

CORAL TROUTS (2016)

Plectropomus spp. & Variola spp.



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth	Torres Strait Finfish Fishery	TSFF	Sustainable	Management strategy evaluation
Western Australia	Western Australia	GDSMF, NDSMF, PLF, PTMF, PFTIMF, WCDSIMF	Sustainable	Catch
Northern Territory	Northern Territory	CLF, FTO	Sustainable	Catch, <u>SAFE</u> assessment
Queensland	Coral Reef Fin Fish Fishery	CRFFF	Sustainable	Quantitative Stock Assessment, catch
Queensland	Gulf of Carpentaria	DFFTF, GOCLF	Undefined	Catch,

TSFF Torres Strait Finfish Fishery (CTH), CLF Coastal Line Fishery (NT), FTO Fishery Tour Operator (NT), CRFFF Coral Reef Fin Fish Fishery (QLD), DFFTF Developmental Fin Fish Trawl Fishery (QLD), GOCLF Gulf of Carpentaria Line Fishery (QLD), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), NDSMF Northern Demersal Scalefish Managed Fishery (WA), PLF Pilbara Line Fishery (WA), PTMF, PFTIMF Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA)

STOCK STRUCTURE

The Coral Trout species complex, part of the family Serranidae, is found throughout Australia and is comprised of: Common Coral Trout (*Plectropomus leopardus*), Barcheek Coral Trout (*P. maculatus*), Bluespotted Coral Trout (*P. laevis*), Passionfruit Coral Trout (*P. areolatus*), Yellow-edge Coronation Trout (*Variola louti*) and White-edge Coronation Trout (*V. albimarginata*), with the Bluespotted Coral Trout and Passionfruit Coral Trout not being found in Western Australia and Northern Territory. The biological stock structures of these

species are spatially complex[1–4] and remain uncertain.

Here, assessment of stock status for this multispecies group is presented at the management unit level—Torres Strait Finfish Fishery (Commonwealth); Coral Reef Fin Fish Fishery and Gulf of Carpentaria (Queensland); and at the jurisdictional level—Western Australia and Northern Territory.

STOCK STATUS

Coral Reef Fin Fish Fishery Common Coral Trout dominates catches in the Coral Reef Fin Fish Fishery (Queensland)[10]. The most recent stock assessment of Common Coral Trout conducted in 2014[10] estimated that the biomass in 2012 was 60 per cent of the unfished (1962) level. The stock is not considered to be recruitment overfished.

The 2014 stock assessment[10] estimated that current catch levels are lower than the estimated maximum sustainable yield for the stock. In 2014, decision rules were introduced for the commercial fishery that set the total allowable commercial catch (TACC) at a maximum economic yield target of 68 per cent of unfished biomass, in order to increase resilience of the stock, and the sustainability of the fishery. Over the past two fishing seasons, the TACC has been reduced by 371 t as a result of applying the decision rules. This level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

On the basis of the evidence provided above, the multispecies Coral Reef Fin Fish Fishery (Queensland) management unit is classified as a **sustainable stock**.

Gulf of Carpentaria Coral Trout is not a target species in Queensland-managed commercial fisheries in the Gulf of Carpentaria. They are taken as by-product in the Developmental Fin Fish Trawl Fishery (Queensland) and Gulf of Carpentaria Line Fishery (Queensland), but only small catches are reported. Coral Trout is a popular recreational species for Gulf of Carpentaria residents and visiting fishers, but estimates of the recreational catch for Coral Trout in this region are uncertain due to the small sample size in the Gulf of Carpentaria. There is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the multispecies Gulf of Carpentaria (Queensland) management unit is classified as an **undefined stock**.

Northern Territory Only small catches are reported from the Fishing Tour Operator sector, Coastal Line Fishery, Demersal Fishery and Timor Reef Fishery. Because Coral Trout are only an incidental catch in these fisheries and are rarely caught by recreational fishers[9], a semi-quantitative sustainable assessment for fishing effects model[9] was used to assess the fishing mortality rate on this species, using data up to 2015. The model results indicated that there is a low risk of Coral Trout being overfished at current levels of harvest, as there is a very low overlap of the fisheries activity and the distribution of Coral Trout in Northern Territory waters. The above evidence indicates that the biomass of this stock is unlikely to

be recruitment overfished; and that 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 Coral Trout species group in the Northern Territory is classified as a **sustainable stock**.

**Torres
Strait
Finfish
Fishery**

No formal stock assessment has been conducted in the Torres Strait Finfish Fishery (Commonwealth) (TSFF), but a management strategy evaluation (MSE) incorporating a population model using biological parameters from Common Coral Trout (*P. leopardus*) [5,6] explored a range of alternative management options, including four constant annual catch scenarios ranging from 80–170 tonnes (t). *Plectropomus leopardus* biological parameters were used because it is the most abundant species in the commercial catch of Torres Strait. The biomass [7] in 2014 was estimated to be more than 60 per cent of assumed unfished level, and all catch scenarios achieved a biomass of at least 70 per cent of the unfished level, by 2025. Annual catches in the TSFF have declined since 2004, to levels well below the lowest annual catch level simulated in the MSE.

The above evidence indicates that the biomass of this management unit stock is unlikely to be recruitment overfished [6]. The lower level of harvest in recent years is unlikely to cause the management unit to become recruitment overfished [6].

On the basis of the evidence provided above, the multispecies Torres Strait Finfish Fishery (Commonwealth) management unit is classified as a **sustainable stock**.

**Western
Australia**

Coral Trout is not a target species in the demersal fisheries of Western Australia, but is landed as by-product. Coral Trout are landed in many of the demersal fisheries of Western Australia. For example, they are a component of the Pilbara Trap Managed Fishery (PTMF), Pilbara Fish Trawl Interim Managed Fishery (PTIMF), Pilbara Line Fishery (PLF) and the Northern Demersal Scalefish Managed Fishery (NDSMF; in the Kimberley region of Western Australia). Coral Trout are therefore assessed on the basis of the status of several indicator species (for example, Red Emperor—*Lutjanus sebae* and Goldband Snapper—*Pristipomoides multidens* in the Kimberley region) that represent the inshore demersal suite of species occurring at depths of 30–250 m. The major performance measures for these indicator species are estimates of spawning stock levels. The target level of spawning biomass is 40 per cent of the unfished level. The limit level is 30 per cent of the estimate of initial spawning biomass. As an example, indicator species assessments using an integrated age structured model determined that the spawning biomass levels of each of the indicator species were greater than 40 per cent of the unfished level in the PTMF, PFTIMF and PLF in 2007 [8]. Furthermore, the spawning biomass levels of the indicator species were either greater than the target level or between the target level and the threshold level in the NDSMF in 2014 [8]. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Only small catches of Barcheek Coral Trout and Common Coral Trout are reported, with very small catches of Yellow-edge Coronation Trout and White-edge Coronation Trout [8]. The total commercial catch of all species within the Coral Trout complex in Western Australia in 2015 was 22 t. The catches of Coral

Trout are low and variable throughout their range in Western Australia. Coral Trout are landed by recreational and charter fishers, with the total estimated recreational catch (23 t) being similar to the total landed commercial catch. Given the low level of overall landings (55 t) of all species of Coral Trout, across multiple fisheries in Western Australia, it is unlikely that any one species is recruitment overfished, or that the level of fishing mortality is likely to cause any species in the Coral Trout complex in Western Australia to become recruitment overfished. 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.

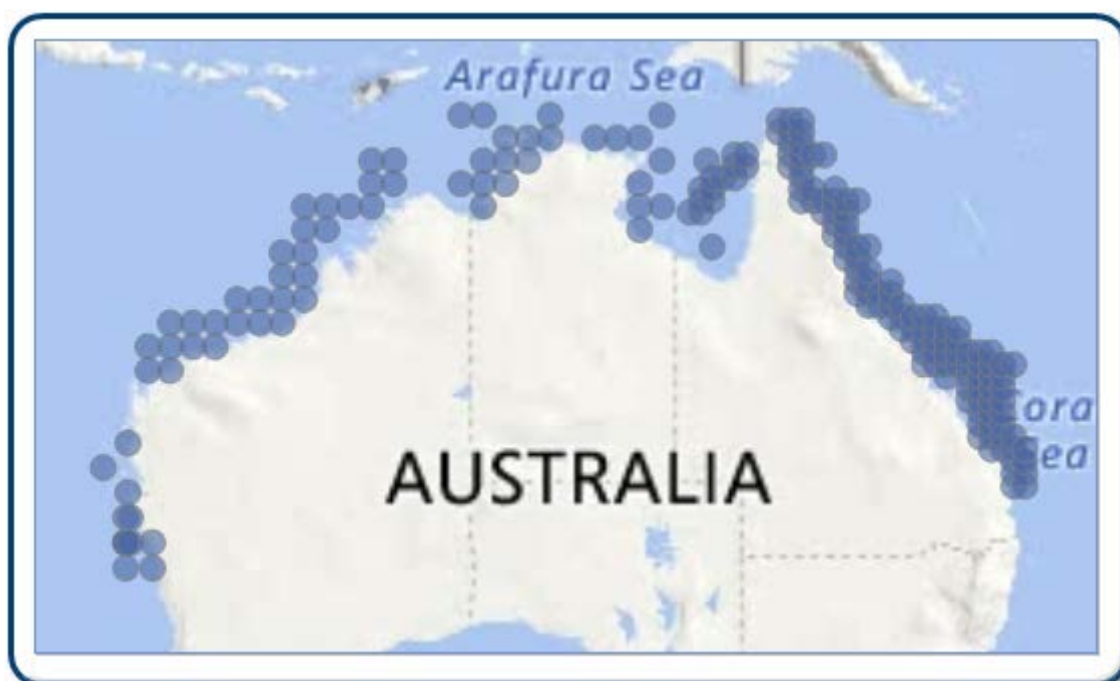
On the basis of the evidence provided above, the Coral Trout species group in Western Australia is classified as a **sustainable stock**.

BIOLOGY

Coral Trout biology[11–18]

Species	Longevity / Maximum Size	Maturity (50 per cent)
CORAL TROUTS	Plectropomus leopardus: 17 years; ~650 mm <u>FL</u> P. maculatus: 13 years; ~650 mm <u>FL</u> P. laevis: 16 years; ~1150 mm <u>FL</u> P. areolatus: 14 years; ~650 mm <u>FL</u> Variola louti: 7 years; ~520 mm <u>FL</u> V. albimarginata: 12 years; ~380 mm <u>FL</u>	All species are protogynous hermaphrodites (individuals are born female and later become male). Size at maturity and sex change also vary by location. P. leopardus: female ~280 mm <u>FL</u> , male ~500 mm <u>FL</u> P. maculatus: female ~300 mm <u>FL</u> , male ~440 mm <u>FL</u> P. laevis: female ~450 mm <u>FL</u> , male ~870 mm <u>FL</u> P. areolatus: female ~370 mm <u>FL</u> , male ~550 mm <u>FL</u> V. louti: Unknown V. albimarginata: Unknown

DISTRIBUTION



Distribution of reported commercial catch of Coral Trout

TABLES

Commercial Catch Methods	Commonwealth	Northern Territory	Queensland	Western Australia
Line	✓	✓	✓	
Otter Trawl		✓	✓	
Unspecified		✓		
Various				✓

Fishing methods	Commonwealth	Northern Territory	Queensland	Western Australia
Commercial				
Line	✓	✓	✓	
Otter Trawl			✓	
Various				✓
Indigenous				
Hand Line, Hand Reel or Powered Reels		✓	✓	✓
Spearfishing		✓	✓	✓
Recreational				
Hand Line, Hand Reel or Powered Reels		✓	✓	✓
Spearfishing		✓	✓	✓
Unspecified		✓		

Management Methods	Commonwealth	Northern Territory	Queensland	Western Australia
Commercial				
Catch restrictions	✓		✓	✓
Gear restrictions	✓	✓	✓	✓
Limited entry	✓	✓	✓	✓
Size limit	✓		✓	✓
Spatial closures	✓	✓	✓	✓
Spatial zoning		✓		

Temporal closures				✓
Total allowable catch		✓		
Total allowable effort		✓		
Vessel restrictions	✓	✓	✓	✓
Indigenous				
Laws of general application		✓		
Spatial closures			✓	
Recreational				
Bag limits		✓		
Gear restrictions		✓	✓	✓
Licence		✓	✓	✓
Limited entry		✓	✓	
Passenger restrictions		✓	✓	
Possession limit		✓	✓	✓
Size limit		✓		✓
Spatial closures		✓	✓	✓
Spatial zoning		✓		
Temporal closures				✓

Active Vessels	Commonwealth	Northern Territory	Queensland	Western Australia
	2 Vessel in TSFF,	24 license in CLF, 9 Vessel in CLF, 8 Vessel in TRF,	190 License in CRFFF, 1 License in DFFTF, 1 License in GOCLF,	16 Vessel in GDSMF, 8 Vessel in NDSMF, 6 Vessel in PLF, 37 Vessel in WCDSCMF,

TSFF Torres Strait Finfish Fishery(CTH)

CLF Coastal Line Fishery(NT)

TRF Timor Reef Fishery(NT)

CRFFF Coral Reef Fin Fish Fishery(QLD)

DFFTF Developmental Fin Fish Trawl Fishery(QLD)

GOCLF Gulf of Carpentaria Line Fishery (QLD)

GDSMF Gascoyne Demersal Scalefish Managed Fishery(WA)

NDSMF Northern Demersal Scalefish Managed Fishery(WA)

PLF Pilbara Line Fishery(WA)

WCDSMF West Coast Deep Sea Crustacean Managed Fishery(WA)

Catch				
	Commonwealth	Northern Territory	Queensland	Western Australia
Commercial	18.012t in TSFF,	0.200833t in CLF, 1.356t in FTO,	753.603t in CRFFF, 0.76t in DFFTF, 0.0375t in GOCLF,	0.0688t in GDSMF, 3.66813t in NDSMF, 0.319t in PLF, 2.50142t in WCDSMF,
Indigenous		Negligible	Unknown	Unknown
Recreational		2.8 t (2010), 0.9 t in FTO (2012)	57 t	6.87 t

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a Commonwealth Data provided for the Commonwealth and Queensland align with the 2014–15 financial year.

b Western Australia and Northern Territory Data provided for Western Australia and the Northern Territory align with the 2015 calendar year.

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

d Commonwealth – Indigenous The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters (with the exception of the Torres Strait). In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state 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), the 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.

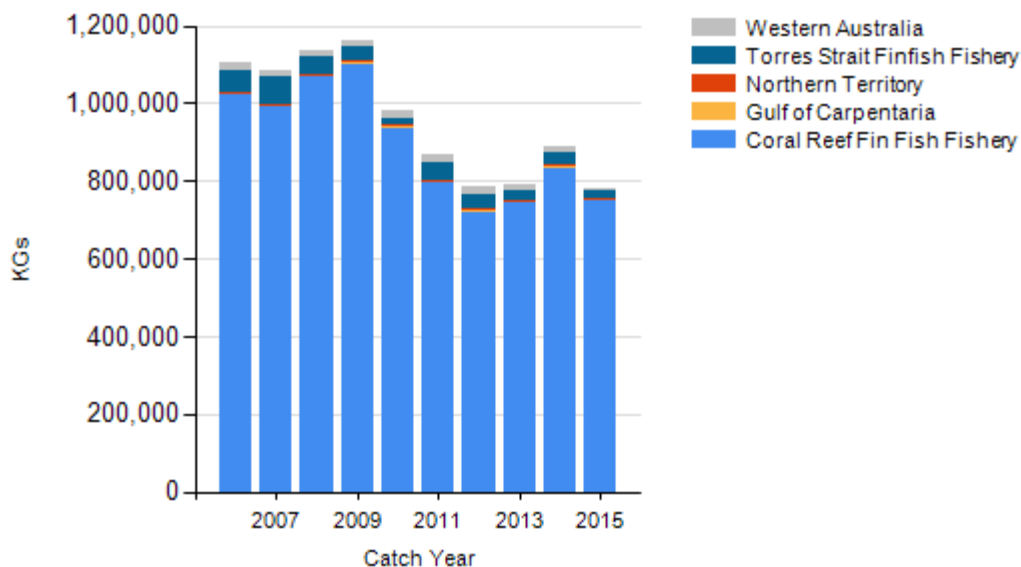
e Queensland – Indigenous Under the Fisheries Act 1994 (Qld), Indigenous fishers in Queensland are able to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and possession limits, and seasonal closures do not apply to Indigenous fishers. Further exemptions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

f Queensland – Indigenous (management methods) Subject to the defence that applies under Section 211 of the Native Title Act 1993 (Cth), and the exemption from a requirement to hold a recreational fishing licence, the non-commercial take by indigenous fishers is covered by the same arrangements as that for recreational fishing.

g Western Australia – Commercial (management methods) In Western Australia, different zones within fisheries may have different effort allocations.

h Western Australia – Recreational (Catch) Boat-based recreational catch from 1 May 2013–30 April 2014.

CATCH CHART



Commercial catch of Coral Trout - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- There were no reported interactions with protected species by the Torres Strait Finfish Fishery (Commonwealth) in 2014, or the Coral Reef Fin Fish Fishery (Queensland) (CRFFF) in the 2012–13 fishing season, indicating that the impact of these fisheries on protected species is low.
- Line fishing for Coral Trout is likely to have little direct effect on the marine environment[20]. However, there is evidence that the removal of predators (including Coral Trout) can lead to an increase in the abundance of their prey species, which is indicative of food web changes[20]. The impacts of this are unknown.
- During the 2014–15 fishing seasons, the CRFFF reported minimal interactions with protected species. The following species: Barramundi Cod and Humphead Maori Wrasse, were identified, but overall the impact on protected species is low.
- Commercial trawl gear used in the Northern Territory has the potential to impact on the benthic habitat. However, trawl nets in the Northern Territory have been designed to fish off the seabed, reducing interaction with benthic habitats[21]. The trawl fishery in the Northern Territory comprises a very small fleet and only fishes about seven per cent of the available area[21].

ENVIRONMENTAL EFFECTS on CORAL TROUTS

- The most recent Queensland Coral Trout stock assessment[10] notes the impact of cyclones on reducing Coral Trout catch rates. A 2010 study[22] reported on the effects of three tropical cyclones on the Coral Reef Fin Fish Fishery (Queensland) industry, including a decrease in Coral Trout catch rates of around one-third in regions with the most structural reef damage. The destruction, scouring and displacement of reef habitat were significant and widespread across large areas of the reef. In addition to the structural reef damage, commercial fishers reported reduced catch rates of all species throughout the directly impacted areas[22]. The analysis identifies depressed catch rates for 12–24 months in affected areas following cyclones.

- Climate change impacts are a concern for coral reef ecosystems. Climate change has been linked to changes in ocean chemistry, and increases in the frequency and extent of coral bleaching events[23]. These events can also affect the replenishment rates of coral reef fin fish populations, individual growth rates[24] and spawning output[25,26] and may influence the geographic distribution of coral reef species (for example, latitudinal shifts in distribution).

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