doi.org/10.1016/j.csr.2011.09.008>
- Finucci B, Dunn MR, Pinkerton MH, Sutton P. 2022.** Characterisation of New Zealand protected shark captures, to 2021. New Zealand Aquatic Environment and Biodiversity Report No. 289. Wellington: Ministry for Primary Industries.
- Gaskin C. 2021.** The State of Our Seabirds 2021. Seabird ecology, research and conservation for the wider Hauraki Gulf / Tīkapa Moana / Te Moananui-ā-Toi region. Auckland: Northern New Zealand Seabirds Charitable Trust.
- Key Biodiversity Areas (KBA). 2024.** Key Biodiversity Areas factsheet: North Eastern North Island (offshore). Available at: <https://www.keybiodiversityareas.org/site/factsheet/27404> Accessed August 2024.
- Lezama-Ochoa N, Hall MA, Pennino MG, Stewart JD, López J, Murua H. 2019.** Environmental characteristics associated with the presence of the Spinetail devil ray (*Mobula mobular*) in the eastern tropical Pacific. *PLoS ONE* 14(8): e0220854. <https://doi.org/10.1371/journal.pone.0220854>
- Marshall A, Barreto R, Carlson J, Fernando D, Fordham S, Francis MP, Herman K, Jabado RW, Liu KM, Rigby CL, et al. 2022.** *Mobula mobular* (amended version of 2020 assessment). *The IUCN Red List of Threatened Species* 2022: e.T110847130A214381504. <https://dx.doi.org/10.2305/IUCN.UK.2022-1.RLTS.T110847130A214381504.en>.
- Ozaki R. 2023.** Chasing rays: Distribution and habitat-use of mobulid rays in the northeastern continental shelf of Aotearoa New Zealand. Published Masters Thesis, The University of Auckland, Auckland.
- Ozaki R, Stephenson F, Pinkerton M, Finucci B, Green L, Penna AD, Sila-Nowicka K. 2024.** Evidence of environmental niche separation between threatened mobulid rays in Aotearoa New Zealand: Insights from species distribution modelling. *Journal of Biogeography* 51: 2117-2135. <https://doi.org/10.1111/jbi.14976>
- Rohner CA, Burgess KB, Rambahiniarison JM, Stewart JD, Ponzo A, Richardson AJ. 2017.** Mobulid rays feed on euphausiids in the Bohol Sea. *Royal Society Open Science* 4: 161060. <http://dx.doi.org/10.1098/rsos.161060>
- Stevens CL, O'Callaghan JM, Chiswell SM, Hadfield MG. 2021.** Physical oceanography of New Zealand/Aotearoa shelf seas—A review. *New Zealand Journal of Marine and Freshwater Research* 55(1): 6-45. <https://doi.org/10.1080/00288330.2019.1588746>
- Zeldis JR, Walters RA, Greig MJN, Image K. 2004.** Circulation over the northeastern New Zealand continental slope, shelf and adjacent Hauraki Gulf, during spring and summer. *Continental Shelf Research* 24(4): 543-561. <https://doi.org/https://doi.org/10.1016/j.csr.2003.11.007>