Bight Redfish (2020)

Centroberyx gerrardi

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, Western Australia, Tasmania, South Australia	Southern Australia	Sustainable	Fishery-independent biomass surveys, estimated spawning stock biomass, fishing mortality rate, spawning potential ratio, length and age composition, catch

STOCK STRUCTURE

Bight Redfish is endemic to southern Australia and occurs from Bass Strait to Lancelin in Western Australia [Gomon et al. 2008]. Little is known of the biological stock structure of Bight Redfish. Limited analysis indicates genetic homogeneity between Western Australia and the Great Australian Bight (GAB) but there is some separation, based on otolith chemistry, between southwest WA and the GAB [Norriss et al. 2016].

Here, assessment of stock status is presented at the biological stock level–Southern Australia.

STOCK STATUS

Southern Australia

Bight Redfish are caught in Commonwealth, Western Australian, Tasmanian and South Australian fisheries, and stock status is assessed here using evidence from each of these jurisdictions.

The most recent quantitative assessment conducted in 2019 for the Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF) [Sporcic et al. 2019] estimated female spawning biomass at the start of 2018–19 to be 4 879 tonnes (t), or 65 per cent of unexploited female spawning stock biomass, which was above the target reference point set for this stock of 0.41 SB0.

A fishery-independent trawl survey in 2015 estimated that the relative biomass of Bight Redfish (2 573 t; coefficient of variation [CV] 0.28) had decreased 80% from the previous 2011 estimate (13 189 t; CV 0.13) [Knuckey et al. 2011,

2015]. In a 2018 fishery-independent survey, the relative abundance increased to 4 053 t; CV 0.25 [Knuckey et al. 2018]. The Great Australian Bight Trawl Sector (GABTS) has also noted a decrease in availability in recent years, with catches well below recommended biological catches [Moore et al. 2019].

Age composition data indicates some reduction in the abundance of older Bight Redfish in recent years, which is supported by length frequency information that suggests a reduction in larger individuals between 2011 and 2013 [Moore et al. 2019], but larger fish were found in subsequent years. These changes may reflect movement of fish rather than changes in abundance.

Catch of Bight Redfish in the GABTS increased to 572 t in 2003–04, before almost doubling after the temporary introduction of additional vessels in the fishery, which included a freezer trawler. Catch reached a peak of 1 407 t in 2007–08. Most of the additional vessels left the fishery by 2008, and effort decreased to around half of peak levels. Since 2008–09, catch has ranged between 170 and 320 t. Landed catch in the 2019–20 fishing season was 170 t (220 t in 2018–19).

In Western Australia, Bight Redfish are taken mainly by commercial line fishing off the lower west and south coasts. Catch-at-age sampling of 5 672 south coast Bight Redfish from the commercial line, demersal gillnet, recreational and charter sectors during 2013 and 2014 showed variable age compositions between those sectors and spatially [Norriss et al. 2016]. The commercial line sample from the western sub-region of the south coast, considered to be the most representative sector, included numbers of fish aged in their 40s, 50s and 60s, the maximum observed age being 84 years, suggesting low mortality rates. Two alternative methods were used to generate median estimates of female spawning potential ratio at (SPR ± 95 per cent CI): 0.45 (0.28–0.66) and 0.40 (0.22–0.63), respectively, being on or above the target reference point (SPR=0.40). There was a 7 per cent and 25 per cent chance, respectively, of breaching the threshold reference point (SPR=0.30) and < 1 per cent chance of breaching the limit. Estimates of natural mortality M and fishing mortality F year[-1] were 0.067 (0.050–0.084) and 0.045 (0.025–0.065), respectively, giving a point estimate of F/M of 0.67, equal to the target reference level. There was a 20 per cent chance of F breaching the threshold level of $F=M$, and close to zero probability of breaching the limit of $F=1.5M$.

Bight Redfish seems to be fished only sporadically in Tasmanian waters, with few confirmed catch records at the species level available. Average annual catches for unspecified Redfish species, which can include but are not restricted to *C. gerrardi*, were generally below 300 kg. A single outstandingly high but confidential catch record for unspecified redfish in 2008–09 is likely due to misreporting of Redbait (*Emmelichthys nitidus*). Bight Redfish is not harvested recreationally in Tasmania as indicated by surveys of recreational fishing [Lyle et al. 2019].

Bight Redfish is taken using demersal gear types in South Australia's commercial multispecies, multi-gear and multi-sectoral Marine Scalefish Fishery. In 2018–19 the total commercial catch in South Australia was 17.3 t. Bight Redfish is an important recreational fishery species in South Australia and is targeted with rod and line. The State-wide recreational survey estimated that 18.99 t of *Centroberyx* species (three species) were harvested in 2013–14, most of which were thought to be Bight Redfish [Giri and Hall 2015]. There is no published information on the cultural importance of Bight Redfish to Indigenous people in South Australia.

The above evidence indicates that the biomass of this stock is unlikely to be depleted and recruitment is unlikely to be impaired. The evidence furthermore indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of available evidence above, the Southern Australia biological stock

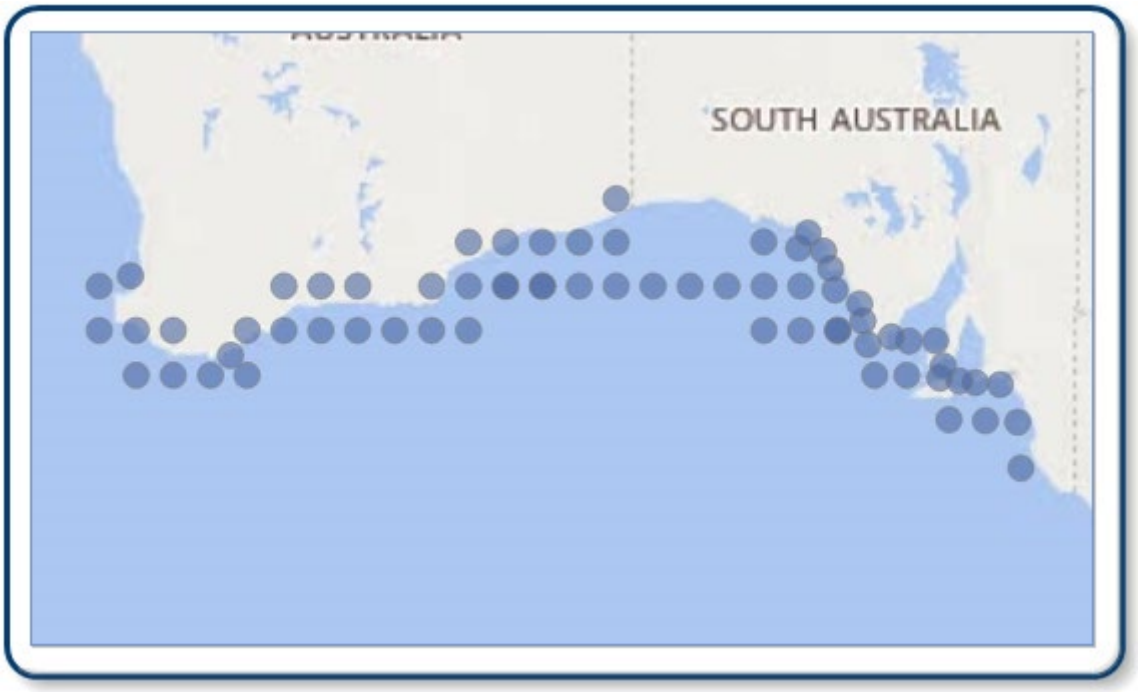
is classified as a **sustainable stock**.

BIOLOGY

Bight Redfish biology [Brown and Sivakumaran 2003, Stockie and Krusic-Golub 2005, Norriss et al. 2016]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Bight Redfish	84 years, 590 mm CL	5–14 years, 430 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Bight Redfish

TABLES

Fishing methods					
	Commonwealth	South Australia	Tasmania	Victoria	Western Australia
Charter					
Hook and Line		✓		✓	✓
Rod and reel					✓
Commercial					
Danish Seine	✓				
Dropline					✓
Fish Trap					✓
Gillnet					✓
Hand Line, Hand Reel or Powered Reels					✓
Longline					✓

(Unspecified)					
Otter Trawl	✓				
Unspecified		✓	✓		
Recreational					
Hook and Line		✓			✓

Management Methods				
	Commonwealth	South Australia	Tasmania	Western Australia
Charter				
Bag limits		✓		✓
Licence				✓
Limited entry				✓
Seasonal closures				✓
Size limit				✓
Spatial closures				✓
Commercial				
Effort limits		✓		✓
Effort limits (individual transferable effort)				✓
Gear restrictions	✓	✓	✓	✓
Individual transferable quota	✓			
Licence				✓
Limited entry	✓		✓	✓
Marine park closures				✓
Size limit		✓		✓
Spatial closures	✓	✓		✓
Spatial zoning				✓
Total allowable catch	✓			
Total allowable effort				✓
Trigger limits	✓			
Recreational				
Bag limits		✓		✓
Licence (Recreation				✓

al Fishing from Boat License)				
Possession limit				✓
Size limit				✓
Spatial closures				✓
Temporal closures				✓

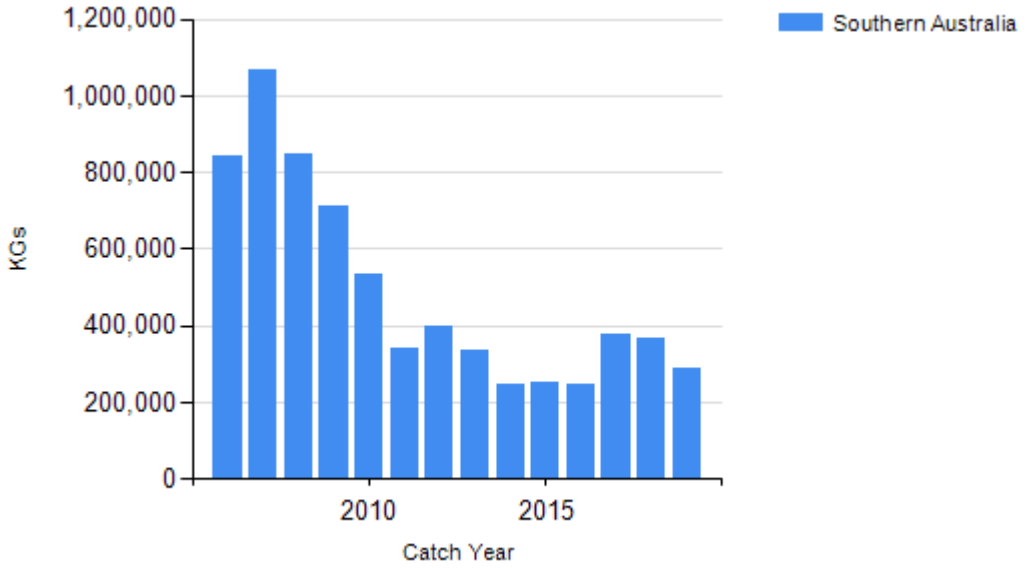
Catch				
	Commonwealth	**South Australia**	**Tasmania**	**Western Australia**
Charter		Unknown		2 t
Commercial	214.553 t	17.346 t	0 t	57.8434 t
Indigenous	Unknown	Unknown	Unknown, likely negligible	Unknown
Recreational	Unknown	18.99 t in 2013–14	Unknown, likely negligible	16 t (2017–18)

Commonwealth – Recreational The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations.

Commonwealth – Indigenous The Australian Government does not manage Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters.

Western Australia – Recreational (management methods) A Recreational Fishing from Boat Licence is required for use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

CATCH CHART



Commercial catch of Bight Redfish- note confidential catch not shown

References

Brown and Sivakumaran 2003	Brown, L and Sivakumaran, K 2003, Spawning and reproductive characteristics of bight redfish and deepwater flathead in the Great Australian Bight trawl fishery. FRDC Project No. 2003/03. Queenscliff, Victoria: Primary Industries Research.
Giri and Hall 2015	Giri, K, and Hall, K 2015, South Australian Recreational Fishing Survey. Fisheries Victoria Internal Report Series No. 62. 75 pp.
Knuckey et al. 2011	Knuckey, IA, Koopman, M and Hudson, R 2011, Resource survey of the Great Australian Bight Trawl Sector 2011, report to AFMA, Canberra.
Knuckey et al. 2015	Knuckey, IA, Koopman, M and Hudson, R 2015, Resource survey of the Great Australian Bight Trawl Sector 2015, report to AFMA, Canberra.
Norriss et al. 2016	Norriss, JV, Fisher, EA, Hesp, SA, Jackson, G, Coulson, PG, Leary, T and Thomson, AW 2016, Status of inshore demersal scalefish stocks on the South Coast of Western Australia. Fisheries Research Report No. 276, Department of Fisheries, Western Australia.
Lyle et al. 2019	Lyle, JM, Stark, KE, Ewing, GP and Tracey, SR 2019, 2017-18 Survey of recreational fishing in Tasmania. Institute for Marine and Antarctic Studies, Hobart, Tasmania.
Sporcic et al. 2019	Sporcic, M, Day, J & Burch, P 2019 Bight redfish (Centroberyx gerrardi) stock assessment based on data to 2018/19, CSIRO Oceans and Atmosphere Flagship, Hobart.
Knuckey et al. 2018	Knuckey, I, Koopman, M and Hudson, R 2018, Resource Survey of the Great Australian Bight Trawl Sector – 2018. AFMA Project 2017/0807. Fishwell Consulting 39pp.
Moore et al. 2019	Moore, A, Mazloumi, N and Mobsby, D 2019, Great Australian Bight Trawl Sector, in H Patterson, Williams, A, Woodhams, J and Curtotti, R 2019, Fishery status reports 2019, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
Stokie and Krusic-Golub 2005	Stokie, T and Krusic-Golub, K 2005, Age estimation of Bight Redfish and Deepwater Flathead in the Great Australian Bight Trawl Fishery, 2004–05, Australian Fisheries Management Authority, Canberra.
Gomon et al. 2008	Gomon, M, Bray D and Kuiter, R. (Eds.) 2008, Fishes of Australia's Southern Coast. Museum Victoria.