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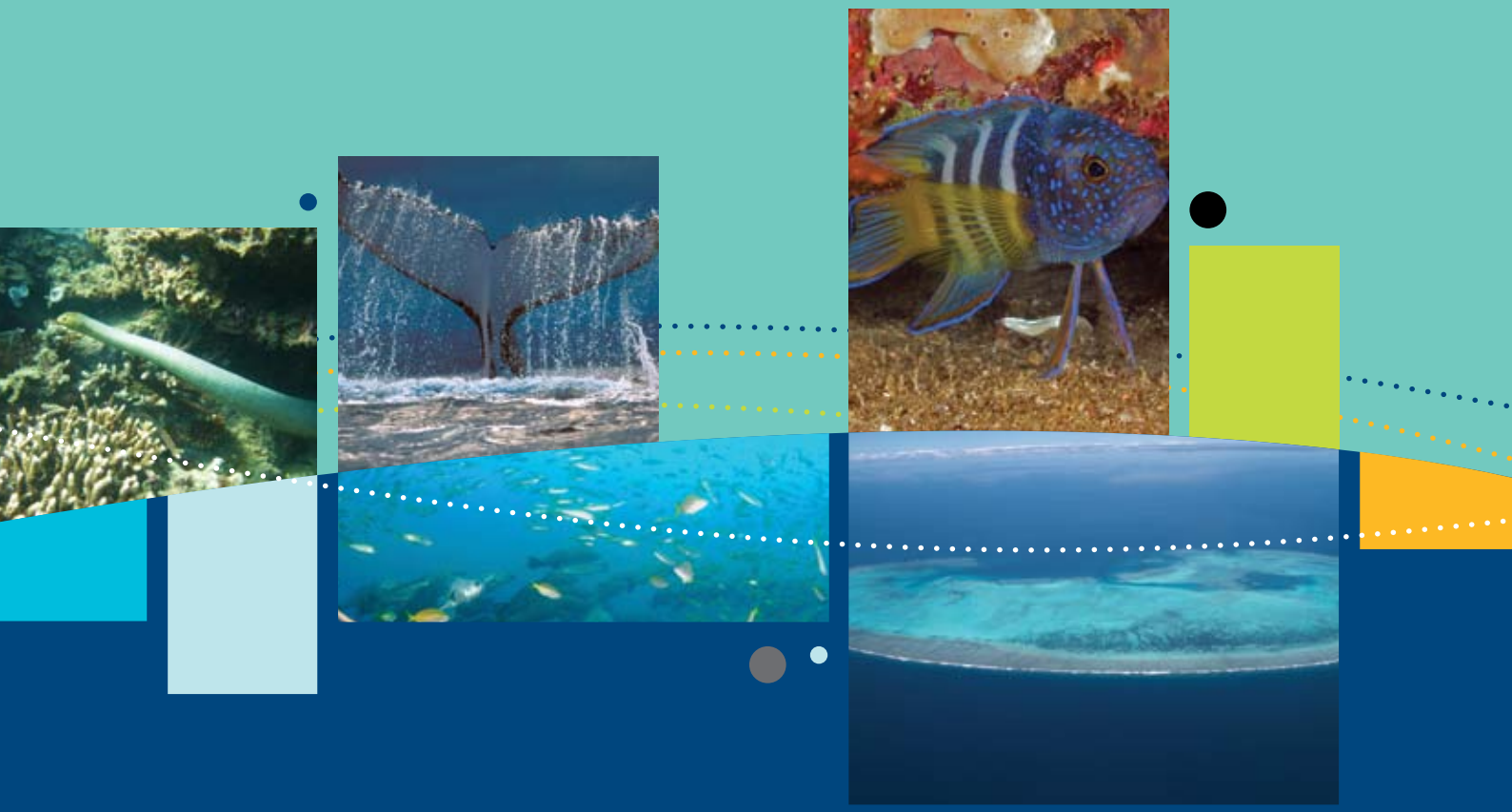

Species group report card – bony fishes

Supporting the marine bioregional plan for the Temperate East Marine Region

prepared under the *Environment Protection and Biodiversity Conservation Act 1999*

Images:
Blue Devil – D.Harasti, Whale tail – D.Paton, Middleton Reef from air – Director of National Parks, Pimpernel Rock, Solitary Islands – D.Harasti, Olive Sea Snake – GBRMPA, Acropora species – R.Chesher Ph.D, Black-browed Albatross – M.Double, Runic wreck on Middleton Reef – Director of National Parks, Flesh-footed shearwater and Balls Pyramid – I.Hutton

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SPECIES GROUP REPORT CARD — BONY FISHES

Supporting the marine bioregional plan for the Temperate East Marine Region prepared under the *Environment Protection and Biodiversity Conservation Act 1999*

Report cards

The primary objective of the report cards is to provide accessible information on the conservation values found in Commonwealth marine regions. This information is maintained by the Department of Sustainability, Environment, Water, Population and Communities and is available online through the department's website (**www.environment.gov.au**). A glossary of terms relevant to marine bioregional planning is located at **www.environment.gov.au/marineplans.**

Reflecting the categories of conservation values, there are three types of report cards:

- species group report cards
- marine environment report cards
- heritage places report cards.

While the focus of these report cards is the Commonwealth marine environment, in some instances pressures and ecological processes occurring in state waters are referred to where there is connectivity between pressures and ecological processes in state and Commonwealth waters.

Species group report cards

Species group report cards are prepared for large taxonomic groups that include species identified as conservation values in a region; that is, species that are listed under Part 13 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and live in the Commonwealth marine area for all or part of their lifecycle. All listed threatened, migratory and marine species and all cetaceans occurring in Commonwealth waters are protected under the EPBC Act and are identified in the relevant marine bioregional plans as conservation values.

Species group report cards focus on species for which the region is important from a conservation perspective; for example, species of which a significant proportion of the population or an important life stage occurs in the region's waters.

For these species, the report cards:

- outline the conservation status of the species and the current state of knowledge about its ecology in the region
- define biologically important areas; that is, areas where aggregations of individuals of a species display biologically important behaviours
- assess the level of concern in relation to different pressures.

1. Bony fishes of the Temperate East Marine Region

The fish fauna of the Temperate East Marine Region are a very diverse group, both morphologically and in the habitats they occupy (Tzioumis & Keable 2007). This report card provides information on three individual fish species, the eastern gemfish, orange roughy and black cod, and seven members of the family group Syngnathidae (seahorses, pipefish and sea dragons) (see Table A1, Attachment A) known to occur within the Temperate East Marine Region. The species were selected following consideration of their conservation status, distribution and population structure within the region, life history characteristics and the potential for the population(s) in the region to be genetically distinct from populations elsewhere.

Other members of the Syngnathidae and related Solenostomidae (ghost pipefish) families may also occur within the Temperate East Marine Region, however due to limited distribution information, they have not been considered in this report card.

Eastern gemfish

Gemfish, (*Rexea solandri*), also known as silver gemfish and king couta, are a slender, silvery fish similar to mackerel. The species occurs from southern Queensland around to the central western Australian coast, including Tasmania, and is also found in New Zealand waters. Genetic studies have indicated the existence of two distinct populations in Australia—one in eastern Australian waters (referred to as the eastern gemfish) and another west of Bass Strait. In this analysis, only the eastern gemfish is considered. Gemfish are mesopelagic, inhabiting oceanic waters around the continental shelf and upper slope. They are known to feed near the ocean floor at depths of 100–800 metres. The only confirmed spawning area for eastern gemfish in Australian waters is off the central New South Wales coast, with fish migrating there during the spawning season (TSSC 2009).

Orange roughy

Orange roughy, (*Hoplostethus atlanticus*), also known as deep sea perch, orange ruff and red roughy, are found in the cold, deep waters of the Atlantic, Pacific and Indian oceans. In Australia, the species is widely distributed in temperate waters between southern Western Australia and central New South Wales, including Tasmania (Kailola et al. 1993). They are a demersal species, most commonly found on the continental slope at depths between 500 and 1400 metres (Gomon et al. 2008). They also congregate around remote seamounts, most notably the South Tasman Rise, Cascade Plateau and Lord Howe Rise (Kailola et al. 1993).

In Australian waters the species grows to 50 centimetres and is noted for its extraordinary lifespan (100 years plus). Adult fish form dense spawning aggregations for several weeks in winter and sporadically form non-spawning aggregations, particularly in summer and autumn. These aggregations are usually associated with seamounts and submerged pinnacles.

Black cod

Black cod, (*Epinephelus daemelii)*, known in Australia as black rock cod or saddled rock cod, are found in the subtropical western Pacific Ocean, from eastern Australia to Northern New Zealand and the Kermadec Islands. They are apex predators, inhabiting small cave habitat in rocky reefs at depths of 50 – 100 metres. Juveniles use coastal rock pools and rocky shores in estuaries, while in coastal waters adults are demersal and territorial, potentially occupying one cave for most of their adult lives. The species' distribution focus is around the Elizabeth and Middleton Reefs and the Solitary, Lord Howe and Norfolk Islands (Malcolm & Harasati 2010). Black cod are protogynous hermaphrodites, spawning as female and changing sex to male at around one metre in length (Pogonoski 2000). In Australia adults can attain 1.5 metres in length and 81 kilograms (Malcolm & Harasati 2010), although most are substantially smaller. They grow more slowly, reach sexual maturity later and have greater longevity than other grouper species due to their cooler, southerly distribution (TSSC 2012). While they are known to form spawning aggregations, little is known of their reproductive behaviour (Malcolm & Harasati 2010).

Syngnathids (seahorses, pipehorses and sea dragons)

The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and sea dragons. Globally, Australia has the highest recorded diversity of syngnathids with an estimated 25–37 per cent of the 330 species currently described occurring in Australian waters (Martin-Smith & Vincent 2006; Pogonoski et al. 2002). A diverse group, they occupy a wide range of habitats, from near-shore and inner-shelf areas in shallow, coastal, tropical and temperate waters (Dawson 1985; Lourie et al. 1999; Lourie et al. 2004; Vincent 1996) to deeper reefs and sponge gardens, pelagic waters and kelp rafts. The deepwater species are most relevant to the Temperate East Marine Region. Syngnathids are carnivorous and feed on small, living crustaceans such as copepods, often eating those that drift by or reside in coral branches or algal mats (Gronell 1984; Kendrick & Hyndes 2005; Martin-Smith 2008; Scales 2010). A few species also eat other invertebrates, such as shrimp and larval fish (Kuiter 2000). Syngnathids range from apparently rare and localised species to widely distributed and very common species. Valuable as curios, aquarium fish and used in traditional Chinese medicine, they make up a small component of commercial fisheries operating in the region (Tzioumis & Keable 2007). Yearly exports of up to 1000 kilograms of dried syngnathids, mostly pipehorses, were recorded from these sectors from 1995 to 2001 (Martin-Smith & Vincent 2006).

Biologically important areas

Biologically important areas are those that are particularly important for the conservation of protected species and where aggregations of individuals display biologically important behaviours such as breeding, foraging, resting or migration. The presence of an observed behaviour is also assumed to be indicative of the presence of required habitat(s). The identification of biologically important areas for all conservation values in the Temperate East Marine Region was carried out on the basis of information such as peer reviewed scientific data (e.g. species distribution, abundance, etc) and expert opinion. The final selection of species was informed by the availability of this scientific information, their conservation status and the relative importance of the region. It is envisaged that the number of identified biologically important areas will continue to expand as reliable spatial and scientific information becomes available.

Biologically important areas have not yet been identified for bony fish species in the Temperate East Marine Region.

2. Vulnerabilities and pressures

Vulnerabilities

Orange roughy are considered to be at the extreme end of the vulnerability spectrum, a factor primarily driven by their slow growth, exceptional longevity and late maturation (FAO 2005). They form dense aggregations to spawn and feed (AFMA 2006; Foley et al. 2011). Eastern gemfish are also known to aggregate to migrate prior to spawning, in an event known as the 'gemfish run' (Rowling 2001). For both species, this behaviour has been a major reason for their rapid decline, with commercial operations known to target fishing effort towards these aggregations.

The life history of black cod renders them vulnerable to overfishing and loss of habitat, as they are large, slow-growing and predominantly occur in shallow waters, using estuaries and coastal rock pools in their juvenile stages. Several decades of sustained targeting by recreational spear and line fishers have contributed to the fragmentation and relative rarity of black cod populations (TSSC 2012). Like many large, territorial groupers, they are likely to have a low abundance as adults, and because the species become male as they reach a size at which they were targeted by recreational fishers, large males are now considered to be rare (Pogonoski 2000). Black cod are curious, aggressive and known to readily take baited hooks dropped within the vicinity of their cave or habitat (DTIRIS 2012). Mortality is likely even if released, due to the species' susceptibility to barotrauma.

Many syngnathid species have more localised distributions than once previously thought, thus highlighting the importance of habitat protection in future seahorse management (Kuiter 2001). Syngnathid population characteristics which make them susceptible to pressures include (Foster & Vincent 2004; Vincent 1996):

- relatively low population densities
- lengthy parental care times combined with small brood size limiting their reproductive rate
- strict monogamy, therefore their social structure is easily disrupted
- sparse distribution, which means that lost partners are not quickly replaced
- naturally low rates of adult mortality, therefore fishing exerts a relatively substantial selective pressure
- a strong association with preferred habitat, which can make populations vulnerable to site-specific impacts
- low mobility and small home ranges, which restrict recolonisation of depleted areas.

A final characteristic worth noting, shared by both orange roughy and some syngnathid species, is their dependence on fragile benthic habitats such as deepwater corals, which are highly vulnerable to damage and slow to recover (Althaus et al. 2009).

Analysis of pressures

On the basis of current information, pressures have been analysed for the three individual species and one family group of bony fishes occurring within the Temperate East Marine Region discussed above. A summary of this pressure analysis is provided in Table 1. Only those pressures identified as *of concern* or *of potential concern* are explored in further detail below. An explanation of the pressure analysis process, including the definition of substantial impact used in this analysis, is provided in Part 3 and Section 1.1 of Schedule 1 of the Plan.

Table 1: Outputs of the bony fish species pressure analysis for the Temperate East Marine Region

Pressure	Source	Species			
		Eastern gemfish	Orange roughy	Black cod	Syngnathids (seahorses, pipehorses and sea dragons)
Sea level rise	Climate change	not of concern	not of concern	of less concern	of less concern
Changes in sea temperature	Climate change	of potential concern	of potential concern	of potential concern	of potential concern
Change in oceanography	Climate change	of potential concern	of potential concern	of potential concern	of potential concern
Ocean acidification	Climate change	of less concern	of less concern	of less concern	of less concern
Chemical pollution / contaminants	Shipping	of less concern	of less concern	of less concern	of less concern
	Vessels (other)				
	Urban development	of less concern	not of concern	of potential concern	of less concern
	Agricultural activities				
Nutrient pollution	Urban development	of less concern	not of concern	of potential concern	not of concern
	Agricultural activities				
Marine debris	Shipping	of less concern	of less concern	of less concern	of less concern
	Vessels (other)				
	Fishing boats				
	Land-based activities				
Noise pollution	Seismic exploration	not of concern	not of concern	not of concern	not of concern
	Shipping	not of concern	not of concern	not of concern	not of concern
	Vessels (other)				
	Urban development	not of concern	not of concern	not of concern	not of concern
Light pollution	Land-based activities	not of concern	not of concern	not of concern	not of concern
	Offshore activities				
Physical habitat modification	Dredging	not of concern	of potential concern	of potential concern	of potential concern
	Dredge spoil				
	Fishing gear				
	Urban/coastal development				
Human presence at sensitive sites	Tourism	not of concern	not of concern	not of concern	not of concern
	Recreational and charter fishing				
	Research				
Invasive species	Shipping	not of concern	not of concern	not of concern	of less concern
	Fishing vessels				
	Land-based activities				
Extraction of living resources	Commercial fishing (domestic)	of less concern	of less concern	not of concern	of less concern
	Commercial fishing (non-domestic)	not of concern	not of concern	not of concern	not of concern
	Recreational and charter fishing	of less concern	not of concern	of less concern	not of concern
	Indigenous harvest	not of concern	not of concern	not of concern	not of concern
	Illegal, unregulated and unreported fishing	not of concern	not of concern	of potential concern	of less concern
Bycatch	Commercial fishing (domestic)	of less concern	of less concern	of potential concern	of potential concern
	Recreational and charter fishing	of less concern	of less concern	of potential concern	not of concern
Oil pollution	Shipping	of less concern	of less concern	of less concern	of less concern
	Vessels (other)				
	Oil rigs	not of concern	not of concern	not of concern	not of concern
Collision with vessels	Shipping	not of concern	not of concern	not of concern	not of concern
	Tourism				
	Fishing				

Legend of concern; of potential concern; of less concern; not of concern

Climate change

The impacts of climate change on deep sea environments, which the species assessed depend upon, are poorly understood, with limited data to support linkages between these systems and changes observed (Weaver et al. 2009). Two aspects of climate change are emerging as pressures *of potential concern* however, and are discussed in more detail below.

Changes in sea temperature—climate change

Sea temperatures have warmed by 0.7 ºC between 1910–1929 and 1989–2008, and current projections estimate ocean temperatures will be a further 1 ºC warmer by 2030 (Lough 2009). At depth, future sea temperature patterns are harder to predict, although Hobday et al. (2006) suggest the rate of warming will be similar to that of surface waters. Increasing sea temperature is considered *of potential concern* for all species assessed.

As with changes in oceanography, most research on the impacts of changing sea temperature at depth due to climate change has concentrated on ecosystem-level effects. Research from Europe suggests that the warming of deep waters will significantly impact the microbial metabolism of the benthos, with potentially negative consequences for ecosystem function and community distribution (Weaver et al. 2009). The same research warns of a significant destabilising of methane reservoirs along continental margins, which may accelerate climate change (Weaver et al. 2009).

All species assessed are likely to experience shifts in distribution and abundance due to sea temperature rises, with impacts on their life cycle stages, prey availability and habitat. Adult black cod and syngnathids are particularly vulnerable given the species' tendency to have specific habitat preferences within a small home range, thus reducing their ability to find and adapt to new habitats (Malcolm 2011; McClatchie et al. 2006).

Changes in oceanography—climate change

Changes in oceanography are assessed as *of potential concern* for all species. Oceanographic changes in the region will be primarily driven by the East Australian Current. Studies indicate that this major boundary current has been strengthening over time, pushing warmer, saltier water up to 350 kilometres further southward along the east coast (Ridgway & Hill 2009). There will also be associated circulation effects from expected changes to the El Niño–Southern Oscillation. A range of potential consequences for ocean circulation patterns arising from these changes includes alterations to current location and direction, changes to upwelling events, and increased thermal stratification and eddy activity (Chin et al. 2010). In New South Wales, for example, ocean current changes resulting from climate change are predicted to cause a reduction in the flow of freshwater to estuaries, and an increase in nutrient laden waters in near

coastal areas. These changes will alter species distribution and abundance and potentially decrease sources of prey for juvenile black cod which use these habitats (DTIRIS 2012).

Although understanding of species-specific responses to oceanographic changes is limited, it is expected that such changes will have consequences for the structure and function of deep sea habitats, impacting benthic fish such as orange roughy. The dense water cascading process which is one of the major transport routes for transferring matter and energy (i.e. food) to depth is expected to change in terms of frequency and intensity (Entoyer 2010; Weaver et al. 2009). There is evidence from Europe that this change alone will alter the population dynamics of commercial deep sea species such as orange roughy at a broad scale (Weaver et al. 2009).

Changes in zonal winds that influence oceanographic processes and productivity have been declining due to climate change (Hobday et al. 2008), and may have consequences for mesopelagic fish species such as eastern gemfish and black cod. For example, decreases in productivity may contribute to recruitment failure and act in conjunction with other pressures (e.g. overfishing) to affect the recovery of the species.

As was the case for changes in sea temperature, black cod and syngnathids are particularly vulnerable to changes in oceanography given their tendency to have specific habitat preferences within a small home range, thus reducing their ability to find and adapt to new habitats (Malcolm 2011; McClatchie et al. 2006). It has also been suggested that oceanographic features play a role in the annual pre-spawning migration of eastern gemfish, although it is unclear whether changes will impact positively or negatively on the species (Prince & Griffin 2001; Rowling 2001).

Chemical pollution /contaminants, nutrient pollution—agricultural activities and urban development

Black cod's use of estuaries as juvenile development grounds makes them vulnerable to the effects of water pollution in the form of run-off from urban development and agricultural activities. This run-off can contain a combination of nutrients and chemicals within fertilisers, pesticides, animal wastes, topsoil, sewage and storm water. These pollutants can degrade the quality of habitats, alter water chemistry, encourage the growth of algae and smother benthic flora and fauna species. In particular, heavy metals and organochlorine pesticides pose high risks to estuarine biota, as they persist in the environment, magnify along food chains and reduce the relative abundance of top-order predators (ANZECC 2000; DECC 2009). Over time, changes in the water chemistry, food chains and turbidity caused by urban and agricultural run-off may significantly impact the long term viability of juvenile black cod within estuaries (DTIRIS 2012).

Physical habitat modification—dredging, dredge spoil, fishing gear and urban/ coastal development

Physical habitat modification refers to physical changes to marine habitats, commonly driven by causes which can include fisheries (e.g. trawling), dredging activities and the development of urban and coastal areas. These pressures are assessed as *of potential concern* for syngnathid species, for orange roughy, and for black cod within its juvenile stages.

Sponge garden and deep reef habitats, preferred by syngnathids, are vulnerable to disturbance given their delicate habitat structure and low rates of productivity, growth and colonisation (Smith et al. 2008). Fishing can cause a reduction in biomass and structural diversity and fewer opportunities for the settlement of new coral colonies within benthic habitats due to the removal of biogenic substratum (Althaus et al. 2009; Lack et al. 2003; Pogonoski et al. 2002). As syngnathids are fairly sedentary, with a limited geographic range and specific habitat preferences, they are considered susceptible to physical habitat modification (Foster & Vincent 2004; Kuiter 2009).

Estuaries provide extensive refuge and feeding opportunities for black cod in its juvenile development stages. This important period in black cod recruitment can be impacted by urban and coastal development which modifies estuaries, for example through vegetation removal or draining. Physical modification of estuarine habitats is considered *of potential concern* to black cod in their juvenile stage, particularly through the ongoing building and repair of seawalls designed to protect low-lying foreshore infrastructure from sea level rise associated with climate change (DTIRIS 2012). Seawalls have been found to change flow and wave patterns, causing erosion and sedimentation (CEL 2010) and reducing the types and area of habitat available for black cod within estuaries and coastal pools.

Commercial bottom trawling on seamounts can cause physical damage to benthic environments affecting benthic fauna. Damage to seamounts could affect orange roughy recruitment due to the link between their spawning aggregations and this habitat feature. The Australian Fisheries Management Authority's Orange Roughy Conservation Programme includes actions which manage and in some areas prohibit targeted fishing in known orange roughy aggregation areas over seamounts to minimise the potential for negative impacts on their spawning activities.

Extraction of living resources — illegal, unregulated and unreported fishing

Isolated incidences of the illegal take of black cod by recreational spear fishers along the New South Wales coast are occasionally reported (DTIRIS 2012), and illegal fishing is *of potential concern* for black cod. The New South Wales Fisheries' 2003 draft recovery plan for black cod reported anecdotal evidence of large catches of black cod in the early 1980s from Elizabeth and Middleton Reefs, and in 1993 a commercial fishing boat crew was found to have taken 24 black cod from the same area (TSSC 2012).

Bycatch—commercial fisheries

Bycatch in commercial fisheries is considered to be a pressure *of potential concern* for syngnathids and black cod. Syngnathids are widely distributed across the fishing grounds of the Queensland East Coast Otter Trawl Fishery (including off Fraser Island) and records indicate that bycatch of syngnathids occurs, particularly of Duncker's and Hardwick's pipehorses, although bycatch numbers are low and considered to be declining (Coles et al. 2008). Danish-seining has the greatest potential for impact on syngnathids as it occurs in relatively shallow waters and uses nets with a small mesh size.

In New South Wales bycatch of syngnathid species, particularly pipehorses, is considered to be an issue, with management measures such as bycatch exclusion devices appearing to have little positive impact (Bowles & Martin-Smith 2003). While commercial fishing and/or take of black cod is prohibited both in Commonwealth and New South Wales waters, the species is caught as bycatch in Commonwealth fisheries, with fish suffering mortality due to fishing hooks and barotrauma (Baker 2009). Indiscriminate fishing methods such as bottom-set baited lines (e.g. setlining, trotlining, handlining) are the most widely used methods with the potential to have a significant negative impact on black cod numbers and distribution (DTIRIS 2012). Commercial fisheries targeting estuarine species may also impact juvenile black cod, in particular trapping in the lower reaches of estuaries on the north coast of New South Wales. These fisheries also target species likely to be black cod prey, potentially reducing their food source and affecting survival rates (DTIRIS 2012).

Bycatch—recreational and charter fishing

Bycatch of black cod by recreational fishers is considered a pressure *of potential concern*. As with commercial fishing, recreational fishing of black cod is prohibited; however recreational fishers are still known to occasionally catch black cod. Limited recognition or knowledge of the species by recreational fishers has meant that it is not always released, or even if released does not survive due to barotrauma. New fishing technologies have improved recreational fishing effectiveness, particularly in deeper waters where adult black cod are found which may increase the risk of recreational bycatch of the species (TSSC 2012).

3. Relevant protection measures

Orange roughy and eastern gemfish are listed as conservation dependent and black cod are listed as vulnerable under section 179 of the EPBC Act. The seven members of the Syngnathidae family are listed marine species under section 248. Under the Act, it is generally an offence to kill, injure, take, trade, keep or move listed marine, migratory or threatened species on Australian Government land or in Commonwealth waters without a permit.

Alongside the EPBC Act, a broad range of sector-specific management measures to address environmental issues and mitigate impacts apply to activities that take place in Commonwealth marine areas. These measures give effect to regulatory and administrative requirements under Commonwealth and state legislation for activities such as commercial and recreational fishing, oil and gas exploration and production, ports activities and maritime transport. In some instances, as in the case of shipping, these measures also fulfil Australia's obligations under a number of international conventions for the protection of the marine environment from pollution and environmental harm.

Protection and conservation measures administered under the EPBC Act and that are relevant to the conservation values described in this report card are listed below.

EPBC Act conservation plans and action plans

Under section 179 of the EPBC Act, species listed as conservation dependent must be the focus of a management plan which outlines actions to address the decline of, and support the recovery of, the species to ensure long-term survival chances are maximised. For the two conservation dependent species discussed in this report card, the relevant management plans are:

- Orange Roughy Conservation Programme (AFMA 2006)
- Eastern Gemfish Stock Rebuilding Strategy (AFMA 2008).

Directions to implement priority actions and mitigate key threats for black cod are contained within the Threatened Species Scientific Committee Conservation advice to the Minister for Sustainability, Environment, Water, Population and Communities. This advice sets out priority regional and local actions and areas of further research for black cod and also refers to the New South Wales government's 2012 Black Rockcod (*Epinephelus daemelii*) recovery plan.

International measures

Australia is a signatory to the following international agreements for the conservation of bony fishes:

- **Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)—www.cites.org**

For more information on conservation listings under the EPBC Act, related management objectives and protection measures, visit the following sites:

- **www.environment.gov.au/coasts/species/marine-species-list.html** (listed marine species)
- **www.environment.gov.au/epbc/protect/species-communities.html** (listed threatened species)
- **www.environment.gov.au/cgi-bin/sprat/public/sprat.pl** (species profile and threats database).

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ATTACHMENT 1: BONY FISH SPECIES OCCURRING IN THE TEMPERATE EAST MARINE REGION

Table A1: Listed bony fish species known to occur in the Temperate East Marine Region

Species (common name/ scientific name)	Conservation status
Eastern gemfish — eastern Australian population (*Rexea solandri*)	Conservation dependent
Orange Roughy (*Hoplostethus atlanticus*)	Conservation dependent
Black cod (*Epinephelus daemelii)*	Vulnerable
Seadragons	
Weedy seadragon (Phyllopteryx taeniolatus)	Marine
Seahorses	
Big-bellied/pot-bellied seahorse (*Hippocampus abdominalis*)	Marine
Bullneck seahorse (*Hippocampus minotaur)*	Marine
Duncker's pipehorse (*Solegnathus dunckeri*)	Marine
Hardwick's pipehorse (*Solegnathus hardwickii*)	Marine
Kellogg's seahorse (*Hippocampus kelloggi*)	Marine
Sad seahorse (*Hippocampus tristis*)	Marine





MAR196.0612