

## Dusky Shark, *Carcharhinus obscurus*

<b>Report Card assessment</b>	<b>Recovering (western stock) Sustainable (eastern stock)</b>		
IUCN Red List Australian Assessment	Near Threatened	IUCN Red List Global Assessment	Endangered
Global Assessors	Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureau, N., Romanov, E., Sherley, R.B. & Winker, H.		
Australian Assessors	Kyne, P.M., Heupel, M.R., White, W.T. & Simpfendorfer, C.A. (Shark Action Plan)  and Woodhams, J., Braccini, M., Peddemors, V., Rogers, P. & Usher, M. (SAFS)		
Report Card Remarks	Western Australian stock is increasing from overfishing; little is known of the eastern Australian stock. Listed on CMS Appendix II.		

### Summary

The Dusky Shark is a common, large bodied whaler shark that inhabits continental shelf and pelagic waters. It is distributed throughout tropical and temperate waters of Australia. Life history characteristics and a broad distribution make Dusky Sharks susceptible to fishing pressure. The east and west coast of Australia have separate stocks of Dusky Shark. Both stocks are targeted by fisheries. Increased regulations have led to recovery of the Western Australian stock which was declining due to overfishing prior to 2006. Little is known on the status of the east coast stock, but catches are limited. Therefore, the Australian subpopulation is assessed as Near Threatened (IUCN) (Kyne et al. 2021), and Recovering (western population) and Sustainable (eastern population) (Woodhams et al. 2021). The global population is assessed as Endangered (IUCN). The species is listed on CMS Appendix II (Australian reservation). From November 2023, the species will be listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).



The Dusky Shark occurs in tropical and warm temperate coastal waters globally (Last and Stevens 2009). In Australia, the Dusky Shark is found throughout coastal and pelagic shelf waters of all states. However, it is rare in Tasmania (Last and Stevens 2009).

### Distribution

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### Stock structure and status

Gene flow between eastern and western Australian Dusky Sharks is low, suggesting two stocks exist (Geraghty et al. 2014). Tagging and telemetry research has shown strong connections between Western Australia and South Australia, but not eastern Australia (Simpfendorfer et al. 1999, Rogers et al. 2013, Bartes et al. 2021), supporting the conclusion of two stocks. The western stock is targeted by gillnet fishing in southwestern Australia, and was overfished prior to 2006, but the introduction of management has resulted in increasing catch rates indicating the population is recovering. Estimates of fishing mortality from tag-recapture data (Simpfendorfer 1999, McAuley et al. 2007) indicate that catches of juveniles can be sustainable, but only if older age classes remain unfished. Catches of adult Dusky Sharks occurred in the West Australia (WA) North Coast Shark Fishery (NSCF) until it was closed in 2009. An assessment indicates that the current level of catch should allow the stock to recover. As such, the western stock of Dusky Sharks is assessed as Recovering. The eastern stock was targeted by longline fishing in northern New South Wales (NSW) for several years during the early 2000s, with catches peaking at around 30 t in 2006/7 (McBeth et al. 2009). Catches have subsequently declined due to management changes in the Ocean Trap and Line (OTL) fishery. Genetic analysis of effective population size for the eastern stock has shown that the stock is large enough to sustain the current levels of harvest (Blower et al. 2020). As such, the eastern stock of Dusky Shark is assessed as Sustainable.

### Fisheries

Dusky sharks are taken mostly in commercial gillnet and longline fisheries. The main fisheries catching the western stock are the WA Temperate Demersal Gillnet and Demersal Longline Fishery (TDGDLF) (target), Commonwealth Southern and Eastern Scalefish and Shark Fishery (incidental) and South Australia Marine Scalefish Fishery (incidental). Historically the WA NSCF also targeted this species, but was closed in 2009. Annual catches in the TDGDLF peaked over 400 t, but are currently around 150 t. The longline component of the NSW OTLF is the main source of mortality for the eastern stock, but it is also taken in the Queensland East Coast Inshore Fin Fish Fishery in small quantities. Recreational and charter fishing also catches Dusky Sharks from both stocks, but in limited quantities.

### Habitat and biology

The Dusky Shark is found in coastal and pelagic waters throughout Australian waters and is found from the surface to depths of 400 m (Compagno 1984). In Australia, maximum size is at least 365 cm total length (TL) (Simpfendorfer et al. 2002). The maximum estimated age for the Western Australian stock is 55 years (McAuley et al. 2007).

Longevity and maximum size	Longevity: estimated 55 years Max size: 365 cm TL
Age and/or size at maturity (50%)	Males: 20 years, 273 cm TL Females: 30 years, 300 cm TL

**CAAB Code:** 37 018003

**Link to IUCN Page:** <https://www.iucnredlist.org/species/3852/2872747>

**Status of Australian Fish Stocks Page:** <https://fish.gov.au/report/304-Dusky-Whaler-2020>

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

### 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.

- Blower, D. C. 2020. *Estimating contemporary abundance, demography, and vulnerability to change for long-lived species with effective population size and population simulation*. PhD thesis, p. 257. School of Biological Sciences. The University of Queensland.
- Braccini, M, Blay, N, Hesp, A, and Molony, B 2018. *Resource Assessment Report Temperate Demersal Elasmobranch Resource of Western Australia*. Department of Primary Industries and Regional Development. Fisheries Research Report No. 294 Department of Primary Industries and Regional Development, Western Australia. 149 pp.
- Compagno, L.J.V. 1984. *FAO species catalogue. Vol. 4. Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Part 2 - Carcharhiniformes*. FAO Fisheries Synopsis, pp. 251–655. FAO, Rome.
- Geraghty, P.T., Williamson, J.E., Macbeth, W.G., Blower, D.C., Morgan, J.A.T., Johnson, G., Ovenden, J.R., and Gillings, M.R. 2014. Genetic structure and diversity of two highly vulnerable carcharhinids in Australian waters. *Endangered Species Research* 24(1), 45-60.
- Kyne, P.M., Heupel, M.R., White, W.T. and Simpfendorfer, C.A. 2021. *The Action Plan for Australian Sharks and Rays 2021*. National Environmental Science Program, Marine Biodiversity Hub, Hobart.
- Last, P.R. and Stevens, J.D. 2009. *Sharks and Rays of Australia*. Second Edition. CSIRO Publishing, Collingwood, Australia.
- Macbeth, W.G., Geraghty, P.T. Peddemors, V.M. and Gray, C.A. 2009. *Observer-based study of targeted commercial fishing for large shark species in waters off northern New South Wales*. Industry & Investment NSW – Fisheries Final Report Series. Cronulla Fisheries Research Centre of Excellence, Cronulla.
- McAuley, R., Peddemors, V., Fowler, A. and Hansen, S. 2014. 26. Dusky shark *Carcharhinus obscurus*. In: Flood, M., Stobutzki, I., Andrews, J., Ashby, C., Begg, G., Fletcher, R., Gardner, C., Georgeson, L., Hansen, S., Hartmann, K., Hone, P., Horvat, P., Maloney, L., McDonald, B., Moore, A., Roelofs, A., Sainsbury, K., Saunders, T., Smith, T., Stewardson, C., Stewart, J. and Wise, B. (eds), *Status of Key Australian Fish Stocks Reports 2014*, pp. 284–290. Fisheries Research and Development Corporation, Canberra.
- McAuley, R.B., Simpfendorfer, C.A., Hall, N.G. 2007. A method for evaluating the impacts of fishing mortality and stochastic influences on the demography of two long-lived shark stocks. *ICES Journal of Marine Science* 64: 1710–1722.
- Rogers, P.J., Huveneers, C., Goldsworthy, S.D., Mitchell, J.G., and Seuront, L. 2013. Broad-scale movements and pelagic habitat of the dusky shark *Carcharhinus obscurus* off southern Australia determined using pop-up satellite archival tags. *Fisheries Oceanography* 22(2), 102–112.
- Simpfendorfer, C.A., McAuley, R., Chidlow, J.A., Lenanton, R., Hall, N., and Bastow, T. 1999. *Biology and stock assessment of Western Australia's commercially important shark species*. Project 96/130 Fisheries Research and Development Corporation, Department of Fisheries of Western Australia, Perth.
- Simpfendorfer, C.A., McAuley R.B., Chidlow J. and Unsworth P. 2002. Validated age and growth of the dusky shark, *Carcharhinus obscurus*, from Western Australian waters. *Marine and Freshwater Research* 53: 567–573.
- Woodhams, J., Braccini, M., Peddemors, V., Rogers, P. and Usher, M. 2021. Dusky whaler (2020). Status of Australian Fish Stocks: <https://fish.gov.au/report/304-Dusky-Whaler-2020>