Luderick (2018)

Girella tricuspidata

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Queensland, New South Wales, Victoria, Tasmania	Eastern Australia	ECIFFF, EGF, GLF, N/A, OHF, SF	Sustainable	Catch, effort, fishing mortality, size composition

EGF Estuary General Fishery (NSW), N/A Not Applicable (NSW), OHF Ocean Hauling Fishery (NSW), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), SF Scalefish Fishery (TAS), GLF Gippsland Lakes Fishery (VIC)

STOCK STRUCTURE

Luderick inhabits shallow coastal and estuarine waters from southern Queensland to northern Tasmania and across to South Australia [Ferguson et al. 2013, Gray and Miskiewicz 2000, Gray et al. 2012, Smith and Sinerchia 2004]. While the biological stock structure of Luderick remains unknown, tagging studies indicate some adults move considerable distances along the eastern Australian coastline, and across the jurisdictional boundary between New South Wales and southern Queensland [Gray et al. 2012]. Limited genetic data support the existence of a single Eastern Australia biological stock [Curley et al. 2013].

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

STOCK STATUS

Eastern Australia

This cross-jurisdictional stock is fished in Queensland, New South Wales, Victoria and Tasmania. Each jurisdiction assesses that part of the biological stock that occurs in its waters. The status presented here for the entire biological stock has been established using evidence from all four jurisdictions.

In Queensland, Luderick is predominantly taken by the inshore commercial gillnet (or 'mesh net') fishery [Halliday et al. 2001]. In 2017, the commercial harvest was 5.5 tonnes (t) and substantially less than an annual average of 14.5 t during 2005–16, although catches are known to have been greater in the past. The recent reduction in catch is reflected in the decline of effort from 267 days in 2016 to only 152 days in 2017. Recent estimates of the recreational harvest of Luderick in Queensland are unreliable, because only one household reported catching the species during a 2013–14 survey [Webley et al. 2015]. A minimum legal length, set at 300 mm total length (TL), close to the size at first maturity

[Pollock 1981, Gray et al. 2012, Curley et al. 2013] applies to Luderick, which protects a portion of the spawning stock. A recreational possession limit of 10 restricts fishing pressure [Campbell 2013]. While there are no current concerns for Luderick in Queensland, there is insufficient information available to confidently classify the biomass or the level of fishing pressure for this part of the stock.

In New South Wales, the main commercial fishery for Luderick occurs in estuaries (mostly using mesh nets but also haul seines) and, to a lesser extent, inshore ocean waters (haul seines) [Gray et al. 2002, 2005a, 2005b, Broadhurst et al. 2003, Gray and Kennelly 2003]. Commercial landings reached a peak of more than 700 t in 1988 but then declined with a reduction in effort to less than 400 t in 2004. Over the subsequent decade, annual landings varied considerably between 280 and 450 t [Hall 2015] but decreased to 250 and 198 t in 2016 and 2017, respectively. The latter reductions follow declining effort and a fairly consistent nominal catch rate by haul seiners, although the nominal catch rate for mesh netting (the most common harvest method) has slightly declined, but remains within the range observed over the past ten years. The trend in nominal catch rate may reflect a shift in targeting priorities to higher-value species by remaining fishers. In terms of recreational catches, West et al. [2015] estimated a decline by more than 50 per cent from ~383 t in 2000–01 to ~150 t in 2013–14, associated with similar declines in effort, but with high uncertainty owing to divergent sampling methods. The mean size of Luderick remained consistent to 2011 (no subsequent data are available). The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

There are no current estimates of fishing mortality for Luderick. Previous estimates from the late 1990s (prior to the reduction in fishing effort in New South Wales) varied considerably between estuaries, but in more than 50 per cent of cases were historically equal to, or less than, natural mortality [Gray et al. 2010]. Fishing mortality is expected to have decreased over the past decade owing to the recent reductions in commercial fishing effort, and especially among juveniles following improved mesh net selectivity [Broadhurst et al. 2003, Gray et al. 2005a] and more recent changes in haul seine selectivity [Broadhurst et al. 2007]. A minimum legal length (MLL) of 270 mm TL, spatial closures and bag limits for recreational fishers (10 per day or 20 in possession) in New South Wales minimise fishing pressure on the spawning stock, and studies imply Luderick is among the most resilient of estuarine teleosts to being caught, handled and released. Specifically, Butcher et al. [2011] observed 99 per cent short-term survival among all sizes of Luderick when released by hook-and-line, while Broadhurst et al. [2009] recorded 83 per cent survival among mesh-netted-and-discarded juveniles. Collectively, the above evidence indicates that the current level of fishing pressure is unlikely to cause this part of the stock to become recruitment impaired.

In Victorian waters, Luderick is commercially harvested from the Gippsland Lakes Fishery and is mainly caught using mesh nets, although a small proportion of catch is attributed to haul seines [Kemp et al. 2011, Victorian Bays and Inlets Fisheries Association 2013, Ramm 1983]. Since 2000, the greatest catches were observed in 2007 (41.5 t); however, since then catches declined to approximately 2 t in 2017. Catch rates have declined continually since the most recent peak in 2007–08 [Conron et al. 2016]. The annual and recent five year average catch rates to 2014–15 were approximately 60 and 20 per cent below the long-term average, respectively [Conron et al. 2016]. However, because Luderick is generally taken as a bycatch species when fishers are targeting Black Bream, the catch rate may not provide a reliable index of abundance for Luderick. The uncertainty regarding interpretation of catch-rate trends makes it difficult to know whether current fishing pressure is impacting the spawning stock biomass within the Gippsland Lakes Fishery. Fishing pressure is limited by a minimum legal length of 230 mm TL for both commercial and recreational fishers, and a daily bag limit of 10 fish for recreational fishers. Harvesting within

the Gippsland Lakes is unlikely to impact the overall biological stock, but there is insufficient information available to confidently classify the biomass or the level of fishing pressure for this part of the stock.

In Tasmanian waters, Luderick is a by-product species of the multi-gear, multi-species Tasmanian Scalefish Fishery, and is caught predominately using mesh net and handline methods. Commercial catches have been minimal, with an annual average of 0.37 t landed between 2001 and 2010 and an annual average of 0.11 t landed in the last five years. Reductions in commercial effort for Luderick reflect a general fishery-wide decline in effort. Estimated recreational catch from handline and mesh net methods is also minimal [Lyle and Tracey 2012, Lyle et al. 2014]. Given the negligible level of commercial and recreational catch in Tasmania, the biomass of this stock is unlikely to be depleted and recruitment is unlikely to be impaired. Further, the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

The evidence presented above indicates that for three parts of the stock (Queensland, Victoria and Tasmania), the status is undefined. However, only small catches and low effort are reported from these jurisdictions, and these are unlikely to have a significant impact on the overall biological stock. For the central part of the stock in New South Wales, where the bulk of the commercial and recreational catches are taken, the above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished and the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

BIOLOGY

Luderick biology [Gray et al. 2012, 2010, Pollock 1981]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Luderick	24 years, 560 mm TL	4–4.5 years, 280–300 mm FL

DISTRIBUTION

Distribution of reported commercial catch of Luderick

TABLES

Commercial Catch Methods	New South Wales	Queensland	Tasmania	Victoria
Gillnet			✓	
Haul Seine	✓			
Haul Seine/Beach Seine	✓			
Hook and Line		✓		✓
Mesh Net	✓			
Net		✓		✓
Unspecified	✓		✓	✓

Fishing methods				
	New South Wales	Queensland	Tasmania	Victoria
Commercial				
Gillnet			✓	
Haul Seine	✓			
Haul Seine/Beach Seine	✓			
Hook and Line		✓		
Mesh Net	✓			
Net		✓		✓
Unspecified	✓		✓	
Indigenous				
Hook and Line	✓	✓	✓	
Mesh Net			✓	
Spearfishing	✓	✓		
Recreational				
Hook and Line	✓	✓	✓	✓
Mesh Net			✓	
Spearfishing	✓	✓		✓

Management Methods				
	New South Wales	Queensland	Tasmania	Victoria
Charter				
Fishing gear and method restrictions		✓		
In possession limits		✓		
Size limit		✓		

Spatial closures		✓		
Commercial				
Effort limits				✓
Fishing gear and method restrictions	✓	✓		✓
Licence				✓
Limited entry	✓	✓	✓	✓
Size limit	✓	✓		
Spatial closures	✓	✓		✓
Temporal closures	✓			
Indigenous				
Bag limits	✓			
Customary fishing permits				✓
Native Title	✓			
Section 37 (1d)(3)(9), Aboriginal cultural fishing authority	✓			
Recreational				
Bag limits	✓			✓
Fishing gear and method restrictions	✓	✓		✓
In possession limits	✓	✓		
Licence	✓		✓	✓
Size limit	✓	✓		✓
Spatial closures	✓	✓		✓

Active Vessels				
	New South Wales	**Queensland**	**Tasmania**	**Victoria**
	246 Fishing Business in EGF, 19 Fishing Business in OHF,	22 in ECIFFF,	8 Vessels in SF,	10 Licence Holders in GLF,

EGF Estuary General Fishery(NSW)

OHF Ocean Hauling Fishery(NSW)

ECIFFF East Coast Inshore Fin Fish Fishery(QLD)

SF Scalefish Fishery(TAS)

GLF Gippsland Lakes Fishery(VIC)

Catch				
	New South Wales	Queensland	Tasmania	Victoria
Commercial	171.54t in EGF, 18.673t in N/A, 7.664t in OHF,	5.5203t in ECIFFF,	0.24761t in SF,	2.02539t in GLF,
Indigenous	Unknown	Unknown	Unknown	Unknown (No catch under permit)
Recreational	150 t (in 2013–14)	Unknown	< 0.5 t (2010)	Unknown

EGF Estuary General Fishery (NSW), N/A Not Applicable (NSW), OHF Ocean Hauling Fishery (NSW), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), SF Scalefish Fishery (TAS), GLF Gippsland Lakes Fishery (VIC),

Queensland – Indigenous (Management Methods) In Queensland, under the *Fisheries Act 1994* (Qld), Indigenous fishers are able to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and possession limits, and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations may be applied for through permits.

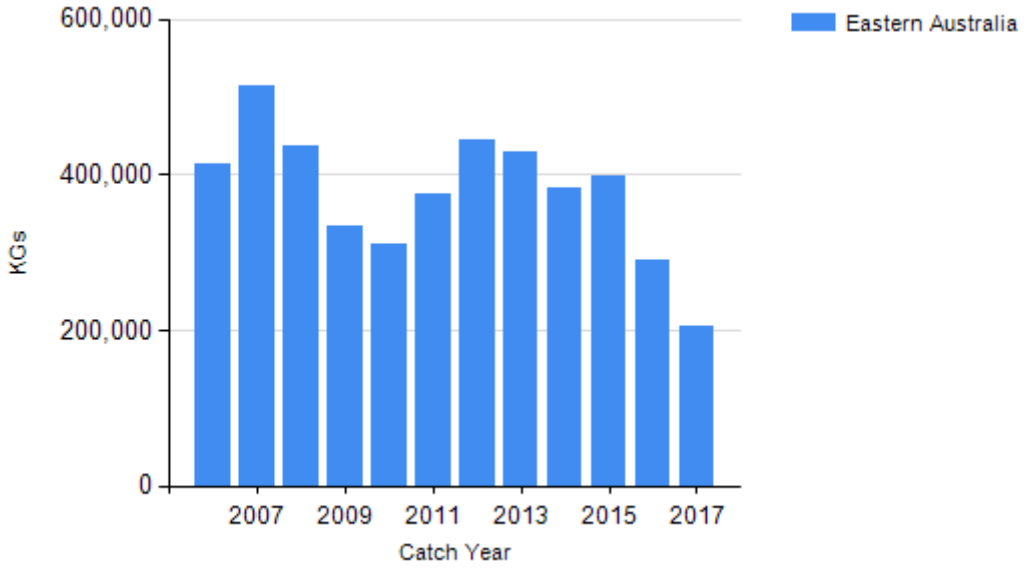
New South Wales – Indigenous (Management Methods) The Aboriginal Cultural Fishing Interim Access Arrangement allows an Indigenous fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances—for example, if they are doing so to provide fish to other community members who cannot harvest themselves. 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 (1d)(3)(9), Aboriginal cultural fishing authority. In cases where the *Native Title Act 1993* (Cth) applies fishing activity can be undertaken by the person holding native title in line with S.211 of that Act, which provides for fishing activities for the purpose of satisfying their personal, domestic or non-commercial communal needs. In managing the resource where native title has been formally recognised, the native title holders are engaged with to ensure their native title rights are respected and inform management of the State's fisheries resources.

Victoria – Indigenous (Management Methods) In Victoria, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. Victorian traditional owners may have rights under the *Commonwealth's Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence. Traditional Owners that have agreements under the *Traditional Owner Settlement Act 2010* (Vic) may also be authorised to fish without the requirement to hold a recreational fishing licence. Outside of these arrangements, Indigenous Victorians can apply for permits under the *Fisheries Act 1995* (Vic) that authorise fishing for specific Indigenous cultural ceremonies or events (for example, different catch and size limits or equipment). There were no Indigenous permits granted in 2017 and hence no Indigenous catch recorded.

Tasmania – Recreational (Management Methods) In Tasmania, a recreational licence is required for fishers using dropline or longline gear, along with nets, such as mesh net or beach seine.

Tasmania – Indigenous (Management Methods) In Tasmania, Indigenous persons 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. If using pots, rings, set lines or mesh nets, Indigenous fishers must obtain a unique identifying code (UIC). The policy document Recognition of Aboriginal Fishing Activities for issuing a 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 Luderick - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Luderick

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