

# Western Blue Groper (2020)

*Achoerodus gouldii*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Sustainable	Catch, catch distribution, biology, length and age composition, fishing mortality, index of spawning stock biomass.
South Australia	South Australia	Negligible	

## STOCK STRUCTURE

Western Blue Groper's distribution spans the coastal waters of South Australia and southern Western Australia. Stock structure has not been studied extensively, but acoustic telemetry of tagged adults in South Australia showed a high site fidelity along a narrow strip of fringing coastal reef (~1 km by ~40 m width) throughout a 12-month period [Bryars et al. 2012]. There is some ontogenetic movement towards deeper reefs as they grow [Shepherd and Brook 2007]. This suggests a complex population structure among adults. Here assessments are provided at the jurisdictional stock level.

## STOCK STATUS

**South Australia** Stock status for Western Blue Groper in South Australia is reported as **Negligible** due to historically low catches in this jurisdiction and the stock has generally not been subject to targeted fishing. South Australia's commercial catch of Western Blue Groper over the past 20 years has averaged <500 kg per annum, and the species is not a major component of recreational landings. Fishing is unlikely to be having a negative impact on the stock.

**Western Australia** In Western Australia, Western Blue Groper are taken predominantly by the commercial demersal gillnet fishery off the lower west and south coasts. Catch-at-age sampling of 682 south coast Western Blue Groper from this sector in 2013 and 2014 found good numbers of older fish (>35 yrs) [Norriss *et al.* 2016].

Two alternative methods were used to generate median estimates of female spawning potential ratio (SPR  $\pm$  95 per cent CI): SPR1 = 0.74 (0.52–0.97) and SPR2 = 0.71 (0.48–0.97), with an almost zero chance of breaching the threshold reference point (SPR=0.30) for either method [Norriss *et al.* 2016]. For males, SPR1 = 0.49 (0.23–0.94) and SPR2 = 0.48 (0.21–0.93) with a 14 per cent and 18 per cent chance of breaching the threshold reference point (SPR=0.30), respectively, and an almost zero chance of males breaching the limit reference point (SPR=0.20) for either method. Estimates of natural mortality  $M$  and fishing mortality  $F$  year<sup>-1</sup> were 0.077 (0.059–0.097) and 0.023 (0.002–0.047), respectively, giving a point estimate of  $F/M$  of 0.30. The probability of  $F$  breaching the threshold level ( $F/M = 1$ ) was almost zero.

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

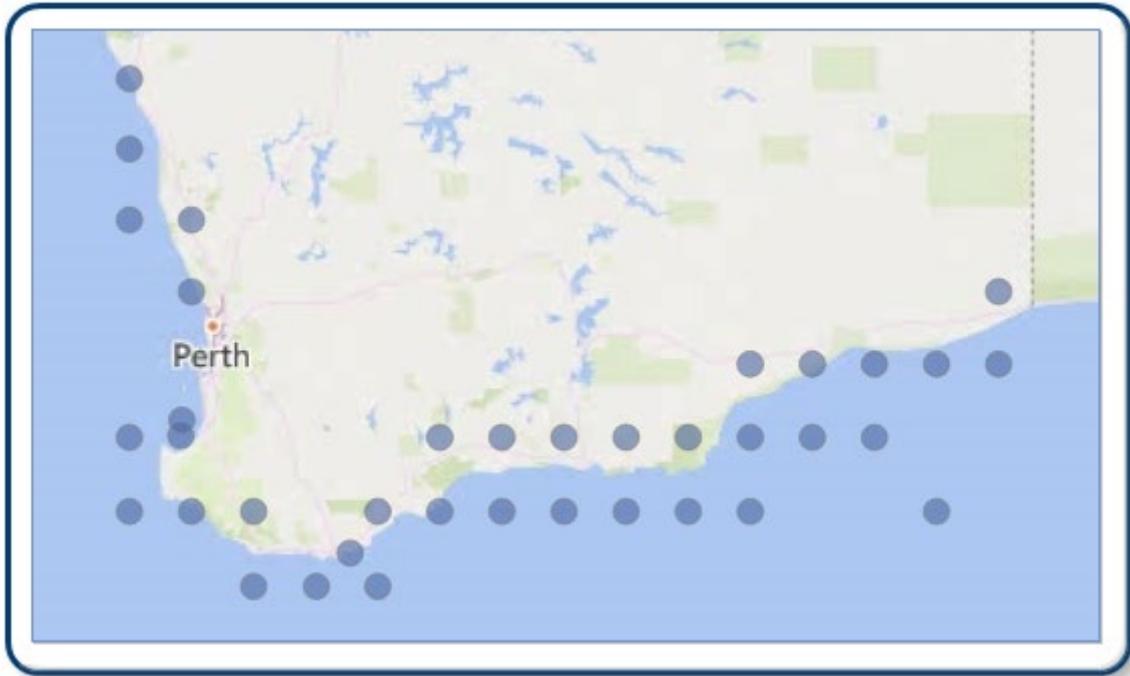
On the basis of the evidence provided above, the Western Australia jurisdictional stock is classified as a **sustainable stock**.

## BIOLOGY

The Western Blue Groper is a protogynous hermaphrodite (some change sex from female to male) that can reach ~40 kg, with exceptional longevity (71 years), slow growth rate, late onset of sexual maturity (~17 years) at a large total length (~65 cm), very late sex change (age ~35 years) at a very large total length (~82 cm), and highly variable inter-annual recruitment [Coulson *et al.* 2009, Norriss *et al.* 2016]. During sub-adulthood there is a migration from inshore protected habitats to deeper (up to 20 m) waters with increasing bottom relief, but they otherwise maintain small home ranges [Shepherd and Brook 2007, Bryars *et al.* 2012], making them vulnerable to localised depletion from overfishing.

Species	Longevity / Maximum Size	Maturity (50 per cent)
Western Blue Groper	71 years, 116 cm total length	~17 years, 623-693 mm TL

## DISTRIBUTION



**TABLES**

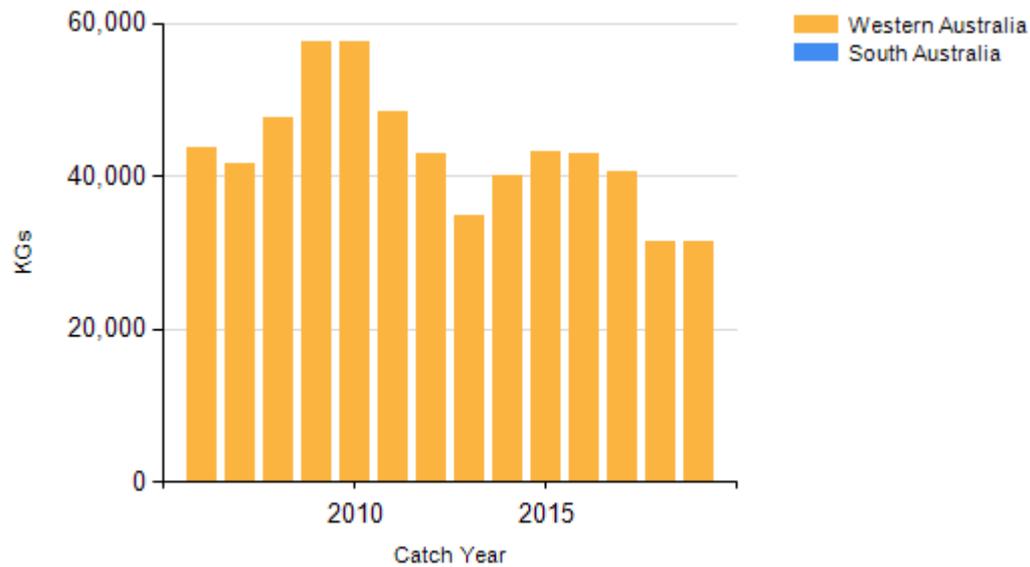
<b>Fishing methods</b>		
	<b>South Australia</b>	<b>Western Australia</b>
<b>Charter</b>		
Hook and Line		✓
Rod and reel		✓
<b>Commercial</b>		
Gillnet		✓
Hand Line, Hand Reel or Powered Reels		✓
Longline (Unspecified)		✓
Unspecified	✓	
<b>Recreational</b>		
Hook and Line		✓
Rod and reel		✓
Spearfishing		✓

<b>Management Methods</b>		
	<b>Western Australia</b>	
<b>Charter</b>		
Bag limits	✓	

<b>Gear restrictions</b>	✓
<b>License</b>	✓
<b>Limited entry</b>	✓
<b>Seasonal closures</b>	✓
<b>Spatial closures</b>	✓
<b>Commercial</b>	
<b>Effort limits</b>	✓
<b>Effort limits (individual transferable effort)</b>	✓
<b>Gear restrictions</b>	✓
<b>License</b>	✓
<b>Limited entry</b>	✓
<b>Marine park closures</b>	✓
<b>Size limit</b>	✓
<b>Spatial closures</b>	✓
<b>Spatial zoning</b>	✓
<b>Recreational</b>	
<b>Bag limits</b>	✓
<b>Gear restrictions</b>	✓
<b>Licence (Recreational Fishing from Boat License)</b>	✓
<b>Possession limit</b>	✓
<b>Size limit</b>	✓
<b>Spatial closures</b>	✓
<b>Temporal closures</b>	✓

<b>Catch</b>	<b>South Australia</b>	<b>Western Australia</b>
<b>Charter</b>		< 0.5 t
<b>Commercial</b>	0 t	31.415 t
<b>Recreational</b>		2 t (2017/18)

**CATCH CHART**



<b>References</b>	
Bryars et al. 2012	Bryars, S., Rogers, P., Huveneers, C., Payne, N., Smith, I. and McDonald, B. (2012). Small home range in southern Australia's largest resident reef fish, the western blue groper ( <i>Achoerodus gouldii</i> ): implications for adequacy of no-take marine protected areas. <i>Marine and Freshwater Research</i> , 63: 552-563.
Coulson et al. 2009	Coulson, P.G., Hesp, S.A., Hall, N.G. and Potter, I.C. (2009). The western blue groper ( <i>Achoerodus gouldii</i> ), a protogynous hermaphroditic labrid with exceptional longevity, late maturity, slow growth, and both late maturation and sex change. <i>Fishery Bulletin</i> , 107: 57-75.
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. NRM Project 12034 Final Report. Fisheries Research Report, No. 276. Department of Fisheries, Western Australia, 116 pp.
Shepherd and Brook 2007	Shepherd, S.A. and Brook, J.B. (2007), Distribution and ontogenetic shifts in habitat and abundance of the temperate western blue groper, <i>Achoerodus gouldii</i> (Richardson). <i>Journal of Fish Biology</i> , 71: 1457-1478. <a href="https://doi.org/10.1111/j.1095-8649.2007.01616.x">https://doi.org/10.1111/j.1095-8649.2007.01616.x</a>