School Shark (2016)

Galeorhinus galeus

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth, Western Australia, New South Wales, Victoria, Tasmania, South Australia	Southern Australia	EGF, JASDGDLMF, MSF, OF, OHF, OTF, OTLF, SESSF (GHTS), SF	Overfished	Estimate of biomass (relative pup production)

SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), EGF Estuary General Fishery (NSW), OHF Ocean Hauling (NSW), OTF Ocean Trawl Fishery (NSW), OTLF Ocean Trap and Line (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), OF Ocean Fishery (VIC), JASDGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA)

STOCK STRUCTURE

School Shark has a broad distribution throughout temperate waters of the eastern North Atlantic, western South Atlantic, and north-eastern and south-eastern Pacific, off South Africa, New Zealand and southern Australia. There is some uncertainty about the stock structure for School Shark[1,2] however, a recent genetic study found there is likely to be one genetic stock spread between Australia and New Zealand[3]. A single Australian biological stock is assumed for management purposes. Insufficient data exist to support more complex stock structure analysis[1].

Here, assessment of stock status is presented at the biological stock level—Southern Australian.

STOCK STATUS

Southern Australia

Assessments since 1991 have consistently estimated that the School Shark stock is less than 20 per cent of the unfished biomass. School Shark is currently taken as incidental catch in fisheries targeting Gummy Shark and this ongoing,

unavoidable bycatch complicates efforts to minimise School Shark fishing mortality. However, historically they were a target species in southern Australia and catches were much larger.

A full stock assessment for School Shark was published in 2009[3]. In 2012, the 2009 assessment was rerun with additional catch data between 2009 and 2012[4]. There are concerns about the ability of the stock assessment to reliably estimate the state of the stock. The assessment incorporates a number of fishery-dependent (catch and effort) and fishery-independent (survey) data series. However, given the low total allowable catches (TAC) in recent years (potentially affecting quota availability, and the accurate reporting of catch and discards), the avoidance behaviour reported by fishers, and recent introduction of spatial closures predominantly off South Australia that prohibit the use of gillnets, the catch per unit effort data may be less reliable as an index of abundance in recent years[5], therefore limiting the ability of the model to accurately resolve the stock status.

The most recent assessment[3] estimated that biomass was 12 per cent of the unfished level (2008). The stock is considered to be recruitment overfished[6]. Under a zero catch scenario, the stock was projected to rebuild to B20 (the limit reference point) within 23 years. However, even the setting of a TAC that would allow rebuilding within 32 years (125 tonnes [t]) would severely constrain Commonwealth fishers that target Gummy Shark. Catch scenarios up to 250 t were projected to allow recovery of the stock within three generations (66 years), but catches of 275 t or greater could not be sustained[4]. Total landed catch (excluding discards) across all jurisdictions was 189 t in 2015.

Industry members have reported signs of increasing availability of School Shark, and that School Shark are becoming harder to avoid[5]. This is supported by preliminary survey work currently being conducted by the Institute for Marine and Antarctic Studies in pupping areas adjacent to Tasmania[7]. The results are consistent with the 2009 stock assessment[3], which suggested that adult biomass levels have stabilised or begun recovering. The results are also consistent with the 2012 stock assessment model results, which predict that rebuilding is likely to be occurring and that catches of 250 t or less would allow rebuilding, provided that gear selectivity and spatial and temporal distribution of catches remain similar to those in 2011. However, it is unclear whether the level of fishing mortality has been adequately reduced to allow the stock to recover from its recruitment overfished state[6]. Measurable improvements in biomass are yet to be detected.

On the basis of the evidence provided above, the Southern Australian biological stock is classified as an **overfished stock**.

BIOLOGY

School Shark biology[8][–11]

Species	Longevity / Maximum Size	Maturity (50 per cent)
School Shark	50 years; ~1 750 mm TL , 32.5 kg	12–16 years; mean length at female maturity and pupping are 1 240 and 1 420 mm TL, respectively

DISTRIBUTION

Distribution of reported commercial catch of School Shark

TABLES

Commercial Catch Methods	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Coastal, Estuary and River Set Nets			✓			
Danish Seine					✓	
Demersal Gillnet	✓					
Demersal Longline	✓		✓	✓		
Dropline	✓		✓			
Gillnet			✓	✓		
Hand Line, Hand Reel or Powered Reels	✓	✓	✓	✓		
Haul Seine			✓			
Line					✓	
Mesh Net		✓			✓	
Otter Trawl		✓			✓	
Setline			✓	✓		
Traps and Pots					✓	
Trotline	✓					
Unspecified			✓		✓	
Various		✓		✓		✓

Fishing methods	

	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Commercial						
Demersal Gillnet	✓					
Demersal Longline	✓		✓			
Dropline	✓		✓			
Gillnet			✓			
Hand Line, Hand Reel or Powered Reels	✓	✓	✓			
Haul Seine			✓			
Line					✓	
Mesh Net		✓			✓	
Otter Trawl		✓				
Unspecified			✓			
Various		✓		✓		✓
Recreational						
Demersal Longline				✓		
Gillnet				✓		
Hand Line, Hand Reel or Powered Reels		✓	✓	✓	✓	✓

Management Methods						
	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Commercial						
Effort limits (individual transferable effort)					✓	✓
Gear restrictions	✓	✓	✓	✓	✓	✓
Individual transferable quota	✓					
Limited entry	✓	✓	✓		✓	✓
Possession restrictions	✓	✓	✓		✓	✓
Size limit	✓	✓	✓	✓	✓	
Spatial closures	✓	✓		✓	✓	✓

Total allowable catch	✓				✓	
Trip limits			✓	✓	✓	
Indigenous						
Bag limits		✓	✓		✓	
Gear restrictions		✓			✓	
Section 31 (1)(c1), Aboriginal cultural fishing authority		✓				
Size limit			✓		✓	
Recreational						
Bag limits		✓	✓	✓	✓	✓
Size limit		✓	✓	✓	✓	
Spatial closures				✓	✓	
Trip limits				✓		

Active Vessels						
	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
	61 Vessel in SESSF (GHTS),	19 License in EGF, 14 License in OTF, 10 License in OTLF,	53 Vessel in MSF,	10 Vessel in SF,	19 Fisher in OF,	21 License in JASDGDLMF,

SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector)(CTH)

EGF Estuary General Fishery(NSW)

OTF Ocean Trawl Fishery(NSW)

OTLF Ocean Trap and Line(NSW)

MSF Marine Scalefish Fishery(SA)

SF Scalefish Fishery(TAS)

OF Ocean Fishery(VIC)

JASDGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2)(WA)

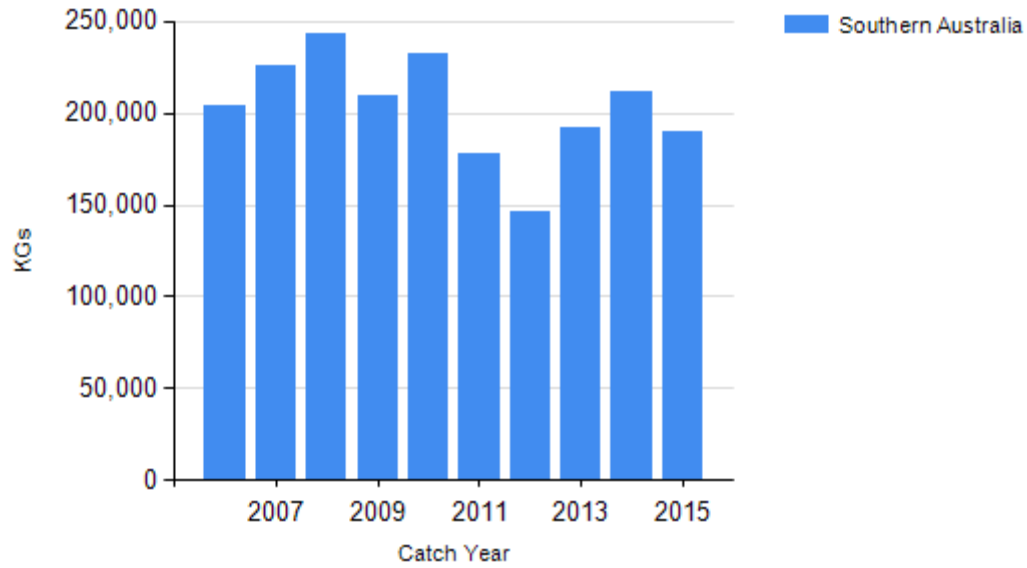
Catch						
	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Commercial	165.219t in SESSF (GHTS),	2.12465t in EGF, 0.0907t in OHF, 1.2994t in OTF, 0.50765t in OTLF,	17.2296t in MSF,	1.285t in SF,	0.859t in OF,	1.16467t in JASDGDLMF,
Indigenous			Unknown	Unknown		
Recreational		Unknown	7749 individuals	Unknown	Unknown	Negligible

			in 2013–14 (of which, 7208 were retained)			

SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), EGF Estuary General Fishery (NSW), OHF Ocean Hauling (NSW), OTF Ocean Trawl Fishery (NSW), OTLF Ocean Trap and Line (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), OF Ocean Fishery (VIC), JASDGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA),

a 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.
b Tasmania – Recreational In Tasmania, a recreational licence is required for fishers using dropline or longline gear, along with nets, such as gillnet or beach seine.
c Commonwealth – Indigenous The Australian Government does not manage non-commercial 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.
d Victoria – Indigenous In Victoria, regulations for managing recreational fishing are also applied to fishing activities by Indigenous people. Recognised Traditional Owners (groups that hold native title or have agreements under the Traditional Owner Settlement Act 2010 [Vic]) are exempt (subject to conditions) from the requirement to hold a recreational fishing licence, and can apply for permits under the Fisheries Act 1995 (Vic) that authorise customary fishing (for example, different catch and size limits or equipment). The Indigenous category in Table 3 refers to customary fishing undertaken by recognised Traditional Owners. In 2015, there were no applications for customary fishing permits to access School Shark.
e New South Wales – Indigenous Aboriginal Cultural Fishing Interim Access Arrangement - allows an Aboriginal fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances, for example, if they are doing so to provide fish to other community members who cannot harvest themselves.
f New South Wales – Indigenous The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside the recreational limits under the Fisheries Management Act 1994 (NSW), Section 37 (1)(c1), Aboriginal cultural fishing authority.
g Victoria – 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 Victorian recreational fishing licence, the non-commercial take by indigenous fishers is covered by the same arrangements as that for recreational fishing.
h Tasmania – Indigenous In Tasmania, Indigenous people engaged in aboriginal fishing activities in marine waters are exempt from holding recreational fishing licences, but must comply with all other fisheries rules as if they were licensed. Additionally, recreational bag and possession limits also apply. If using pots, rings, set lines or gillnets, Aborigines must obtain a unique identifying code (UIC). The policy document Recognition of Aboriginal Fishing Activities for issuing a Unique Identifying Code (UIC) to a person for Aboriginal Fishing activity explains the steps to take in making an application for a UIC.

CATCH CHART



Commercial catch of School Shark - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Interactions with marine mammals (Australian Sea Lions, Long-nosed Fur Seals, New Zealand Fur Seals and dolphins) in some gillnet fisheries continue to be an issue. Mitigation actions that have been implemented include spatial and temporal closures, increased monitoring, and implementation of the Australian Sea Lion Management Strategy[14] and Dolphin Strategy[15]. The Australian Fisheries Management Authority has closed areas where most interactions occur and increased observer coverage to 100 per cent in adjacent areas. These management measures were revised through the Dolphin Strategy for the 2014–15 fishing season[15].
- Offal management strategies, introduced in April 2011 include requirements for gillnet operators to remove any biological materials from nets before they are set. This has been effective in reducing seabird interactions in other fisheries[15].
- The use of auto-longlines in the Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (Commonwealth) has raised concerns about the potential for interactions with seabirds, including albatrosses and shearwaters[16]. New measures have been implemented to assist industry to meet the Seabird Threat Abatement Plan[17] and performance criteria[18].
- Demersal gillnets are known to interact with a number of threatened and protected species, including marine mammals and seabirds, in areas of Western Australia where they are used to catch School Shark. However, such interactions occur at a very low frequency and have been assessed as posing low–negligible risks to these populations[19].
- Recent analysis of potential changes in ecosystem structure of finfish in the South and West Coast Bioregions of Western Australia found no evidence of systematic changes in species diversity, richness or trophic index, indicating that the Western Australian fisheries are not having a material impact on the food chain or trophic structure in these regions[20].
- The demersal gillnets used to catch School Shark in Western Australia are deployed infrequently over a small proportion of the target fisheries' operational area. Under normal circumstances, the physical impact of the gear on the benthic habitat is minimal[19].

ENVIRONMENTAL EFFECTS on School Shark

- Sea level rise and changes in sea temperature associated with climate change may negatively affect the School Shark biological stock because the habitats that School Shark use as nursery and feeding grounds are potentially prone to such effects[20]. Habitat modification, for example through installation of pipelines and outfalls, construction of piers, sewerage and industrial outlets, and land run-off may also affect nursery/pupping grounds[21].

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