

Hammer Octopus (2023)

Octopus australis



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland	Queensland	Undefined	Catch, effort, risk assessment
New South Wales	New South Wales	Sustainable	Catch, effort, standardised CPUE

STOCK STRUCTURE

The Hammer Octopus is distributed along the east coast of Australia from central Queensland to southern New South Wales [Reid 2016]. The stock structure of Hammer Octopus is currently unknown. However, on the basis of the relatively large size of mature eggs (8–12 mm, equating to 13.7–21.4% of dorsal mantle length), the species is likely to be holobenthic [Boletzky 1974; Stranks and Norman 1992]. Holobenthic octopuses typically have large benthic rather than pelagic hatchlings, with limited dispersal capacity, and show finer scale population structuring across their distributions [e.g., Pale Octopus, Doubleday et al. 2008; Higgins et al. 2013]. Therefore, it is unlikely that Hammer Octopus forms a single biological stock across its geographic distribution. Furthermore, there is no joint stock assessment for this species, so stock status is reported here at the jurisdictional level - Queensland and New South Wales.

STOCK STATUS

New South Wales The Hammer Octopus is a small, short-lived species that is found in coastal waters and bays on sand and mud substrates in depths between 3 and 140 m [Stranks and Norman 1992]. In NSW, combined octopus are an important by-product species group, with most of the commercial catch taken by the prawn trawl sector of the Ocean Trawl Fishery in northern NSW, and smaller amounts reported from the fish trawl sector along the central coast [Hall 2020].

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In NSW, total annual commercial catches of combined octopus are available from 1979–80 to 2008–09 and for separate species from 2009–10 to 2021–22 [Hall 2020]. Commercial catches of combined octopus steadily increased from around 200 tonnes (t) in the late 1970s to a peak of 783 t in 1997–98. Catches then rapidly declined over 2 years to 277 t in 1999–2000, briefly returned to over 500 t in 2000–01 and have since fluctuated at lower levels (76–256 t since 2004–05). Separate species catch data since 2009–10 suggest that Hammer Octopus typically dominates commercial catches, accounting for 84.2–94.6% of total catches [Hall 2018]. The total commercial catch of Hammer Octopus in 2021–22 was 61 t.

The most recent estimate of the recreational harvest of combined octopus species in New South Wales was approximately 1,634 octopus during 2019–20, with an additional 2,241 octopus caught and released [Murphy et al. 2022]. The proportion of Hammer Octopus in this estimate is unknown. The 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 in 2017–18 and 2013–14 were approximately 1,145 and 1,877 octopus harvested, with an additional 2,700 and 5,227 octopus caught and released, respectively [Murphy et al. 2020]. Relative to the total commercial catch, these recreational catches are very small (< 1% of the total state harvest). A survey of Aboriginal cultural fishing in the Tweed River catchment identified octopus as a common component of the marine invertebrate catches [Schnierer and Egan 2016]; however, statewide estimates of the annual Aboriginal harvest of octopus in New South Wales are unknown.

Evidence suggests that the bulk of the historical combined octopus catches taken by the Ocean Trawl Fishery are likely to have comprised Hammer Octopus [Hall 2018]. Historical combined octopus catch rates from monthly records (standardised catch per unit effort, CPUE, in kg per day) for the prawn and fish trawl sectors indicate widely fluctuating trends (between 14.6–50 kg per day), with gradual increases over several years, followed by a sudden rapid decrease over one or a few years (e.g., from 42.4 kg per day in 1998 to 17.2 kg per day in 1999 and back up to 40.0 kg per day in 2004) [Hall 2020]. This pattern of abundance corresponds to anecdotal evidence from fishers indicating that after several good years, combined octopus catches suddenly decrease in trawl landings.

Recent standardised CPUE (in kg per hour trawled) for Hammer Octopus from daily records for both the fish trawl and prawn trawl sectors, which have been recorded since 2009, indicate that over the preceding three years catch rates had been steadily increasing to well above-average levels, but in 2021–22 suddenly decreased to near the long-term average (of 3.2 kg per hour trawled) [Hall 2023]. These recent trends in CPUE, combined with historical levels for combined species dominated by Hammer Octopus, suggest that although the biomass of this stock fluctuates considerably, it is unlikely to be depleted and that recruitment is unlikely to be impaired. However, this assessment involves considerable uncertainty given the monthly and combined species reporting prior to 2009 and reliance on catch-rate analyses for a non-target species.

Current levels of fishing effort in the prawn trawl and fish trawl sectors of the Ocean Trawl Fishery (3,916 and less than 800 days fished, respectively) are much lower than historical levels (18,000 and 3,054 days fished in the early 2000s) due to a reduced number of operators [Hall 2023]. While no current fishing mortality estimates are available for the species, the current level of fishing mortality is considered unlikely to cause the stock to become recruitment

impaired.

On the basis of the evidence provided above, Hammer Octopus in New South Wales is classified as a **sustainable stock**.

Queensland In Queensland, Hammer Octopus is taken as a permitted by-product species in the East Coast Trawl Fishery. The take of Hammer Octopus is not reported specifically in logbooks, however the species is one of the more common octopus species encountered in the fishery [Courtney et al. 2007]. Commercial harvest of all octopus species reached a peak of 42 t in 1997–98. Catches of all octopus species have been relatively stable since this peak, averaging about 18 t over the last decade to 2021–22. An ecological risk assessment of the East Coast Trawl Fishery identified Hammer Octopus to be at a low to intermediate risk from fishing impacts [Jacobsen et al. 2018]. There is no estimate of recreational harvest of Hammer Octopus in Queensland.

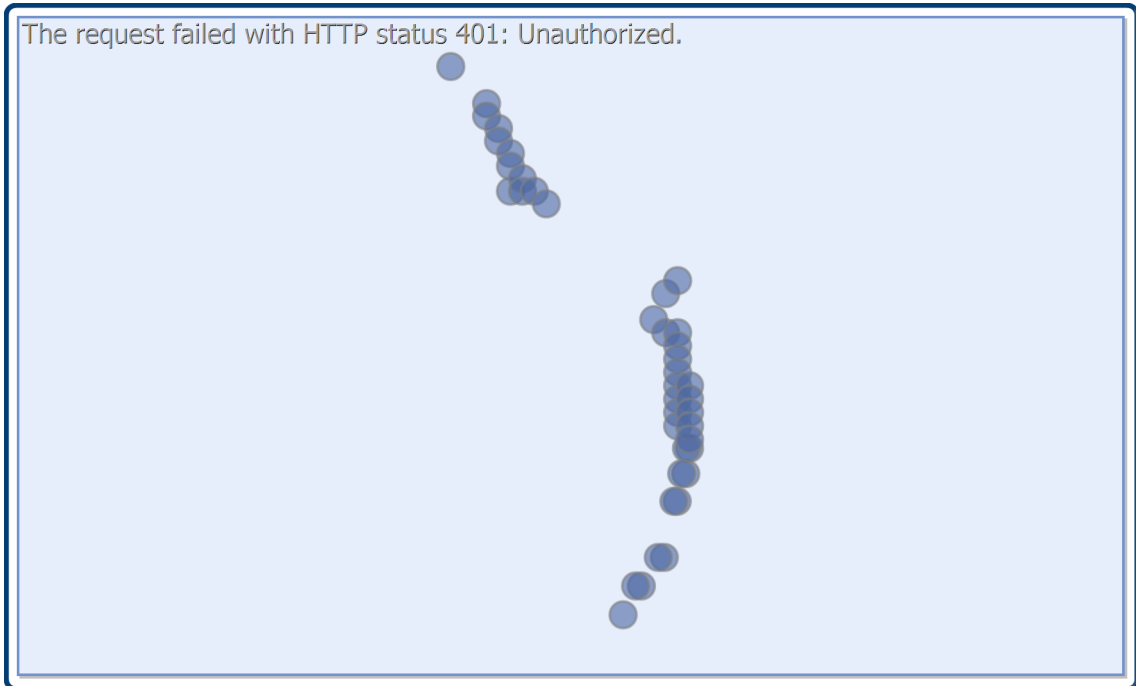
There are no sustainability concerns for Hammer Octopus given the low catches and low to intermediate ecological risk profile, however there is insufficient evidence to confidently classify the status of this stock. On the basis of the evidence provided above, Hammer Octopus in Queensland is classified as an **undefined stock**.

BIOLOGY

[Nuttall 2009]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Hammer Octopus	Lifespan up to 11 months in NSW waters, 499 mm maximum total length	Unknown

DISTRIBUTION



Distribution of reported commercial catch for Hammer Octopus.

TABLES

Fishing methods	New South Wales	Queensland
Commercial		
Danish Seine		✓
Midwater Trawl		✓
Otter Trawl	✓	✓
Various	✓	
Recreational		
Various	✓	✓

Management Methods	New South Wales	Queensland
Commercial		
Bag/possession limits		✓
By-catch reduction devices		✓

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Effort limits	✓	
Gear restrictions	✓	✓
Harvest Strategy		✓
Limited entry	✓	✓
Marine park closures	✓	
Seasonal or spatial closures		✓
Spatial closures	✓	
Vessel restrictions	✓	✓
Recreational		
Bag limits	✓	
Bag/possession limits		✓
Gear restrictions	✓	✓
Licence	✓	
Marine park closures	✓	
Seasonal or spatial closures		✓
Spatial closures	✓	

Catch	New South Wales	Queensland
Commercial	60.9661 t	23.4654 t
Indigenous	Unknown	Unknown
Recreational	1,145 mixed octopus (2017–18)	Unknown

New South Wales – Recreational (Catch). Estimate from Murphy et al. [2022], based on a survey of Recreational Fishing Licence households. Note, estimates for octopus are highly uncertain, with a relative standard error of greater than 30% and based on survey data from fewer than 20 households.

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

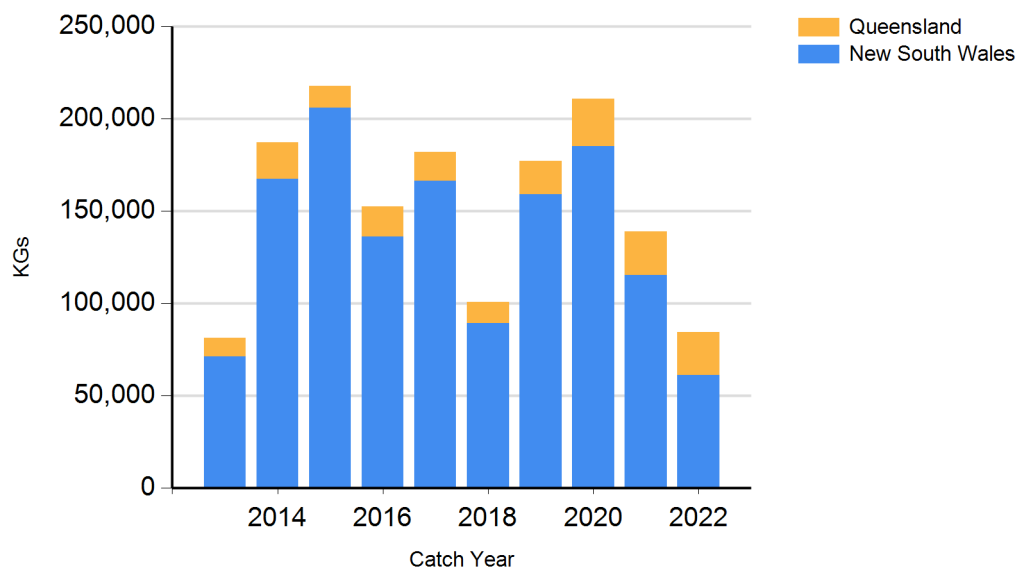
Queensland – Indigenous (Management Methods). For more information see: <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

Queensland – Recreational Fishing (Catch). Data with high uncertainty (Residual Error >50 %) has 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>

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

CATCH CHART



Commercial catch data for Hammer Octopus, provided in financial years and aligned according to end year.

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