Sand Whiting (2023)

Sillago ciliata

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland	Queensland	Sustainable	Stock assessment (age and length structured model), commercial catch and CPUE, recreational catch, length and age
New South Wales	New South Wales	Sustainable	Catch, effort and standardised CPUE, length and age, mortality rates

STOCK STRUCTURE

Sand Whiting occurs along the east coast of Australia and is most abundant in southern Queensland and northern New South Wales. Recent tagging studies have shown movement of adult fish between estuaries separated by distances of up to 450 km and across state management jurisdictions [Gray 2023], but conclusive information on biological stock boundaries remains incomplete. The unknown nature of biological stock composition means no formal assessment at the biological stock level has been completed. Separate assessments of Sand Whiting have been conducted in Queensland and New South Wales [Hoyle et al. 2000; O'Neill 2000; Ochwada-Doyle et al. 2014; Leigh et al. 2019; Hall 2020].

Here, assessment of stock status is presented at the jurisdictional level—Queensland and New South Wales.

STOCK STATUS

New South Wales

In New South Wales, Sand Whiting is mainly taken by the commercial Estuary General Fishery using mesh nets and general-purpose hauling nets, and smaller

catches are reported by the Ocean Hauling Fishery [Hall 2020]. Annual commercial catches of Sand Whiting in New South Wales waters remained above 130 tonnes (t) between 1980–91 and 2007–08 but have decreased to below 100 t since 2015–16 and reached the lowest catch in five decades of 54 t in 2021–22 [Hall 2023]. These recent decreases in catches have coincided with similar declines in effort, such that the standardised commercial catch rates for both the mesh netting and hauling sectors, while variable, have remained near long-term averages over the last 13 years and were above average over the last three years [Hall 2023]. The length compositions of the commercial landings for this species have been relatively stable since the late-1960s (although the time-series has many missing years) [NSW DPI, unpublished data]. Recent size and age structures sampled from landed commercial fishing catches suggest that Sand Whiting caught by hauling nets tend to be smaller and mostly between two and five years of age, whereas those caught by meshing nets are on average larger and contain more fish between the ages of six and twelve [Hall 2023]. Historical fishery-independent sampling from the 2000s using multi-panel mesh nets with a range of mesh sizes, suggest that size and age structures vary among NSW estuaries that also vary in fisheries management history and estuary mouth opening and closing cycles [Gray 2023].

The most recent estimate of the recreational harvest of Sand Whiting in New South Wales was approximately 165,755 fish or around 46.1 t during 2019–20 [Murphy et al. 2022]. 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 estimates from previous surveys were 172,941 fish in 2013–14 and 120,831 fish in 2017–18, which suggests catches have recently increased [Murphy et al. 2020]. A survey of Aboriginal cultural fishing in the Tweed River catchment identified Sand Whiting as one of the top 10 most important species numerically in catches and was estimated to account for 14.2% of the total finfish catches in that catchment [Schnierer and Egan 2016]. Statewide estimates of the annual Aboriginal harvest of Sand Whiting in NSW waters are unknown but are assumed to be significant.

In combination, the above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Nominal effort levels (in total number of days fished) over the past 11 years have been well below historical levels. In 2021–22, effort was 7,171 days for mesh netting and 762 days for hauling compared with 23,093 and 8,012 days, respectively, in 1998–99 [Hall 2020]. Changes in catch reporting from monthly to daily records in July 1997 significantly altered effort distributions and would account for some of the historical decrease. There is a minimum legal length for both commercial and recreational fishers of 270 mm TL and 31 estuaries are designated as recreational fishing havens following a commercial fishing licence buyout in 2016, which has reduced commercial fishing pressure on the spawning stock. Estimates of total mortality from catch curves indicate that the rate of fishing mortality is likely to be less than or equal to that of natural mortality [Ochwada-Doyle et al. 2014; Hall 2023]. Collectively, 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, Sand Whiting in New South Wales is classified as a **sustainable stock.**

Queensland

The Queensland Sand Whiting jurisdictional stock is a predominantly caught in shallow coastal and estuarine waters south of Baffle Creek. The annual harvest of Sand Whiting in Queensland is shared evenly between the recreational and commercial sectors. The commercial harvest is caught using nets (mainly gillnets and tunnel nets) in the East Coast Inshore Fishery (ECIF), whereas the recreational harvest is predominantly caught by hook and line. The most recent stock assessment of Sand Whiting in Queensland (based on 2017 data) estimated the exploitable biomass to be at 29% of unfished biomass [Leigh et al. 2019]. This corresponds to an approximate maximum sustainable yield (MSY) but is below the target biomass of 60% unfished biomass set in Queensland's Sustainable Fishing Strategy (2017–2027) [QDAF 2017]. Since 2007, both size and age frequencies of commercial and recreational harvests have been largely consistent between years, indicating a stable population with continued recruitment [QDAF 2023, unpublished data]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Fishing pressure has remained relatively stable between 1945 and 2009 for commercial harvest, albeit with some variability between years. Since 2009–10 however, the harvest has been in intermittent decline. In 2021–22, the commercial harvest reached a historic low of 74 t; representing a decline of more than two-thirds compared to the long-term historical averages based on commercial logbook data (1988–2021: 263 t) and Queensland Fish Board data (1945–80: 266 t) [Leigh et al. 2019]. Over the same period the sector experienced a 75 per cent decline in nominal effort (2009–10: 5,163 boat days; 2021–22: 1,287 boat days). The onset of this decline in effort coincided with spatial closures within key commercial fishing grounds. In 2009, 23% of the Moreton Bay Marine Park was closed to commercial net fishing (van de Geer et al. 2013). A series of subsequent license buybacks along with structural adjustment packages saw the number of net license holders targeting Sand Whiting in the region reduce by half (a decline of 75 licenses between 2009–10 and 2021–22).

Sand whiting consistently rank as one of the most popular species targeted by the recreational sector in Queensland, in terms of numbers harvested [QDAF 2021a]. The species is predominantly caught by hook and line in combined catches with congeneric species including Goldenline Whiting (*S. analis*) and Northern Whiting (*S. sihama*). The most recent statewide recreational fishing survey estimated that approximately 65.6 t of Sand Whiting complex (i.e. comprising catches of "Sand Whiting" or "Whiting - unspecified") was harvested in 2019–20 [Teixeira et al. 2021]. This was lower than the harvest estimates from previous survey years (102.3 t, 124.8 t and 453.5 t in 2013–14, 2010–11 and 2000–01 respectively) [Henry and Lyle 2003; Taylor 2012; Webley et al. 2015]. There are no direct estimates of recreational fishing effort targeting Sand Whiting in Queensland. However, there is some evidence for a decline in effort targeting whiting (Sillago spp.) since 2000. According to diary surveys, approximately 126,000 days were spent targeting whiting in Queensland waters in 2013–14; compared to 194,000 days in 2010–11 and 361,000 days in 2000–01 [Webley et al. 2015].

Fishing pressure for Sand Whiting is managed under ECIF Harvest Strategy (2017–2026) [QDAF 2021b]. A total allowable commercial catch (TACC) limit of 162 t per year was introduced on 1 September 2021. By the end of the 2022 season, approximately 46% of the commercial quota remained unused. In 2009, a combined in-possession limit of 30 whiting (Sand, Goldenline and Northern Whiting) was applied to the recreational sector with the aim of reducing fishing

mortality. The current minimum legal size for Sand Whiting in Queensland (230 mm TL) allows a proportion of mature fish to spawn at least once [Ochwada-Doyle et al. 2014]. The current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

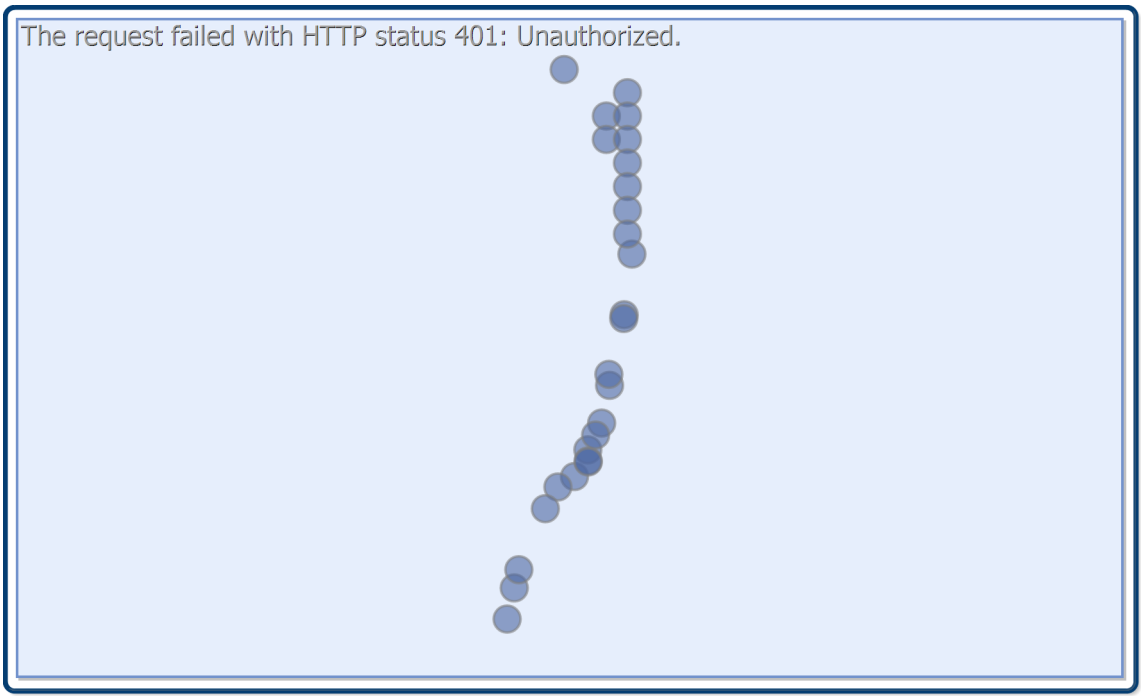
On the basis of the evidence provided above, Sand Whiting in Queensland is classified as a **sustainable stock**.

BIOLOGY

Sand Whiting biology [Burchmore et al. 1988; Gray 2023; McKay 1992; Ochwada-Doyle et al. 2014; Stocks et al. 2011]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Sand Whiting	12 years, 510 mm Total Length (TL)	Males: 170–240 mm Fork Length (FL); Females: 190–240 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Sand Whiting

TABLES

Fishing methods		
	New South Wales	Queensland
Charter		
Hook and Line	✓	✓
Commercial		
Haul Seine	✓	
Line		✓
Mesh Net	✓	
Net		✓
Various	✓	
Recreational		
Hook and Line	✓	✓

Management Methods		
	New South Wales	Queensland
Charter		
Bag/possession limits	✓	✓
Gear restrictions	✓	✓
Seasonal or spatial closures		✓
Size limit	✓	✓
Spatial closures	✓	
Commercial		
Gear restrictions	✓	✓
Harvest Strategy		✓
Individual transferable quota		✓
Limited entry	✓	✓
Seasonal or spatial closures		✓
Size limit	✓	✓

Spatial closures	✓	
Temporal closures	✓	
Vessel restrictions		✓
Recreational		
Bag/possession limits	✓	✓
Gear restrictions	✓	✓
In possession limits	✓	
Seasonal or spatial closures		✓
Size limit	✓	✓
Spatial closures	✓	

Catch		
	New South Wales	**Queensland**
Charter	243 fish (2021–22)	
Commercial	55.933 t	73.8527 t
Indigenous	Unknown	Unknown
Recreational	46.1 t (2019–20)	65.6 t (2019–20)

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 has been sourced from the commercial fisheries logbook program. Further information 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 based at the whole Queensland level and derived from statewide recreational fishing surveys. Where possible, estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability. In the absence of an adequate conversion factor, data presented as number of fish.

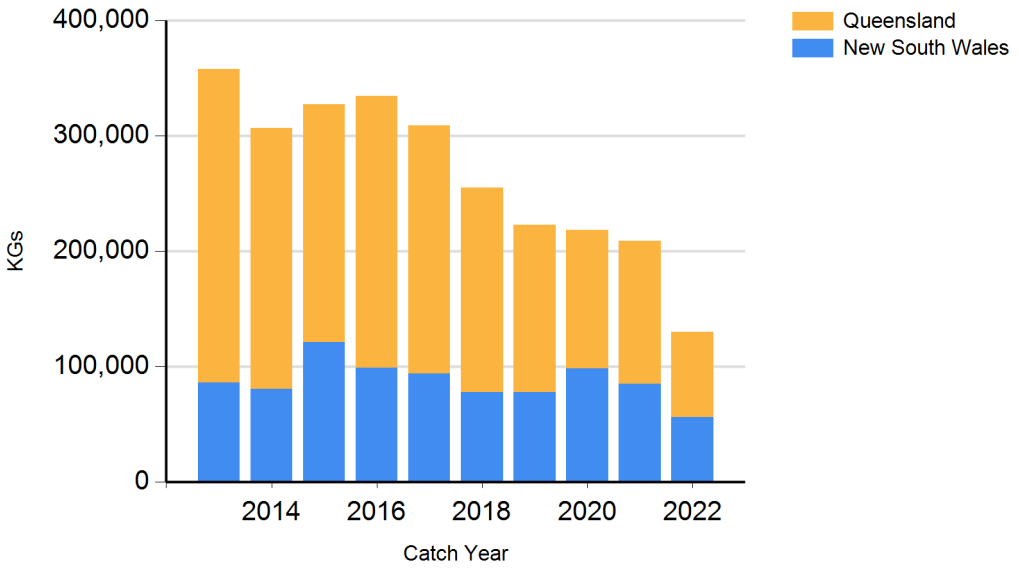
Queensland – Commercial (Management Methods). Harvest strategies are available at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy

New South Wales – Commercial (Catch). Data are provided for financial years.

New South Wales – Recreational (Catch). Estimates from Murphy et al. [2020, 2022], based on a survey of Recreational Fishing Licence households.

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

CATCH CHART



Commercial catch of Sand Whiting - note confidential catch not shown

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