Yellowfin Whiting (2018)

Sillago schomburgkii

Mike Steer: South Australian Research and Development Institute, **Kim Smith**: Department of Primary Industries and Regional Development, Western Australia

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Northern Western Australia	EGBSMNMF, EGBSMNMF || SBBSMNMF || WL (NC, GC, WC), SBBSMNMF, WL (NC || GC || WC)	Sustainable	Catch, effort, CPUE, age composition
Western Australia	Southern Western Australia	CSLPMF, CSLPMF || FBLC84 || FBLC93 || SCEMF || SWCBNF || WCBBFNMF || WCEMF || WL (NC, GC, WC) || WL (SC), FBLC84, FBLC93, SCEMF, SWCBNF, WCBBFNMF, WCEMF, WL (NC || GC || WC), WL (SC)	Sustainable	Catch, effort, CPUE, age composition
South Australia	Gulf St. Vincent	MSF	Sustainable	Catch, effort, CPUE
South Australia	Spencer Gulf	MSF	Sustainable	Catch, effort, CPUE

MSF Marine Scalefish Fishery (SA), CSLPMF Cockburn Sound (Line and Pot) Managed Fishery (WA), EGBSMNMF Exmouth Gulf Beach Seine and Mesh Net Managed Fishery (WA), SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery (WA), SCEMF South Coast Estuarine Managed Fishery (WA), SWCBNF South West Coast Beach Net Fishery (Order) (WA), WCBBFNMF West Coast (Beach Bait Fish Net) Managed Fishery (WA), WCEMF West Coast Estuarine Managed Fishery (WA), WL (SC) Open Access in the South Coast (WA), FBLC84 Fishing Boat Licence Conditions (WA), FBLC93 Fishing Boat Licence Conditions (WA), WL (NC || GC || WC) Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions (WA), CSLPMF || FBLC84 || FBLC93 || SCEMF || SWCBNF || WCBBFNMF || WCEMF || WL (NC, GC, WC) || WL (SC) Various Fisheries combined due to 3 boat rule

(WA), EGBSMNMF || SBBSMNMF || WL (NC, GC, WC) Various Fisheries combined due to 3 boat rule (WA)

STOCK STRUCTURE

Yellowfin Whiting is endemic to south-western Australia, being found in coastal waters around Exmouth in Western Australia and in and near the gulf waters of South Australia. There is some uncertainty about the continuity of distribution through the remote coastal waters between Western Australia and South Australia. Based on the possible discontinuous distribution between South Australian and Western Australian populations, there is a possibility of separate stocks in these areas [Steer et al. 2018]. Western Australian populations in northern (Gascoyne Coast Bioregion) and southern (West Coast and South Coast Bioregions) regions also appear to have low connectivity. Adults in northern and southern regions have distinctly different size-at-age due to different growth rates, which suggests low levels of movement between regions [DPIRD unpublished data]. Spawning occurs in very shallow (< 5 m) coastal waters, which would limit the alongshore dispersal of eggs and larvae, further restricting movement between regions. Northern and southern regions are therefore assumed to support separate biological stocks. In South Australia, oceanographic separation of the two gulfs during the spawning season in summer must considerably reduce the opportunity for mixing of eggs and larvae. As such, the populations in the gulfs may constitute separate stocks, but more evidence is required to confirm this.

Here, assessment of stock status is presented at the biological stock level–Northern Western Australia, Southern Western Australia, Spencer Gulf (South Australia) and Gulf St. Vincent (South Australia).

STOCK STATUS

Gulf St. Vincent

Yellowfin Whiting are considered to be a secondary species within South Australia's commercial multispecies, multi-gear and multi-sectoral Marine Scalefish Fishery. The most recent assessment of Yellowfin Whiting was completed in 2018 and used data to the end of December 2017 [Steer et al. 2018]. The primary indicators used for biomass and fishing mortality are catch, effort and targeted CPUE [Steer et al. 2018]. The Gulf St. Vincent Yellowfin Whiting stock has produced considerably lower catches than the Spencer Gulf stock. Targeted catches by the netting sector have declined in recent years, but these reflect lower effort levels rather than declining CPUE. Targeted hauling net CPUE has remained relatively stable at approximately 60 kg.fisherday[-1] over the past decade. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence 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 Gulf St. Vincent biological stock is classified as a **sustainable stock**.

Northern Western Australia

The majority of commercial and recreational catches of Yellowfin Whiting in northern Western Australia occur in Shark Bay. The long-term catch and catch rate trends are relatively stable. Recent commercial catches in Shark Bay have declined due to a reduction in commercial effort, but catch rates in this area have increased, possibly due to strong recruitment after the 2010/11 marine heatwave event, as seen in the Southern Western Australian stock [Jackson et al. in press]. The age structure was sampled in 2001–03 and 2014 and was similar in both periods [Brown 2014, Coulson et al. 2005]. Age structure in 2014 was used to estimate fishing mortality and spawning potential ratio (SPR). Estimates of SPR were above the Target Reference Level of 40 per cent. This evidence indicates that the stock is not recruitment impaired and 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 Northern Western Australia

biological stock is classified as a **sustainable stock**.

Southern Western Australia

The majority of commercial and recreational catches of Yellowfin Whiting in southern Western Australia occur off the Perth metropolitan area. Recreational catches are taken by line by shore-based fishers, but the current recreational catch is unknown due to lack of recent shore-based fishing surveys in Western Australia. Data for the commercial net and line fisheries show that the long-term commercial catch and catch rate trends in this region are relatively stable. Recent catches and catch rates have been above average due to strong recruitment by a single year class that was spawned during the 2010/11 marine heatwave event [Department of Fisheries 2017, Smith and Grounds in press]. Catches and catch rates have now returned to lower, more typical long-term levels. The recruitment event was confirmed by sampling of the age structure in 2015 and 2016 [Department of Fisheries 2017] and these age structure data were used to estimate fishing mortality and spawning potential ratio (SPR) at that time. Estimates of SPR in 2015/16 were close to the Target Reference Level of 40 per cent. This 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 Southern Western Australia stock is classified as a **sustainable stock**.

Spencer Gulf

The South Australian catches of Yellowfin Whiting are dominated by those from northern Spencer Gulf, although the fishery in this region is characterised by high levels of variability. This may reflect the transient nature of targeted fishing effort, with fishers opportunistically targeting Yellowfin Whiting due to market demands, or when the availability of higher value species is low [Steer et al. 2018]. There has been a long-term declining trend in fishing effort for Yellowfin Whiting. However, this decline has not been reflected in total catch, targeted catch or targeted CPUE. Total catch in 2017 was 134 tonnes (t), 9 per cent less that the peak of 148 t in 2004. The long-term trends in targeted hauling net catch rates have remained relatively stable over the past 30 years fluctuating around an annual average of approximately 85 kg.fisherday[-1]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence 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 Spencer Gulf biological stock is classified as a **sustainable stock**.

BIOLOGY

Yellowfin Whiting biology [Ferguson 2000, Hutchins and Swainston 1986, Hyndes and Potter 1997]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Yellowfin Whiting	Western Australia: 12 years, 420 mm TL South Australia: 11 years, 420 mm TL	Western Australia: 2 years, 180– 200 mm TL South Australia: 2 years, 220–240 mm TL

DISTRIBUTION

Distribution of reported commercial catch of Yellowfin Whiting

TABLES

Commercial Catch Methods	South Australia	Western Australia
Beach Seine		✓
Gillnet		✓
Hand Line, Hand Reel or Powered Reels		✓
Handline (hand operated)	✓	
Haul Seine		✓
Otter Trawl		✓
Purse Seine		✓
Seine Nets	✓	
Unspecified	✓	✓

Fishing methods		
	South Australia	Western Australia
Commercial		
Beach Seine		✓
Gillnet		✓
Hand Line, Hand Reel or Powered Reels		✓
Handline (hand operated)	✓	
Haul Seine		✓
Purse Seine		✓

Seine Nets	✓	
Unspecified	✓	✓
Indigenous		
Hook and Line	✓	
Recreational		
Hook and Line	✓	✓

Management Methods		
	South Australia	Western Australia
Commercial		
Effort limits	✓	
Gear restrictions	✓	✓
Limited entry	✓	✓
Size limit	✓	
Spatial closures	✓	✓
Temporal closures	✓	
Indigenous		
Bag limits	✓	
Gear restrictions	✓	
Size limit	✓	
Recreational		
Bag limits	✓	✓
Gear restrictions	✓	
Possession limit		✓
Size limit	✓	

Active Vessels		
	South Australia	Western Australia
	49 Licences in MSF,	<3 in CSLPMF, <3 in EGBSMNMF, 5 in SBBSMNMF, 11 in SCEMF, 9 in SWCBNF, <3 in WCBBFNMF, 8 in WCEMF, 12 in WL (SC), <3 in Charter, <3 in FBLC84, <3 in FBLC93, 5

		in WL (NC || GC || WC),

MSF Marine Scalefish Fishery(SA)

CSLPMF Cockburn Sound (Line and Pot) Managed Fishery(WA)

EGBSMNMF Exmouth Gulf Beach Seine and Mesh Net Managed Fishery(WA)

SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery(WA)

SCEMF South Coast Estuarine Managed Fishery(WA)

SWCBNF South West Coast Beach Net Fishery (Order)(WA)

WCBBFNMF West Coast (Beach Bait Fish Net) Managed Fishery (WA)

WCEMF West Coast Estuarine Managed Fishery(WA)

WL (SC) Open Access in the South Coast(WA)

Charter Tour Operator(WA)

FBLC84 Fishing Boat Licence Conditions(WA)

FBLC93 Fishing Boat Licence Conditions(WA)

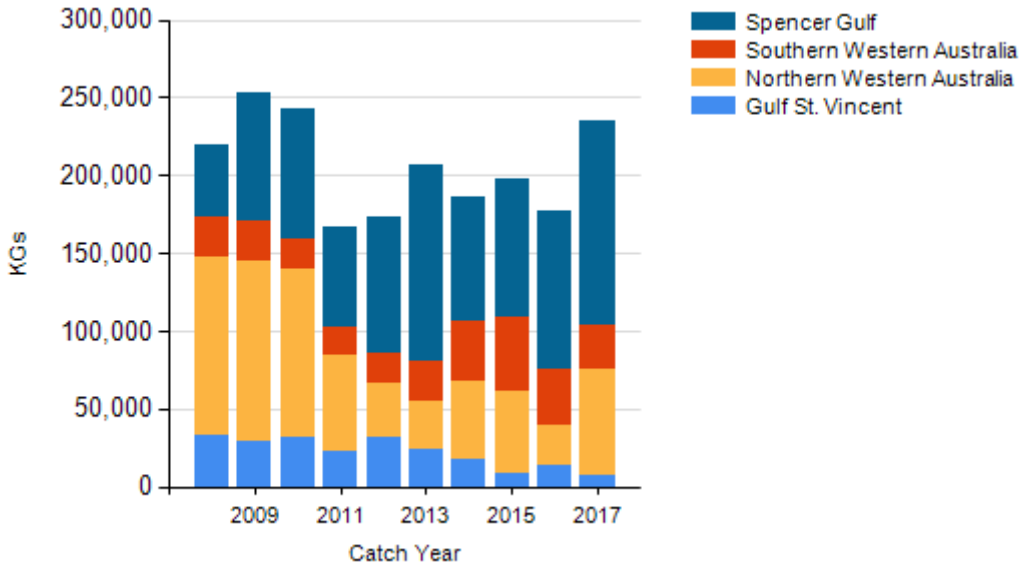
WL (NC || GC || WC) Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions(WA)

Catch		
	South Australia	**Western Australia**
Commercial	139.137t in MSF,	28.01t in CSLPMF || FBLC84 || FBLC93 || SCEMF || SWCBNF || WCBBFNMF || WCEMF || WL (NC, GC, WC) || WL (SC), 67.914t in EGBSMNMF || SBBSMNMF || WL (NC, GC, WC),
Indigenous	Unknown	
Recreational	45.3 t (in 2013/14) [Giri and Hall 2015]	Unknown

MSF Marine Scalefish Fishery (SA), CSLPMF Cockburn Sound (Line and Pot) Managed Fishery (WA), EGBSMNMF Exmouth Gulf Beach Seine and Mesh Net Managed Fishery (WA), SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery (WA), SCEMF South Coast Estuarine Managed Fishery (WA), SWCBNF South West Coast Beach Net Fishery (Order) (WA), WCBBFNMF West Coast (Beach Bait Fish Net) Managed Fishery (WA), WCEMF West Coast Estuarine Managed Fishery (WA), WL (SC) Open Access in the South Coast (WA), FBLC84 Fishing Boat Licence Conditions (WA), FBLC93 Fishing Boat Licence Conditions (WA), WL (NC || GC || WC) Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions (WA), CSLPMF || FBLC84 || FBLC93 || SCEMF || SWCBNF || WCBBFNMF || WCEMF || WL (NC, GC, WC) || WL (SC) Various Fisheries combined due to 3 boat rule (WA), EGBSMNMF || SBBSMNMF || WL (NC, GC, WC) Various Fisheries combined due to 3 boat rule (WA),

Western Australia – Recreational (catch) Recreational catches of Yellowfin Whiting are taken by shore-based fishers. The current recreational catch is unknown due to the absence of any recent surveys of shore-based fishing.

CATCH CHART



Commercial catch of Yellowfin Whiting - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Yellowfin Whiting

References

594	Hyndes, GA and Potter, IC 1997, Age, growth and reproduction of Sillago schomburgkii in south-western Australian, nearshore waters and comparisons of life history styles of a suite of Sillago species. Environmental Biology of Fishes 49: 435–447.
589	Brown, J 2014, Shark Bay Beach Seine and Mesh Net Managed Fishery Stock Status Report December 2014. Unpublished report. Department of Fisheries, Western Australia. 19pp.
590	Coulson, PG, Hesp, SA, Potter, IC and Hall, NG 2005, Comparisons between the biology of two co-occurring species of whiting (Sillaginidae) in a large marine embayment. Environmental Biology of Fishes, 73: 125–139.
591	Department of Fisheries, September 2017, Addendum to: Johnston, DJ, Smith, KA, Brown, JI, Travaille, KL, Crowe, F, Oliver, RK, Fisher, EA 2015, Western Australian Marine Stewardship Council Report Series No. 3: West Coast Estuarine Managed Fishery (Area 2: Peel-Harvey Estuary) and Peel-Harvey Estuary Blue Swimmer Crab Recreational Fishery. Department of Fisheries, Western Australia. 284pp
592	Ferguson, G 2000, Yellowfin whiting (Sillago schomburgkii). South Australian Fisheries Assessment Series 00/10.
593	Giri, K and Hall, K 2015, South Australian Recreational Fishing Survey. Fisheries Victoria Internal Report Series No. 62.
595	Hutchins, B and Swainston, R 1986, Sea fishes of southern Australia: complete field guide for anglers and divers. Swainston Publishing, Perth.
596	Jackson, G, Cavali, P and Turner, S 2018, Gascoyne Inner Shark Bay Status Report 2018. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia.
597	Smith, K and Grounds, G, In press West Coast Nearshore and Estuarine Finfish Status Report 2017. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2017/18: The State of the Fisheries eds. D.J. Gaughan and K. Santoro. Department of Primary Industries and Regional Development, Western Australia.
598	Steer, MA, Fowler, AJ, McGarvey, R, Feenstra, J, Smart, J, Roger, PJ, Earl, J, Beckmann, C, Drew, M, Matthews, D 2018, Assessment of the South Australian Marine Scalefish Fishery in 2017. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2017/000427-2. SARDI Research Report Series No. 1002. 242pp.