



Australian Government

Australian Fisheries Management Authority

Small Pelagic Fishery (SPF)

Species summaries 2021

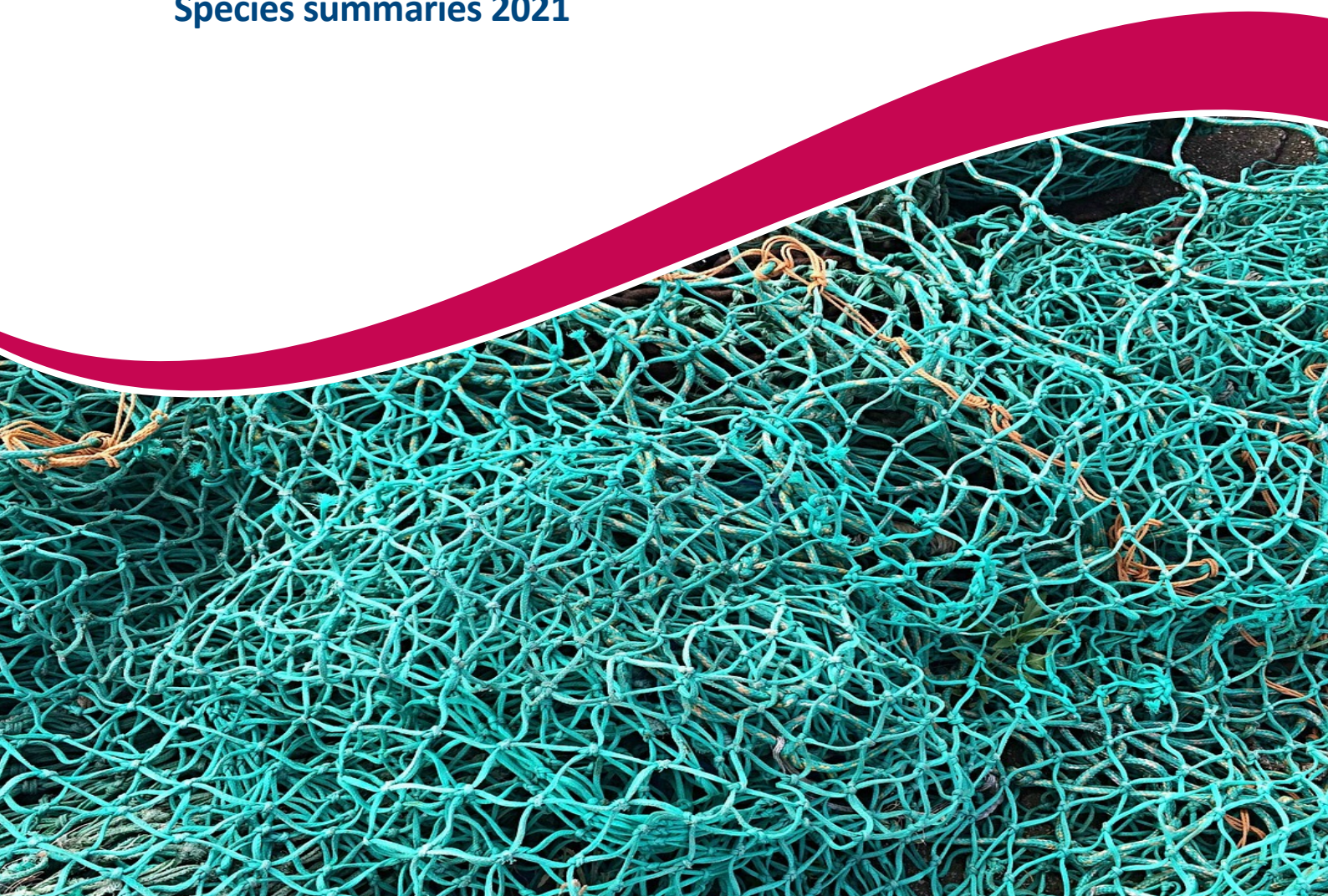


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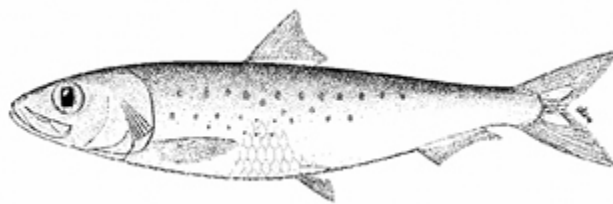
Jack mackerel west 15

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Australian sardine

Sardinops sagax



Species Summary

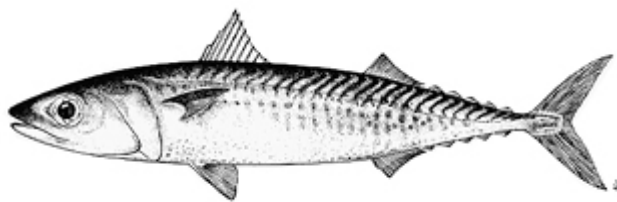
Common Names	Sardine, pilchard																																																																												
Stock assessment	DEPM Survey conducted in 2019 – 1 st season at Tier 1 (noting it was at Tier 1 for the previous five years based on the 2015 DEPM).																																																																												
Exploitation Rate * 2021-22 Tier Level	*Tier 1 – 20% (5 seasons)	Tier 2 – 10% (5 seasons)	Tier 3 – 5% (no limit)																																																																										
Estimated biomass	42,724 tonnes (2019 DEPM Survey, northern east coast stock) 49,575 tonnes (2015 DEPM Survey)																																																																												
Stock Structure	Several studies have found evidence of stock structuring of Australian sardine across southern Australia (Dixon, Worland & Chan 1993; Izzo, Gillanders & Ward 2012; Yardin et al. 1998); however, the boundaries were not conclusively defined. Izzo et al. (2017), using an integrated assessment that included genetic, morphological, otolith, growth, reproductive and fishery data, found evidence for at least 4 isolated stocks (south-west coast of Western Australia, Great Australian Bight and Spencer Gulf, Bass Strait and Port Phillip Bay, and eastern Australia). Since the sardine subarea (off eastern Australia) is the only area of the SPF that is fished, Australian sardine in the SPF is assessed and managed as a single east coast stock.																																																																												
Historical Catch data (State and Commonwealth fisheries)	<table border="1"><caption>Historical Catch Data (t)</caption><thead><tr><th>Fishing Season (May-April)</th><th>Catch (t)</th></tr></thead><tbody><tr><td>84/85</td><td>100</td></tr><tr><td>85/86</td><td>150</td></tr><tr><td>86/87</td><td>100</td></tr><tr><td>87/88</td><td>100</td></tr><tr><td>88/89</td><td>100</td></tr><tr><td>89/90</td><td>150</td></tr><tr><td>90/91</td><td>200</td></tr><tr><td>91/92</td><td>300</td></tr><tr><td>92/93</td><td>350</td></tr><tr><td>93/94</td><td>350</td></tr><tr><td>94/95</td><td>400</td></tr><tr><td>95/96</td><td>350</td></tr><tr><td>96/97</td><td>450</td></tr><tr><td>97/98</td><td>300</td></tr><tr><td>98/99</td><td>350</td></tr><tr><td>99/00</td><td>100</td></tr><tr><td>00/01</td><td>50</td></tr><tr><td>01/02</td><td>50</td></tr><tr><td>02/03</td><td>400</td></tr><tr><td>03/04</td><td>600</td></tr><tr><td>04/05</td><td>2000</td></tr><tr><td>05/06</td><td>3200</td></tr><tr><td>06/07</td><td>2800</td></tr><tr><td>07/08</td><td>3800</td></tr><tr><td>08/09</td><td>3000</td></tr><tr><td>09/10</td><td>2400</td></tr><tr><td>10/11</td><td>1600</td></tr><tr><td>11/12</td><td>400</td></tr><tr><td>12/13</td><td>250</td></tr><tr><td>13/14</td><td>450</td></tr><tr><td>14/15</td><td>550</td></tr><tr><td>15/16</td><td>500</td></tr><tr><td>16/17</td><td>550</td></tr><tr><td>17/18</td><td>450</td></tr><tr><td>18/19</td><td>550</td></tr><tr><td>19/20</td><td>700</td></tr></tbody></table>			Fishing Season (May-April)	Catch (t)	84/85	100	85/86	150	86/87	100	87/88	100	88/89	100	89/90	150	90/91	200	91/92	300	92/93	350	93/94	350	94/95	400	95/96	350	96/97	450	97/98	300	98/99	350	99/00	100	00/01	50	01/02	50	02/03	400	03/04	600	04/05	2000	05/06	3200	06/07	2800	07/08	3800	08/09	3000	09/10	2400	10/11	1600	11/12	400	12/13	250	13/14	450	14/15	550	15/16	500	16/17	550	17/18	450	18/19	550	19/20	700
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Catch and TAC (t) * incomplete season	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught																																																																									
	2020-21*	9,190	10,095	92 / (1%)																																																																									
	2019-20	9,050	10,001	232 / (2%)																																																																									

	2018-19	9,510	10,465	136 / (1%)
	2017-18	9,550	9,738	104.239 / (1%)
	2016-17	1,880	2,068	139.8 / (7%)
ABARES Status	Biomass: Not overfished		Fishing mortality: Not subject to overfishing	
Assessment Summary				
Key model technical assumptions/ parameters	The parameters used in the biomass calculation are based on the South Australian sardine stock, not the east coast stock. Ideally parameters are based on the stock being assessed however, sardine parameters are relatively consistent worldwide and given the Commonwealth catch is so low, addressing this gap is not a current priority for the fishery. Further, the exploitation rate of 20 per cent is conservative as shown by the MSE testing by Smith et al. (2015) and accounts for uncertainties in the assessment.			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There were no discernible trends in the CPUE data.			
RAG Comments	<ul style="list-style-type: none">The RAG noted that Victorian catches have not been provided due to confidentiality concerns and the issue of data sharing is becoming a concern in multiple jurisdictions for a number of jointly managed stocks. However, this has not been relevant to the RBC / TAC setting process for this Commonwealth stock since 2017 given the research showing the stock boundary corresponds broadly with the NSW / Victorian border.Adopted the new biomass estimate for the northern, east coast stock and recommended it be used as the basis for the 2021-22 RBC.			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	First Season at Tier 1 (2019 DEPM estimate) 42,724 x 20% = 8,454 tonnes		
Additional Work - AFMA				
State Catch (t)	466	Four-year weighted average for NSW catch only, rounded to nearest tonne		
Discards (t)	10	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fisheries Catch (t)	0.34	Three year average		

Research Catch Allowance (t)	0			
Provisional TAC		7,980 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				
The MAC noted the decrease in the TAC is due to the updated biomass estimate being slightly lower than the 2015 biomass estimate, not due to any sustainability concerns regarding the stock.				
The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	7,980	
AFMA Advice				
AFMA Management recommends a TAC of 7,980 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.				
This will be the first season at Tier 1 using the 2019 biomass estimate noting that the stock was in Tier 1 for the previous five years based on a 2015 biomass estimate. The relatively large decrease in TAC compared to 2020-21 is primarily due to a decrease in the biomass estimated in 2019 compared to that estimated in 2015.				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
9,190	7,980	10	2	-1,210

Blue mackerel east

Scomber australasicus



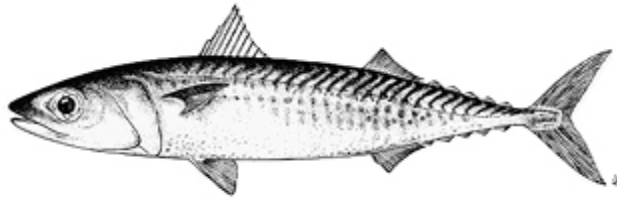
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Common Names	Pacific mackerel, common mackerel, English mackerel, school mackerel, spotted chub mackerel, spotted mackerel, chub mackerel, Japanese mackerel, southern mackerel, slimy mackerel, slimies																																																																																																																		
Stock assessment	DEPM survey conducted in 2019 (1 st season at Tier 1 using the 2019 estimate noting that the previous five years it has been at Tier 1 based on the 2015 DEPM surveys estimate).																																																																																																																		
Exploitation Rate * 2021-22 Tier Level	*Tier 1 - 15% (5 seasons)	Tier 2 – 7.5% (5 seasons)		Tier 3 – 3.75% (no limit)																																																																																																															
Estimated biomass	80,000 tonnes (2019 DEPM Survey) 83,000 tonnes (2015 DEPM survey)																																																																																																																		
Stock Structure	The stock structure of blue mackerel is uncertain. Genetic analysis of samples from southern Queensland, Western Australia and New Zealand indicates population subdivisions. Genetic differences were detected between Western Australia and Queensland, and between Western Australia and New Zealand, but not between Queensland and New Zealand (Schmarr et al. 2007; Whittington, Ovenden & Ward 2012). No finer-scale analyses of blue mackerel have been undertaken to further define stock structure. Blue mackerel within the SPF is assessed and managed as separate stocks in the eastern and western subareas.																																																																																																																		
Historical Catch data (State and Commonwealth fisheries)	<table><caption>Estimated Historical Catch Data (t)</caption><thead><tr><th>Fishing Season (May-April)</th><th>Total Catch (t)</th><th>Jul-Jun (t)</th></tr></thead><tbody><tr><td>84/85</td><td>200</td><td>0</td></tr><tr><td>85/86</td><td>800</td><td>0</td></tr><tr><td>86/87</td><td>1300</td><td>0</td></tr><tr><td>87/88</td><td>1400</td><td>0</td></tr><tr><td>88/89</td><td>500</td><td>0</td></tr><tr><td>89/90</td><td>200</td><td>0</td></tr><tr><td>90/91</td><td>200</td><td>0</td></tr><tr><td>91/92</td><td>300</td><td>0</td></tr><tr><td>92/93</td><td>400</td><td>0</td></tr><tr><td>93/94</td><td>500</td><td>0</td></tr><tr><td>94/95</td><td>400</td><td>0</td></tr><tr><td>95/96</td><td>400</td><td>0</td></tr><tr><td>96/97</td><td>400</td><td>0</td></tr><tr><td>97/98</td><td>500</td><td>0</td></tr><tr><td>98/99</td><td>800</td><td>0</td></tr><tr><td>99/00</td><td>800</td><td>0</td></tr><tr><td>00/01</td><td>900</td><td>0</td></tr><tr><td>01/02</td><td>700</td><td>0</td></tr><tr><td>02/03</td><td>800</td><td>0</td></tr><tr><td>03/04</td><td>1000</td><td>0</td></tr><tr><td>04/05</td><td>900</td><td>0</td></tr><tr><td>05/06</td><td>800</td><td>0</td></tr><tr><td>06/07</td><td>700</td><td>0</td></tr><tr><td>07/08</td><td>600</td><td>0</td></tr><tr><td>08/09</td><td>600</td><td>0</td></tr><tr><td>09/10</td><td>700</td><td>0</td></tr><tr><td>10/11</td><td>400</td><td>0</td></tr><tr><td>11/12</td><td>400</td><td>0</td></tr><tr><td>12/13</td><td>500</td><td>0</td></tr><tr><td>13/14</td><td>500</td><td>0</td></tr><tr><td>14/15</td><td>500</td><td>0</td></tr><tr><td>15/16</td><td>2400</td><td>0</td></tr><tr><td>16/17</td><td>1600</td><td>0</td></tr><tr><td>17/18</td><td>3200</td><td>0</td></tr><tr><td>18/19</td><td>4300</td><td>0</td></tr><tr><td>19/20</td><td>6200</td><td>0</td></tr></tbody></table>				Fishing Season (May-April)	Total Catch (t)	Jul-Jun (t)	84/85	200	0	85/86	800	0	86/87	1300	0	87/88	1400	0	88/89	500	0	89/90	200	0	90/91	200	0	91/92	300	0	92/93	400	0	93/94	500	0	94/95	400	0	95/96	400	0	96/97	400	0	97/98	500	0	98/99	800	0	99/00	800	0	00/01	900	0	01/02	700	0	02/03	800	0	03/04	1000	0	04/05	900	0	05/06	800	0	06/07	700	0	07/08	600	0	08/09	600	0	09/10	700	0	10/11	400	0	11/12	400	0	12/13	500	0	13/14	500	0	14/15	500	0	15/16	2400	0	16/17	1600	0	17/18	3200	0	18/19	4300	0	19/20	6200	0
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	2020-21*	11,970	13,167	1,456 / (11%)																																																																																																															
	2019-20	11,970	13,179	5,715 / (43%)																																																																																																															

	2018-19	12,090	13,299	9,297 / (30%)
	2017-18	12,090	12,249	2,891 / (24%)
	2016-17	2,630	2,887	1,560 / (46%)
ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Annual Fishery Assessment Summary				
Key model technical assumptions/ parameters	Adult parameters used in the biomass calculation for the blue mackerel (east) stock are from blue mackerel samples collected from South Australia in 2002 and 2006. These samples are used due to difficulties in catching large, adult spawning blue mackerel on the east coast. Resolving this is a high priority before the next DEPM is undertaken.			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There were no discernible trends in the CPUE data.			
RAG Comments	<ul style="list-style-type: none">The fish caught between 2014 and 2016 were larger and older compared to fish caught since 2017 to current. Between 2014 and 2016 three year old fish dominate the catch where more recent catches are dominated by two year olds and there is an increase in one year old fish.<ul style="list-style-type: none">There are a number of potential explanations for this including a change in fishing practise observed in the fishery between the two periods, most notably a decrease in trawl speed, spatial segregation of catches, a recruitment pulse coming through etc. The RAG will continue to monitor for changes through the annual fishery assessment process.The RAG accepted the biomass estimate of 80,000 tonnes, the current exploitation rate of 15 per cent is considered to be precautionary (as shown by the MSE testing by Smith et al 2015) and accounts for uncertainties in the assessment.A future research priority has been identified to collect samples of large, spawning fish to inform estimates of adult parameters.			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	1 st Season at Tier 1 (2019 DEPM) 80,000 x 15% = 12,000 tonnes		
Additional Work - AFMA				
State Catch (t)	436	Four-year weighted average, rounded to nearest tonne		
Discards (t)	107	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		

Other Commonwealth Fishery Catch (t)	16	Three year average.		
Research Catch Allowance (t)	0			
Provisional TAC		11,440 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				
<p>The MAC noted:</p> <ul style="list-style-type: none">• due to a lack of adult samples collected in the 2015 and 2019 DEPM surveys, there is uncertainty in the adult parameters informing the biomass estimate and therefore increased uncertainty in that estimate. The MAC supported targeted work to reduce this uncertainty as a high priority before the next DEPM survey.• that despite the uncertainty regarding the biomass estimate, the RAG considers the exploitation rate highly conservative and accounts for any uncertainty in the biomass estimate.• The decrease in TAC compared to 2020-21 is primarily due to a decrease in the revised biomass estimate compared to that estimated in 2015, and a slight increase in state catch, not due to sustainability concerns for the stock. <p>The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.</p>				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	11,440	
AFMA Advice				
<p>AFMA Management recommends a TAC of 11,440 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.</p> <p>This will be the first season at Tier 1 using the 2019 biomass estimate noting that the stock was in Tier 1 for the previous five years based on a 2015 biomass estimate. The decrease in TAC compared to 2020-21 is primarily due to a decrease in the biomass estimated in 2019 compared to that estimated in 2015 and a slight increase in state catch.</p>				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
11,970	11,440	10	2	-530

Blue mackerel west

Scomber australasicus



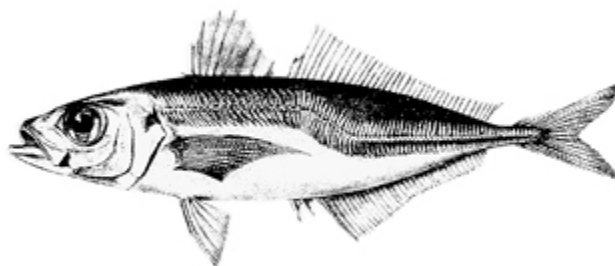
Species Summary																																																								
Common Names	Pacific mackerel, common mackerel, English mackerel, school mackerel, spotted chub mackerel, spotted mackerel, chub mackerel, Japanese mackerel, southern mackerel, slimy mackerel, slimies																																																							
Stock assessment	DEPM survey last conducted in 2005 and 2006 (5 th season at Tier 3)																																																							
Exploitation Rate * 2021-22 Tier Level	Tier 1 – 15% (5 seasons)	Tier 2 – 7.5% (5 seasons)	*Tier 3 - 3.75% (no time limit)																																																					
Estimated biomass	86,500 tonnes																																																							
Stock Structure	The stock structure of blue mackerel is uncertain. Genetic analysis of samples from southern Queensland, Western Australia and New Zealand indicates population subdivisions. Genetic differences were detected between Western Australia and Queensland, and between Western Australia and New Zealand, but not between Queensland and New Zealand (Schmarr et al. 2007; Whittington, Ovenden & Ward 2012). No finer-scale analyses of blue mackerel have been undertaken to further define stock structure. Blue mackerel within the SPF is assessed and managed as separate stocks in the eastern and western subareas																																																							
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Catch and TAC (t) * incomplete season	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught																																																				
	2020-21*	3,210	3,534	0 / (0%)																																																				
	2019-20	3,240	3,563	12 / (0%)																																																				

	2018-19	3,230	3,850	0 / (0%)
	2017-18	3,230	3,850	0 / (0%)
	2016-17	6,200	6,820	760 / (11%)
ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Annual Fisheries Assessment Summary				
Key model technical assumptions/ parameters	The most recent DEPM surveys for the Blue mackerel Redbait east stock are from 2005 and 2006. The DEPM surveys gave biomass estimates of 86,990 tonnes (2005) and 50,782 tonnes (2006). The biomass estimate for this stock is the average biomass estimate from the 2005 and 2006 DEPM surveys (68,886 tonnes).			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There was no data to review trends in the CPUE.			
RAG Comments	<ul style="list-style-type: none">There was no new data for this stock presented to SPFRAG at the December 2020 meeting given there had been very little fishing effort in the west.The SPFRAG noted that the most recent DEPM survey for this stock had been undertaken in 2005 and 2006. The RAG confirmed its previous approach which adopted a biomass estimate for blue mackerel of 86,500 tonne based on the results of the two surveys that covered most of the central part of the western spawning sub area.			
RAG Recommendations				
Recommended Biological Catch (RBC)	3,243 tonnes	Fifth Season at Tier 3 86,500 x 3.75% = 3,243 tonnes		
Additional Work - AFMA				
State Catch (t)	4	Four-year weighted average, rounded to nearest tonne		
Discards (t)	27	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fishery Catch (t)	0.06	Three year average		
Research Catch Allowance (t)	0			

Provisional TAC		3,210 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				
The MAC noted that there is very limited fishing effort in the western zone of the SPF.				
The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	3,210	
AFMA Advice				
AFMA Management recommends a TAC of 3,210 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
3,210	3,210	10	2	0

Jack mackerel east

Trachurus declivis



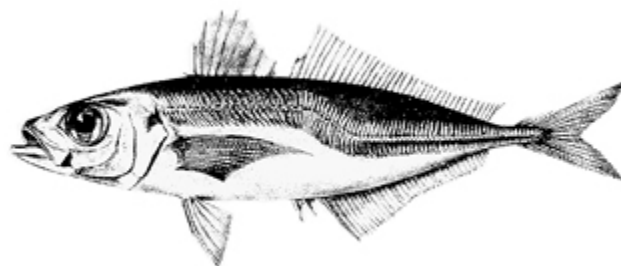
Species Summary																																																																														
Common Names	Cowanyoung, greenback horse mackerel, scaly mackerel, scad, common jack mackerel.																																																																													
Stock assessment	DEPM survey for jack mackerel conducted in 2018 (2 nd Season at Tier 1)																																																																													
Exploitation Rate * 2021-22 Tier Level	*Tier 1 - 12% (5 Seasons)	Tier 2 – 6% (10 seasons)		Tier 3 – 3% (no limit)																																																																										
Estimated biomass	156,292 tonnes (2018 biomass estimate) 157 800 tonnes (2014 biomass estimate)																																																																													
Stock Structure	The stock structure of jack mackerel is unclear. Richardson (1982) found evidence of population subdivision between Western Australia, including the Great Australia Bight, and eastern Australia. Similarly, a DEPM estimate for western jack mackerel appears to show some stock structuring around the Bonney Coast west of Bass Strait (AFMA 2017d). Richardson (1982) also found evidence of a Wahlund effect (where multiple populations are detected in a single sample) in east coast samples, suggesting some additional structuring. Smolenski, Ovenden & White (1994) found evidence of structuring between New South Wales and south-eastern Tasmania, although the differences appeared not to be temporally consistent. These studies suggest that further investigation of stock structure in jack mackerel on the east coast is warranted. Currently, jack mackerel in the SPF is assessed and managed as separate stocks in the eastern and western subarea																																																																													
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Catch and TAC (t)	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught																																																																										

* incomplete season	2020-21*	18,580	20,453	2,729 / (13%)
	2019-20	18,730	20,619	7,464 / (36%)
	2018-19	18,890	20,778	4,930 / (24%)
	2017-18	18,880	20,747	2,699 / (13%)
	2016-17	18,670	20,537	4,065 / (20%)
ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Annual Fisheries Assessment Summary				
Key model technical assumptions/ parameters	The DEPM and associated adult sampling provided robust estimates of key parameters for this stock.			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There were no discernible trends in the CPUE data.			
RAG Comments	<ul style="list-style-type: none">The fish caught between 2014 and 2016 were larger and older compared to fish caught since 2017 to current. Since 2017, there has been a shift in age distribution for this species to one - three year old fish from fish aged four – six years.<ul style="list-style-type: none">There are a number of potential explanations for this including a change in fishing practise observed in the fishery between the two periods, most notably a decrease in trawl speed, spatial segregation of catches, a recruitment pulse coming through etc. The RAG will continue to monitor for changes through the annual fishery assessment process.The 2019/20 catch was the highest in 20 years. <p>The annual assessment provided no basis to change previous advice for this stock which was that SPFRAG accepted the 2018 biomass estimate of 156,292 tonnes for jack mackerel east and that it was appropriate to apply the Tier 1 exploitation rate for the 2020-21 season.</p>			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	Second season at Tier 1 156,292 x 12% = 18,755 tonnes		
Additional Work - AFMA				
State Catch (t)	3	Four-year weighted average, rounded to nearest tonne		

Discards (t)	86	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fishery Catch (t)	40	Three year average		
Research Catch Allowance (t)	0			
Provisional TAC		18,630 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				
<p>The MAC noted:</p> <ul style="list-style-type: none">Fishing effort in the SPF is focused on the eastern stocks of Jack mackerel and blue mackerel.Catches of Jack mackerel east are increasing but that they still remain well below the TAC. <p>The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.</p>				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	18,630	
AFMA Advice				
AFMA Management recommends a TAC of 18,630 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
18,580	18,630	10	2	50

Jack mackerel west

Trachurus declivis



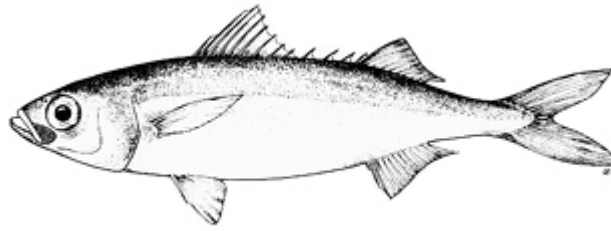
Species Summary																																																																																	
Common Names	Cowanyoung, greenback horse mackerel, scaly mackerel, scad, common jack mackerel.																																																																																
Stock assessment	DEPM survey for jack mackerel conducted in 2017 (4 th Season at Tier 1)																																																																																
Exploitation Rate * 2021-22 Tier Level	*Tier 1 - 12% (5 seasons)	Tier 2 – 6% (10 seasons)	Tier 3 – 3% (no limit)																																																																														
Estimated biomass	34,978 tonnes																																																																																
Stock Structure	The stock structure of jack mackerel is unclear. Richardson (1982) found evidence of population subdivision between Western Australia, including the Great Australia Bight, and eastern Australia. Similarly, a DEPM estimate for western jack mackerel appears to show some stock structuring around the Bonney Coast west of Bass Strait (AFMA 2017d). Richardson (1982) also found evidence of a Wahlund effect (where multiple populations are detected in a single sample) in east coast samples, suggesting some additional structuring. Smolenski, Ovenden & White (1994) found evidence of structuring between New South Wales and south-eastern Tasmania, although the differences appeared not to be temporally consistent. These studies suggest that further investigation of stock structure in jack mackerel on the east coast is warranted. Currently, jack mackerel in the SPF is assessed and managed as separate stocks in the eastern and western subarea																																																																																
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	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught
Catch and TAC (t) * incomplete season	2020-21*	4,170	4,590	0 / (0%)
	2019-20	4,200	4,619	14 / (0%)
	2018-19	4,190	4,282	0 / (0%)
	2017-18	920	1,280	0 / (0%)
	2016-17	3,600	3,960	693.8 / (18%)
ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Annual Fisheries Assessment Summary				
Key model technical assumptions/ parameters	Since only a limited number of adult samples were collected during the 2017 jack mackerel west DEPM survey, adult parameters obtained from the 2014 eastern jack mackerel survey were used to input into the biomass calculation for the western stock.			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There was no data to review trends in the CPUE.			
RAG Comments	<ul style="list-style-type: none">There was no new data for this stock presented to SPFRAG at the December 2020 meeting due to very little fishing effort in the west during 2019-20.The annual assessment provided no basis to change previous advice for this stock which was that the DEPM survey for jack mackerel conducted in 2017 provided a best estimate of biomass of 34,978 tonnes (which is the 31,069 plus the Bass Strait estimate) which was considered to be conservative given that the stock extends west of Kangaroo Island and a large amount of spawning activity was detected in Bass Strait which was not extensively sampled (and therefore the biomass estimate is an underestimate).Due to limited information on the stock structure of jack mackerel west, if catch in the grids south of Kangaroo Island (G54 and G55) reach 20 per cent of the TAC this area will be closed to fishing for the rest of the fishing year. Catch will continue to be restricted to 20 per cent of the TAC in these grids as a precautionary measure until more is known about the stock structure of jack mackerel west in this area.			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	Fourth Season at Tier 1 34,978 x 12% = 4,197 tonnes		
Additional Work - AFMA				

State Catch (t)	8	Four-year weighted average, rounded to nearest tonne		
Discards (t)	0	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fishery Catch (t)	6	Three year average		
Research Catch Allowance (t)	0			
Provisional TAC		4,180 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				
<p>The MAC noted:</p> <ul style="list-style-type: none">• There is very limited fishing effort in the western zone of the SPF.• Consistent with the approach in previous years, AFMA will continue to restrict the catch of jack mackerel west taken directly south of Kangaroo Island to 20 per cent of the TAC as a precautionary measure in response to some uncertainty regarding stock structure. <p>The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.</p>				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	4,180	
AFMA Advice				
<p>AFMA Management recommends a TAC of 4,180 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.</p> <p>Consistent with the RAG’s previous advice, the catch of jack mackerel west taken directly south of Kangaroo Island will continue to be restricted to 20 per cent of the TAC as a precautionary measure in response to some uncertainty regarding stock structure. AFMA Management will work with industry to achieve this and if necessary, implement a closure direction for that area.</p>				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
4,170	4,180	10	2	10

Redbait east

Emmelichthys nitidus



Species Summary

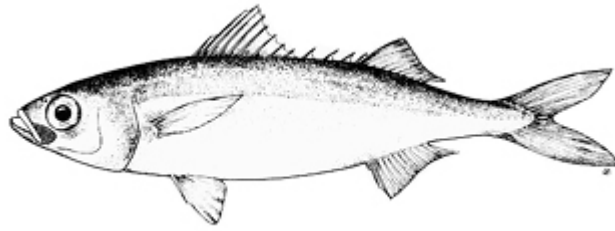
Common Names	Pearl fish, picarel, red baitfish, red herring, southern rover, cape bonnetmouth			
Stock assessment	DEPMs conducted in 2005 and 2006 (Tier 2 – 10 th Season)			
Exploitation Rate * 2021-22 Tier Level	Tier 1 – 10% (5 Seasons)	*Tier 2 – 5% (10 Seasons)	Tier 3 – 2.5% (no limit)	
Estimated biomass	68,886 tonnes (2005 and 2006 DEPM surveys)			
Stock Structure	The stock structure of redbait in Australia has not been studied. Redbait within the SPF is assessed and managed as separate stocks in the eastern and western subareas			
Historical Catch data (State and Commonwealth fisheries)	<div></div> <p>* Confidential (<6 boats/yr) - Only Commonwealth data shown</p> <p>Total Catch</p> <p>■ Jul-Jun</p> <p>■ May-Apr</p> <p>Catch (t)</p> <p>Fishing Season (May-April)</p>			
Catch and TAC (t) * incomplete season	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught
	2020-21*	3,420	3,735	942 / (25%)
	2019-20	3,150	3,492	2,445 / (70%)
	2018-19	3,420	3,761	319 / (15%)
	2017-18	3,410	3,741	15 / (0%)
	2016-17	3,310	3,641	103.8 / (3%)

ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Annual Fisheries Assessment Summary				
Key model technical assumptions/ parameters	The most recent DEPM surveys for the redbait east stock are from 2005 and 2006. The DEPM surveys gave biomass estimates of 86,990 tonnes (2005) and 50,782 tonnes (2006). The biomass estimate for this stock is the average biomass estimate from the 2005 and 2006 DEPM surveys (68,886 tonnes).			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> No discernible trend in weekly CPUE data.			
RAG Comments	<ul style="list-style-type: none">The fish caught between 2014 and 2017 were larger and older compared to fish caught since 2018 to current. Between 2014 and 2017 there was a large distribution of ages caught (0 – 14 years) where as more recent catches are dominated by two year olds and one year olds.<ul style="list-style-type: none">There are a number of potential explanations for this including a change in fishing practise observed in the fishery between the two periods, most notably a decrease in trawl speed, spatial segregation of catches, a recruitment pulse coming through etc. The RAG will continue to monitor for changes through the annual fishery assessment process.A new DEPM survey was completed in October 2020, results of which will be available to the RAG in 2021.The annual assessment provided no basis to change previous advice for this stock which was the approach used by SPFRAG of adopting the average of these DEPM estimates (68,886 tonnes) should be continued, and the Harvest Strategy Tier 2 harvest rate for redbait of 5 per cent be used as the basis for RBC advice.			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	Tenth Season at Tier 2 68,886 x 5% = 3,444 tonnes		
Additional Work - AFMA				
State Catch (t)	0	Four-year weighted average, rounded to nearest tonne		
Discards (t)	0	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fishery Catch (t)	5	Three year average		
Research Catch Allowance (t)	1			

Provisional TAC	3,440 tonnes (rounded to the nearest 10 tonnes)			
MAC Recommendations				
<p>The MAC:</p> <ul style="list-style-type: none">discussed the sudden increase in redbait catches in 2019-20 and noted that it is likely related to avoiding dolphin interactions, fishing further south and in deeper water.Noted that catch to date for 2020-21 is around 1000 tonnes with two and half months left of the season.The results of the updated DEPM will be available to inform the 2022-23 TAC. <p>The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.</p>				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	3,440	
AFMA Advice				
AFMA Management recommends a TAC of 3,440 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
3,420	3,440	10	2	20

Redbait west

Emmelichthys nitidus



Species Summary

Common Names	Pearl fish, picarel, red baitfish, red herring, southern rover, Cape bonnetmouth																																																							
Stock assessment	DEPM survey conducted in 2017 (3 rd Season Tier 1)																																																							
Exploitation Rate * 2021-22 Tier Level	*Tier 1 - 10 % (5 Seasons)	Tier 2 – 5 % (10 seasons)		Tier 3 – 2.5 % (No limit)																																																				
Estimated biomass	66,787 tonnes (2017)																																																							
Stock Structure	The stock structure of redbait in Australia has not been studied. Redbait within the SPF is assessed and managed as separate stocks in the eastern and western subareas																																																							
Historical Catch data (State and Commonwealth fisheries)	<div><p>* Confidential (<6 boats/yr) - Only Commonwealth data shown</p><table><caption>Historical Catch Data (t)</caption><thead><tr><th>Fishing Season (May-April)</th><th>Catch (t)</th></tr></thead><tbody><tr><td>95/96</td><td>0</td></tr><tr><td>96/97</td><td>0</td></tr><tr><td>97/98</td><td>0</td></tr><tr><td>98/99</td><td>0</td></tr><tr><td>99/00</td><td>0</td></tr><tr><td>00/01</td><td>0</td></tr><tr><td>01/02</td><td>1100</td></tr><tr><td>02/03</td><td>1250</td></tr><tr><td>03/04</td><td>250</td></tr><tr><td>04/05</td><td>2500</td></tr><tr><td>05/06</td><td>3100</td></tr><tr><td>06/07</td><td>3250</td></tr><tr><td>07/08</td><td>1350</td></tr><tr><td>08/09</td><td>650</td></tr><tr><td>09/10</td><td>300</td></tr><tr><td>10/11</td><td>0</td></tr><tr><td>11/12</td><td>0</td></tr><tr><td>12/13</td><td>0</td></tr><tr><td>13/14</td><td>0</td></tr><tr><td>14/15</td><td>0</td></tr><tr><td>15/16</td><td>1150</td></tr><tr><td>16/17</td><td>1150</td></tr><tr><td>17/18</td><td>0</td></tr><tr><td>18/19</td><td>0</td></tr><tr><td>19/20</td><td>50</td></tr></tbody></table></div>				Fishing Season (May-April)	Catch (t)	95/96	0	96/97	0	97/98	0	98/99	0	99/00	0	00/01	0	01/02	1100	02/03	1250	03/04	250	04/05	2500	05/06	3100	06/07	3250	07/08	1350	08/09	650	09/10	300	10/11	0	11/12	0	12/13	0	13/14	0	14/15	0	15/16	1150	16/17	1150	17/18	0	18/19	0	19/20	50
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Catch and TAC (t) * incomplete season	Year	Agreed TAC (t)	TAC after unders/overs (t)	Catch(t) / % TAC Caught																																																				
	2020-21*	6,640	7,308	0 / (0%)																																																				
	2019-20	6,680	6,762	9 / (0%)																																																				
	2018-19	820	1,108	0 / (0%)																																																				

	2017-18	820	1,108	0 / (0%)
	2016-17	2,880	3,168	1,174 / (37%)
ABARES Status	Biomass: Not overfished		Fishing Mortality: Not subject to overfishing	
Assessment Summary				
Key model technical assumptions/ parameters	The most plausible model biomass estimate ranged between 51,765 tonnes and 102,867 tonnes. With no solid reason to reject either estimate and for consistency with the approach taken with other stocks, the median biomass estimate of 66,787 tonnes was used as the basis for the Scientific Panel's (now replaced by SPFRAG) recommended biological catch level.			
Weekly CPUE Trends	<i>The weekly CPUE is monitored for evidence of localised depletion. If a general decrease in CPUE occurs after consistent effort within a given grid cell, this may be evidence of localised depletion occurring. However, there are a number of factors, not just fishing effort, which can also influence CPUE. SPFRAG review this information annually.</i> There was no data to review trends in the CPUE.			
RAG Comments	<ul style="list-style-type: none">There was no new data for this stock presented to SPFRAG at the December 2020 meeting given very little fishing effort in 2019-20The annual assessment provided no basis to change previous advice for this stock which was to recommend the spawning biomass estimate of 66,787 tonnes be used for the RBC based on the weight of evidence provided by the survey.			
RAG Recommendations				
Recommended Biological Catch (RBC)	2021-22	Third season at Tier 1 66,787 x 10% = 6,678 tonnes		
Additional Work - AFMA				
State Catch (t)	0	Four-year weighted average, rounded to nearest tonne		
Discards (t)	0	Rate based on previous three years, by method and applied to the RBC to get tonnage. If one method is not expected to fish in upcoming year, the discard amount attributed to that method does not get deducted from the RBC.		
Other Commonwealth Fishery Catch (t)	2	Three year average		
Research Catch Allowance (t)	0			
Provisional TAC		6,680 tonnes (rounded to the nearest 10 tonnes)		
MAC Recommendations				

The MAC noted there is very limited fishing effort in the western zone of the SPF.				
The MAC supported the recommended TAC and overcatch/undercatch percentages and determined amount.				
Undercatch (%)	Overcatch (%)	Determined Amount (t)	TAC (t)	
10	10	2	6,680	
AFMA Advice				
AFMA Management recommends a TAC of 6,680 tonnes for the 2021-22 fishing year with undercatch and overcatch provisions set at 10 per cent, and a determined amount of 2 t.				
2020-21 agreed TAC (t)	2021-22 recommended TAC (t)	Overcatch & Undercatch (%)	Determined amount (t)	Change in TAC (t)
6,640	6,680	10	2	40