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Commonwealth Small Pelagic Fishery: Summary Status Report 2023

Report to the Australian Fisheries Management Authority

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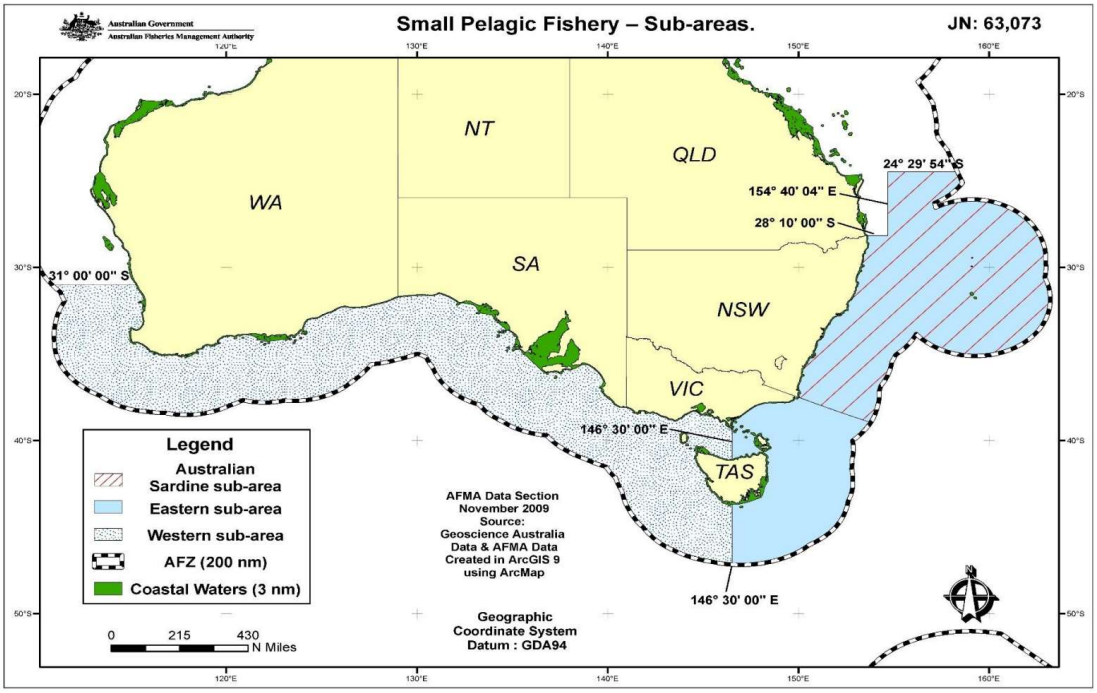
Background

This report summarises information available on the status of target species in the Commonwealth Small Pelagic Fishery (SPF) in 2022/23. The target species in the Eastern and Western sub-areas (Figure 1) are Jack Mackerel (*Trachurus declivis*), Blue Mackerel (*Scomber australasicus*) and Redbait (*Emmelichthys nitidus*). Australian Sardine (*Sardinops sagax*) is a target species in the Sardine sub-area only. Recent SPF catches have been dominated by Jack Mackerel, Blue Mackerel and Redbait taken by mid-water trawling (Figure 2) in the Eastern sub-area off southern New South Wales (NSW). Smaller quantities of Sardine and Blue Mackerel are taken by purse-seining.

Figure 1. Sub-areas of the Commonwealth Small Pelagic Fishery. Source: SPF-Harvest-Strategy_April-2017_FINAL.pdf (afma.gov.au))



The only other significant catches of SPF species in areas adjacent to the SPF are taken by purse-seine vessels targeting Sardine and Blue Mackerel in waters under the jurisdiction of New South Wales (NSW). Catches from these vessels are included in this report.

Prior to the establishment of the SPF in 2001, purse-seine vessels operating off Tasmania targeted Jack Mackerel (Kailola et al. 1993). The annual catch of the Jack Mackerel

Fishery peaked at approximately 40,000 t in 1986/87 and declined quickly to around 8,000 t in 1988/89. The fishery continued sporadically up until 2000 when purse-seine fishing off Tasmania ceased due to large inter-annual variations in catches. Rules (e.g., Total Allowable Catch (TAC), zones, input controls) established in the Jack Mackerel Fishery were maintained in the SPF up until 2008/09 when the Harvest Strategy (AFMA 2008) and Management Plan (AFMA 2009) for the SPF were implemented. Catches taken in the Jack Mackerel Fishery are not presented in this report because they are of limited relevance to the modern SPF.

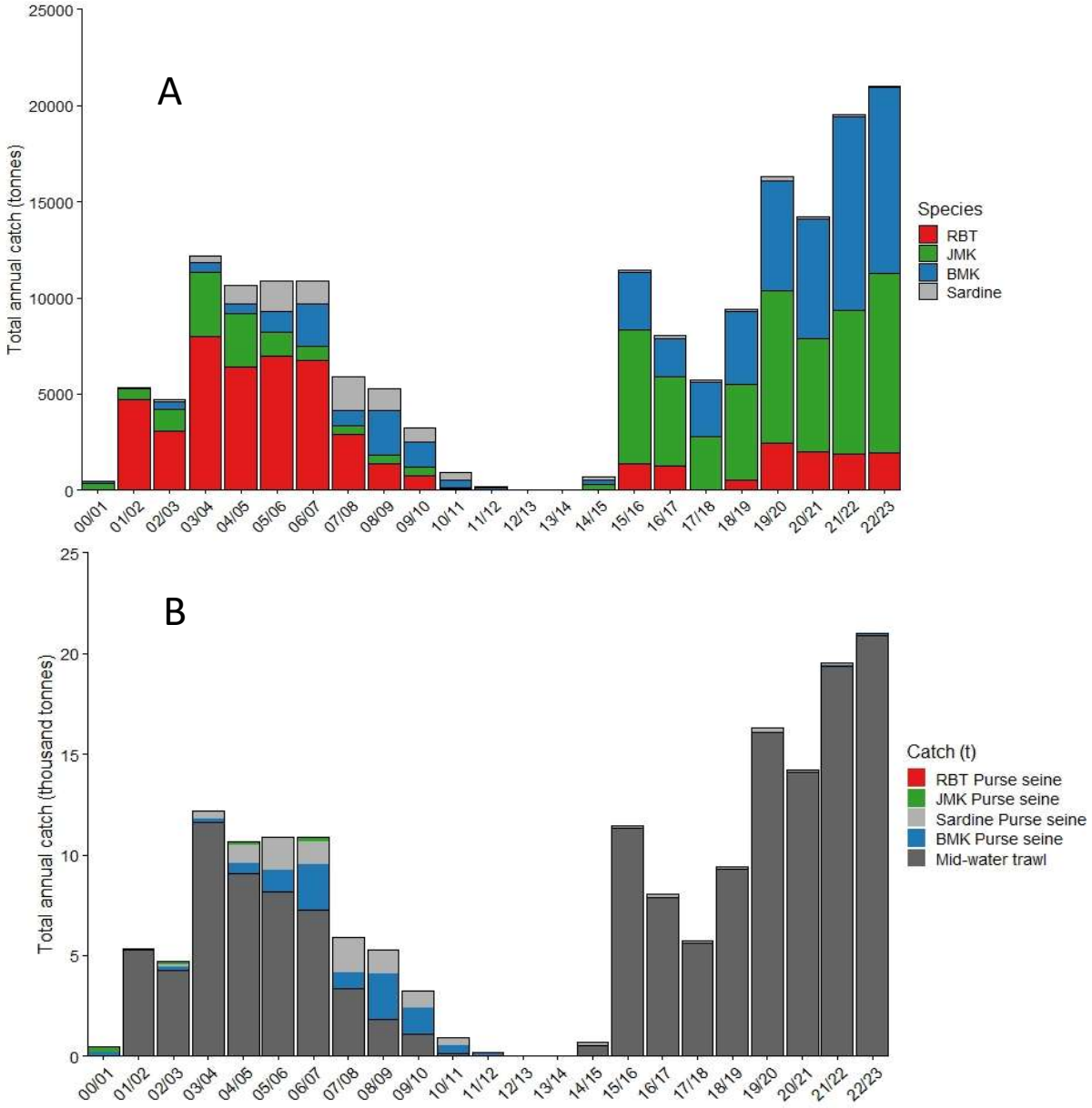
The SPF Harvest Strategy 2008 (last revised 2022) specifies that the primary technique for assessing the status of SPF species is the Daily Egg Production Method (DEPM). To retain a species in a sub-area at Tier 1, where exploitation rates are highest, the DEPM must be applied every 5 years (Table 1). Between applications of the DEPM, fishery-dependent data are analysed to identify variations in fishing patterns or catches that may be indicative of changes in stock status. The report summaries information available on target species in the SPF at the end of 2022/23 fishing season and is based on a presentation to the SPF Resource Assessment Group in December 2022. It updates the latest fishery assessment report (Grammer et al. 2022a)

Table 1. Exploitation rates and their duration at each tier in the SPF Harvest Strategy. Source: SPF-Harvest-Strategy_April-2017_FINAL.pdf (afma.gov.au))

Species	Tier 1	Tier 2	Tier 3
Jack Mackerel	12% 5 seasons	6% 10 seasons	3% Indefinite
Redbait	10% 5 seasons	5% 10 seasons	2.5 %
Blue Mackerel	15% 5 seasons	7.5% 5 seasons	3.75% Indefinite
Australian Sardine,	20% 5 seasons	10% 5 seasons	5% Indefinite

The total catch in the SPF in 2022/23 was 21,009 t, with 20,969 t taken in the Eastern sub-area (including the Sardine Sub-area) and 40 t taken in the Western Sub-area. A total of 20,901 t was taken by mid-water trawling with 108 t taken by purse-seining.

Figure 2. Annual catches by species and gear type in the Commonwealth Small Pelagic Fishery. A) Total catch by species. B) Total catch by species and gear type.



Jack Mackerel

Eastern sub-area

The total catch of Jack Mackerel in the Eastern sub-area in 2022/23 was 9,340 t, which is the highest in the history of the SPF. It was taken entirely by mid-water trawling off southern NSW. CPUE of Jack Mackerel in this operation has been relatively stable at 5-8 t.trawl hr^{-1} since it began in 2017/18. The modal size in 2022/23 was 210 mm FL, which is below the mean size at 50% maturity (~230 mm FL). The modal age was 3 years.

The spawning biomass of Jack Mackerel in the Eastern sub-area in 2019 was estimated to be 156,292 t (49,120–263,496) (Ward et al. 2020). The catch in 2022/23 was 6.0% of the spawning biomass and 49.8% of the Tier 1 TAC of 18,720 t. Jack Mackerel in the Eastern sub-area is classified as **sustainable**.

Western sub-area

The total catch of Jack Mackerel in the Western sub-area in 2022/23 was 2 t. The spawning biomass in 2016/17 was estimated to be 34,978 t (Ward et al. 2018). Recent catches negligible (e.g. 0.1% of the Tier 2 TAC of 2,099 t). Jack Mackerel in the Western sub-area is classified as **sustainable**.

Blue Mackerel

Eastern sub-area

The total catch of Blue Mackerel in the Eastern sub-area in 2022/23 was 9,814 t, including 9,586 t (98%) by SPF mid-water trawlers, and 51 t and 177 t by SPF and NSW purse-seine vessels, respectively. It is the second highest annual catch of Blue Mackerel in the history of the SPF. CPUE of Blue Mackerel by mid-water trawlers off NSW was ~5.7 t.trawl hr^{-1} in 2022/23, which is similar to the rate previously recorded in this operation, except for the high of 10 t.trawl hr^{-1} in 2021/22. The modal size in 2022/23 was 280 mm FL, which is similar to the mean size at 50% maturity (~287 mm FL). The modal age was 2 years.

The spawning biomass of Blue Mackerel in the Eastern sub-area in 2019 was estimated to be approximately 80,000 t (Ward et al. 2021). The total catch in 2022/23 was 12.0% of the spawning biomass and 84.6% of the Tier 1 TAC (11,600 t). Blue Mackerel in the Eastern sub-area is classified as **sustainable**.

Western sub-area

There was total catch of Blue Mackerel in the Western sub-area of the SPF in 2022/23 was 13t. The spawning biomass in 2006 was estimated to be 86,500 t (Ward et al. 2009). Recent catches have been negligible (e.g. 0.4% of the Tier 3 TAC 3,240 t). Blue Mackerel in the Western sub-area is classified as **sustainable**.

Redbait

Eastern sub-area

The total catch of Redbait in the Eastern sub-area of the SPF in 2022/23 was 1,921 t, well below the 7,733 t taken off Tasmania in 2003/04. CPUE of Redbait by trawlers of NSW has been relatively stable at 1.7-3.5 t.trawl hr^{-1} since 2018/19 t. The modal size in 2022/23 was 190 mm FL which is above the mean size at 50% maturity of ~157 mm FL for females and 147 mm FL for males (Grammer et al. 2022a). The modal age was 2 years.

The spawning biomass of Redbait Eastern in 2020 was estimated to be 52,629 t (13,937-91,321 t) (Grammer et al. 2022b). The total catch of Redbait in the Eastern sub-area was 3.7% of the spawning biomass and 35.7% of the TAC (5,380 t). Redbait in Eastern sub-area is classified as **sustainable**.

Western sub-area

The total catch of Redbait in the Western sub-area in 2022/23 was 25 t. The spawning biomass for Redbait in Western sub-area in 2017 was estimated to be 66,787 t (28,797–190,392) (Ward et al. 2019). The total catch of Redbait in the Western sub-area was negligible (e.g. 0.4% of the TAC of 6,680 t). Redbait in Western sub-area is classified as **sustainable**.

Australian Sardine

Eastern sub-area

The total catch of Sardine in the Sardine sub-area in 2022/23 was 345 t including 56 t and 275 t by SPF and NSW purse-seine vessels, respectively, and 14 t from SPF mid-water trawlers.

The spawning biomass of Australian Sardine in the Sardine sub-area in 2019 was estimated to be 42,724 t (15,487–69,962 t) (Ward et al. 2021). The total catch of Sardine in the Eastern sub-area was 0.8% of the spawning biomass and 4.3% of the TAC (7,970 t). Sardine in the Sardine sub-area is classified as **sustainable**.

Summary

All SPF stocks are classified as sustainable. DEPM surveys have now been conducted for all stocks. Resulting estimates of spawning biomass (proxies for B_0) could be used to inform the establishment of target (e.g. B_{50}), trigger (B_{40}, B_{30}) and limit reference points (e.g. B_{20}) for each stock.

In 2023/24, all SPF stocks are at Tier 1 except for Blue Mackerel in the Western sub-area (Tier 3), where the DEPM was last applied in 2006. A DEPM survey for Jack Mackerel was done in the Eastern sub-area in the summer (December-January) of 2023/24. A DEPM survey of Blue Mackerel and Sardine in the spring (mainly September) of 2024. A Redbait survey is scheduled for the spring of 2024/25.

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