Southern Shortfin Eel (2020)

Anguilla australis

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland	Queensland	Undefined	Catch, Effort, CPUE
New South Wales	New South Wales	Undefined	Catch, effort, standardised CPUE
Victoria	Victoria	Sustainable	Catch, Effort
Tasmania	Tasmania	Sustainable	Catch, spatial restrictions on effort

STOCK STRUCTURE

Southern Shortfin Eel is widespread in coastal streams of south-eastern Australia, from the Pine River in southern Queensland to the Murray River in South Australia, including Tasmania. The species also occurs in New Zealand and western Pacific Islands [Beumer 1996, Allen et al. 2002]. Genetic studies indicate that Shortfin Eel represents two geographically separate subspecies; *Anguilla australis australis* in Australia and *Anguilla australis schmidtii* in New Zealand and western Pacific islands [Shen and Tzeng 2007, Arai 2016]. As there is currently no cross-jurisdictional stock assessment undertaken for the shared stock, assessment of stock status is presented here at the jurisdictional level—New South Wales, Queensland, Tasmania and Victoria.

STOCK STATUS

New South Wales

In New South Wales, commercial catches of Southern Shortfin Eel are taken almost exclusively by eel trapping in the Estuary General Fishery. Commercial catches of Southern Shortfin Eel have fluctuated widely, with a rapid increase in the early 1990s to a peak of 82.2 tonnes (t) in 1993–94 before decreasing to 3.2 t in 1996–97 and then increasing to a second peak of 46.8 t in 1998–99 before

steadily decreasing to 4.3 t in 2005–06 [Hall 2020]. Since then catches have remained at less than 10 t, and have been less than 1 t over the last four years. There are insufficient data in many years to form a time series of catch rates for standardisation from New South Wales waters [Hall 2020]. Reported fishing effort for the species by eel trapping also declined rapidly during the 2000s from 1 866 days in 2000–01 to a mere 16 days in 2009–10; although targeted fishing for Longfin Eel (*Anquilla reinhardtii*) still occurs in many of the estuaries where catches of Southern Shortfin Eel were historically reported. Fisher identification of the two species may not be reliable.

Recreational catches of freshwater eels are not separated according to species. The most recent estimate of the recreational harvest of combined species was approximately 2 955 eels or around 2.18 t during 2017–18 [Murphy et al. 2020]. This estimate was based on a survey of Recreational Fishing Licence (RFL) Households, comprised of at least one fisher possessing a long-term (1 or 3 years duration) fishing licence and any other fishers resident within their household. The equivalent estimated recreational harvest in 2013–14 was approximately 60 per cent smaller at around 1 024 eels, but an additional 16 479 eels were caught and released [Murphy et al. 2020]. A survey of Aboriginal cultural fishing in the Tweed River catchment identified freshwater eels as one of the main components of freshwater catches [Schnierer and Egan 2016]; however, statewide estimates of the annual Aboriginal harvest of eels in New South Wales waters are unknown. There is insufficient information to confidently classify the status of this stock.

On the basis of the information provided above, Southern Shortfin Eel in New South Wales is classified as an **undefined stock**.

Queensland

Anguillid eels in Queensland are represented by three species, the Southern Shortfin (*A. australis*), Pacific Shortfin (*Anguilla obscura*) and the Longfin Eel (*A. reinhardtii*). All three are restricted to rivers flowing east off the Great Dividing Range. South-east Queensland is considered the northern extent of the distribution of Southern Shortfin Eel, the Pacific Shortfin is restricted to North Queensland and Longfin Eels are common throughout eastern drainages of Queensland. Eels support both commercial and limited recreational fisheries though data for neither identifies to species. The target species in the Queensland commercial eel fishery is predominantly the Longfin Eel. The Southern Shortfin Eel is also targeted but numbers captured are negligible. There is insufficient information to confidently classify the status of this stock.

On the basis of the information provided above, Southern Shortfin Eel in Queensland is classified as an **undefined stock**.

Tasmania

In Tasmania the freshwater eel fishery catches adult Southern Shortfin Eels (*A. australis*) and Longfin Eels (*A. reinhardtii*). The fishery is primarily focused on Southern Shortfin Eels which typically constitute more than 95% of the harvest by weight.

The commercial fishery is managed by the Inland Fishery Service (IFS) with 12 commercial fishing licences that restrict operators to geographically defined areas. Fishing is not permitted in an extensive region in Tasmania including the World Heritage Area and 99 per cent of rivers. Harvesting of juvenile eels is prohibited through application of a size limit. Regular commercial catch estimates are not available but have historically ranged between 30 t and 70 t per year for both species combined [Purser et. al. 2014].

Recreational eel fishing is limited by a bag limit, possession limit and size limit which apply to both species. Estimates of recreational catches are unavailable [IFS 2018].

The Inland Fisheries Service (IFS) supports the fishery and the stock through

annual catch of juvenile eels during their annual upstream migration and relocating these above stream structures. Eel ladders and dam bypasses to assist eel migration have continued to be developed by IFS and Hydro Tasmania.

Eel catches across both species are reported to have remained consistent over decades, with most of the fluctuation in catches due to changes in the commercial fishing sector and fluctuating market demand. This indicates that the Tasmanian component of the Southern Shortfin Eel stock is not depleted.

A substantial portion of Tasmania's waterways are protected from eel fishing including those in the World Heritage Area where there are also fewer barriers to eel migration. Existing management restrictions have successfully maintained catches of both species at a consistent level (although data available to assess this is limited). This evidence indicates that existing fishing activities are unlikely to cause the stock to become depleted.

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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 currently level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, Southern Shortfin Eel in Tasmania is classified as a **sustainable stock**.

Victoria

The Victorian Eel Fishery is comprised of both Longfin Eel and Southern Shortfin Eel, which have different but overlapping distributions in estuarine and freshwaters east and south of the Great Dividing Range. Commercial fishing is generally confined to lower and estuarine reaches of waters that are open to fishing and predominantly targets migrating eels.

The Victorian Southern Shortfin Eel Fishery, which is managed as one stock, supports both recreational and commercial fisheries. The status of the Victorian Southern Shortfin Eel fishery has been evaluated using catch and nominal catch per unit effort (CPUE) for the commercial eel fishery.

Since 1979–80 annual catch has been highly variable. Throughout the 1980s and 1990s annual catch ranged from 131–310 t, but thereafter declined considerably to an historic low of 32 t in 2010–11. This decline is attributed to the Millennium Drought (2000–2011), which ended following emergence of La Niña weather conditions. Since then annual catch has continued to vary, averaging 58 t per year with a low of 36 t in 2016–17 and a high the following year of 84 t.

CPUE during normal fyke net fishing operations, as opposed to large scale removals of many tonnes of stocked eels with seine nets ahead of impending drought, has ranged from 1.5 to 4.0 kg/net-day with an overall average of 2.5 kg/net-day since 1980. This implies that when environmental conditions are favourable the performance of the fishery is reasonably stable.

Juvenile and undersized eels (elvers and "snigs"), known as "restock", are netted from coastal rivers and relocated to designated culture lakes (confined lakes and impoundments) in inland western Victoria for on-growing to market size under an Aquaculture Licence. This practice, which commenced in the 1960s, is dependent on access to restock eels. Productivity from culture lakes is highly susceptible to short and long term and seasonal environmental variations, particularly drought [Victorian Fisheries Authority 2017]. Since 2003 restock Southern Shortfin Eels have represented on average 15 per cent (2.5–48 per cent) of the total annual catch.

There is no long-term estimate of recreational harvest of Southern Shortfin Eel

in Victoria but it is believed to be very low. In recent surveys of recreational fishing licence holders, <0.4 per cent of anglers fishing in rivers and lakes preferred to catch eels and just 2.6 per cent indicated their favourite fish to catch was eel [Australian Survey Research 2012, Australian Survey Research Pty Ltd 2018].

Eel is an important resource for some Aboriginal communities. The use of fish traps, channels and aquaculture systems (ponds and dam walls) in western Victoria dates back tens of thousands of years [Head 1989, Richards 2011]. However, no quantitative estimates of the Aboriginal harvest of eels from Victorian waters are available.

The Victorian Southern Shortfin Eel Fishery is managed using a range of input controls and at least thirty per cent of all connected rivers, creeks and streams with a common opening to the sea are closed to commercial fishing. The eel fishery is subject to strong environmental drivers that can severely reduce productivity. Nonetheless, 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 also indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

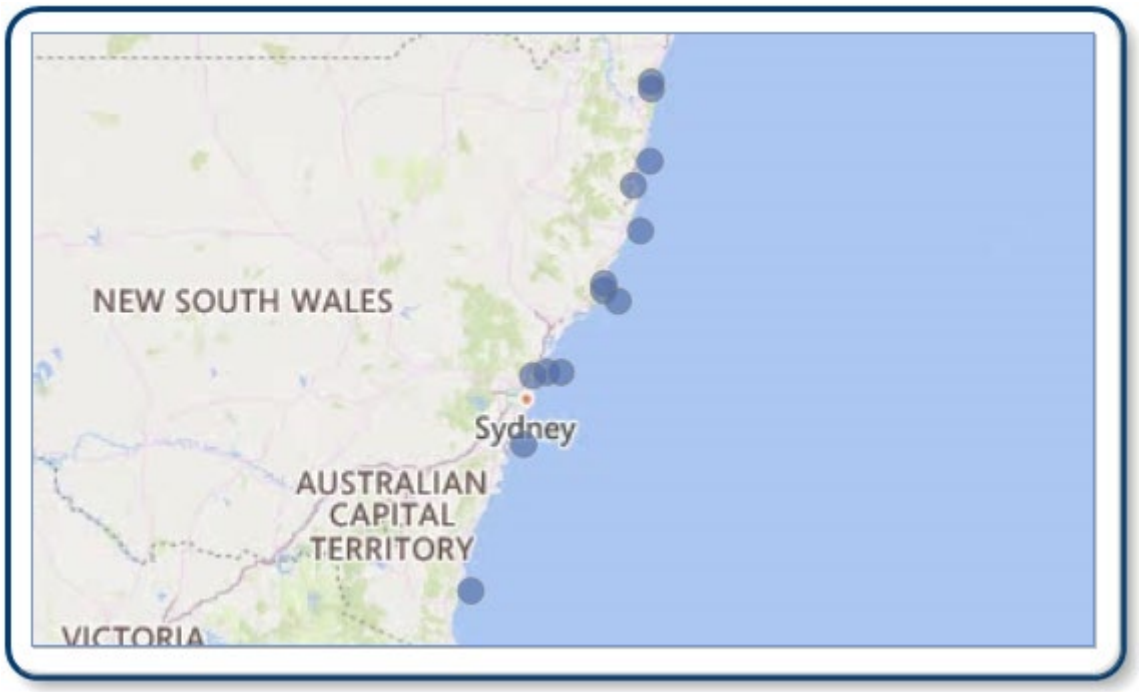
On the basis of the evidence provided above, Southern Shortfin Eel in Victoria is classified as a **sustainable stock**.

BIOLOGY

[Beumer 1996, Allen *et al.* 2002, McKinnon *et al.* 2002, Crook *et al.* 2014].

Species	Longevity / Maximum Size	Maturity (50 per cent)
Southern Shortfin Eel	Females: 18–35 years, 110 cm. Males: 14–24 years, 60 cm.	Size at migration. Females:10–35 years, 48–102 cm. Males: 6–24 years, 34–60 cm

DISTRIBUTION



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TABLES

Fishing methods				
	New South Wales	Queensland	Tasmania	Victoria
Commercial				
Fish Trap		✓		
Net				✓
Traps and Pots				✓
Unspecified			✓	✓
Various	✓			
Recreational				
Hook and Line		✓	✓	✓
Line	✓			

Management Methods				
	New South Wales	Queensland	Tasmania	Victoria
Commercial				
Catch limits	✓			
Gear restrictions	✓	✓		✓
Limited entry	✓	✓		✓
Size limit	✓	✓		
Spatial restrictions	✓	✓		✓
Recreational				
Bag and possession limits			✓	
Bag limits	✓			✓
Gear restrictions	✓	✓		✓
Licence	✓			
Possession limit		✓		
Size limit	✓	✓		
Spatial closures			✓	

Catch				
	New South Wales	Queensland	Tasmania	Victoria
Commercial	0.139 t	0 t	0 t	49.573 t

Indigenous	Unknown	Unknown	Unknown	Unknown
Recreational	2 955 eels (2.2 t) of mixed freshwater eels (2017–18)	Unknown	Unknown	Unknown

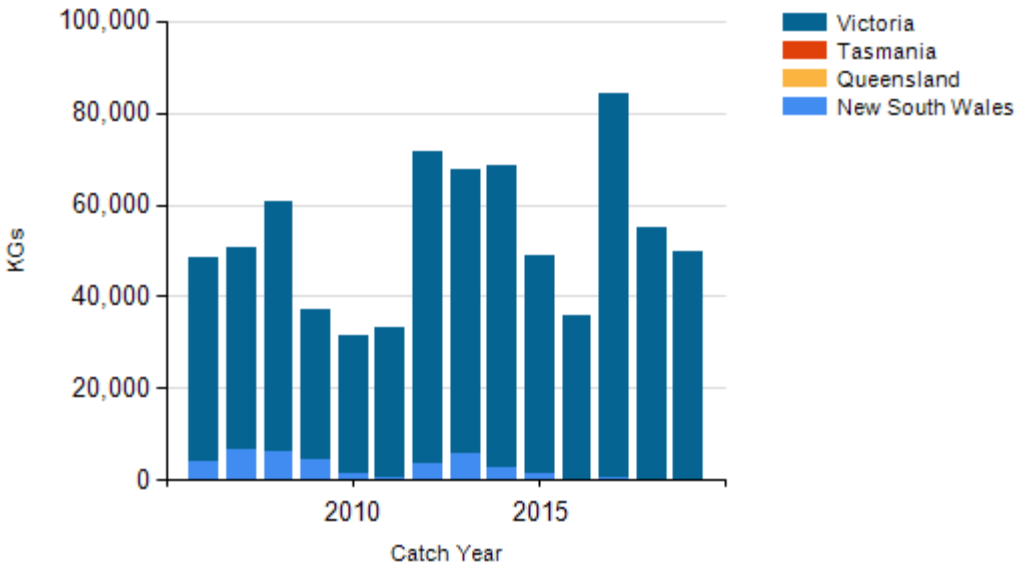
New South Wales – Recreational (catch totals) Estimate from Murphy et al. [2020], based on a survey of Recreational Fishing Licence households.

New South Wales – Indigenous (management methods) https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing).

Queensland – Indigenous (management methods) for more information see https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing

Victoria – Indigenous (Management Methods) A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, size limits and restricted areas. Traditional (non-commercial) fishing activities that are carried out by members of a traditional owner group entity under an agreement pursuant to Victoria's *Traditional Owner Settlement Act 2010* are also exempt from the need to hold a recreational fishing licence, subject to any conditions outlined in the agreement. Native title holders are also exempt from the need to obtain a recreational fishing licence under the provisions of the Commonwealth's *Native Title Act 1993*.

CATCH CHART



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