# Appendix 1 Terms of Reference for the Expert Panel on a Declared Commercial Fishing Activity

## Background

On 19 November 2012, the Minister for Sustainability, Environment, Water, Population and Communities made the Final (Small Pelagic Fishery) Declaration 2012 (the Final Declaration), which came into force on 20 November 2012.

The Final Declaration provides that a commercial fishing activity which:

a. is in the area of the Small Pelagic Fishery;

b. uses the mid-water trawl method; and

c. uses a vessel which is greater than 130 metres in length, has an on-board fish processing facility and has storage capacity for fish or fish products in excess of 2000 tonnes

is a Declared Commercial Fishing Activity for the purposes of Part 15B of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (the EPBC Act).

The Declared Commercial Fishing Activity is prohibited for up to two years while an expert panel conducts an assessment and reports to the Minister on the activity.

The Expert Panel is established under section 390SH of the EPBC Act, as are the terms of reference for its assessment.

## Terms of Reference

The Expert Panel will assess the Declared Commercial Fishing Activity, particularly the potential for the activity to result in adverse environmental impacts.

The Expert Panel will assess and advise on:

1. the likely nature and extent of direct interactions of the Declared Commercial Fishing Activity with species protected under the EPBC Act, particularly seals and dolphins;
2. the potential for any localised depletion of target species (arising from the Declared Commercial Fishing Activity) to result in adverse impacts to the Commonwealth marine environment, including the target species' predators protected under the EPBC Act;
3. actions that could be taken by operators of the Declared Commercial Fishing Activity or relevant regulatory authorities to avoid, reduce and mitigate adverse environmental impacts of the activity;
4. monitoring or scientific research that would reduce any uncertainties about the potential for adverse environmental impacts resulting from the Declared Commercial Fishing Activity;
5. any other matters about the environmental impacts of the Declared Commercial Fishing Activity that the Expert Panel considers relevant to its assessment; and
6. other related matters that may be referred to it by the Minister.

## Date for report

The Expert Panel must report to the Minister by 22 October 2014.

## Manner of carrying out assessment

In carrying out its assessment, the Expert Panel will:

a. examine existing scientific literature, other relevant information and any ongoing research or monitoring projects relevant to the impacts of the Declared Commercial Fishing Activity;

b. consult with and seek submissions from experts in relevant scientific disciplines where the Expert Panel believes this is necessary to clarify areas of uncertainty about the environmental impacts of the Declared Commercial Fishing Activity;

c. consider the fisheries management arrangements under which the Declared Commercial Fishing Activity is proposed to operate and the extent to which those management arrangements address the relevant environmental impacts and uncertainties;

d. take account of the requirements of the EPBC Act as they relate to the operation and accreditation of Commonwealth fisheries;

e. commission, through the Department of Sustainability, Environment, Water, Population and Communities, new reviews, research projects, modelling or analyses which the Expert Panel believes are necessary to fill critical knowledge gaps and where the results of those projects and analyses will allow the Expert Panel to fulfil its terms of reference;

f. consult with relevant experts, including in the operations of the Declared Commercial Fishing Activity, on the nature and effectiveness of measures available to reduce direct interactions with EPBC Act protected species and the potential ecological effects of any localised depletion resulting from the Declared Commercial Fishing Activity; and

g. identify further necessary and practicable monitoring or research projects that would reduce critical uncertainties for decision making relevant to any future operations of the Declared Commercial Fishing Activity.

# Appendix 2 Advice provided to the panel

The panel is very grateful to the many people that provided insights and inputs to inform the panel's assessment. Those people and the nature of their input to the panel's work are identified below. The panel also contacted a number of other national and international experts who, for various reasons, were unable to contribute to the panel's assessment.

Table A2.1 People who provided advice to the panel

| NAME AND POSITION | EXPERTISE | NATURE OF CONSULTATION |
|---|---|---|
| Mr K. Antonysen, Recreational fisher | Recreational fishing | Submission to Interim Declaration<br>Nomination of experts |
| Professor Gavin Begg, Research Chief, South Australian Research and Development Institute (SARDI) Aquatic Sciences | Fisheries science: relevant fisheries research | Written response to request for information |
| Mr Simon Boag and Mr Fritz Drenkhahn, South East Trawl Fishing Industry Association | Commercial fishing operations: trawl | Submission to Interim Declaration<br>Nomination of experts<br>Invited submission |
| Mr Jon Bryan, Conservation Member, Small Pelagic Fishery Resource Assessment Group (SPFRAG) | Conservation | Phone meeting |
| Mr Anthony Ciconte, Commercial fisher | Commercial fishing | Submission to Interim Declaration |
| Professor Doug Butterworth, Department of Maths and Applied Maths, University of Cape Town, South Africa | Fisheries science | Written response to request for information |
| Dr Ad Corten, Chief Scientist, Corten Marine Research, Netherlands | Fishing operations and bycatch | Written response to request for information |
| Dr Bram Couperus, Researcher, Institute of Marine Resources and Ecosystem Studies, University of Wageningen , Netherlands | Fishing operations and bycatch | Written response to request for information |
| Mr Martin Exel, General Manager, Environment and Policy, Austral Fisheries | Commercial fishing operations: mid-water trawl | Meeting |
| Dr James Findlay, Chief Executive Officer, Australian Fisheries Management Authority | Fisheries management | Meeting and written responses to requests for information and questions |
| Mr George Day, Senior Manager, Demersal and Midwater Fisheries, AFMA | Fisheries management | Meeting and written responses to requests for information and questions |
| Mr Peter Douglas. Douglas Fishing Super Fund | Commercial fishing operations | Submission to Interim Declaration |

| NAME AND POSITION | EXPERTISE | NATURE OF CONSULTATION |
|---|---|---|
| Dr Elizabeth Fulton, Principal Research Scientist and CEO's Science Leader Fellow, CSIRO Oceans and Atmosphere Flagship | Fisheries science: ecosystem modelling | Meeting |
| Mr Gerry Geen, Director, Seafish Tasmania Pty Ltd | Commercial fishing operations: mid-water trawl | Submission to Interim Declaration<br>Meeting |
| Mr John Holdsworth, Blue Water Marine Research, New Zealand | Recreational fishing | Written response to request for information. |
| Dr Patrick Hone, Executive Director, Fisheries Research and Development corporation (FRDC) | Fisheries science: relevant fisheries research | Written and verbal response to request for information |
| Ms Rebecca Hubbard, on behalf of Stop the Super Trawler Alliance | Conservation | Submission to Interim Declaration<br>Nomination of experts |
| Mr Darren Kindleysides, Director, Australian Marine Conservation Society (AMCS) | Conservation | Submission to Interim Declaration |
| Dr Jeremy Lyle, Senior Research Scientist, Institute of Marine and Antarctic Studies (IMAS), University of Tasmania | Fisheries science: marine mammal bycatch mitigation and SPF daily egg production method (DEPM) biomass assessment | Meeting |
| Dr Vincent Lyne, Research Scientist, CSIRO Marine and Atmospheric Research | Science: fisheries oceanography | Meeting |
| Professor Jessica Meeuwig, Director/ Research Professor, Centre for Marine Futures, University of Western Australia | Science: marine ecology | Submission to Interim Declaration<br>Meeting |
| Ministry of Primary Industries, New Zealand | Fisheries management | Written response to request for information |
| Mr Andy Moore, Fisheries and Quantitative Sciences, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) | Fisheries science | Meeting |
| Dr Francisco Neira, Marine Sciences Consulting | Fisheries science: DEPM biomass assessment | Meeting |
| Dr Jonathon Nevill | Environmental science: aquatic conservation policy | Submission to Interim Declaration<br>Invited submission |
| Mr Mark Nikolai, Chief Executive Officer, Tasmanian Association for Recreational Fishing Inc. (TARFish) | Recreational fishing | Invited submission |
| Mr Andrew Penney, Domestic Fisheries and Marine Environment, ABARES | Fisheries science | Meeting |

| NAME AND POSITION | EXPERTISE | NATURE OF CONSULTATION |
|---|---|---|
| Mr Graham Pike, Recreational and Charter Fishing Member, SPFRAG | Recreational fishing | Submission to Interim Declaration<br>Nomination of experts |
| Mr Joe Pirello, Managing Director, Seafish Tasmania Pty Ltd | Commercial fishing operations: mid-water trawl | Submission to Interim Declaration<br>Meeting |
| Dr Éva Plagányi, Senior Research Scientist, CSIRO Marine and Atmospheric Research | Fisheries science: ecosystem modelling | Invited submission |
| Dr Cristian Canales Ramirez, Department of Resource Evaluation, Fisheries Development Institute, Chile | Fisheries science | Written response to request for information |
| Professor Keith Sainsbury, Professor, Marine System Management, IMAS, University of Tasmania | Fisheries science and management | Meeting |
| Mr Les Scott, Managing Director, Australian Longline Pty Ltd | Commercial fishing operations: mid-water trawl | Meeting |
| Mr Sean Sloane, Director, Fisheries and Aquaculture Policy, Primary Industries and Regions, South Australia (PIRSA) | Fisheries management | Meeting |
| Dr Tony Smith, Ecosystem Based Management Stream Leader, CSIRO Oceans and Atmosphere Flagship | Fisheries science and marine resource assessment and modelling | Meeting |
| Dr Ilona Stobutzki, Assistant Secretary, Fisheries and Quantitative Sciences, ABARES | Fisheries science | Meeting |
| Assoc. Professor Tim Ward, Principal Scientist, Finfish, SARDI Aquatic Sciences | Fisheries science: resource assessment | Meeting |
| Ms Marcia Valente, Director, Valente Holdings Pty Ltd | Commercial fishing | Submission to Interim Declaration |
| Mr Richard Wells, ResourceWise Ltd, New Zealand | Fisheries specialist | Phone meeting |
| Mr JaapJan Zeeberg, former researcher, Netherlands Institute for Fisheries Research | Fishing operations and bycatch | Phone meeting |
| Dr Ian Knuckey, Director Fishwell Consulting | Fishing operations | Response to request for advice |

Table A2.2 Participants in consultation meetings

| ORGANISATION | ATTENDANCE |
|---|---|
| **Australian government agencies: phone conference 11 April 2014** | |
| ABARES | Dr Ilona Stobutzki<br>Mr Andrew Penney<br>Mr Andy Moore |
| AFMA | Dr James Findlay<br>Mr George Day |
| Department of Agriculture | Mr Gordon Neil<br>Ms Terri McGrath |
| Department of the Prime Minister and Cabinet | Ms Hannah Keal |
| FRDC | Mr Crispian Ashby |
| **Indigenous community: meeting 1, 2 May 2014, Hobart (teleconference)** | |
| NSW Indigenous Fishing Consultative Committee | Assoc. Prof. Stephan Schnierer |
| **Conservation groups meeting 1, 2 May 2014, Hobart** | |
| Environment Tasmania | Ms Rebecca Hubbard |
| Tasmanian Conservation Trust | Mr Jon Bryan |
| Humane Society International | Mr Alistair Graham |
| **Scientific community: meeting 1, 2 May 2014, Hobart** | |
| CSIRO | Dr Neil Klaer (apology) |
| FRDC, Small Pelagics Research Co-ordination Program | Prof. Colin Buxton |
| Agreement on the Conservation of Albatrosses and Petrels | Mr Warren Papworth (apology) |
| Australian Marine Sciences Association | Dr Tim Lynch |
| University of Western Australia Oceans Institute | Dr Tim Langlois (by phone) |
| IMAS (meeting 3, 2 May 2014, Hobart) | Dr Caleb Gardner |
| **Recreational fishing groups: meeting 2, 2 May 2014, Hobart** | |
| Tuna Club of Tasmania | Mr John Edwards |
| Game Fish Tasmania Sports Fishing Club Inc. | Mr Neil Clark<br>Mr Martin Haley |
| TARFish | Mr Mark Nikolai |
| Australian Recreational Fishing Foundation | Mr Allan Hansard (apology) |
| Recfishwest | Mr Leyland Campbell (apology) |
| Recreational Fishing Alliance of NSW | Mr Malcolm Poole (by phone) |
| Game Fishing Association Australia | Mr Brett Cleary |
| Australian National Sportfishing Association | Mr John Burgess |
| **State government agencies: meeting 3, 2 May 2014, Hobart** | |
| Department of Fisheries, Western Australia | Ms Heather Brayford (by phone) |
| Sea Fishing and Aquaculture, Tasmanian Department of Primary Industries, Water and Environment | Mr Rob Gott<br>Ms Frances Seaborn |
| **Resource and management advisory bodies: meeting 3, 2 May 2014, Hobart** | |

| ORGANISATION | ATTENDANCE |
|---|---|
| South East Management Advisory Committee | Ms Debbie Wisby |
| **Commercial fishing industry: meeting 3, 2 May 2014, Hobart** | |
| Seafish Tasmania | Mr Gerry Geen |
| Commonwealth Fisheries Association | Mr Martin Exel<br>Ms Renee Vajtauer (by phone) |
| Tasmanian Seafood Industry Council | Mr Neil Stump |

# Appendix 3 EPBC Act protected species in the SPF area

## Protected species

Table A3.1 Protected species list

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| **MARINE MAMMALS** | | | | |
| **Pinnipeds** | | | | |
| *Arctocephalus forsteri* | New Zealand fur seal | Marine | Medium | Medium |
| *Arctocephalus gazella* | Antarctic fur seal | Marine | Not assessed | Not assessed |
| *Arctocephalus pusillus* | Australian fur seal, Cape fur seal | Marine | High | High |
| *Arctocephalus tropicalis* | Subantarctic fur seal | Vulnerable Marine | Medium | Medium |
| *Hydrurga leptonyx* | Leopard seal | Marine | High | Medium |
| *Leptonychotes weddelli* | Weddell seal | Marine | Not assessed | Not assessed |
| *Lobodon carcinophagus* | Crabeater seal | Marine | Not assessed | Not assessed |
| *Mirounga leonina* | Southern elephant seal | Vulnerable Marine | High | Medium |
| *Neophoca cinerea* | Australian sea lion | Vulnerable Marine | Medium | Medium |
| *Ommatophoca rossii* | Ross seal | Marine | Not assessed | Not assessed |
| **Cetaceans: Baleen whales** | | | | |
| *Balaenoptera acutorostrata* | Common minke whale | Cetacean Migratory | Medium | Medium |
| *Balaenoptera bonaerensis* | Antarctic minke whale | Cetacean Migratory | Medium | Medium |
| *Balaenoptera borealis* | Sei whale | Vulnerable Cetacean Migratory | Medium | Medium |
| *Balaenoptera edeni* | Bryde's whale | Cetacean Migratory | Medium | Medium |
| *Balaenoptera musculus* | Blue whale | Endangered Cetacean Migratory | Medium | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Balaenoptera omurai* | Omura's whale | Not listed (all cetaceans protected in the Australian Whale Sanctuary) | Not assessed | Not assessed |
| *Balaenoptera physalus* | Fin whale | Vulnerable<br>Cetacean<br>Migratory | Medium | Medium |
| *Caperea marginata* | Pygmy right whale | Cetacean<br>Migratory | Medium | Medium |
| *Eubalaena australis* | Southern right whale | Endangered<br>Cetacean<br>Migratory | Medium | Medium |
| *Megaptera novaeangliae* | Humpback whale | Vulnerable<br>Cetacean<br>Migratory | Medium | Medium |
| **Cetaceans: Toothed cetaceans** | | | | |
| *Berardius arnuxii* | Arnoux's beaked whale | Cetacean | Medium | Medium |
| *Delphinus delphis* | Common dolphin, short-beaked common dolphin | Cetacean | Medium | Medium |
| *Feresa attenuata* | Pygmy killer whale | Cetacean | High | Medium |
| *Globicephala macrorhynchus* | Short-finned pilot whale | Cetacean | High | Medium |
| *Globicephala melas* | Long-finned pilot whale | Cetacean | High | Medium |
| *Grampus griseus* | Risso's dolphin, grampus | Cetacean | High | High |
| *Hyperoodon planifrons* | Southern bottlenose whale | Cetacean | High | Medium |
| *Kogia breviceps* | Pygmy sperm whale | Cetacean | Medium | Medium |
| *Kogia sima* | Dwarf sperm whale | Cetacean | Medium | Medium |
| *Lagenodelphis hosei* | Fraser's dolphin, Sarawak dolphin | Cetacean<br>Migratory | High | High |
| *Lagenorhynchus cruciger* | Hourglass dolphin | Cetacean | High | High |
| *Lagenorhynchus obscurus* | Dusky dolphin | Cetacean<br>Migratory | Low | Low |
| *Lissodelphis peronii* | Southern right whale dolphin | Cetacean | High | High |
| *Mesoplodon bowdoini* | Andrew's beaked whale | Cetacean | High | Medium |
| *Mesoplodon densirostris* | Blainville's beaked whale, dense-beaked whale | Cetacean | High | Medium |
| *Mesoplodon ginkgodens* | Gingko-toothed beaked whale | Cetacean | High | Medium |
| *Mesoplodon grayi* | Gray's beaked whale | Cetacean | High | Medium |
| *Mesoplodon hectori* | Hector's beaked whale | Cetacean | High | Medium |
| *Mesoplodon layardii* | Strap-toothed beaked whale | Cetacean | High | Medium |
| *Mesoplodon mirus* | True's beaked whale | Cetacean | High | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Orcinus orca* | Killer whale, orca | Cetacean Migratory | Medium | Medium |
| *Peponocephala electra* | Melon-headed whale | Cetacean | Medium | Medium |
| *Phocoena dioptrica* | Spectacled porpoise | Cetacean | Not assessed | Not assessed |
| *Physeter macrocephalus* | Sperm whale | Cetacean Migratory | Medium | Medium |
| *Pseudorca crassidens* | False killer whale | Cetacean | High | Medium |
| *Sousa chinensis* | Indo-Pacific humpback dolphin | Cetacean Migratory | Medium | Medium |
| *Stenella attenuata* | Spotted dolphin, pantropical spotted dolphin | Cetacean Migratory | Medium | Medium |
| *Stenella coeruleoalba* | Striped dolphin | Cetacean | High | High |
| *Stenella longirostris* | Long-snouted spinner dolphin | Cetacean Migratory | Medium | Medium |
| *Steno bredanensis* | Rough-toothed dolphin | Cetacean | Medium | Medium |
| *Tasmacetus shepherdi* | Shepherd's beaked whale | Cetacean | Medium | Medium |
| *Tursiops aduncus* | Indo-Pacific bottlenose dolphin | Cetacean Migratory | High | High |
| *Tursiops truncatus* | Common bottlenose dolphin | Cetacean | High | High |
| *Ziphius cavirostris* | Cuvier's beaked whale | Cetacean | High | Medium |
| **Dugong** | | | | |
| *Dugong dugon* | Dugong | Marine Migratory | Medium | Medium |
| **Seabirds** (central place forager species bolded) | | | | |
| ***Anous minutus*** | Black noddy | Marine | Low | Low |
| ***Anous stolidus*** | Common noddy | Marine | Low | Low |
| *Anous tenuirostris melanops* | Australian lesser noddy | Vulnerable Marine | Low | Low |
| *Apus pacificus* | Fork-tailed swift | Marine Migratory | Not assessed | Not assessed |
| *Ardea alba/Ardea modesta/ Egretta alba* | Great egret, white egret | Marine Migratory | Not assessed | Not assessed |
| ***Ardenna tenuirostris*** (listed Marine as *Puffinus tenuirostris)* | Short-tailed shearwater | Marine Migratory | Medium | Medium |
| *Botaurus poiciloptilus* | Australasian bittern | Endangered | Not assessed | Not assessed |
| *Calonectris leucomelas* (listed Migratory as *Puffinus leucomelas*) | Streaked shearwater | Marine Migratory | Medium | Medium |
| *Catharacta skua* | Great skua | Marine | Medium | Medium |
| *Daption capense* | Cape petrel | Marine | Medium | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Diomedea epomophora epomophora* (listed Marine and Migratory as *D. epomophora* (sensu stricto)) | Southern royal albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Diomedea exulans amsterdamensis* | Amsterdam albatross | Endangered Marine Migratory | Medium | Medium |
| *Diomedea exulans antipodensis* | Antipodean albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Diomedea exulans exulans* (listed Marine and Migratory as *D. dabbenena*) | Tristan albatross | Endangered Marine Migratory | Medium | Medium |
| *Diomedea exulans (sensu lato)* | Wandering albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Diomedea exulans gibsoni/D. gibsoni* | Gibson's albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Diomedea sanfordi* | Northern royal albatross | Endangered Marine Migratory | Medium | Medium |
| ***Eudyptula minor*** | Little penguin | Marine | Low | Low |
| ***Fregetta grallaria grallaria*** | White-bellied storm petrel (Tasman Sea, Australasian) | Marine | Medium | Medium |
| *Fregetta tropica* | Black-bellied storm petrel | Marine | Medium | Medium |
| *Fulmarus glacialoides* | Southern fulmar | Marine | Medium | Medium |
| *Garrodia nereis* | Grey-backed storm petrel | Marine | Medium | Medium |
| *Haliaeetus leucogaster* | White-bellied sea eagle | Marine Migratory | Not assessed | Not assessed |
| *Halobaena caerulea* | Blue petrel | Vulnerable Marine | Medium | Medium |
| ***Larus dominicanus*** | Kelp gull | Marine | Low | Low |
| ***Larus novaehollandiae*** | Silver gull | Marine | Low | Low |
| ***Larus pacificus*** | Pacific gull | Marine | Low | Low |
| *Lugensa brevirostris* | Kerguelen petrel | Marine | Medium | Medium |
| *Macronectes giganteus* | Southern giant petrel | Endangered Marine Migratory | Low | Low |
| *Macronectes halli* | Northern giant petrel | Vulnerable Marine Migratory | Low | Low |
| *Morus capensis* | Cape gannet | Marine | Low | Low |
| ***Morus serrator*** | Australasian gannet | Marine | Low | Low |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Neophema chrysogaster* | Orange-bellied parrot | Critically endangered Marine | Not assessed | Not assessed |
| *Oceanites oceanicus* | Wilson's storm petrel | Marine | Low | Low |
| *Pachyptila desolata* | Antarctic prion | Marine | Not assessed | Not assessed |
| *Pachyptila belcheri* | Slender-billed prion | Marine | Not assessed | Not assessed |
| *Pachyptila salvini* | Salvin's prion | Marine | Not assessed | Not assessed |
| *Pachyptila turtur* | Fairy prion | Marine | Medium | Medium |
| *Pachyptila vittata* | Broad-billed prion | Marine | Not assessed | Not assessed |
| *Pandion haliaetus* | Osprey | Marine Migratory | Not assessed | Not assessed |
| ***Pelagodroma marina*** | White-faced storm petrel | Marine | Low | Low |
| ***Pelecanoides urinatrix*** | Common diving petrel | Marine | Low | Low |
| ***Phaethon rubricauda*** | Red-tailed tropicbird | Marine | Low | Low |
| ***Phalacrocorax fuscescens*** | Black-faced cormorant | Marine | Medium | Medium |
| *Phoebetria fusca* | Sooty albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Phoebetria palpebrata* | Light-mantled sooty albatross | Marine Migratory | Medium | Medium |
| *Procellaria aequinoctialis* | White-chinned petrel | Marine Migratory | Medium | Medium |
| *Procellaria cinerea* | Grey petrel | Marine Migratory | Low | Low |
| *Procellaria parkinsoni* | Black petrel | Marine Migratory | Medium | Medium |
| *Procellaria westlandica* | Westland petrel | Marine Migratory | Medium | Medium |
| ***Procelsterna cerulea*** | Grey ternlet | Marine | Low | Low |
| *Pseudobulweria rostrata* | Tahiti petrel | Marine | Low | Low |
| *Pterodroma cervicalis* | White-necked petrel | Marine | Medium | Medium |
| *Pterodroma lessoni* | White-headed petrel | Marine | Low | Low |
| ***Pterodroma leucoptera leucoptera*** | Gould's petrel | Endangered Marine | Medium | Medium |
| ***Pterodroma macroptera*** | Great-winged petrel | Marine | Medium | Medium |
| *Pterodroma mollis* | Soft-plumaged petrel | Vulnerable Marine | Medium | Medium |
| ***Pterodroma neglecta neglecta*** | Kermadec petrel (western) | Vulnerable Marine | Low | Low |
| ***Pterodroma nigripennis*** | Black-winged petrel | Marine | Medium | Medium |
| ***Pterodroma solandri*** | Providence petrel | Marine | Medium | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| ***Puffinus assimilis*** | Little shearwater | Marine | Medium | Medium |
| *Puffinus bulleri* | Buller's shearwater | Marine | Medium | Medium |
| ***Puffinus carneipes*** | Flesh-footed shearwater, fleshy-footed shearwater | Marine | Medium | Medium |
| *Puffinus gavia* | Fluttering shearwater | Marine | Low | Low |
| ***Puffinus griseus*** | Sooty shearwater | Marine | Low | Low |
| *Puffinus huttoni* | Hutton's shearwater | Marine | Low | Low |
| ***Puffinus pacificus*** | Wedge-tailed shearwater | Marine | Medium | Medium |
| *Stercorarius antarcticus* | Brown skua | Marine | Not assessed | Not assessed |
| ***Sterna albifrons*** | Little tern | Marine | Low | Low |
| ***Sterna anaethetus*** | Bridled tern | Marine | Low | Low |
| ***Sterna caspia*** | Caspian tern | Marine | Low | Low |
| ***Sterna dougallii*** | Roseate tern | Marine<br>Migratory | Not assessed | Not assessed |
| ***Sterna fuscata*** | Sooty tern | Marine | Low | Low |
| *Sterna hirundo* | Common tern | Marine | Low | Low |
| *Sterna paradisaea* | Arctic tern | Marine | Low | Low |
| *Sterna striata* | White-fronted tern | Marine | Low | Low |
| *Sterna sumatrana* | Black-naped tern | Marine | Low | Low |
| ***Sternula nereis nereis*** | Australian fairy tern | Vulnerable | Not assessed | Not assessed |
| ***Sula dactylatra*** | Masked booby | Marine | Low | Low |
| *Thalassarche bulleri platei* | Buller's albatross, Pacific albatross | Vulnerable<br>Marine<br>Migratory | Medium | Medium |
| ***Thalassarche cauta cauta*** (listed Marine and Migratory as *T. cauta* (sensu stricto)) | Shy albatross, Tasmanian shy albatross | Vulnerable<br>Marine<br>Migratory | High | Medium |
| *Thalassarche chlororhynchos bassi/T. carteri* | Indian yellow-nosed albatross, Atlantic yellow-nosed albatross | Vulnerable<br>Marine<br>Migratory | Medium | Medium |
| *Thalassarche chrysostoma* | Grey-headed albatross | Endangered<br>Marine<br>Migratory | Medium | Medium |
| *Thalassarche eremita* | Chatham albatross | Endangered<br>Marine<br>Migratory | High | Medium |
| *Thalassarche melanophris* | Black-browed albatross | Vulnerable<br>Marine<br>Migratory | High | Medium |
| *Thalassarche melanophris impavida* (listed Marine and Migratory as *T. impavida*) | Campbell albatross | Vulnerable<br>Marine<br>Migratory | Medium | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Thalassarche salvini* | Salvin's albatross | Vulnerable Marine Migratory | Medium | Medium |
| *Thalassarche steadi* | White-capped albatross | Vulnerable Marine Migratory | Medium | Medium |
| ***Thalasseus bergii*** (listed Marine as *Sterna bergii*) | Crested tern | Marine | Low | Low |
| **MARINE REPTILES** | | | | |
| **Turtles** | | | | |
| *Caretta caretta* | Loggerhead turtle | Endangered Marine Migratory | Medium | Medium |
| *Chelonia mydas* | Green turtle | Vulnerable Marine Migratory | Medium | Medium |
| *Dermochelys coriacea* | Leatherback turtle | Endangered Marine Migratory | Medium | Medium |
| *Eretmochelys imbricata* | Hawksbill turtle | Vulnerable Marine Migratory | Medium | Medium |
| *Lepidochelys olivacea* | Olive ridley turtle, Pacific ridley turtle | Endangered Marine Migratory | Not assessed | Not assessed |
| *Natator depressus* | Flatback turtle | Vulnerable Marine Migratory | Not assessed | Not assessed |
| **Seasnakes** | | | | |
| *Acalytophis peroni* | Horned seasnake | Marine | Medium | Medium |
| *Aipysurus laevis* | Olive seasnake | Marine | Not assessed | Not assessed |
| *Aipysurus pooleorum* | Shark Bay seasnake | Marine | Not assessed | Not assessed |
| *Astrotia stokesii* | Stokes' seasnake | Marine | Medium | Medium |
| *Disteira kingii* | Spectacled seasnake | Marine | Medium | Medium |
| *Disteira major* | Olive-headed seasnake | Marine | Not assessed | Not assessed |
| *Hydrophis elegans* | Elegant seasnake | Marine | Low | Low |
| *Hydrophis ornatus/Chitulia ornata* | Spotted seasnake, ornate reef seasnake | Marine | Medium | Medium |
| *Pelamis platurus* | Yellow-bellied seasnake | Marine | Medium | Medium |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| **SHARKS AND RAYS** | | | | |
| *Carcharias taurus* (east coast population) | Grey nurse shark | Critically endangered | Medium | Medium |
| *Carcharias taurus* (west coast population) | Grey nurse shark | Vulnerable | Medium | Medium |
| *Carcharodon carcharias* | Great white shark | Vulnerable<br>Migratory | Medium | Medium |
| *Centrophorus harrissoni* | Harrisson's dogfish, endeavour dogfish, dumb gulper shark, Harrisson's deepsea dogfish | Conservation dependent | Not assessed; not listed at the time of ERA | Not assessed |
| *Centrophorus zeehaani* | Southern dogfish, endeavour dogfish, little gulper shark | Conservation dependent | Not assessed, not listed at the time of ERA | Not assessed |
| *Cetorhinus maximus* | Basking shark | Migratory | Not assessed | Not assessed |
| *Galeorhinus galeus* | School shark, eastern school shark, snapper shark, tope, soupfin shark | Conservation dependent | Not assessed, not listed at the time of ERA | Not assessed |
| *Isurus oxyrinchus* | Shortfin mako, mako shark | Migratory | Not assessed, not listed at the time of ERA | Not assessed |
| *Isurus paucus* | Longfin mako | Migratory | Not assessed, not listed at the time of ERA | Not assessed |
| *Lamna nasus* | Porbeagle, mackerel shark | Vulnerable<br>Migratory | Not assessed, not listed at the time of ERA | Not assessed |
| *Manta birostris* | Giant manta ray | Migratory | Not assessed: not listed the time of ERA | Not assessed |
| *Pristis zijsron* | Green sawfish, dindagubba, narrowsnout sawfish | Vulnerable | Not assessed, not listed at the time of ERA | Not assessed |
| *Rhincodon typus* | Whale shark | Vulnerable<br>Migratory | Medium | Medium |
| **TELEOST FISH** | | | | |
| **Syngnathids** | | | | |
| *Acentronura australe* | Southern pygmy pipehorse | Marine | Low | Low |
| *Acentronura tentaculata* | Shortpouch pygmy pipehorse | Marine | Low | Low |
| *Campichthys galei* | Gale's pipefish | Marine | Low | Low |
| *Campichthys tryoni* | Tryon's pipefish | Marine | Low | Low |
| *Choeroichthys suillus* | Pig-snouted pipefish | Marine | Low | Low |
| *Corythoichthys amplexus* | Fijian banded pipefish, brown-banded pipefish | Marine | Low | Low |
| *Corythoichthys ocellatus* | Orange-spotted pipefish, ocellated pipefish | Marine | Low | Low |
| *Cosmocampus howensis* | Lord Howe pipefish | Marine | Low | Low |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Festucalex cinctus* | Girdled pipefish | Marine | Low | Low |
| *Filicampus tigris* | Tiger pipefish | | Low | Low |
| *Halicampus boothae* | Booth's pipefish | Marine | Low | Low |
| *Halicampus brocki* | Brock's pipefish | Marine | Low | Low |
| *Halicampus grayi* | Mud pipefish, Gray's pipefish | Marine | Low | Low |
| *Heraldia nocturna* | Upside-down pipefish, eastern upside-down pipefish | Marine | Low | Low |
| *Hippichthys cyanospilos* | Blue-speckled pipefish, blue-spotted pipefish | Marine | Low | Low |
| *Hippichthys heptagonus* | Madura pipefish, reticulated freshwater pipefish | Marine | Low | Low |
| *Hippichthys penicillus* | Beady pipefish, steep-nosed pipefish | Marine | low | Low |
| *Hippocampus abdominalis* | Big-belly seahorse, eastern potbelly seahorse, New Zealand potbelly seahorse | Marine | Low | Low |
| *Hippocampus angustus* | Western spiny seahorse, narrow-bellied seahorse | Marine | Low | Low |
| *Hippocampus breviceps* | Short-head seahorse, short-snouted seahorse | Marine | Low | Low |
| *Hippocampus kelloggi* | Kellogg's seahorse, great seahorse | Marine | Low | Low |
| *Hippocampus kuda* | Spotted seahorse, yellow seahorse | Marine | Low | Low |
| *Hippocampus minotaur* | Bullneck seahorse | Marine | Low | Low |
| *Hippocampus planifrons* | Flat-face seahorse | Marine | Low | Low |
| *Hippocampus subelongatus* | West Australian seahorse | Marine | Low | Low |
| *Hippocampus whitei* | White's seahorse, crowned seahorse, Sydney seahorse | Marine | Low | Low |
| *Histiogamphelus briggsii* | Crested pipefish, Briggs' crested pipefish, Briggs' pipefish | Marine | Low | Low |
| *Histiogamphelus cristatus* | Rhino pipefish, Macleay's crested pipefish, ring-back pipefish | Marine | Low | Low |
| *Hypselognathus horridus* | Shaggy pipefish, prickly pipefish | Marine | Low | Low |
| *Hypselognathus rostratus* | Knifesnout pipefish, knife-snouted pipefish | Marine | Low | Low |
| *Kaupus costatus* | Deepbody pipefish, deep-bodied pipefish | Marine | Low | Low |
| *Kimblaeus bassensis* | Trawl pipefish, Bass Strait pipefish | Marine | Low | Low |
| *Leptoichthys fistularius* | Brushtail pipefish | Marine | Low | Low |
| *Lissocampus caudalis* | Australian smooth pipefish, smooth pipefish | Marine | Low | Low |
| *Lissocampus fatiloquus* | Prophet's pipefish | Marine | Low | Low |
| *Lissocampus runa* | Javelin pipefish | Marine | Low | Low |
| *Maroubra perserrata* | Sawtooth pipefish | Marine | Low | Low |
| *Micrognathus andersonii* | Anderson's pipefish, shortnose pipefish | Marine | Low | Low |

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Micrognathus brevirostris* [A] | Thorntail pipefish, thorn-tailed pipefish | Marine | Not assessed | Not assessed |
| *Microphis manadensis* | Manado pipefish, Manado River pipefish | Marine | Low | Low |
| *Mitotichthys meraculus* | Western crested pipefish | Marine | Low | Low |
| *Mitotichthys mollisoni* | Mollison's pipefish | Marine | Low | Low |
| *Mitotichthys semistriatus* | Halfbanded pipefish | Marine | Low | Low |
| *Mitotichthys tuckeri* | Tucker's pipefish | Marine | Low | Low |
| *Nannocampus subosseus* | Bonyhead pipefish, bony-headed pipefish | Marine | Low | Low |
| *Notiocampus ruber* | Red pipefish | Marine | Low | Low |
| *Phycodurus eques* | Leafy seadragon | Marine | Low | Low |
| *Phyllopteryx taeniolatus* | Common seadragon, weedy seadragon | Marine | Low | Low |
| *Pugnaso curtirostris* | Pugnose pipefish, Pug-nosed pipefish | Marine | Low | Low |
| *Solegnathus dunckeri* | Duncker's pipehorse | Marine | Low | Low |
| *Solegnathus hardwickii* [B] | Pallid pipehorse, Hardwick's pipehorse | Marine | Not assessed | Not assessed |
| *Solegnathus lettiensis* | Gunther's pipehorse, Indonesian pipefish | Marine | Low | Low |
| *Solegnathus robustus* | Robust pipehorse, robust spiny pipehorse | Marine | Low | Low |
| *Solegnathus spinosissimus* | Spiny pipehorse, Australian spiny pipehorse | Marine | Low | Low |
| *Solenostomus cyanopterus/ paegnius* | Robust ghost pipefish, blue-finned ghost pipefish | Marine | Low | Low |
| *Solenostomus paradoxus* | Ornate ghost pipefish, harlequin ghost pipefish, ornate ghost pipefish | Marine | Low | Low |
| *Stigmatopora argus* | Spotted pipefish, gulf pipefish | Marine | Low | Low |
| *Stigmatopora nigra* | Widebody pipefish, wide-bodied pipefish, black pipefish | Marine | Low | Low |
| *Stipecampus cristatus* | Ringback pipefish, ring-backed pipefish | Marine | Low | Low |
| *Syngnathoides biaculeatus* | Double-end pipehorse, double-ended pipehorse, alligator pipefish | Marine | Low | Low |
| *Trachyrhamphus bicoarctatus* | Bentstick pipefish, bend stick pipefish, short-tailed pipefish | Marine | Low | Low |
| *Urocampus carinirostris* | Hairy pipefish | Marine | Low | Low |
| *Vanacampus margaritifer* | Mother-of-pearl pipefish | Marine | Low | Low |
| *Vanacampus phillipi* | Port Phillip pipefish | Marine | Low | Low |

[A] The panel noted that this species is not valid in Australia. Now *M. pygmaeus*. (Codes for Australian Aquatic Biota (CAAB) Taxon code 37 282087).

[B] The panel noted that this species is not valid in Australia. Current valid species likely to be Solegnathus sp. 1. (CAAB Taxon code 37 282099).

| GROUP/SCIENTIFIC NAME | COMMON NAME/S | EPBC ACT LISTING STATUS | LEVEL 2 PSA RISK (DALEY *ET AL.* 2007B) | LEVEL 2 PSA RESIDUAL RISK (AFMA 2010B) |
|---|---|---|---|---|
| *Vanacampus poecilolaemus* | Longsnout pipefish, Australian long-snout pipefish, long-snouted pipefish | Marine | Low | Low |
| *Vanacampus vercoi* | Verco's pipefish | Marine | Low | Low |
| **Other teleost fish** | | | | |
| *Hoplostethus atlanticus* | Orange roughy | Conservation dependent | Not assessed, not listed at the time of ERA | Not assessed |
| *Rexea solandri* | Gemfish | Conservation dependent | Not assessed, not listed at the time of ERA | Not assessed |
| *Thunnus maccoyii* | Southern bluefin tuna | Conservation dependent | Not assessed, not listed at the time of ERA | Not assessed |

# Rationale for not assessing direct interactions of the DCFA with species groups

## Dugong *Dugong dugon*

The panel did not assess the possible impact of direct interactions on dugong specifically, due to the very marginal overlap of the species' distribution with the area of the Small Pelagic Fishery (SPF) and noting that no interactions with dugong in the mid-water trawl sector of the SPF had been recorded in the period 2002–2011 (Tuck *et al.* 2013). The distribution of dugong overlaid with trawl effort in the SPF (2000–2013) is mapped in Figure A3.1.

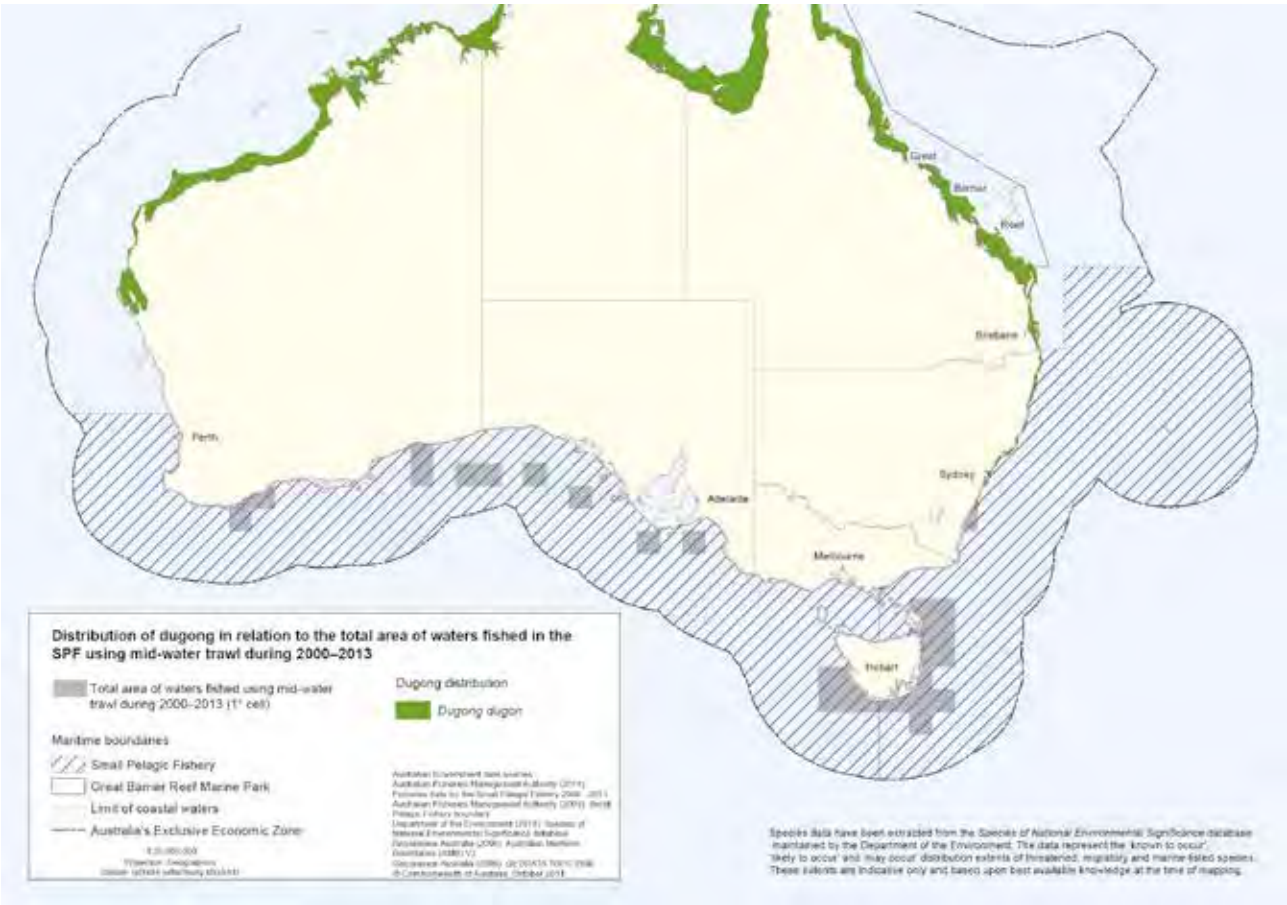



Figure A3.1 Distribution of dugong in relation to the total area of waters fished in the SPF using mid-water trawl during 2000–2013. **Source:** Map produced by the Environmental Resources Information Network (ERIN), Department of the Environment using unpublished AFMA data.

## Turtles

Elgin Associates (unpublished (a)) found that the likelihood of interaction of mid-water trawl gear with turtles in the SPF was low to moderate. The panel noted that that no interactions with turtles in the mid-water trawl sector of the SPF had been recorded in the period 2002–2011 (Tuck *et al.* 2013). As a result, the panel did not assess the possible impact of direct interactions on turtles specifically. The distribution of protected species of turtles overlaid with trawl effort in the SPF (2000–2013) is mapped in Figure A3.2.

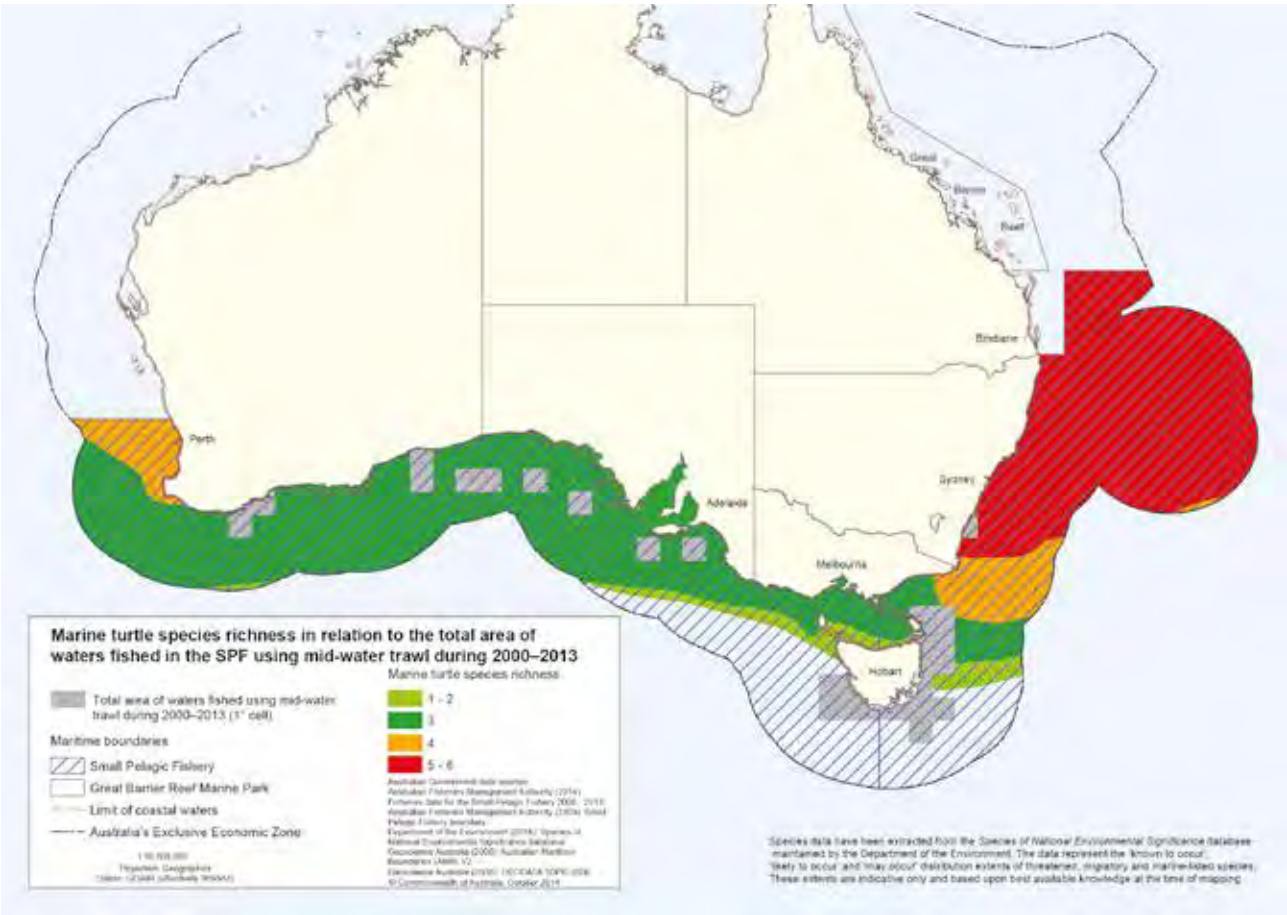



Figure A3.2 Marine turtle species richness in relation to the total area of waters fished in the SPF using mid-water trawl during 2000–2013. Source: Map produced by ERIN using unpublished AFMA data.

## Seasnakes

The panel did not assess the possible impact of direct interactions on protected species of seasnakes specifically, due to the generally low overlap of the species' distribution with the area of the SPF and noting that no interactions with seasnakes in the mid-water trawl sector of the SPF were recorded in the period 2002–2011 (Tuck *et al.* 2013). The distribution of protected species of seasnakes overlaid with trawl effort in the SPF (2000–2013) is mapped in Figure A3.3.

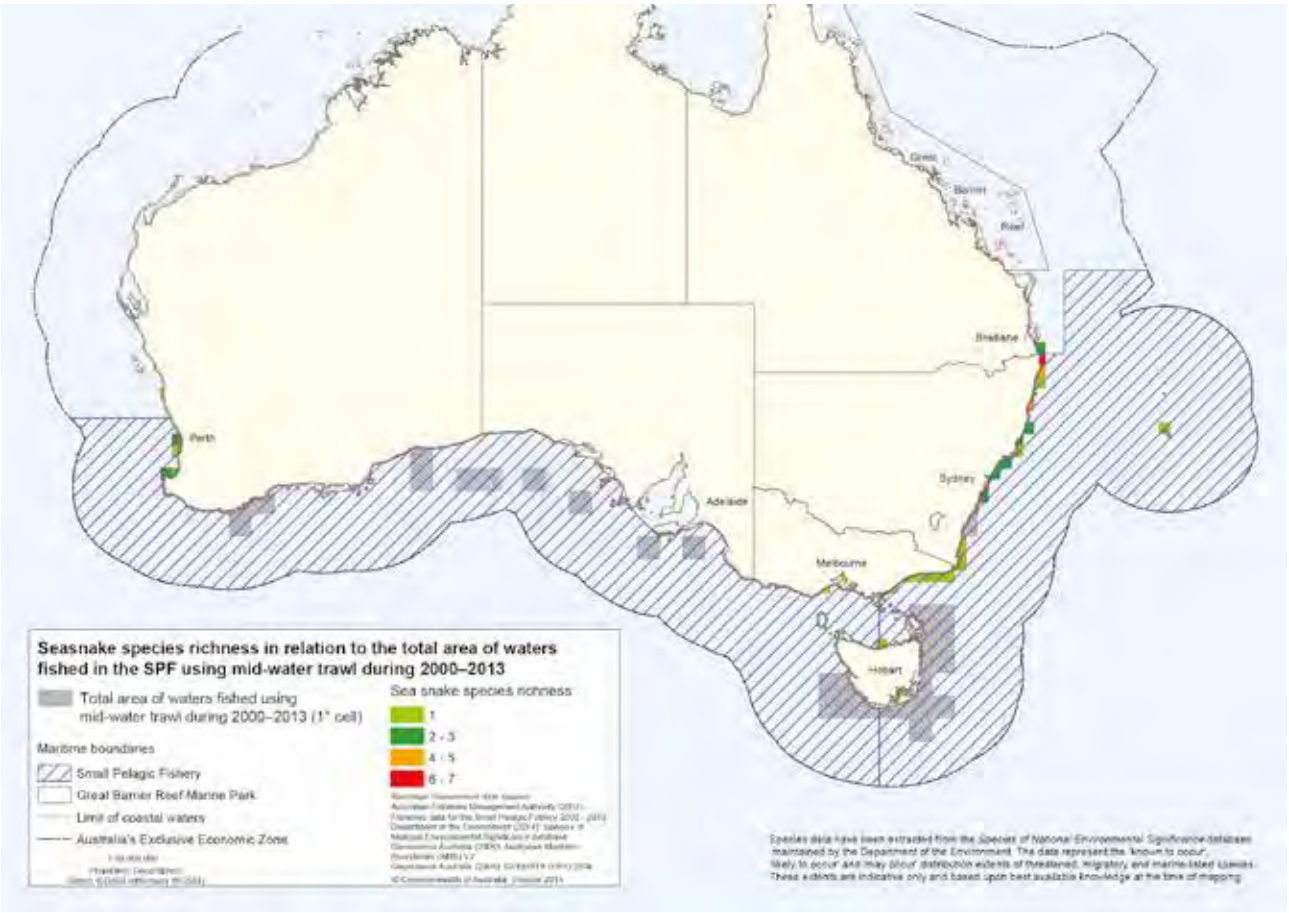



Figure A3.3 Seasnake species richness in relation to the total area of waters fished in the SPF using mid-water trawl during 2000–2013. **Source:** Map produced by ERIN using unpublished AFMA data.

## Sharks and rays

Of the 13 protected species (including separate east and west stocks of grey nurse shark *Carcharias taurus*) of sharks and rays occurring in the area of the SPF, only four (grey nurse shark east and west stocks, great white shark *Carcharias carcharodon* and whale shark *Rhincodon typus*, were assessed in the SPF mid-water trawl ecological risk assessment (ERA) (Daley *et al.* 2007b). Each of these was assessed at medium risk by both the ERA and subsequent residual risk assessment. The ERA did not assess basking shark *Cetorhinus maximus* and the remaining species were not protected species at the time the ERA was conducted.

The panel noted that there are only two records of protected shark species being captured in the SPF mid-water trawl sector in the period 2000 to 2011 (Tuck *et al.* 2013). In each case a single individual of great white shark and of shortfin mako shark *Isurus oxyrinchus* was captured. Further, of the other protected shark species occurring in the SPF, the panel considered that Harrisson's dogfish *Centrophorous harrissoni*, southern dogfish *C. zeehaani* and school shark *Galeorhinus galeus*, are generally likely to be out of the depth range of mid-water trawl gear. Elgin Associates (unpublished (a)) found that it was unlikely that the mid-water trawl sector of the SPF would interact with grey nurse shark or longfin mako *Isurus paucus*. While Elgin Associates (unpublished (a)) found that it was possible that interactions could occur with porbeagle *Lamna nasus* and basking shark, no interactions with these species were recorded in the mid-water trawl sector of the SPF in the period 2002–2011 (Tuck *et al.* 2013). Similarly, there are no records of interactions with the giant manta ray *Manta birostris* and extremely low records of catch of any skates or rays in the mid-water trawl sector of the SPF (Tuck *et al.* 2013).

As a result, the panel has not assessed the possible impact of direct interactions with protected species of sharks and rays specifically. The distribution of these species overlaid with trawl effort in the SPF (2000–2013) is mapped in Figure A3.4.

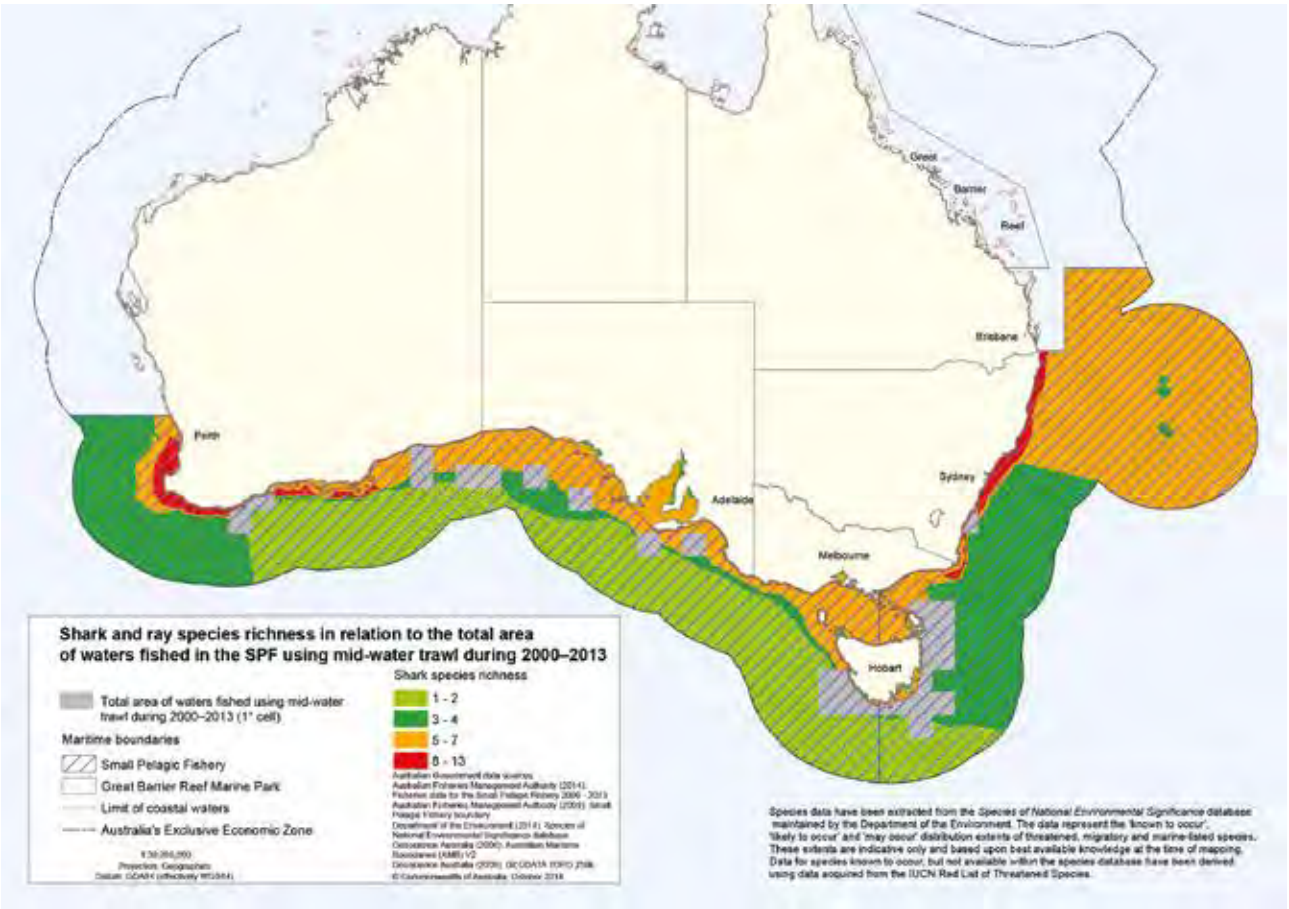



Figure A3.4 Shark and ray species richness in relation to the total area of waters fished in the SPF using mid-water trawl during 2000–2013. **Source:** Map produced by ERIN using unpublished AFMA data.

## Teleosts

Sixty-six species of syngnathids occur within the area of the SPF. Sixty-four of these were rated as low-risk in the mid-water trawl sector ERA (Daley *et al.* 2007b). This rating largely reflects a low susceptibility of these species to the fishing gear/method. The remaining two species were not assessed in the ERA but the panel considered that these two species had limited overlap with the area of the SPF and that it was reasonable to assume these species were unlikely to be more susceptible to the fishing gear/method than the other 64 syngnathid species assessed in the ERA. The panel noted that there were no reported interactions between syngnathids and mid-water trawl gear in the period 2001–11 (Tuck *et al.* 2013). The distribution of protected species of syngnathid overlaid with trawl effort in the SPF (2000–2013) is mapped in Figure A3.5.

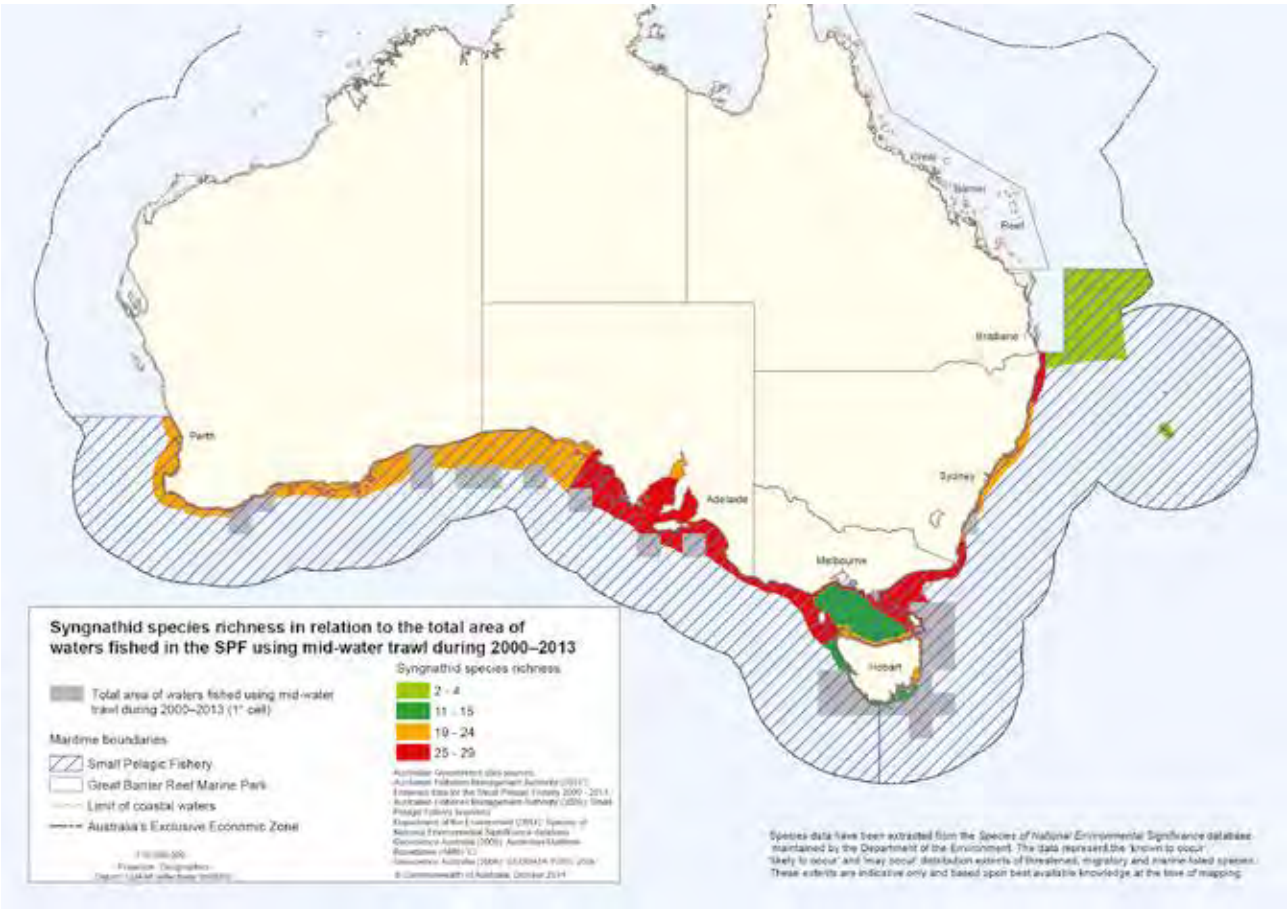



Figure A3.5 Syngnathid species richness in relation to the total area of waters fished in the SPF using mid-water trawl during 2000–2013. **Source:** Map produced by ERIN using unpublished AFMA data.

In addition, there are a three protected species of teleost fishes occurring in the area of the SPF (gemfish *Rexea solandri*, orange roughy *Hoplostethus atlanticus* and southern bluefin tuna *Thunnus maccoyii*). The panel considered that orange roughy is likely to be out of the normal depth range of mid-water trawl gear. Very small quantities of gemfish and no southern bluefin tuna or orange roughy were recorded in the SPF mid-water trawl sector in the period 2002–2011 (Tuck *et al.* 2013). As a result, the panel has not assessed the possible impact of direct interactions with protected species of teleosts specifically.

# Appendix 4 Target species' profiles and stock status

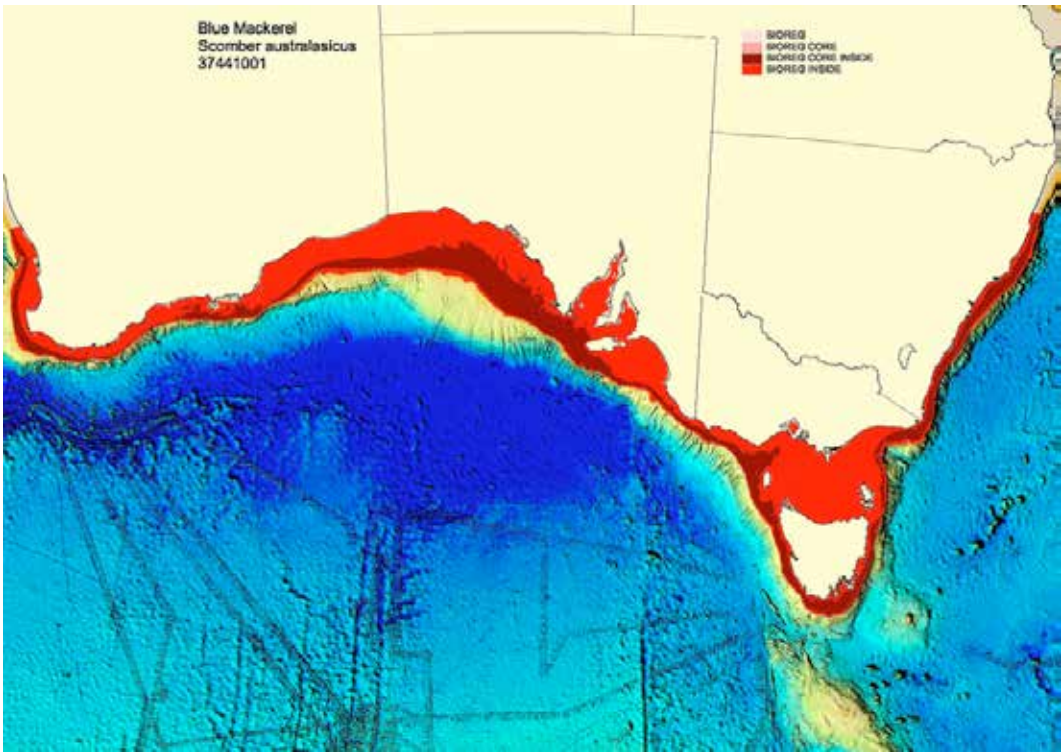
## Target species' profiles

Information on each of the Small Pelagic Fishery (SPF) target species is presented in Tables A4.1 to A4.5. Data for lengths and weights from Yearsley *et al.* (1999) are considered as most appropriate for species in Australia. They evaluated all information recorded in literature, anecdotes and museum species and provided maximum and average sizes. Lengths are recorded as total lengths unless otherwise stated. Other data are provided where considered relevant.

Table A4.1 Australian sardine *Sardinops sagax* (Jenyns, 1842)

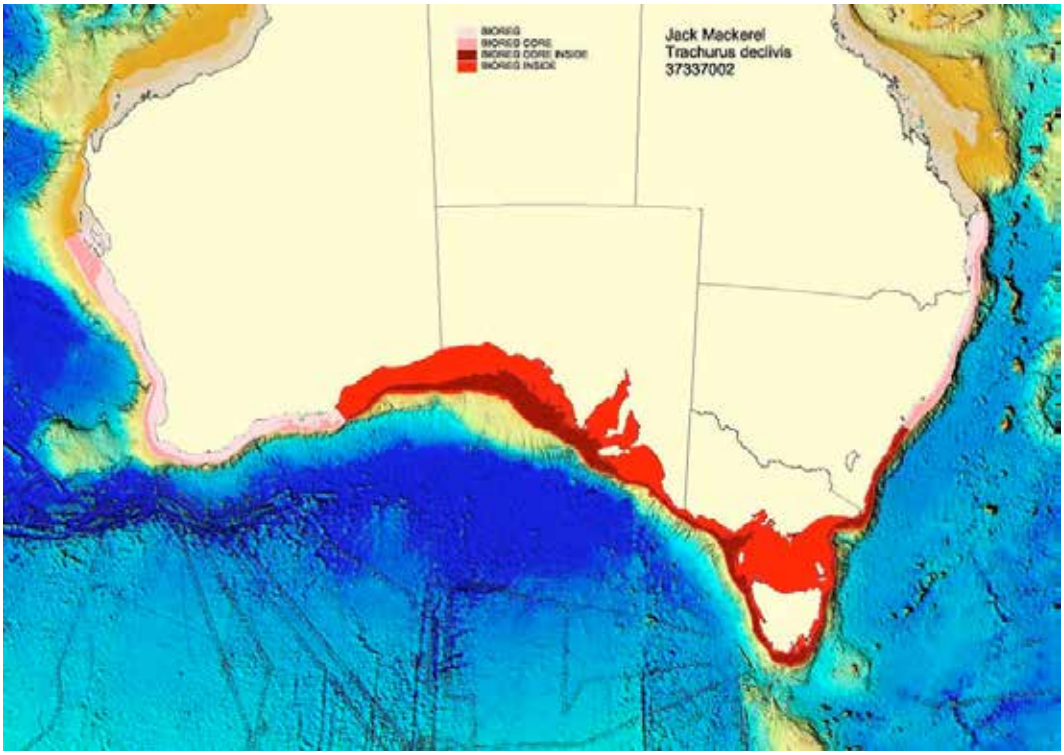
| **Family** | **Clupeidae** | |
|---|---|---|
| Distribution | The species is found in waters off Australia, New Zealand, Japan, North and South America, and Africa. In Australia, it is found throughout southern temperate waters from the mid-coast of Queensland ~23°S to Shark Bay (WA ~25° S) including northern Tasmania (Kailola *et al.* 1993, Gomon *et al.* 1994, Ward *et al.* 2013). | |
| Stock structure | There are no detailed studies of stock structure in Australia (Ward *et al.* 2013). The consensus is for four separate biological stocks: a single biological stock off SA and western Victoria, two separate biological stocks off the south and west coasts of WA and an eastern stock separated from the southern Australian stocks by Bass Strait (Ward *et al.* 2012b). | |
| Movement | Movement patterns of sardines in Australian waters are poorly understood (Ward *et al.* 2013) but were found to migrate northwards up the east coast of Australia into southern Queensland to spawn similar to reported migrations in North America, southern Africa and Japan (Ward and Staunton-Smith 2002). | |
| Habitat | Coastal pelagic; often in bays, inlets and inshore waters from surface to 200 m (Kailola *et al.* 1993); mainly schooling offshore on continental shelf to edge (Yearsley *et al.* 1999); near surface in summer but submerged in winter (Gomon *et al.* 1994). | |
| Age | Longevity: | to 6 years (Kailola *et al.* 1993), rarely beyond 6–8 years (Ward *et al.* 2013); up to 9 years (Rogers and Ward 2007, Rogers *et al.* unpublished) |
| | Recruitment to the fishery: | 1.5 years (Moore *et al.* 2011) |
| | Maximum reported age: | 25 years (Whitehead 1985) |
| Size | Maximum length: | to 21 cm TL (Yearsley *et al.* 1999), to 25 cm (Rogers *et al.* unpublished), 39.5 cm SL (Whitehead and Rodriguez-Sánchez 1995 in Froese and Pauly 2011) |
| | Common length: | 18 cm TL (Yearsley *et al.* 1999), in South Australia 12–20 cm FL (Rogers and Ward 2007), 20 cm SL (Whitehead 1985) |
| | Maximum weight: | <0.1 kg (Yearsley *et al.* 1999) |
| | Growth rates and maximum size vary according to food availability and environmental conditions, they are higher in South Australia than elsewhere in Australia (Ward *et al.* 2013). | |
| Reproduction | Age at maturity (50%): | 1–3 years (Kailola *et al.* 1993) |
| | Size at maturity: | 7–13 cm TL (Kailola *et al.* 1993); 14.6 and 15.0 cm for males and females respectively (Ward *et al.* 2013) |
| | Peak spawning season is variable: western WA in winter, SA and southern WA in summer-autumn, in Victoria spring-early summer, in southern Queensland in winter-early Spring, and in southern NSW between winter-early summer (Ward *et al.* 2013). | |

Table A4.2 Blue mackerel *Scomber australasicus* (Cuvier, 1832)

| **Family** | **Scombridae** |
|---|---|
| Distribution | Blue mackerel is found in the south-east Indian Ocean through to the north Indian Ocean and Red Sea, in the western Pacific Ocean including New Zealand and Australia, in the north-west Pacific Ocean and East China Sea and in the north-east Pacific off Hawaii and Mexico (Collette and Nauen 1983, Scoles *et al.* 1988, Smith *et al.* 2005). Distributed around most of Australia except in the Gulf of Carpentaria, Northern Territory (Gomon *et al.* 1994, Yearsley *et al.* 1999); core distribution is considered to be southern Australia; unclear whether the distribution is continuous around Tasmania and through Bass Strait (Bulman *et al.* 2008).<br>  <br><br>Figure A4.1 Distribution of blue mackerel (based on CSIRO CAAB data). Bioreg = range determined by the Bioregionalisation project based on Codes for Aquatic Australian Biota (CAAB) database, CSIRO. Core = preferred depth range, Inside = unverified core distribution range (P. Last, CSIRO, pers. comm. 2007). **Source:** Bulman *et al.* (2008), reproduced with permission from the CSIRO and FRDC |
| Stock structure | Stock structure is uncertain (Ward *et al.* 2013). Bulman *et al.* (2008) note that stock structure studies strongly suggest separate east and west stocks but finer resolution of stocks is unlikely based on lack of definition between Queensland and New Zealand fish, and broad, seasonal distribution.<br>In the SPF the species is managed as separate stocks east and west of 146°30′ E. |
| Movement | Little is known about the movement patterns of blue mackerel in Australian waters (Ward *et al.* 2013). |
| Habitat | Coastal pelagic near surface around continental margins and islands in temperate waters but wanders into tropical waters (Yearsley *et al.* 1999); migratory and schooling in coastal waters and open seas (Gomon *et al.* 1994).<br>Depth: Juveniles and small adults usually occur in inshore waters and large adults form schools in depths of 40–200 m across the continental shelf (Kailola *et al.* 1993) |

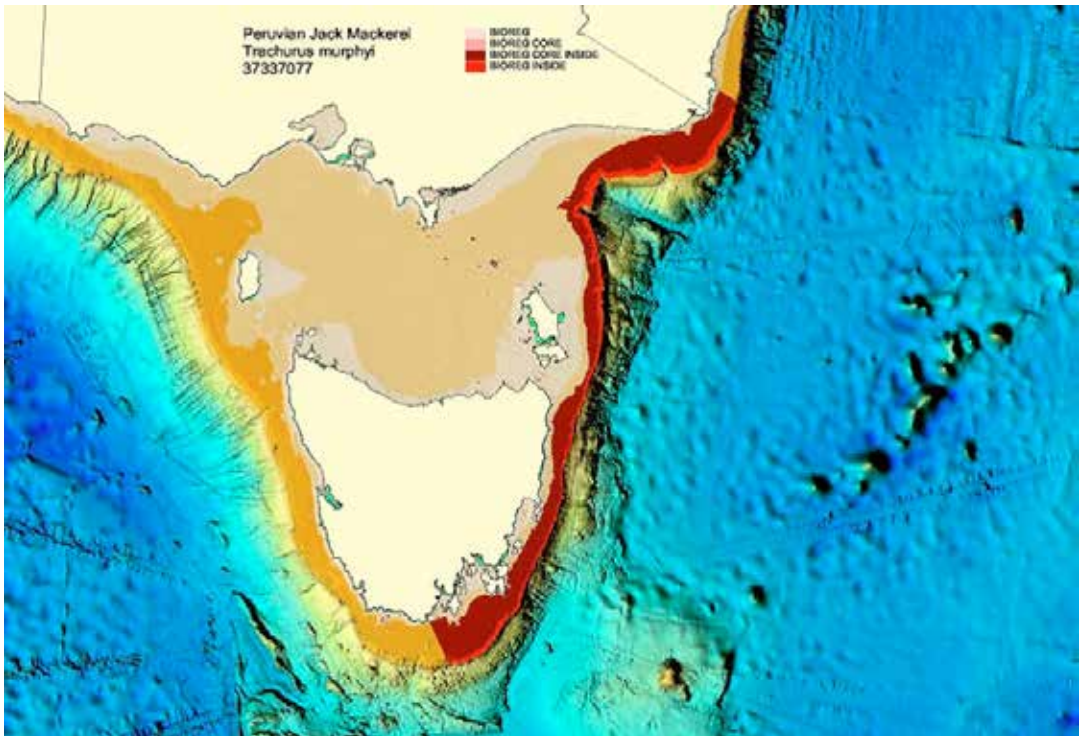
| **Family** | **Scombridae** | |
|---|---|---|
| Age | Longevity: | 7 years NSW (Stewart and Ferrell 2001); GAB at least 8 years old (commonly 2–5) (Stevens *et al.* 1984); in New Zealand maximum age 21 (males) and 23 (females) (Morrison *et al.* 2001) |
| | Recruitment to the fishery: | 2 years (Moore *et al.* 2011) |
| Size | Maximum length: | 50 cm FL (commonly 20–35 cm) (Yearsley *et al.* 1999); >45 cm in GAB (Rogers *et al.* 2007) |
| | Maximum weight: | at least 1.5 kg (commonly 0.2–0.7 kg) (Yearsley *et al.* 1999) |
| Reproduction | Age at maturity (50%): | 2 years (Moore *et al.* 2011); in New Zealand, age 2 (Bulman *et al.* 2008) |
| | Size at maturity: | 28 cm FL (Stevens *et al.* 1984); L50 (length at which 50% of the population is mature) 23.6 cm FL (females), 21.6 cm FL (males) (Rogers *et al.* 2009); 28 cm (FL) in New Zealand (Bulman *et al.* 2008) |
| | Blue mackerel are serial spawners, spawning multiple times over a prolonged spawning season of indeterminate fecundity (Ward and Rogers 2007; Rogers *et al.* 2009). Mean batch fecundity ~70,000 and ~135 eggs per g (ovary-free weight) (Rogers *et al.* 2009). Spawning in southern Australia occurs from spring to early autumn and late winter to spring off eastern Australia (Rogers *et al.* 2009). | |

Table A4.3 Jack mackerel *Trachurus declivis* (Jenyns, 1841)

| **Family** | **Carangidae** |
|---|---|
| Distribution | Jack mackerel is widely distributed throughout southern Australia from Wide Bay, Queensland to Shark Bay, WA including Tasmanian waters (Williams and Pullen 1993, Gomon *et al.* 1994).<br>  <br><br>Figure A4.2 Distribution of jack mackerel in Australia (based on CSIRO CAAB data). Bioreg = range determined by the Bioregionalisation project, Core = preferred depth range, Inside = unverified core distribution range (P. Last, CSIRO, pers. comm. 2007).<br>**Source:** Bulman *et al.* (2008) |
| Stock structure | There is some evidence to suggest that at least two populations of jack mackerel occur within Australian waters, with a third population occurring in New Zealand (Ward *et al.* 2013). Genetic studies found distinct differences between GAB and New Zealand fish (Richardson 1982). In Australia, stock structure studies suggest there are east and west subpopulations of jack mackerel (Bulman *et al.* 2008) and there was an early suggestion of a split in the eastern population but no real evidence either way. Recent re-examination of the original studies (Ovenden, unpublished) has suggested that overlapping but genetically distinct populations could account for the possible Wahlund effect proposed by Richardson (1982). Jordan *et al.* (1995) suggested the existence of a resident winter population off eastern Tasmania boosted in spring by migration from the north. |

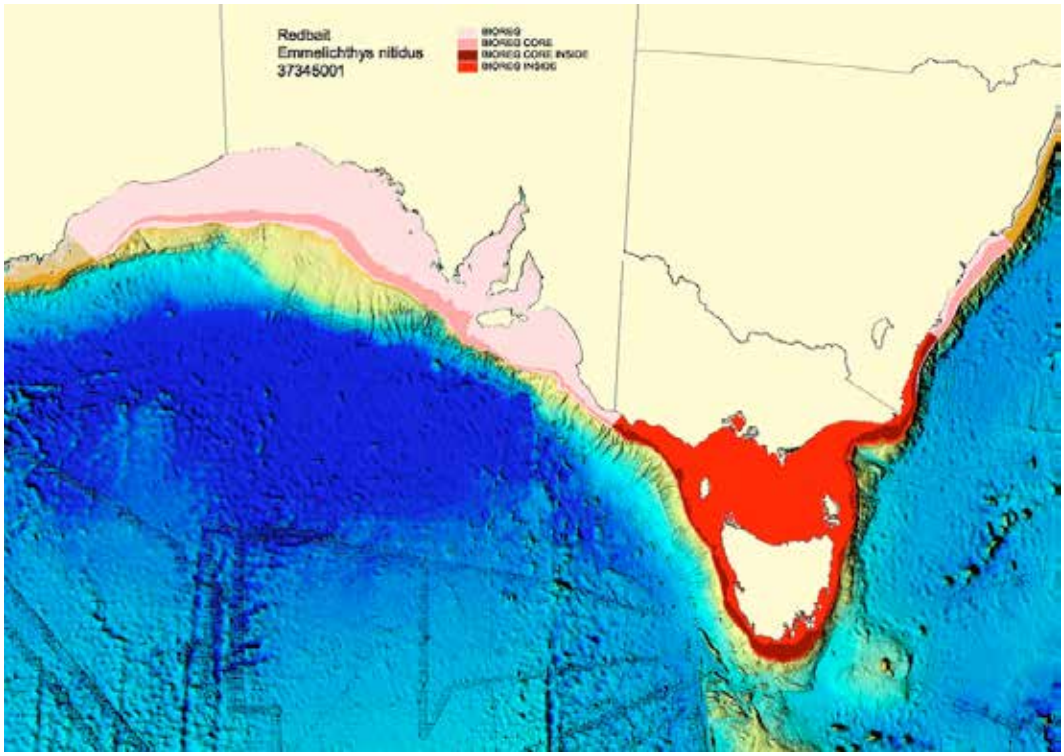
| Family | Carangidae |
|---|---|
| Movement | Ward *et al.* (2013) note there have been no specific studies focused on movement of jack mackerel. However, there are accounts of size classes being absent from catches: such as in the GAB where larger juveniles (16–26 cm) were caught in January 1966 but completely absent two months later (Shuntov 1969); the absence of mature fish (>30 cm) south of 39°S and fewer smaller fish north of 39°S (Stevens and Hausfeld 1984); and observation of spring-migrating fish into Tasmanian water (Jordan *et al.* 1995). Bulman *et al.* (2008) note there is a correlation between size and depth with smaller fish generally found inshore and large fish offshore based on studies from the GAB (Shuntov 1969; Stevens *et al.* 1984), Tasmania (Pullen 1994, Blaber and Bulman 1987) and eastern Bass Strait (Furlani *et al.* 2000). |
| Habitat | Pelagic, continental shelf waters from surface to 500 m (Kailola *et al.* 1993, Gomon *et al.* 1994, Yearsley *et al.* 1999); generally found at less than 300 m water depth. |
| Age | Longevity: 16 years (Webb and Grant 1979, Lyle *et al.* 2000)<br>Age at maturity: 3–4 years (Kailola *et al.* 1993)<br>Size at maturity: 31.5 cm (LD50 females) (Marshall *et al.* 1993), 27 cm FL (Kailola *et al.* 1993) but note that Stevens *et al.* (1984) observed macroscopically mature fish at 16–18 cm FL<br>Recruitment to the fishery: 2 years (Moore *et al.* 2011) |
| Size | Maximum length: to 64 cm TL commonly 25–40 cm (Yearsley *et al.* 1999)<br>Maximum weight: ~1.6 kg commonly 0.2–0.6 kg (Yearsley *et al.* 1999) |
| Reproduction | Jack mackerel are serial spawners but spawning frequency in Australian waters has not been determined (Marshall *et al.* 1993). However, batch fecundity for fish from east Tasmania is estimated at ~63,000 eggs (Neira 2011). Spawning appears to progress southwards from spring to summer (Neira 2011): from October to January in NSW (Maxwell 1979, Neira 2011) and mid-December to mid-February in Tasmania (Marshall *et al.* 1993; Jordan *et al.* 1995, Neira 2011) and December–January in the GAB and Western Bass Strait (Stevens *et al.* 1984, Neira *et al.* 1998). |

Table A4.4 Peruvian jack mackerel *Trachurus murphyi* (Nichols, 1920)

| **Family** | **Carangidae** |
|---|---|
| Distribution | Widespread throughout the south Pacific, along the shelf and oceanic waters adjacent to Ecuador, Peru and Chile and across the south Pacific to New Zealand and southeastern Australia (South Pacific Regional Fisheries Management Organisation (SPRFMO) 2014b); expanse described by Elizarov *et al.* (1993) as the "Jack mackerel belt" from the coast of Chile to New Zealand within a 35° to 50°S variable band across the South Pacific, which varies with season as "spawning groups concentrate mainly in the north of 40°S in spring and summer and south of 40°S in autumn and winter to feed" (SPRFMO 2014b). In Australia, it is reported throughout the fishery (Moore *et al.* 2011), but see map below.<br><br>  <br><br>Figure A4.3. Distribution (presumed) of Peruvian jack mackerel (based on catch data). Bioreg = range determined by the Bioregionalisation project, Core = preferred depth range, Inside = unverified core distribution range. **Source:** Bulman *et al.* (2008), reproduced with permission of the CSIRO and FRDC. |
| Stock structure | In the south Pacific, up to five stocks have been suggested; a Chilean stock which is a straddling stock with respect to the high seas; a Peruvian stock which is also a straddling stock with respect to the high seas; a central Pacific stock which exists solely in the high seas; a south-west Pacific stock which exists solely in the high seas; and a New Zealand-Australian stock which straddles the high seas and both the New Zealand and Australian Exclusive Economic Zones (SPRFMO 2014b). Bulman *et al.* (2008) concluded that it is probable that fish caught in Australia belong to a large south-west Pacific Ocean basin stock. |

| Family | Carangidae |
|---|---|
| Movement | No information is available on movement of Peruvian jack mackerel in Australian waters. Elsewhere:<br>• a seasonal migration has been described between coastal and oceanic waters for the Chilean subpopulation, and is related to 'reproductive and trophic processes' (SPRFMO 2014b)<br>• in Chilean fisheries waters, large jack mackerel tend to be distributed toward the south; a similar tendency for larger fish in southern waters is also seen in New Zealand fisheries waters (SPRFMO 2014b)<br>• Russian researchers detected several geographically isolated groupings of jack mackerel within the species belt; these groupings were attached to zones having stable hydrological conditions; each one makes circular seasonal migrations (SPRFMO 2014b)<br>• in oceanic waters, beyond 120°W, a migratory pattern has been described whereby jack mackerel move from productive, cold southern waters, northward into subtropical waters where they spawn, and then return (SPRFMO 2014b)<br>• in New Zealand, *T. murphyi* appeared in catches in the mid-1980s, increasing and extending westwards (to Australia) until the mid-1990s, then contracting as the range contracted eastwards (SPRFMO 2014b). |
| Habitat | Pelagic neritic and oceanic (SPRFMO 2014b)<br>Depth: 10–306 m; diurnal migratory behaviour has been identified, with fish being found deeper during the day (50–180 m) than at night (10–40 m) (SPRFMO 2014b) |
| Age | Longevity: 20–30 years (SPRFMO 2014b); 30 years (Moore *et al.* 2011)<br>Recruitment to the fishery: not determined<br>Maximum reported age: 16 years (Smith-Vaniz 1995 in Froese and Pauly 2011); in Chile the maximum recorded age is 19 years (whole otoliths); in Peru max age of 11 years; in New Zealand age of 35 years (sectioned otoliths). Some of the difference in these estimates can be explained by New Zealand specimens being larger, and therefore older than those in Chile, as would be expected for an animal near the extreme of its range, but may be due to differing ageing methodologies. Chilean estimates have been validated using the bomb radiocarbon method (SPRFMO 2014b) |
| Size | Maximum length: ~81 cm TL (Moore *et al.* 2011); 70 cm TL male/unsexed (Smith-Vaniz 1995 in Froese and Pauly 2011)<br>Common length: 45 cm FL male/unsexed (Smith-Vaniz 1995 in Froese and Pauly 2011) |
| Reproduction | Age at maturity (50%): 3 years (Moore *et al.* 2011); 2–3 years (SPRFMO 2013)<br>Length at maturity: at first maturity in Chile 21.6–30 cm (Cubillos 2008 in SPRFMO 2014b); in Peru 26.5 cm FL (Perea *et al.* in SPRFMO 2014)<br>Indeterminate batch spawner. Spawns when water temp above 15°C and currents are low; evidence that occurs along subtropical convergence. *T. murphyi* spawns throughout its whole distribution range in austral spring and summer, with the main spawning season from October to December. In Peruvian waters *T. murphyi* has a single relatively extended spawning period with a maximum in November each year. The reproductive activity of *T. murphyi* has a greater variability off Peru and the spawning period has peaks of lesser magnitude but extend longer than observed in the spawning occurring off Chile (SPRFMO 2014b). |

Table A4.5 Redbait *Emmelichthys nitidus* (Richardson, 1845)

| **Family** | **Emmelichthyidae** |
|---|---|
| Distribution | Redbait is widely distributed throughout the southern hemisphere. It is found off the western Cape coast in South Africa, St. Paul and Amsterdam Islands, throughout southern Australia and New Zealand. In Australia, they have been caught from northern NSW (south of 30S), Victoria, SA, Tasmania and WA (Bulman *et al.* 2008).<br><br>  <br><br><br>Figure A4.4. Distribution of redbait in Australia. Bioreg = range determined by the Bioregionalisation project in CAAB database, CSIRO. Core = preferred depth range, Inside = unverified core distribution range (P. Last, CSIRO pers. comm. 2007).<br>**Source:** Bulman *et al.* (2008), reproduced with permission from CSIRO and FRDC. |
| Stock structure | "There have been no targeted stock structure studies on redbait in Australia. However, on the weight of evidence, Bulman *et al.* (2008) concluded that redbait from eastern Australia and eastern Tasmania were likely to be a single stock. The situation for western Tasmania and the GAB is less clear but the observation that fish off eastern and south-western Tasmania exhibit some biological differences (Neira *et al.* 2008) provides some evidence for separation into eastern and western stocks" (Ward *et al.* 2013). |
| Movement | No studies have investigated redbait movement (Ward *et al.* 2013). |
| Habitat | Pelagic, forms surface or mid-water schools over the continental shelf but common in 20–100 m (Kailola *et al.* 1993, Yearsley *et al.* 1999). Mostly recorded from mid-water trawl in 100–400 m water (Ward *et al.* 2013). |

| Family | Emmelichthyidae | |
|---|---|---|
| Age | Longevity: | 21 years (females) and 18 years (males) (Ewing and Lyle 2008); they note that much larger redbait (>49.3 cm) from South Africa suggest that the maximum age may be higher than indicated from Tasmanian or Victorian samples and that growth is highly variable by region |
| | Recruitment to the fishery: | ~2 years (Moore *et al.* 2011) |
| Size | Maximum length/weight: | to 36 cm TL and 0.4 kg (commonly adults 20–34 cm and 0.1–0.3 kg) (Yearsley *et al.* 1999); Ewing and Lyle (2008) note that the maximum reported size from Tasmania is 31.7 cm FL (female) and 30.4 cm FL (males); off eastern Victoria 33.5 cm FL and 356 g (Furlani *et al.* 2000); 34.4 cm SL off Chile and up to 49.3 cm TL in South Africa. |
| Reproduction | Age at maturity (50%): | 2–4 years (Welsford and Lyle 2003, Neira *et al.* 2008, Ewing and Lyle 2009) |
| | Size at maturity: | Female: 14.7 cm east, 24.4 cm FL south-west; male: 15.7 cm east, 26.1 cm south-west, Ewing and Lyle 2009); noticeable regional differences in size and age at sexual maturity, southwestern Tasmania fish maturing at ~10.0 cm larger and two years older compared to eastern Tasmania fish (Ewing and Lyle 2009) |
| | Redbait is an asynchronous batch spawner with indeterminate fecundity similar to other clupeids, engraulids and scombrids (Ewing and Lyle 2009). Batch fecundity of 186 per g of gonad-free weight lower than for sardines (~500) but similar to carangids and scombrids (~150–200) (Ewing and Lyle 2009). Spawns off southeastern Australia during October/November but could extend into February/March (Neira *et al.* 2008). Spawn along a narrow 2.5 nautical mile corridor either side of the shelf break when mid-water temperatures are 12.0–15.2°C (Neira *et al.* 2008). | |

# Stock assessment and status

Table A4.6 Stock assessment and status, SPF target species

| SPECIES | NATURE OF ASSESSMENT | MOST RECENT ASSESSMENT | SPAWNING BIOMASS (T) | STOCK STATUS (2012) | HARVEST STRATEGY TIER, RBC, STATE CATCH ALLOWANCE AND TAC (2013–14) | HARVEST STRATEGY TIER, RBC, ESTIMATED STATE CATCH[1] ALLOWANCE AND TAC (2014–15) |
|---|---|---|---|---|---|---|
| Australian sardine (east) | DEPM | July 2004<br>A DEPM is being conducted for this species in 2014 | DEPM: 29,000 t<br>Estimate used to set RBC: 40,000 t | Not overfished<br>Not subject to overfishing | Tier: 2<br>RBC: 3000 t<br>State catch: 2735 t<br>TAC: 270 t | Tier: 2<br>RBC: 3000 t<br>Est. state catch: 1070 t<br>TAC: 560 t |
| Blue mackerel (east) | DEPM | 2004 | DEPM: 23 000 t<br>Estimate used to set RBC: 40,000 t | Not overfished<br>Not subject to overfishing | Tier: 2<br>RBC: 3000 t<br>State catch: 315 t<br>TAC: 2700 t | Tier: 2<br>RBC: 3000 t<br>State catch: 172 t<br>TAC: 2660 t |
| Blue mackerel (west) | DEPM | 2005 | DEPM: 56,000 t<br>Estimate used to set RBC: maximum permissible for blue mackerel (west) under Tier 2 in SPF Harvest Strategy | Not overfished<br>Not subject to overfishing | Tier: 2<br>RBC: 6500 t<br>State catch: 30 t<br>TAC: 6500 t | Tier: 2<br>RBC: 6500 t<br>State catch: 28 t<br>TAC: 6500 t |
| Jack mackerels (east) | 2011 using samples collected off southeastern Australia in 2002 | A DEPM is being conducted for this species in 2014 | DEPM: 141,000 t<br>Estimate used to set RBC: 141,000 t | Not overfished<br>Not subject to overfishing | Tier: 2<br>RBC: 10,600 t<br>State catch: 800 t<br>TAC: 9800 t | Tier: 2<br>RBC: 10,600 t<br>Est. state catch: 80 t<br>TAC: 10,230 t |
| Jack mackerels (west) | No assessment, some catch history data available | | DEPM: n.a.<br>Estimate used to set RBC: maximum permissible for jack mackerel (west) in SPF Harvest Strategy | Not overfished<br>Not subject to overfishing | Tier: 2<br>RBC: 5000 t<br>State catch: confidential<br>TAC: 5000 t | Tier: 2<br>RBC: 5000 t<br>State catch: confidential<br>TAC: 5000 t |
| Redbait (east) | DEPM | 2005 and 2006 | DEPM: 86,990 t (2005) and 50,782 t (2006)<br>Estimate used to set RBC: 68,886 t (average of DEPM estimates) | Not overfished<br>Not subject to overfishing | Tier 2<br>RBC: 5200 t<br>State catch: 0<br>TAC: 5200 t | Tier 2<br>RBC: 5200 t<br>State catch: 0<br>TAC: 5000 t |
| Redbait (west) | No DEPM survey, some catch history data available | None | DEPM: n.a.<br>Estimate used to set RBC: maximum permissible for redbait (west) | Uncertain<br>Not subject to overfishing | Tier 2<br>RBC: 5000 t<br>State catch: 0<br>TAC: 5000 t | Tier 2<br>RBC: 5000 t<br>State catch: 0<br>TAC: 5000 t |

1. State catches taken from SEMAC (2014). However, AFMA (2014b) notes that information on state catches was subsequently revised and the revised figures were used in setting the TACs.
Sources: Ward *et al.* (2013), Moore *et al.* 2013, AFMA (2013g), SPFRAG (2014b), AFMA (2014b); SEMAC (2014)

# Shortened forms

| | |
|---|---|
| ABARES | Australian Bureau of Agricultural and Resource Economics and Sciences |
| ACAP | Agreement on the Conservation of Albatrosses and Petrels |
| AFMA | Australian Fisheries Management Authority |
| AFZ | Australian Fishing Zone |
| AMCS | Australian Marine Conservation Society |
| ASL | Australian sea lion |
| Atlantis-SE | Atlantis South East model |
| $B_{MSY}$ | Biomass at maximum sustainable yield |
| BRD | Bycatch reduction device |
| CAAB | Codes for Australian Aquatic Biota |
| CCAMLR | Commission/Convention for the Conservation of Antarctic Marine Living Resources |
| CCSBT | Commission for the Conservation of Southern Bluefin Tuna |
| CED | Cetacean excluder device |
| CFP | Certified Fishing Practice |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CM | Conservation measure |
| CPF | Central place forager |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| CTS | Commonwealth Trawl Sector |
| DAFF | Department of Agriculture, Fisheries and Forestry (Commonwealth) |
| DCFA | Declared Commercial Fishing Activity |
| DDD | Dolphin dissuasive device |
| DEPM | Daily egg production method |
| DPIPWE | Department of Primary Industries, Parks, Water and Environment (Tasmania) |
| DSEWPaC | Department of Sustainability, Environment, Water, Population and Communities (Commonwealth) |
| EAC | East Australian Current |
| EBFM | Ecosystem-based fisheries management |
| EBS | Eastern Bass Strait |
| ECDWT | East Coast Deepwater Trawl |
| EEZ | Exclusive Economic Zone |
| EPBC Act | *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) |
| EPI | Ecological Performance Indicator |
| ERA | Ecological risk assessment |

| | |
|---|---|
| ERAEF | Ecological Risk Assessment for the Effects of Fishing |
| ERIN | Environmental Resources Information Network |
| ERM | Ecological risk management |
| ETP | Eastern Tropical Pacific |
| EwE | Ecosim with Ecopath |
| F | Fishing mortality |
| FAO | Food and Agriculture Organization of the United Nations |
| FL | Fork length |
| FM Act | *Fisheries Management Act 1991* (Cwlth) |
| FRDC | Fisheries Research and Development Corporation |
| FRML | Fishery-related mortality limit |
| GAB | Great Australian Bight |
| GABT | Great Australian Bight Trawl |
| GCM | Global Climate Model |
| GDSG | Genetically distinct spawner groups |
| GHAT | Gillnet, hook and trap (fishery) |
| HCR | Harvest control rule |
| HCS | Humboldt Current System |
| HIMI | Heard Island and McDonald Islands |
| ICES | International Council for the Exploration of the Seas |
| IMAS | Institute of Marine and Antarctic Studies |
| ISMP | Integrated Scientific Monitoring Program |
| ITQ | Individual transferable quota |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| IWC | International Whaling Commission |
| LOA | Length overall |
| LTL | Low trophic level |
| MALFiRM | Maximum allowable level of fishing related mortality |
| MEY | Maximum economic yield |
| MMED | Marine mammal excluder device |
| MMOP | Marine Mammal Operational Procedures |
| MMPA | Marine Mammal Protection Act of 1972 (USA) |
| MNPL | Maximum net productivity level |
| MoU | Memorandum of understanding |
| MSC | Marine Stewardship Council |

| | |
|---|---|
| MSE | Management strategy evaluation |
| MSY | Maximum sustainable yield |
| NMFS | National Marine Fisheries Service (USA) |
| NRC | National Research Council (USA) |
| NSW | New South Wales |
| OCS | Offshore Constitutional Settlement |
| OSP | Optimum sustainable population |
| PBR | Potential biological removal |
| PCB | Polychlorinated biphenyls |
| PFTIMF | Pilbara Fish Trawl Interim Managed Fishery |
| PIRSA | Primary Industries and Regions, South Australia |
| PSA | Productivity-susceptibility analysis |
| PSWG | Pelagic Scientific Working Group, (South Africa) |
| RBC | Recommended biological catch |
| SA | South Australia |
| SAP | Seal avoidance practices |
| SARDI | South Australian Research and Development Institute |
| SASF | South Australian Sardine Fishery |
| SBT | Southern bluefin tuna |
| SED | Seal excluder device |
| SEMAC | South East Management Advisory Committee |
| SESSF | Southern and Eastern Scalefish and Shark Fishery |
| SET | South East Trawl |
| SETFIA | South East Trawl Fishing Industry Association |
| SD | Standard deviation |
| SFR | Statutory Fishing Right |
| SL | Standard length |
| SLED | Sea Lion Excluder Device |
| SPF | Small Pelagic Fishery |
| SPFMAC | Small Pelagic Fishery Management Advisory Committee |
| SPFRAG | Small Pelagic Fishery Resource Assessment Group |
| SPRFMO | South Pacific Regional Fisheries Management Organisation |
| SSB | Spawning stock biomass |
| SSC | Species Survival Commission (IUCN) |
| SSL | Steller sea lion |

| | |
|---|---|
| SSMU | Small-scale management unit |
| SST | Sea surface temperature |
| STF | Subtropical Front |
| SURF | Supportive role for fishery ecosystems |
| TAC | Total allowable catch |
| TACC | Total allowable commercial catch |
| TAFI | Tasmanian Aquaculture and Fisheries Institute |
| TARFish | Tasmanian Association for Recreational Fishing Inc. |
| TL | Total length |
| TEPS | Threatened, endangered and protected species |
| USA | United States of America |
| VIT | Victorian Inshore Trawl |
| VMS | Vessel monitoring system |
| VMP | Vessel management plan |
| WA | Western Australia |
| WTO | Wildlife trade operation |
| WWF | World Wide Fund for Nature |