

## Gummy Shark, *Mustelus antarcticus*

<b>Report Card assessment</b>	<b>Sustainable (southern stock)</b> <b>Undefined (eastern stock)</b>		
IUCN Red List Australian Assessment	Endemic to Australia	IUCN Red List Global Assessment	Least Concern
Global Assessors	Walker, T.		
Australian Assessors	Kyne, P.M., Heupel, M.R., White, W.T. & Simpfendorfer, C.A. (Shark Action Plan)  and Woodhams, J., Peddemors, V., Braccini, M., Victorian Fisheries Authority & Lyle, J. (SAFS)		
Report Card Remarks	Important commercially targeted species with catch sustainably managed by Commonwealth and State fisheries agencies.		

### Summary

The Gummy Shark is an abundant and productive species endemic to southern and eastern Australia. It is harvested over much of its range using gillnets, and to a lesser extent long-lines. Strict management and regular stock assessments, and large area closures to shark fishing in Victoria, provides this species with effective protection from overfishing.



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By harvesting the mid-sized sharks, the fishery protects the large, older sharks that breed and maintain the population. Stock assessments indicate that current catch levels are sustainable and that the number of sharks surviving to enter the fishery is stable over a wide range of population sizes. Biomass is also above the level required to maintain the maximum sustainable catch. The Gummy shark is therefore assessed as Least Concern (IUCN) (Kyne et al. 2021) and Sustainable (southern stock) and Undefined (eastern stock) (Woodhams et al. 2021).

### Distribution

The Gummy shark is endemic to southern Australia and is found from Geraldton (Western Australia) south around South Australia, Victoria, Tasmania, New South Wales (NSW) and eastern Queensland (Last and Stevens 2009, White et al. 2021). North of Port Stephens (NSW) it occurs at greater depth than in more southern areas, occurring on the outer shelf and upper continental slope (Rigby et al. 2016).

### Stock structure and status

Two stocks occur in Australian waters – a southern stock that includes Western Australia (WA), South Australia, Victoria and Tasmania, and an eastern stock that includes NSW and possibly Queensland

(Gardner and Ward 202). Tagging and telemetry research shows that the majority of individuals move less than 150 km, but can move >2,000 km (Brown et al. 2000, Braccini et al. 2017, Bartes et al. 2021). Woodhams et al. (2021) provides a summary of the available information on the status of the eastern and southern stocks. Catches of the eastern stock are limited and there is little information available to determine the status of the stock, and as such it is assessed as Undefined using SAFS criteria. The southern stock is one of the most well studied and assessed shark species globally. Although historically some parts of its range were considered overfished in the past decades of careful management, a productive life history, regular stock assessments and coordinated research have resulted in the stock being at or above its target reference point ( $0.48B_0$ ) for several decades. Current catches are managed by catch quotas (Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF)) or effort quotas (WA Temperate Demersal Gillnet and Demersal Longline Fishery TDGDLF), and current catches are ~2,000 t nationally. As such, the southern stock is assessed as Sustainable.

### Fisheries

Gummy sharks are targeted by commercial gillnet and longline fisheries in southern Australia, including the SESSF (Gillnet Hook and Trap sector) and WA TDGDLF. They are also caught as incidental catch by a range of other fisheries using that use demersal trawl, Danish seine, and longline. They are caught regularly by recreational and charter fishers.

### Habitat and biology

The Gummy Shark is demersal, occurring mainly on the continental shelf from the shore to about 80 m depth (Walker and Gason 2009), but also on the upper slope to 350 m. It typically inhabits sandy and rocky substrate. Female Gummy Sharks reach a longer total length (TL) (185 cm) and greater body mass (24.8 kg) than the males (150 cm TL, 13.5 kg) (Walker 2007). This species likely has a maximum age of approximately 16 years (Moulton et al. 1992).

Longevity and maximum size	Longevity: ~16 years Max size: 185 cm TL
Age and/or size at maturity (50%)	Males: 95–113 cm TL Females: 111–125 cm TL

**CAAB Code:** 37 017001

**Link to IUCN Page:** <https://www.iucnredlist.org/species/39355/68634159>

**Status of Australian Fish Stocks Page:** <https://fish.gov.au/report/301-Gummy-Shark-2020>

**Link to page at Shark References:** <http://shark-references.com/species/view/Mustelus-antarcticus>

### References

- Bartes, S., Simpfendorfer, C., Walker, T. I., King, C., Loneragan, N., and Braccini, M. 2021. Conventional tagging of sharks in Western Australia: the main commercial species exhibit contrasting movement patterns. *Marine and Freshwater Research* 72(11): 1643–1656.
- Braccini, M., Rensing, K., Langlois, T., and McAuley, R. 2017. Acoustic monitoring reveals the broad-scale movements of commercially important sharks. *Marine Ecology Progress Series* 577: 121–129.
- Brown, L.P., Bridge, N.F., and Walker T.I. 2000. *Summary of tag releases and recaptures in the southern shark fishery*. Marine and Freshwater Resources Institute Report No. 18.
- Gardner, M.G. and Ward, R.D. 2002. Taxonomic affinities within Australian and New Zealand *Mustelus* sharks (Chondrichthyes : Triakidae) inferred from allozymes, mitochondrial DNA and precaudal vertebrae counts. *Copeia* 2002(2), 356–363.
- Last, P. R. and J. D. Stevens 2009. *Sharks and Rays of Australia*, Second Edition. Collingwood, Australia, CSIRO Publishing.
- Moulton, P.M., Walker, T.I. and Saddler, S.R. 1992. Age and growth studies of gummy shark, *Mustelus antarcticus* Günther, and school shark, *Galeorhinus galeus* (Linnaeus), from southern-Australian waters. *Australian Journal of Marine and Freshwater Research* 43: 1241–1267.

- Pribac, F., Punt, A.E., Walker, T.I. and Taylor, B.L. 2005. Using length, age and tagging data in a stock assessment of a length selective fishery for gummy shark (*Mustelus antarcticus*). *Journal of Northwest Atlantic Fishery Science* 35: 267–290.
- Rigby, C.L., White, W.T. and Simpfendorfer, C.A. 2016. Deepwater chondrichthyan bycatch of the eastern king prawn fishery in the southern Great Barrier Reef, Australia. *PLoS ONE* 11(5), e0156036.
- Walker, T.I. 1992. A fishery simulation model for sharks applied to the gummy shark, *Mustelus antarcticus* Günther, from southern Australian waters. In: J.G. Pepperell (ed.) *Sharks: Biology and Fisheries*. Vol. 43. pp 195–212. (CSIRO Australia)
- Walker, T.I. 1994a. Fishery model of gummy shark, *Mustelus antarcticus*, for Bass Strait. In: I. Bishop (ed) Resource Technology '94 New Opportunities Best Practice. 26–30 September 1994. University of Melbourne, Melbourne. pp. 422–438. (The Centre for Geographic Information Systems and Modelling, The University of Melbourne: Melbourne.)
- Walker, T.I. 1994b. Stock assessments of the gummy shark, *Mustelus antarcticus* Günther, in Bass Strait and off South Australia. In: D.A. Hancock (ed.) *Population Dynamics for Fisheries Management*. 24–25 August 1993. Perth. 1. pp. 173–187. (Australian Government Printing Service: Canberra.)
- Walker, T.I. 1998. Can shark resources be harvested sustainably? A question revisited with a review of shark fisheries. *Marine and Freshwater Research* 49: 553–72.
- Walker, T.I. 2007. Spatial and temporal variation in the reproductive biology of gummy shark (*Mustelus antarcticus* (Chondrichthyes: Triakidae) harvested off southern Australia. *Marine and Freshwater Research* 58: 67–97.
- Walker, T.I. 2010. Population biology and dynamics of the gummy shark (*Mustelus antarcticus*) harvested off southern Australia. 313 pp. Department of Zoology, The University of Melbourne.
- Walker, T.I. and Gason, A.S. 2009. SESSF monitoring data management, reporting and documentation 2006/07. Final report to Australian Fisheries Management Authority. Project No. R2006/812. June 2009. vii + 177 pp. Primary Industries Research Victoria, Department of Primary Industries, Queenscliff, Victoria, Australia.
- White, W.T., Arunrugstichai, S. and Naylor, G.J.P. 2021. Revision of the genus *Mustelus* (Carcharhiniformes: Triakidae) in the northern Indian Ocean, with description of a new species and a discussion on the validity of *M. walkeri* and *M. ravidus*. *Marine Biodiversity* 51(3).
- Woodhams, J., Peddemors, V., Braccini, M., Victorian Fisheries Authority and Lyle, J. 2021. Gummy shark (2020). Status of Australian Fish Stocks: <https://fish.gov.au/report/301-Gummy-Shark-2020>