

Eastern Shovelnose Ray (2023)

Aptychotrema rostrata



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland, New South Wales	Eastern Australia	Undefined	

STOCK STRUCTURE

The Eastern Shovelnose Ray, *Aptychotrema rostrata*, is an endemic batoid common to the east coast of Australia. The species occurs from approximately 18°S to 36°S over sandy substrates in depths up to 220 m [Last et al. 2016]. No genetic analysis of stock structure has been published for Eastern Shovelnose Rays. There appears to be biological differences between Queensland and New South Wales, implying potential stock differentiation within their range. However, further investigation would be required to confirm stock structure. Here, assessment of stock status is presented at the biological stock level—Eastern Australia.

STOCK STATUS

Eastern Australia

Almost all the harvest for Eastern Shovelnose Ray occurs in New South Wales. Eastern Shovelnose Rays constitute 75% of the total Rhinobatidae landed in NSW [NSW I&I 2007]. The NSW Ocean Trawl Fishery (OTF) catches about 95% of all rhinobatids landed by NSW commercial fisheries [Peddemors 2015]. Eastern Shovelnose Rays are caught by demersal trawl nets in the OTF.

Between 1998 and 2008 catches within the OTF were stable around 110 tonnes (t) per year. Since 2014 there has been a reduction in catch; however, this has corresponded with reduced effort in the OTF and annual catch has remained relatively constant at less than 70 t p.a., with the 2022 fiscal year recording 44.78 t for New South Wales fisheries. Catch per unit effort in NSW trawl fisheries is spatially and temporally highly varied, with significantly higher landings reported between 32°S and 31°S latitudes and double the amount

landed in the winter months.

Recreational fishers catch approximately 18 t per year, of which 2.4 t (around 14%) are kept [Murphy et al. 2020]. No data on post-release survivorship from recreational angling are available. Indigenous catches are unknown.

In Queensland, Eastern Shovelnose Rays caught in the East Coast Inshore Fishery (ECIF) can be retained for sale. However, take is restricted by a combined in-possession limit of five guitarfish and/or shovelnose rays (total). Catch is largely reported at the species-complex level and the data has poor species resolution. At the complex level, the ECIF harvests small amounts of guitarfish and shovelnose rays with between 3 to 4.5 t retained each year since 2017. This data has poor resolution and cannot be used to determine harvest rates for individual species including the Eastern Shovelnose Ray.

The Eastern Shovelnose Ray is one of the more abundant species of elasmobranch bycatch caught in the East Coast Trawl Fishery (ECTF) [Campbell et al. 2021; Kyne et al. 2021]. As they cannot be retained for sale, all Eastern Shovelnose Rays caught in the ECTF are discarded. Research on the fate of trawl-caught Eastern Shovelnose Rays suggests that post-release survivorship is high for this species [Campbell et al. 2018; Kyne et al. 2021], although females often abort pups following capture stress [Adams et al. 2018].

While shovelnose rays can be retained by recreational fishers, this sector is restricted by a one shark or ray in possession limit. Data from the Queensland recreational fishing survey estimates that around 12,000 shovelnose rays and guitarfish were caught in this sector over the 2019–20 period with negligible numbers retained for consumption [Queensland Department of Agriculture and Fisheries 2021; Teixeira et al. 2021]. The recreational data has poor species resolution and the proportion of Eastern Shovelnose Rays in this catch is unclear.

Female Eastern Shovelnose Rays exhibit a positive linear relationship between maternal total length and uterine fecundity, and can have more than 18 embryos, suggesting high fecundity [Meagher 2010]. Eastern Shovelnose Rays have an annual, seasonal reproductive cycle in NSW. Reproductive cycles, maximum total length and length at maturity differ between NSW and Queensland implying there may be sub-structuring within the eastern Australian stock of Eastern Shovelnose Rays [Meagher 2010].

There is insufficient information available to confidently classify the status of this stock. On the basis of the evidence provided above, the Eastern Australia biological stock is classified as an **undefined stock**.

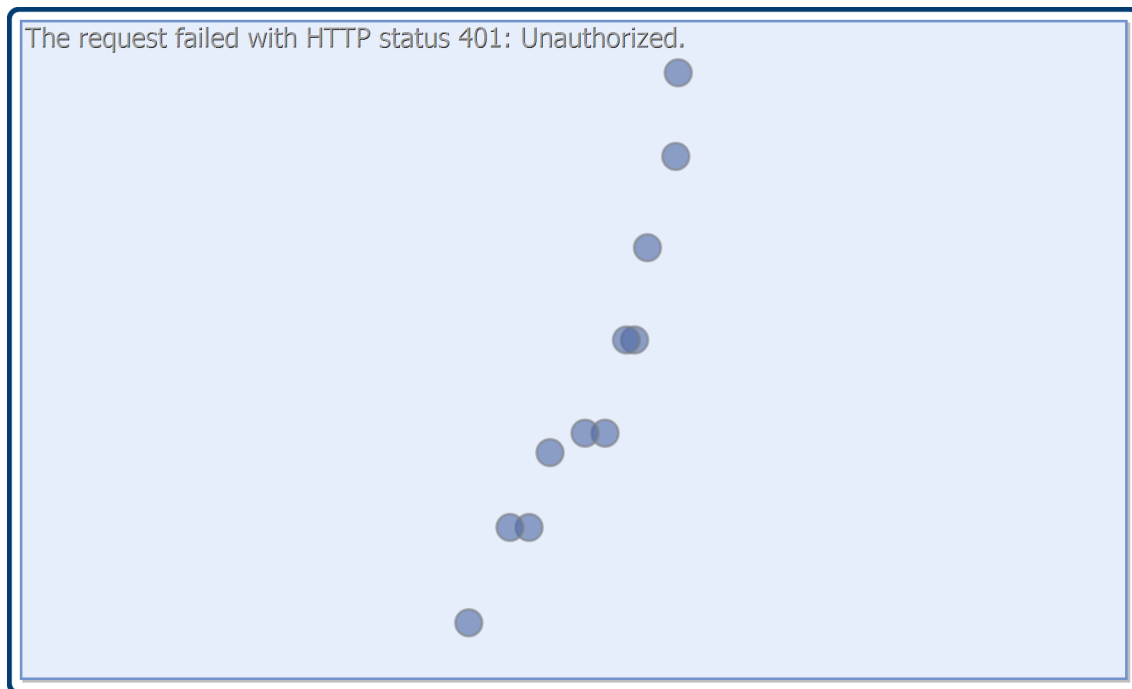
BIOLOGY

Eastern Shovelnose Ray biology [Kyne and Bennett 2002; Meagher 2010; Last et al. 2016; Campbell et al. 2021]

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Species	Longevity / Maximum Size	Maturity (50 per cent)
Eastern Shovelnose Ray	<p>Overall. Maximum Length 1200 mm [Last et al. 2016]</p> <p>NSW [Meagher 2010]: Females: 985 mm (11 years) Males: 920 mm (8 years)</p> <p>Queensland [Campbell et al. 2021]: Females: 753 mm TL (17 years) Males: 671 mm TL (15 years)</p>	<p>NSW [Meagher 2010]: Females: 50% maturity at 690–700 mm (3.5–4 years) Males: 50% maturity at 710–720 mm (4.5–5 years)</p> <p>Queensland. Females 540–660 mm [Kyne & Bennett 2002; 753 mm TL (13.3 years) [Campbell et al. 2021] Males: 555–680 mm TL [Kyne & Bennett 2002]; 555 mm TL (10.0 years) [Campbell et al. 2021]</p>

DISTRIBUTION



Distribution of reported commercial catch of Eastern Shovelnose Ray.

TABLES

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Fishing methods		
	New South Wales	Queensland
Commercial		
Mesh Net	✓	
Net		✓
Otter Trawl	✓	
Various	✓	
Recreational		
Hook and Line	✓	✓

Management Methods		
	New South Wales	Queensland
Charter		
Bag/possession limits	✓	✓
Gear restrictions		✓
Seasonal closures		✓
Commercial		
By-catch reduction devices		✓
Effort limits	✓	
Gear restrictions	✓	✓
Harvest Strategy		✓
Limited entry	✓	
Processing restrictions	✓	✓
Seasonal or spatial closures	✓	✓
Trip limits		✓
Vessel limits		✓
Recreational		
Bag/possession limits	✓	✓

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Gear restrictions	✓	✓
Seasonal or spatial closures		✓

Catch	New South Wales	Queensland
Commercial	44.781 t	0 t
Indigenous	unknown	
Recreational	2.4 t	12,000 fish (2019–20)

New South Wales – Indigenous (Management Methods).

<https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

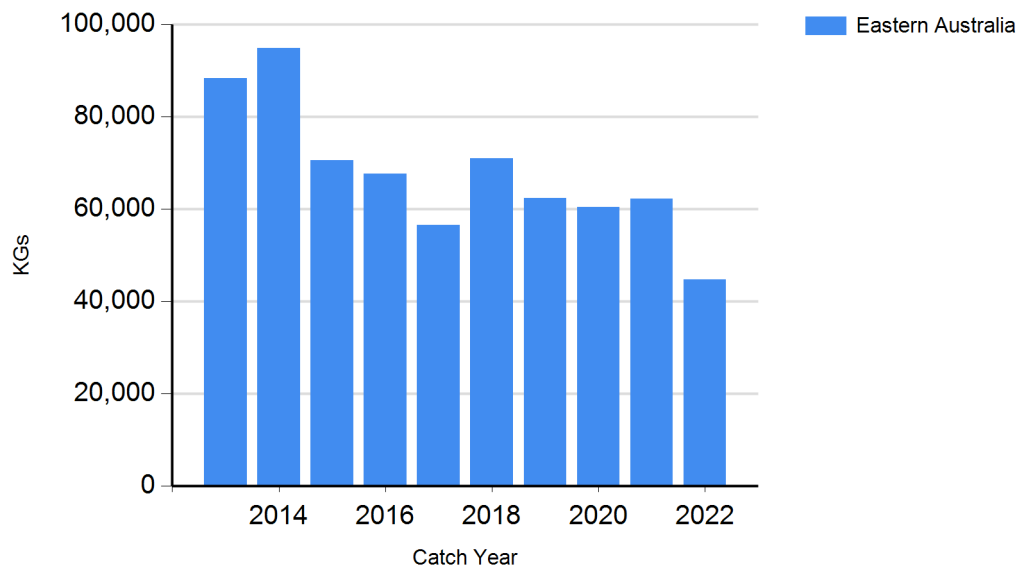
Queensland – Recreational Fishing. Data are based at the whole of Queensland level and derived from statewide recreational fishing surveys. Where possible, estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability.

Queensland – Commercial. Queensland commercial and charter data has been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report (<https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>)

Queensland – Indigenous (management methods). For more information see <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

CATCH CHART

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Commercial catch of Eastern Shovelnose Ray - note confidential catch not shown

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Last et al. 2016	Last P, White W, Séret B, Naylor G, de Carvalho M & Stehmann, M 2016, <i>Rays of the World</i> . Clayton South: CSIRO Publish
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Campbell et al. 2018	Campbell MJ, McLennan MF, Courtney AJ and Simpfendorfer CA 2018, Post-release survival of two elasmobranchs, the eastern shovelnose ray (<i>Aptychotrema rostrata</i>) and the common stingaree (<i>Trygonoptera testacea</i>), discarded from a prawn trawl fishery in southern Queensland, Australia. <i>Marine and Freshwater Research</i> 69: 551-561
Kyne et al. 2021	Kyne PM, Heupel MR, White WT and Simpfendorfer C 2021, The Action Plan for Australian Sharks and Rays 2021. (1 ed.) National Environmental Research Program Marine Biodiversity Hub.
Peddemors 2015	Peddemors V 2015, Shovelnose Rays (Rajiformes). In: Stewart J, Hegarty A, Young C, Fowler AM and Craig J (Eds) <i>Status of Fisheries Resources in NSW 2013-14</i> . NSW Department of Primary Industries, Mosman: 391pp.