

Baldchin Groper (2020)

Choerodon rubescens



David Fairclough: Department of Primary Industries and Regional Development, Western Australia

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Recovering	Spawning potential ratio, fishing mortality rate, catch, effort

STOCK STRUCTURE

Analyses of microsatellite DNA indicates that Baldchin Groper comprises a single biological stock in Western Australia, occurring primarily in the West Coast Bioregion (WCB) south of 27°S latitude and west of 115°30'E longitude [Fairclough et al. 2011, Gardner et al. 2015].

Here, assessment of stock status is presented at the biological stock level—Western Australia.

STOCK STATUS

Western Australia The Western Australian Department of Primary Industries and Regional Development uses fishing mortality (F) based assessments for data-limited species that compare to reference levels (target, threshold and limit) based on ratios of natural mortality (M) ($F_{\text{target}} = 2/3M$, $F_{\text{threshold}} = M$ and $F_{\text{limit}} = 3/2M$; [Wise et al. 2007]). An assessment in 2007 found that F estimated using linear catch curves for the Western Australia biological stock of Baldchin Groper exceeded the threshold, i.e. $F = \sim 0.28$, $M = 0.21$, based on biological data collected from 1993–95 and 2000–01 [Wise et al. 2007, Department of Fisheries 2015]. External review supported the finding that this and other assessed indicator species in the demersal resource in the West Coast Bioregion (WCB; the Western Australia biological stock of West Australian Dhufish and the West Coast stock of Snapper; [Newman et al. 2018]) may have been experiencing recruitment overfishing [Wise et al. 2007, O'Neill 2009].

Changes to the management of fishing for demersal species, including Baldchin Groper, by both the commercial and recreational sectors in the WCB, where the majority of catches of Baldchin groper occur, were introduced between late 2007 and early 2010. These changes were designed to reduce retained catches by each sector in the WCB by at least 50 per cent of 2005–06 levels to allow

recovery of stocks, such that F would fall below the threshold level (M). The 50 per cent catch reduction levels (stock recovery benchmarks) equate to 22 tonnes (t) and 33 t for the commercial and recreational sectors in the WCB, respectively.

Annual commercial catches of Baldchin Groper have remained low since 2008, i.e. 7–19 t per year, with eight t landed in 2019. Seven t of the 2019 catch were landed in the WCB, which remains below the recovery benchmark of 22 t [Fairclough et al. 2020]. Estimated recreational sector catches of Baldchin Groper (biennial estimates for private boat-based recreational fishers [Ryan et al. 2019], plus annual tour operator catches) between 2011–12 and 2017–18 ranged from 38–53 t, with the majority (91 per cent) landed in the WCB. The recreational catches in the WCB were close to or above the 33 t maximum retained catch levels that would allow stock recovery. Approximately 33 per cent of Baldchin groper caught by private recreational boat-based fishers in 2017–18 and by charter fishers in 2018–19 were released, while commercial release rates are unknown. As this species is susceptible to high release mortality, this may increase fishing mortality levels. Management is currently evaluating options to ensure recreational catches in the WCB do not exceed recovery benchmarks.

Using methods of estimating fishing mortality (F) that take into account recruitment variation [Fisher, 2013], assessments of age structure data for Baldchin Groper for three time periods (re-assessment prior to management changes: 1993–95; 2000–02; new assessment around the time of management changes: 2007–11), indicated that F estimates had been above the limit reference point ($F = 0.315$) at $F = 0.39–0.51$, for an extended period which may have resulted in depleted biomass. The spawning potential ratio was between the limit (SPR0.2) and threshold (SPR0.3) in the last of those periods [Fairclough et al. 2014].

Baldchin groper has not been assessed since 2014. However, an age-based assessment of indicator species for the demersal resource in the WCB (the Western Australia biological stock of West Australian Dhufish and the West Coast stock of Snapper) was conducted in 2017, based on 2012–13 to 2014–15 data. Estimated F values for West Australian Dhufish ($F = 0.21$) and Snapper ($F = 0.23$) were above their limit reference points ($F = 1.5M = 0.165, 0.18$, respectively) and spawning potential ratios were between the limit and threshold for West Australian Dhufish ($SPR = 0.2–0.3$) and below the limit of SPR0.2 for Snapper [Fairclough et al. 2020]. That assessment was based on age composition data collected just after management changes were completed. At the time of the assessment, the predicted timeframe for recovery was ~20 years, given the longevity of these species [Hesp et al. 2002, Norriss and Crisafulli 2010]. Estimates of F were also derived using a method that allows for a change in fishing mortality, (i.e. for cohorts of fish that have recruited to the fishery pre- and post-management changes [Fisher 2013]). For the small number of age classes in the 2012–13 to 2014–15 data for West Australian Dhufish and Snapper that recruited to the fishery after management changes commenced in 2008, F estimates were lower than for age classes recruited to the fishery prior to management changes, i.e. $F = 0.13$ vs 0.21 for West Australian Dhufish and $F = 0.14$ vs 0.27 for Snapper. These differences in F before and after the management changes suggest that recovery of these species has commenced and, as they are considered indicators of the status of all species in the resource, it is assumed that is also the case for Baldchin Groper [Newman et al. 2018].

The above evidence indicates that at the time of the first assessment in 2007, which followed a period of sustained high catches (fishing mortality; Fairclough et al. 2020), the biomass of the Western Australia biological stock of Baldchin Groper was likely to have been depleted and recruitment was likely to have been impaired. However, the above evidence indicates that the current level of fishing mortality, based on significant reductions in catches and the recent status of indicator species, should allow the stock to recover from its recruitment impaired

state.

On the basis of the evidence provided above, the Western Australia biological stock is classified as a

recovering stock

BIOLOGY

Baldchin Groper biology [Fairclough 2005, Nardi et al. 2006, Fairclough et al. 2014]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Baldchin Groper	~25 years, ~700 mm TL	Female maturity: 4 years, 279 mm TL Protogynous sex change (to male): 12 years, 479 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Baldchin Groper

TABLES

Fishing methods	Western Australia
Charter	
Rod and reel	✓
Spearfishing	✓
Commercial	
Dropline	✓
Gillnet	✓

Hand Line, Hand Reel or Powered Reels	✓
Line	✓
Recreational	
Rod and reel	✓
Spearfishing	✓

Management Methods	
	Western Australia
Charter	
Bag limits	✓
Gear restrictions	✓
Licence	✓
Limited entry	✓
Marine park closures	✓
Passenger restrictions	✓
Size limit	✓
Spatial closures	✓
Temporal closures	✓
Commercial	
Effort limits	✓
Gear restrictions	✓
Limited entry	✓
Marine park closures	✓
Size limit	✓
Spatial closures	✓
Temporal closures	✓
Total allowable effort	✓
Vessel restrictions	✓
Recreational	
Bag limits	✓
Gear restrictions	✓

Licence (fishing from a boat)	✓
Marine park closures	✓
Possession limit	✓
Size limit	✓
Spatial closures	✓
Spatial zoning	✓
Temporal closures	✓

Catch	Western Australia
Charter	11 t
Commercial	7.01513 t
Indigenous	Unknown
Recreational	36 t (2017/18)

Western Australia – Commercial (catch) The GDSMF fishing season runs from 1 September–31 August.

Western Australia – Commercial (catch) The JASDGLMF and WCDGDLIMF fishing seasons run from 1 June–31 May.

Western Australia – Commercial (catch) The WCDSIMF fishing season runs from 1 January–31 December.

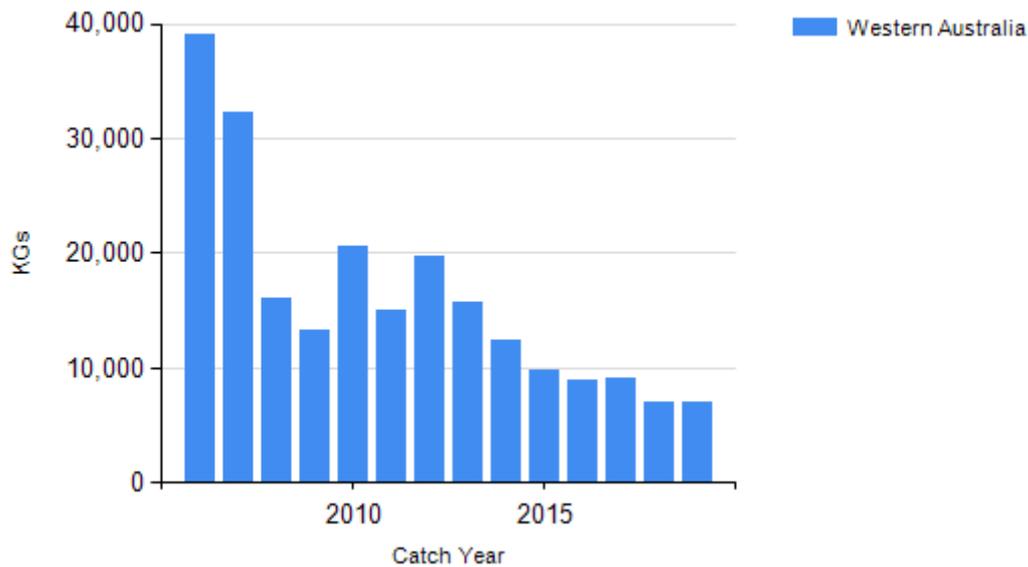
Western Australia – Commercial (catch) The SBBSMNMF fishing season runs from 1 January–31 December.

Western Australia – Recreational (catch) The boat-based recreational catch is for a full year survey.

Western Australia – Recreational tour operator (catch) The recreational charter catch is for a full year from 1 July–30 June.

Western Australia – Indigenous Subject to the defence that applies under Section 211 of the *Native Title Act 1993* (Cth), and the exemption from a requirement to hold a recreational fishing licence, the non-commercial take by Indigenous fishers is covered by the same arrangements as those for recreational fishing.

CATCH CHART



Commercial catch of Baldchin Groper - note confidential catch not shown

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