

Yellowtail Kingfish (2018)

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STOCK STATUS OVERVIEW

| Jurisdiction | Stock | Fisheries | Stock status | Indicators |
|--|-------------------|--|--------------|--|
| Commonwealth, Queensland, New South Wales, South Australia | Eastern Australia | HSF, MSF, N/A, OTLF, RRFFF, SESSF (CTS), SESSF (GHTS) | Undefined | Catch, CPUE, size composition, fishing mortality, yield per recruit analysis, spawning potential ratio |
| Western Australia | Western Australia | GDSMF, GDSMF JASDGDMF WCDGDLIMF WCDSIMF WL (SC), JASDGDMF, WCDGDLIMF, WCDSIMF, WL (SC) | Sustainable | Catch, effort, indicator species status, risk analysis |

HSF High Seas Fishery (CTH), SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), N/A Not Applicable (NSW), OTLF Ocean Trap and Line Fishery (NSW), RRFFF Rocky Reef Fin Fish Fishery (QLD), MSF Marine Scalefish Fishery (SA), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), JASDGDMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCDGDLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA), WL (SC) Open Access in the South Coast (WA), GDSMF || JASDGDMF || WCDGDLIMF || WCDSIMF || WL (SC) Various Fisheries combined due to 3 boat rule (WA)

STOCK STRUCTURE

Yellowtail Kingfish are a highly mobile pelagic species with a widespread distribution extending throughout temperate waters of the Atlantic, Pacific and Indian Oceans [Nugroho et al. 2001]. In Australian waters, the species occurs along the entire southern seaboard of the continent from North Island in southern Queensland (10°S) to Trigg Island in Western Australia (32°S) including the east coast of Tasmania, and around Lord Howe and Norfolk Islands [Love and Langenkamp 2003] where they inhabit rocky reefs and adjacent areas in coastal waters to

depths of more than 300 m [Stewart and Hughes 2008].

Genetic analyses have shown the population in Western Australia to be genetically distinct from the Yellowtail Kingfish found on the eastern (New South Wales) and southern/central (Victoria, South Australia) Australian coasts or New Zealand waters [Miller et al. 2011]. These findings confirm results from previous analyses that found no evidence of genetic differentiation between New Zealand and New South Wales Yellowtail Kingfish [Smith et al. 1991] and results of tagging studies which show that Yellowtail Kingfish undergo movements between Australia and New Zealand [Gillanders et al. 2001].

Here, assessment of stock status is presented at the genetically-determined biological stock level—Eastern Australia and Western Australia.

STOCK STATUS

Eastern Australia

Yellowtail Kingfish are caught in Queensland, New South Wales and South Australian waters, as well as in the Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF). The stock status presented here for the entire biological stock considers evidence from the four jurisdictions.

Catch in Commonwealth Trawl and Gillnet, Hook and Trap sectors of the SESSF was 9 t in 2017. Vessels operating on the high seas also catch the species, with 35 t reported in logbooks in the South Pacific Regional Fisheries Management Organisation Convention Area in 2017. There have been no stock assessments undertaken for Yellowtail Kingfish in Commonwealth fisheries. There is therefore insufficient information available to confidently classify the status of the part of the stock that occurs in Commonwealth waters.

Reported catch from the Queensland fishery is relatively minor, ranging from 3–14 t per year over the period from 2004–17. Recreational and charter catch was estimated to be less than 10 t. There are no current estimates for indigenous harvest. There is therefore insufficient information available to confidently classify the status of part of the stock that occurs in Queensland waters.

In South Australia, Yellowtail Kingfish is considered a species of low–medium value and makes a minor contribution to the total production value of South Australia's commercial multispecies, multi-gear and multi-sectoral Marine Scalefish Fishery. Historically, the commercial catch of Yellowtail Kingfish has rarely exceeded 2 t per annum, with the majority being incidentally retained as by-product from the hauling net sector. Only a few commercial fishers have reported targeting the species using handlines and have typically landed negligible and inconsistent quantities. The State-wide recreational catch of Yellowtail Kingfish, however, is substantial, with the past three phone-diary surveys estimating increasing annual catches from 61.6 t in 2000–01 [Henry and Lyle 2003], to 100.58 t in 2007–08 [Jones 2009] and 198.98 t in 2013–14 [Giri and Hall 2015]. Despite the size of this recreational harvest, there have been no stock assessments undertaken for Yellowtail Kingfish in South Australia. There is therefore insufficient information available to confidently classify the status of the part of the stock that occurs in South Australia's waters.

Commercial landings of Yellowtail Kingfish in New South Wales have declined from an average of approximately 550 t per year in the period 1983–84 to 1989–90, to an average of approximately 150 t per year since the mid-1990s. In recent history, a continuous decline in landings has been recorded from 266 t in 2009–10 to 66–t in 2016–17, the lowest recorded harvest for the species. Commercial catch rates (median kg per day line fishing) have decreased substantially from 22 kg per day in 2009 to 9 kg per day in 2017. Standardised catch per unit effort (in days) for handlining (the main commercial method landing Yellowtail Kingfish in New South Wales) showed a similar trend over the same reporting period [NSW DPI unpublished]. The recreational catch for Yellowtail Kingfish was estimated to be 144 t in 2000–01 [Henry and Lyle 2003] and has declined to 120 t in 2013–14, which was associated with a reduction in

overall numbers of anglers participating, but no significant change in catch rates [West et al. 2015].

Fishing mortality has been consistently estimated to be several times greater than natural mortality since 1998 [NSW DPI unpublished]. High rates (around 12–15 per cent) of recaptures of tagged fish suggest ongoing high levels of exploitation [NSW DPI unpublished]. Yellowtail Kingfish in New South Wales are harvested at an average size that is considerably smaller than the size that would produce the maximum yield per recruit (“growth overfished”) [NSW DPI unpublished]. For more than 10 years, the spawning potential ratio (SPR) for Yellowtail Kingfish has been consistently estimated to be below the limit reference point of 20 per cent indicating that there may be a high risk of recruitment failure [Goodyear 1993, Mace and Sissenwine 1993] and is currently estimated to be between 2 and 14 per cent [NSW DPI unpublished]. This SPR estimate (< 20 per cent virgin level) also infers low spawning stock biomass. The size composition of fish in commercial landings since the early-2000s is indicative of a heavily fished stock (around 90 per cent of catch is less than 850 mm, the approximate size at maturity for female Yellowtail Kingfish in New South Wales [Gillanders et al. 1999]). The New South Wales Yellowtail Kingfish fishery continues to be based largely on juveniles and the size composition in commercial landings has remained in a relatively stable, but truncated state since the 1990s, except for the effect of increasing the minimum legal length in 2007 [NSW DPI unpublished]. The above evidence indicates that the biomass of the part of the stock that occurs in New South Wales waters is likely to be depleted and that recruitment is likely to be impaired. The above evidence indicates that current fishing mortality levels are expected to prevent the New South Wales part of the stock recovering from a recruitment impaired state.

The above assessment is based on the New South Wales commercial Yellowtail Kingfish catch, which is taken from a relatively small part of the distribution of the Eastern Australia biological stock and represents only 15 per cent of the total landings from the stock. In addition, movement patterns and stock demographics of Yellowtail Kingfish in south-eastern Australia are poorly understood, resulting in large uncertainty as to whether the New South Wales assessment can be used as a representative assessment of the entire biological stock. Further monitoring is therefore required to address this uncertainty. As a result, there is insufficient information available to confidently classify the overall status of entire Eastern Australia biological stock.

On the basis of the evidence provided above, this biological stock is classified as an **undefined stock**

Western Australia

In Western Australia, Yellowtail Kingfish makes up a very minor component of commercial and recreational catches. Commercially, catches of Yellowtail Kingfish have been less than 1 tonne (t) for any of the fishery sectors and total commercial catches for all fisheries have been less than 3 t per year since 1999. Boat-based recreational catches of Yellowtail Kingfish have not exceeded 7.5 t per year. Shore-based catches are unknown. Yellowtail Kingfish are not targeted to any great extent by any sector and there is no evidence that catches have fluctuated greatly through time as a result of fishing.

In Western Australia, all species of fish are allocated to a suite for monitoring and assessment purposes. Yellowtail Kingfish are part of the large pelagic resource in Western Australia, which uses Spanish Mackerel, Grey Mackerel and Samsonfish as indicator species [Department of Fisheries Western Australia 2011]. As the status of each of these indicator stocks is sustainable, then this implies that the Yellowtail Kingfish stock is also sustainable.

In addition, Western Australia uses a weight of evidence approach for all assessments. For the case of Yellowtail Kingfish the lines of evidence included: catch, catch distribution, effort levels, vulnerability (Productivity Susceptibility

Assessment) and stock reduction analyses (Catch-MSY) [Froese et al. 2016].

The current risk level for the Yellowtail Kingfish stock was estimated to be “Medium”. The current status of the Yellowtail Kingfish stock in Western Australia is “Acceptable-Sustainable”, with no new management required. Catch-MSY forward projections [Froese et al. 2016] indicate an increasing trend in biomass under current management arrangements. Furthermore, the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

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

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

BIOLOGY

Yellowtail Kingfish biology [Stewart et al. 2001, Stewart and Hughes 2008]

| Species | Longevity / Maximum Size | Maturity (50 per cent) |
|---------------------|--------------------------|----------------------------|
| Yellowtail Kingfish | 20+ years, 1900 mm FL | 5–10 years, 800–1250 mm FL |

DISTRIBUTION



Distribution of reported commercial catch of Yellowtail Kingfish

TABLES

| Commercial Catch Methods | Commonwealth | New South Wales | Queensland | South Australia | Western Australia |
|--------------------------|--------------|-----------------|------------|-----------------|-------------------|
| Beach Seine | | | | | ✓ |
| Danish Seine | ✓ | | | | |
| Demersal Gillnet | ✓ | | | | |

| | | | | | |
|---------------------------------------|---|---|---|---|---|
| Demersal Longline | ✓ | | | | |
| Demersal Pair Trawl | ✓ | | | | |
| Dropline | ✓ | ✓ | | | ✓ |
| Gillnet | | | | | ✓ |
| Hand Line, Hand Reel or Powered Reels | | | | | ✓ |
| Handline (mechanised) | ✓ | | | | |
| Hook and Line | | ✓ | ✓ | | ✓ |
| Longline (Unspecified) | | | | | ✓ |
| Midwater Trawl | ✓ | | | | |
| N/A | | | ✓ | | |
| Otter Trawl | ✓ | | | | |
| Purse Seine | | | | | ✓ |
| Trolling | | ✓ | | | ✓ |
| Unspecified | | ✓ | | ✓ | ✓ |

| Fishing methods | | | | | |
|---------------------------------------|--------------|-----------------|------------|-----------------|-------------------|
| | Commonwealth | New South Wales | Queensland | South Australia | Western Australia |
| Commercial | | | | | |
| Demersal Gillnet | ✓ | | | | |
| Demersal Longline | ✓ | | | | |
| Dropline | ✓ | ✓ | | | ✓ |
| Gillnet | | | | | ✓ |
| Hand Line, Hand Reel or Powered Reels | | | | | ✓ |
| Handline (mechanised) | ✓ | | | | |
| Hook and Line | | ✓ | ✓ | | ✓ |
| Otter Trawl | ✓ | | | | |
| Trolling | | ✓ | | | ✓ |
| Unspecified | | ✓ | | ✓ | ✓ |

| Management Methods | | | | | |
|--------------------|--------------|-----------------|------------|-----------------|-------------------|
| | Commonwealth | New South Wales | Queensland | South Australia | Western Australia |
| Charter | | | | | |
| Bag limits | | ✓ | ✓ | | |
| Gear | | ✓ | ✓ | | |

| | | | | | |
|---|---|-------------------------------|-------------------|------------------------|---|
| restrictions | | | | | |
| Licence | | ✓ | | | ✓ |
| Limited entry | | | | | ✓ |
| Passenger restrictions | | | | | ✓ |
| Possession limit | | ✓ | ✓ | | |
| Size limit | | ✓ | ✓ | | ✓ |
| Spatial closures | | ✓ | ✓ | | ✓ |
| Commercial | | | | | |
| Limited entry | ✓ | ✓ | ✓ | ✓ | ✓ |
| Size limit | | ✓ | ✓ | | ✓ |
| Spatial closures | | ✓ | ✓ | | ✓ |
| Vessel restrictions | | ✓ | ✓ | | ✓ |
| Indigenous | | | | | |
| Bag limits | | ✓ | | | |
| Native Title | | ✓ | | | |
| Section 37 (1d)(3)(9), Aboriginal cultural fishing authority | | ✓ | | | |
| Recreational | | | | | |
| Bag limits | | ✓ | ✓ | | ✓ |
| Gear restrictions | | ✓ | ✓ | | |
| Licence | | ✓ | | | ✓ |
| Possession limit | | ✓ | ✓ | | ✓ |
| Size limit | | ✓ | ✓ | ✓ | ✓ |
| Spatial closures | | ✓ | ✓ | | ✓ |
| Active Vessels | | | | | |
| | Commonwealth | New South Wales | Queensland | South Australia | Western Australia |
| | 2 Vessels in HSF, 8 Vessels in SESSF (CTS), 19 Vessels in SESSF (GHTS), | 117 Fishing Business in OTLF, | 75 in RRFFF, | 13 Licences in MSF, | 3 in GDSMF, 3 in JASDGDMF, <3 in WCDGDLIMF, 11 in WCDSIMF, 13 in WL (SC), 18 in Charter, |

HSF High Seas Fishery(CTH)

SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector)(CTH)

SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector)(CTH)

OTLF Ocean Trap and Line Fishery(NSW)

RRFFF Rocky Reef Fin Fish Fishery(QLD)

MSF Marine Scalefish Fishery(SA)

GDSMF Gascoyne Demersal Scalefish Managed Fishery(WA)

JASDGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2)(WA)

WCDGDLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery(WA)

WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery(WA)

WL (SC) Open Access in the South Coast(WA)

Charter Tour Operator(WA)

| Catch | Commonwealth | New South Wales | Queensland | South Australia | Western Australia |
|---------------------|--|-------------------------------------|-----------------|---------------------------------------|---|
| Charter | | | | | 0.47 t |
| Commercial | 36.1574t in HSF, 7.0755t in SESSF (CTS), 2.06688t in SESSF (GHTS), | 4.492t in N/A, 61.977t in OTLF, | 6.17t in RRFFF, | 2.07184t in MSF, | 2.2907t in GDSMF JASDGDLMF WCDGDLIMF WCDSIMF WL (SC), |
| Indigenous | Unknown | Unknown | Unknown | Unknown | Unknown |
| Recreational | Unknown | 120 t in 2013–14 [West et al. 2015] | 9 t in 2013–14 | 199 t in 2013–14 [Giri and Hall 2015] | 7.5 (± 1.4) t |

HSF High Seas Fishery (CTH), SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), N/A Not Applicable (NSW), OTLF Ocean Trap and Line Fishery (NSW), RRFFF Rocky Reef Fin Fish Fishery (QLD), MSF Marine Scalefish Fishery (SA), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), JASDGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCDGDLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA), WL (SC) Open Access in the South Coast (WA), GDSMF || JASDGDLMF || WCDGDLIMF || WCDSIMF || WL (SC) Various Fisheries combined due to 3 boat rule (WA),

Commonwealth – Recreational The Commonwealth Government does not manage recreational fishing. Recreational fishing in Commonwealth waters is managed by the states or territory immediately adjacent to those waters, under their management regulations.

Commonwealth – Indigenous The Commonwealth Government does not manage non-commercial Indigenous fishing (with the exception of the Torres Strait). In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the states or territory immediately adjacent to those waters. In the Torres Strait both commercial and non-commercial Indigenous fishing is managed by the Torres Strait Protected Zone Joint Authority (PZJA) through the Australian Fisheries Management Authority (Commonwealth), Department of Agriculture Fisheries and Forestry (Queensland) and the Torres Strait Regional Authority. The PZJA also manages non-Indigenous commercial fishing in the Torres Strait.

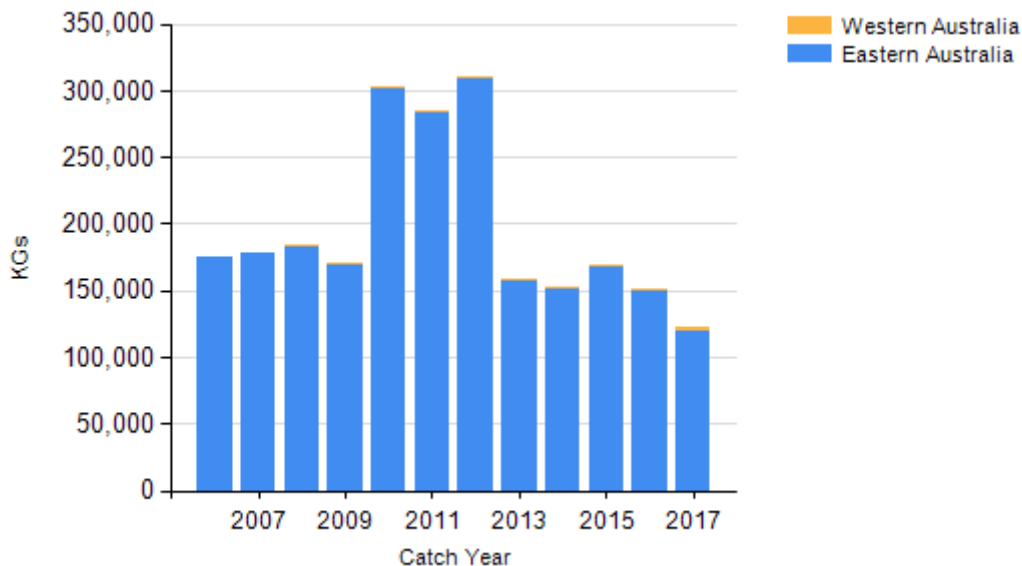
Western Australia – Recreational (a) In Western Australia, a recreational fishing from boat licence is required to take finfish from a powered vessel; and (b) (catch) Western Australia boat-based recreational catch from 1 September 2015–30 November 2016 [Ryan et al. 2017]. Shore based catches are largely unknown.

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 bag limits and seasonal closures do not apply to

Indigenous fishers. Further exemptions to fishery regulations can be obtained through permits.

New South Wales – Indigenous (management method) (a) Aboriginal fishing interim compliance policy (increased bag limits) - allows an Aboriginal 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; (b) Aboriginal cultural fishing authority - the authority that Indigenous persons can apply for to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), Section 37 (1)(c1), Aboriginal cultural fishing authority; and (c) 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.

CATCH CHART



Commercial catch of Yellowtail Kingfish - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Yellowtail Kingfish

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|------------|--|
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