

Luderick (2023)

Girella tricuspidata



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland, New South Wales, Victoria, Tasmania	Eastern Australia	Sustainable	Catch, effort, fishing mortality, size composition

STOCK STRUCTURE

Luderick inhabit shallow coastal and estuarine waters from southern Queensland to northern Tasmania and across to South Australia [Gray and Miskiewicz 2000; Smith and Sinerchia 2004; Gray et al. 2012; Ferguson et al. 2013]. 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 Because 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.

Off southern Queensland, Luderick are at their northern distributional limit, and predominantly taken by the East Coast Inshore Fishery (ECIF) in the south, and at their northern distributional limit [Halliday et al. 2001]. In 2021–22, the commercial harvest was 4.36 tonnes (t) and substantially less than an annual

average of 10.48 t during 2009–21, although catches are known to have been greater in the past. Historically, estimates of the recreational harvest of Luderick in Queensland have been unreliable [Webley et al. 2015]. This deficit remains for the results of a 2019–20 recreational fishing survey [Teixeira et al. 2021]. A minimum legal size, 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 immature fish from harvesting. 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' (gillnets) but also haul seines) and, to a lesser extent (approximately 10% of total), inshore ocean waters (haul seines) [Gray 2002; Gray et al. 2005a; Gray et al. 2005b; Broadhurst et al. 2003; Gray and Kennelly 2003]. Commercial landings reached a peak of nearly 800 t in 1989 but then declined with a reduction in effort to less than 400 t in 2004. Over the subsequent 16 years, annual landings varied considerably between 290 and 450 t [Hall 2015] but decreased to 265 t in 2016 and have remained quite stable to 2021 (250 t). The last reductions in annual catches follow declining effort and a consistent nominal catch rate by both haul seiners and mesh netters (the most common harvest method) over the past decade. The most recent estimate of the recreational harvest of Luderick in New South Wales was approximately 40,000 fish (24 t) during 2019–20 and down 19% from approximately 50,000 fish or 30 t during 2017–18 but reflecting concomitantly lower fishing effort (23%) [Murphy et al. 2020; Murphy et al. 2022]. These estimates are based on surveys of recreational fishing licence (RFL) households, which comprised at least one person with a long-term (one or three year) fishing licence, but also included other fishers within the household. An earlier comparable survey of RFL households was done in 2013–14 during which 108,000 (or 65 t) Luderick were recreationally harvested, but with greater perceived effort (reflecting the larger catches during this period) [West et al. 2015].

Formal fishing mortality estimates from the late 1990s (prior to the reduction in fishing effort in NSW) varied considerably between estuaries, but in more than 50% of cases were historically equal to, or less than, natural mortality [Gray et al. 2010]. Fishing mortality across all ages classes of Luderick in NSW is expected to have decreased over the past 15 years due to substantial reductions in total commercial fishing effort, including > 30% reduction for the most common methods. This outcome is already evident with Gray et al. [2022] showing that following up to eight years of commercial fishing closures in two estuaries, there were increased mean lengths and proportions of adult Luderick.

For juvenile Luderick, fishing mortality has likely been further decreased by improved selectivity for both remaining mesh nets [Broadhurst et al. 2003; Gray et al. 2005a] and haul seines [Broadhurst et al. 2007]. Recent size-at-age data imply differences in year-class strength between estuaries, but collectively older ages remain well represented. 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% short-term survival among all sizes of Luderick when released by hook-and-line, while Broadhurst et al. [2009] recorded 83% survival among mesh-netted-and-discarded juveniles. Collectively, the above evidence indicates that the current level of fishing pressure is unlikely to cause the NSW

component of the stock to become recruitment impaired.

In Victorian waters, Luderick were commercially harvested from the Gippsland Lakes Fishery and mainly caught using mesh nets, although a small proportion of catch is attributed to haul seines [Ramm 1983; Kemp et al. 2011; Victorian Bays and Inlets Fisheries Association 2013]. Since 2000, the greatest catches were observed in 2007 (41.5 t); however, catches have since declined to approximately 2 t in 2017 and 2.7 t in 2019. 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% below the long-term average, respectively [Conron et al. 2016]. However, because Luderick are generally taken as bycatch when fishers are targeting Black Bream, the catch rate may not provide a reliable index of abundance. The uncertainty regarding interpretation of catch-rate trends makes it difficult to know whether recent fishing pressure has impacted 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. At the end of March 2020, the commercial fishery was closed following a buy-out of all commercial netting licences, implemented to improve recreational fishing access by hook and line methods. Removing commercial licences is a key part of the Gippsland Lakes Recovery Plan, which also includes strategies for fish re-stocking and cross-agency habitat improvement [VFA 2020]. 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. Harvest by recreational anglers in the state is unknown.

In Tasmanian waters, Luderick is a by-product species of the multi-gear, multi-species Tasmanian Scalefish Fishery, predominately caught using mesh nets and hand lines. Commercial catches have been minimal, with an average catch of 0.32 t recorded since 1995–96 (maximum recorded catch was 1.5 t in 1995–96). The total recorded commercial catch in 2021–22 was 143 kg. Reductions in commercial effort for Luderick reflect a general fishery-wide decline in effort. Estimated recreational catches from hand lines and mesh nets are also minimal [Lyle and Tracey 2012; Lyle et al. 2014].

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 commercial and recreational catches are taken (i.e. > 97% of the total), 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 current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

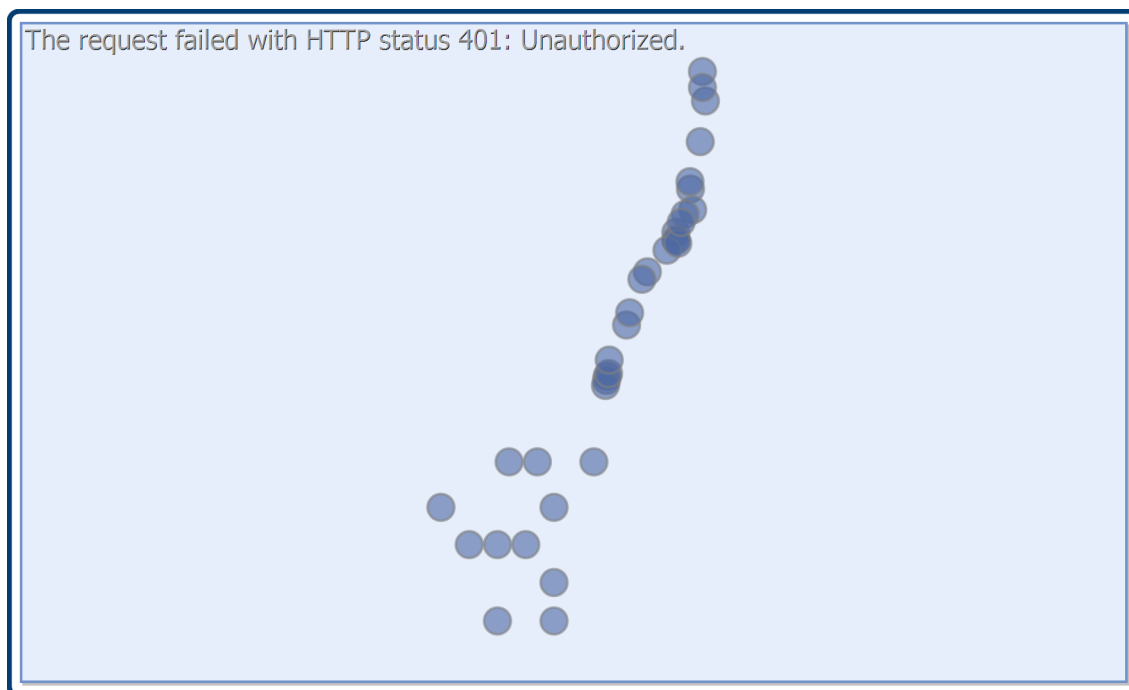
On the basis of the evidence provided above, the Eastern Australia biological stock is classified as a **sustainable stock**.

BIOLOGY

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

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

Fishing methods	New South Wales	Queensland	Tasmania	Victoria
Charter				
Hand Line, Hand Reel or Powered Reels	✓	✓		
Hook and Line		✓		
Commercial				
Haul Seine	✓			
Line		✓		
Mesh Net	✓			
Net		✓		✓
Unspecified			✓	
Various	✓			

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Recreational				
Hook and Line	✓	✓	✓	✓
Mesh Net			✓	
Spearfishing	✓	✓		✓

Management Methods				
	New South Wales	Queensland	Tasmania	Victoria
Charter				
Bag/possession limits		✓		
Daily catch limits	✓			
Fishing gear and method restrictions	✓			
Gear restrictions		✓		
License	✓			
Seasonal or spatial closures		✓		
Size limit	✓	✓		
Spatial closures	✓			
Commercial				
Effort limits				✓
Fishing gear and method restrictions	✓			✓
Licence				✓
Limited entry	✓	✓	✓	✓
Seasonal or spatial closures		✓		
Size limit	✓	✓		
Spatial closures	✓			✓
Temporal closures	✓			
Vessel restrictions		✓		

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Recreational				
Bag limits	✓			✓
Fishing gear and method restrictions	✓			✓
Gear restrictions		✓		
In possession limits	✓			
Licence	✓		✓	✓
Seasonal or spatial closures		✓		
Size limit	✓	✓		✓
Spatial closures	✓			✓

Catch				
	New South Wales	Queensland	Tasmania	Victoria
Charter		0.02 t (2020–21)		
Commercial	189.97 t	7.9415 t	0 t	0 t
Indigenous	Unknown	Unknown	Unknown	Unknown (No catch under permit)
Recreational	24 t (in 2019–20)	Unknown	< 0.5 t (2010)	Unknown

Queensland – Indigenous (Management Methods). For more information see <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

Queensland – Commercial (Catch). Queensland commercial and charter data have been sourced from the commercial fisheries logbook program. Further information is available through the Queensland Fisheries Summary Report <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>

Queensland – Recreational Fishing (Catch). Data with high uncertainty have been excluded and listed as unknown. More information available at: <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/monitoring-reporting/statewide-recreational-fishing-surveys>

New South Wales – Recreational (Catch). Henry and Lyle [2003]; West et al. [2015]; Murphy et al. [2020]; Murphy et al. [2022].

New South Wales – Indigenous (Management Methods).
(<https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>)

New South Wales. <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

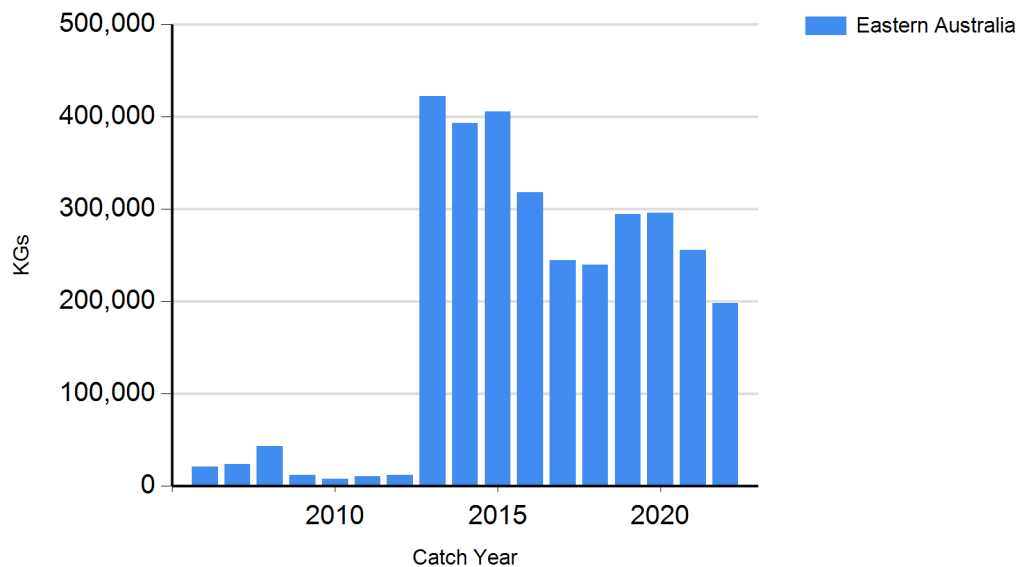
Victoria – Indigenous (Management Methods). A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, 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* (<https://www.justice.vic.gov.au/your-rights/native-title/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* (<https://www.legislation.gov.au/Details/C2017C00178>).

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 traditional 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. For details, see the policy document 'Recognition of Aboriginal Fishing Activities' (<https://fishing.tas.gov.au/Documents/Policy%20for%20Aboriginal%20tags%20and%20alloting%20an%20UIC.pdf>).

CATCH CHART

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Commercial catch of Luderick

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