Stock status summary

The fishery scientific assessment summarised in this report and considered adequate to meet the legislative requirements for supporting a total allowable catch (TAC) determination for the NSW Bigeye Ocean Perch is that done by the CSIRO, commissioned by the Australian Fisheries Management Authority (AFMA) and published as 'Bigeye Ocean Perch' in the 'Ocean Perch (*Helicolenus barathri*, *H. percoides*)' section of the Fishery Status Reports by the Australian Bureau of Agricultural and Resource Economics and Sciences (Patterson et al. 2017; hereinafter referred to as the Commonwealth assessment).

The structure of this stock status summary is consistent with a format to inform a species status determination against criteria for the Status of Australian Fish Stocks (SAFS; www.fish.gov.au/). It does not attempt to replicate the detail of the Commonwealth assessment but sources and cites key information from that assessment. Where data are unavailable or considered insufficient to reliably inform the SAFS criteria the summary has been populated with 'NA', rather than removing the criteria. This format has been maintained to transparently represent the data available and highlight areas where supplementary information, alternate data sources or analyses may be required to improve the assessment and determination of species status into the future.

Biology and stock structure

Ocean Perch are lecithotrophic and viviparous, meaning that egg fertilization and larval development occur inside the female fish. The larvae are released when they reach about 1 mm in length. The Ocean Perch breeding season extends from June to November and a single female can produce between 150,000–200,000 larvae per season. Ocean Perch are ambush predators, rising quickly from the ocean floor to capture prey. Main food sources for Ocean Perch are Royal Red Prawns, squid and smaller fish. Bigeye Ocean Perch is distributed on the upper-slope of the continental slope and more commonly found in 250–800 m.

Within the Commonwealth, Ocean Perch is managed as a single stock that includes two species: the Inshore Ocean Perch (*Helicolenus percoides*) and the Offshore Ocean Perch (*H. barathri*; hereinafter referred to as Bigeye Ocean Perch). Ocean Perch stock structure is uncertain, but there is probably an east–west structuring of stocks (Morrison et al. 2013). Reef Ocean Perch and Bigeye Ocean Perch have been assessed separately in the Commonwealth since 2009, but a single all-areas Commonwealth TAC is set for the two species. Based on the depth of capture and logbook records, most of the landed Ocean Perch is considered to be Bigeye Ocean Perch (Patterson et al. 2017).

Stock status and assessment method

The Commonwealth assessment for Bigeye Ocean Perch is a Tier 4 assessment (AFMA 2017), i.e. standardised catch per unit effort (CPUE), including discards (Haddon 2013; Sporcic and Haddon 2016). The current Commonwealth assessment of Bigeye Ocean Perch classifies the stock as not overfished and not subject to overfishing (Patterson et al. 2017).

Bigeye Ocean Perch has not previously been assessed against the criteria for SAFS, although it is scheduled for SAFS assessment in 2018.

Fishery statistics summary

Fishery statistics presented in this report are restricted to those used to inform the Commonwealth assessment and are summarised here from Patterson et al. (2017) and references therein. The Commonwealth assessment of Bigeye Ocean Perch uses data from the Commonwealth Ocean Trawl Fishery within Commonwealth fishing zones 10 and 20 (south-eastern Australia) and catch records from depths from 200–700 m depth.

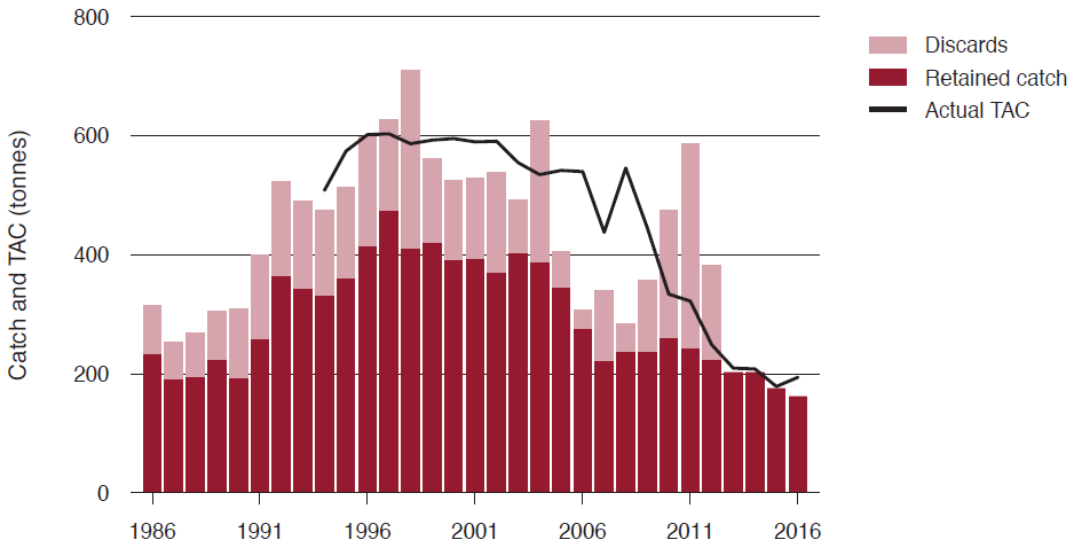
Catch information

The catch information below is summarised from Paterson et al. (2017).

Bigeye Ocean Perch has been a significant part of trawl catches since the fishery developed in the late 1960s (Morison et al. 2013). Landed catch of Ocean Perch since the 1970s has generally been between 200 and 400 t, increasing from 200 t in the 1980s to around 400 t from 1995 to 2004, before decreasing again to around 200 t from 2007 to 2014 (Figure 1). Commonwealth landed catch in the 2016/17 fishing season was 162.9 t. The weighted average discards between 2012 and 2015 were 148.72 t (Thomson and Upston 2016). Most Reef (inshore) Ocean Perch (around 95 per cent in recent years) are discarded because of their small size (Upston and Thomson 2015). Discard rates for Bigeye Ocean Perch are much lower; around 11 per cent of total catch was estimated to have been discarded in 2014 (Upston and Thomson 2015).

The multiyear TAC covering both species set by the AFMA Commission for the 2014/15 to 2016/17 fishing seasons was 195 t; however, after the 15 per cent deduction to account for the uncertainty in Tier 4 assessment methods, and deductions for state catches and discards, the multiyear TAC was reduced to 190 t. The Commonwealth landed catch in the 2016/17 fishing season was 163 t. Annual landings by NSW state fishers have been around 15–36 t since 2000 (Thomson and Upston 2016).

Catch information



Notes: TAC Total allowable catch. Data for 2013 to 2016 exclude discards and state catch.
Source: Haddon 2013a; Australian Fisheries Management Authority catch disposal records (2013 to 2016 catch data)

Figure 1 Total Ocean Perch (Reef and Bigeye) annual catches (Commonwealth Trawl Sector, Scalefish Hook Sector and state combined) and fishing season total allowable catches (TACs), 1986 to 2016 (from Patterson et al. 2017).

Recreational and Indigenous

Recreational catches have not been accounted for in the Commonwealth assessment of Ocean Perch. The inclusion of recreational catch has been raised as an issue for consideration in Commonwealth assessments (SESSF RAG 2017).

Illegal Unregulated and Unreported

The level of Illegal Unregulated and Unreported (IUU) fishing has not been quantified.

Catch rate information

Bigeye Ocean Perch standardised CPUE analyses using data to 2012 (Haddon 2013), are presented in Figures 2 and 3 below (from Patterson et al. 2017).

Text summarised from Paterson et al. (2017).

> Tier 4 standardised CPUE assessments were last updated in 2013 (Haddon 2013). The CPUE to 2012 for Bigeye Ocean Perch (Haddon 2013) indicates stability in catch rates since 1996, but a decline for two consecutive years since 2013 (Sporcic and Haddon 2016). Standardised CPUE remained above the limit reference point (Figure 2; Sporcic and Haddon 2016).

Catch rate information

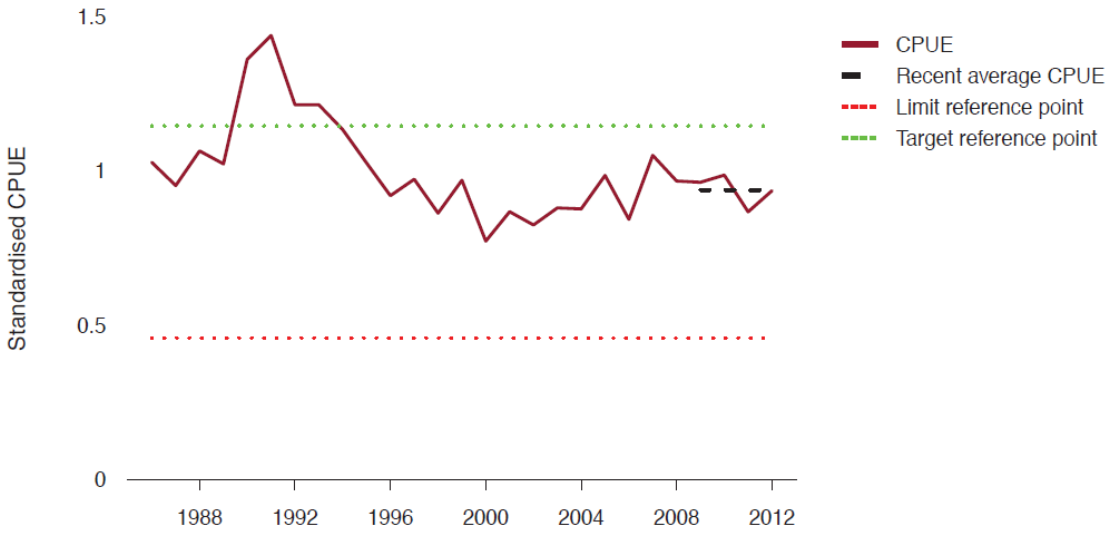


Figure 2 Standardised CPUE, including discards, for Bigeye Ocean Perch, 1986 to 2012 (Source: Haddon 2013 cited in Patterson et al. 2013).

Stock assessment methodology

Year of most recent assessment	2017 (Haddon 2013, in Patterson et al. 2017)
Assessment method	Commonwealth Tier 4, Standardised CPUE (including discards)
Main data inputs	CPUE – Commonwealth Trawl Fishery; zones 10–20; depth 200–700 m Discard rates (Thomson and Upston 2016)
Main data inputs (rank)†	CPUE – 2 (medium quality) – Haddon 2013; Sporcic and Haddon 2016) Discard rates: 2 (medium quality) – Thomson and Upston 2016
Key model structure and assumptions	Tier 4 – Standardised CPUE (Commonwealth Harvest Strategy Policy; Commonwealth of Australia 2003, 2017) *Assumptions:* • That standardised catch rates are a valid

Stock assessment methodology	
	representation of changes in stock abundance and • Can thus be used as a relative index of abundance for assessment purposes and • Are not unduly influenced by other factors not accounted for through standardisation (see Sporcic and Haddon 2016)
Sources of uncertainty evaluated	Uncertainty associated with Tier 4 assessment (see Haddon 2013; Sporcic and Haddon 2016)

† Main data inputs (rank)

1 – High quality: data have been subjected to documented quality assurance and peer review processes, are considered representative and robust and provide a high level of confidence to support fisheries management decisions.

2 – Medium quality: data have been subjected to some internal quality assurance processes, have some documented limitations, but are still considered sufficiently accurate and informative to be useful to inform management decisions with some caveats.

3 – Low quality: data have been subjected to limited or no quality assurance processes, may be compromised by unknown or documented limitations that have not been fully explored, but are considered the best available information and require a high level of precaution to be exercised when interpreted to inform management decisions.

Status indicators and limits – Reference levels	
Biomass indicator or proxy	Standardised CPUE (AFMA 2017)
Biomass limit reference level	$CPUE_{20}$ (AFMA 2017)
Fishing mortality indicator or proxy	NA Implied from Patterson et al. 2017: Catch (including discards) as a proportion of recommended biological catch (RBC) Trend in CPUE
Fishing mortality limit reference level	Implied from Patterson et al. 2017: Catch (plus discards) as a proportion of RBC is <1
Target reference level	$CPUE_{40}$ (note $CPUE_{40}$ is B_{MSY} proxy) (AFMA 2017; Haddon

Status indicators and limits – Reference levels	
	2013)

Stock Assessment Results	
Biomass status in relation to limit	**Not overfished** – standardised CPUE (biomass proxy) is above limit (Patterson et al. 2017)
Fishing mortality in relation to limit	**Not subject to overfishing** (Patterson et al. 2017)
Previous SAFS stock status	Not previously assessed
Current SAFS stock status	NA – Bigeye Ocean Perch is to be assessed in 2018, status is not yet determined

Fishery interactions

Interactions between the Commonwealth Trawl and Auto Long Lining Fisheries are described by Sporcic and Haddon (2016); declines in the Trawl sector since the mid-2000s are associated with increased catches in the Auto Long Lining sector. Concurrent with general declines in Trawl catches are increased and sustained relatively high geometric mean CPUE for the Trawl fishery (Sporcic and Haddon 2016)

The Commonwealth Trawl Fishery interacts with other commercial and non-commercial bycatch and discard marine species, a range of endangered threatened and/or protected species and marine habitats (AFMA 2014; Wayte et al. 2007).

References

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