Protecting South Australia's Fish, Sharks & Rays

THROUGH NATIONAL AND STATE LEVEL ACTIONS

This paper provides a summary of actions that can be taken at the national and state levels to protect SA's fish, sharks and rays. The actions covered are:

- legislative protection;
  - Commonwealth legislation
  - State legislation
- inclusion of at risk species on non-government organisation's (NGO) threatened species listings;
- contributing to planning and policy development processes;
- improved management of industries and infrastructure that impact on the marine environment;
  - shipping;
  - commercial fishing;
  - aquaculture
  - mining and exploration;
  - power generation; and
  - desalination plants;
- reducing the impacts of climate change; and
- increased research.

Many of the threats discussed in this paper can and should also be addressed through actions at the regional and local levels. These actions are discussed in a companion paper - 'Protecting SA's Fish, Sharks and Rays: Through Regional and Local Level Actions'.

Further information on the threats faced by SA's fish, sharks and rays is provided in another paper in this series - 'Protecting SA's Fish, Sharks and Rays: An Overview of the Threats'.

The above papers are available at www.ccsa.asn.au/fsr or by contacting the Conservation Council of SA at fsr@ccsa.asn.au or on (08) 8223 5155.

The western blue devil
Photo (c) Peter Horne

Protection for at-risk fish, sharks and rays and their habitats can be achieved through both Commonwealth and state laws. Once protected in this way, it generally becomes illegal to kill, injure, trade, keep or move those species.

THE THREATENED SPECIES NETWORK is a community based partnership between WWF-Australia and the Australian Government.
http://wwf.org.au/ourwork/ species/tsn/

Threatened Species Network

Australian Government

WWF

Conservation Council of South Australia Inc

CONSERVATION COUNCIL OF SOUTH AUSTRALIA INC.
1/157 Franklin St., Adelaide 5000
Ph: 8223 5155, Fax: 8232 4782
Email: fsr@ccsa.asn.au
http://www.ccsa.asn.au/fsr

LEGISLATIVE PROTECTION

Protection for at-risk fish, sharks and rays and their habitats can be achieved through both Commonwealth and state laws. Once protected in this way, it generally becomes illegal to kill, injure, trade, keep or move those species identified as being at risk from extinction and/or to damage their habitat. Penalties for such actions are set out in the relevant Acts.

This paper provides a brief summary of the relevant legislation. More detailed information is available in the 'Protecting Fish, Sharks and Rays: An Overview of Legislative Protection Options' paper available at www.ccsa.asn.au/fsr or by phoning the Conservation Council of SA on (08) 8223 5155.

COMMONWEALTH LEGISLATION

At the Commonwealth level, the key legislation available is the Environment Protection and Biodiversity Conservation Act (EPBC Act) (1999). Under the EPBC Act (1999) fish, sharks and rays can be protected through inclusion on one or more of three protected species lists:

- 'threatened species' under the categories of Critically Endangered, Endangered, Vulnerable, Conservation Dependent, Extinct, or Extinct in the Wild;
- 'listed marine species'; and
- 'listed migratory species'

The process for nomination and assessment of 'threatened species' is defined in the Act. Once listing is achieved, a Conservation Advice is prepared which provides information on the threats faced by that species and the priority actions needed to assist its recovery. In some cases, Recovery Plans, which provide more detailed information on both threats and actions, are developed.

Inclusion as a 'listed marine species' is at the discretion of the Minister, while 'listed migratory species' must already be listed under an international convention that Australia is a signatory to, such as the Bonn Convention (The Conservation of Migratory Species of Wild Animals).

Once accepted as a listed marine or migratory species, the major threats are identified and threat abatement plans, wildlife conservation plans and/or conservation agreements are prepared.

In addition to listing of the species themselves, protection of their habitat can be provided under the EPBC Act (1999) through listing as a 'threatened ecological community'. The Act also provides for listing of 'key threatening processes' which may cause harm to SA's fish, sharks and rays.

STATE LEGISLATION

At the state level, individual species protection can be provided by listing under the Fisheries Management Act (FM Act) (2007) and the National Parks and Wildlife Act (NPW Act) (1972).

Both the FM Act (2007) and the NPW Act (1972) lack a statutory process for nomination and assessment of species for listing as protected. In both cases it is up to the Minister for the Environment to determine whether particular species are listed.

As with the Commonwealth EPBC Act, protection for at-risk species can also be achieved at the state level through protection of their habitat. The main legislation through which this can be achieved is the Marine Parks Act (MP Act) (2007) and the Fisheries Management Act (FM Act) 2007.

Under the Marine Parks Act (2007), it is possible to protect the key habitats of SA's fish, sharks and rays – and the at-risk species in particular – by including them in Sanctuary Zones within Marine Protected Areas (MPA). Such protection requires key habitats, and in particular spawning and nursery areas – whether they be reefs, estuaries, mangroves, seagrass or sandy bottoms - to be adequately represented in the roll-out of SA's Representative System of MPAs.

The Fisheries Management Act (2007) provides for the declaration of Aquatic Reserves for which managment plans should then be prepared.

The Natural Resources Management Act (NRM Act) (2004), and the regional NRM Boards established under that legislation, have a particularly important role to play in the protection of fish, sharks and rays, and other marine species. In order to do so, it will be necessary to ensure that regional NRM Comprehensive Plans include strategies and actions which reduce the threats, and programs and projects which involve both education and research activities.

Other state legislation which can be used to protect at-risk fish habitat and address threatening processes include the Native Vegetation Act (1991), Coast Protection Act (1972), Wilderness Protection Act (1992), Environment Protection Act (1993), Environment Protection Act (Sea Dumping) (1984), and the Heritage Places Act (1993).

NON-GOVERNMENT ORGANISATION LISTINGS

Protection can also be achieved through the listing of at-risk fish species on non-government organisation (NGO) threatened species lists such as the World Conservation Union (IUCN) Red List and the Australian Society for Fish Biology (ASFB) Threatened Fish Species List. While this will not in itself provide any legal protection, it will increase awareness of the status of at-risk fish species, and can influence those assessing nominations for legislative protection

PLANNING AND POLICY DEVELOPMENT

Both Commonwealth and state government marine related plans and policies can play a significant role in the protection for fish, sharks and rays. In most cases, opportunities are provided for community input into both the development of new plans and policies, and reviews of existing ones.

There are a large number of plans and policies that relate to the protection of fish, sharks and rays. The most significant are those connected with marine planning, Marine Protected Areas, fisheries, aquaculture, marine pests, marine pollution, climate change, coastal management and acid-sulphate soils.

Contributing to the development and/or review of government plans and policies can influence the level of protection provided for SA's fish, sharks and rays and their key habitats. As can advocating for the full implementation of existing plans and policies e.g. the National Plan of Action for the Conservation and Management of Sharks.

MANAGEMENT OF INDUSTRIES AND INFRASTRUCTURE

There are a large number and variety of industries which impact on the marine environment, either directly or indirectly. Similarly the construction and operation of infrastructure such as power stations can cause harm to fish, sharks and rays and their habitats.

INDUSTRY MANAGEMENT

SHIPPING

Commercial shipping has significant impacts on SA's fish, sharks and rays, including pollution of various types and the introduction of pest species into new areas.

Pollution from shipping mainly results from oil and chemical spills, the use of anti-fouling paints on hulls, and the dumping of rubbish at sea.

Oil spills primarily occur as a result of poor maintenance of the ships' engines and in extreme cases from collisions. Improved maintenance of all ships, and tighter restrictions on registration and use of older ships – particularly oil tankers – will help reduce these impacts. Chemical spills can be reduced by the development and use of safer equipment and methods for the transfer of liquid chemicals and wastes, and enforcement of Occupational, Health, Safety and Welfare (OHS&W) rules and

regulations.

The issue of hull anti-fouling paints has been partially addressed by the move from tributyl tin (TBT) based paints to less dangerous (but still problematic) copper-based paints for boats less than 25 m. Larger boats however still use TBT which accumulates in the environment, especially in ports, and poses a significant environmental threat. Better regulation, and support for the development and adoption of alternative anti-fouling methods will help.

While it is illegal to dump rubbish at sea, this continues to be an issue as evidenced by the amount of marine debris washed up on beaches around the world. In order to maintain stability while at sea, ships take on large amounts of ballast water, which invariably includes a variety of marine life. Before entering ports, the ballast water is released into the local waters. This is the major cause of pest species being transferred from one port to another.

Strict enforcement of Australia's ballast water management requirements is vital in reducing this risk.

COMMERCIAL FISHING

Of the 21 commercial fisheries operating in South Australian waters in 2004/05, 14 were rated as 'fully fished', 4 as 'over fished or depleted', and 3 as 'environmentally limited'. (PIRSA, 2006). Given these figures, it is clear that impacts resulting from climate change, introduced marine pests, disease, etc. have the potential to significantly affect the state's fisheries. Based on the precautionary principle – a core element of ecologically sustainable development – it would appear appropriate that catch levels be reduced. In addition, the inclusion of the breeding grounds for commercial species in Sanctuary Zones of marine parks, will not only benefit those species, but also other fish, sharks and rays that breed in those areas.

The catching of non-target species i.e. by-catch is the other major issue related to commercial fisheries. This is a particular problem in those fisheries involving trawling and netting. While there have been improvements in this area over recent years, mainly through improvements in fishing gear to exclude non-target species, by-catch remains a significant problem.

AQUACULTURE

The rapid expansion of the aquaculture industry in SA over recent years has had major economic benefits for regional communities and SA as a whole. However, as with any marine based industry, there are also a number of potential negative impacts that need to be addressed. Those relating to aquaculture include: increased nutrient loads beneath fish cages from both uneaten food and fish excrement; fish that escape from cages preying on local species; the potential for chemicals used to prevent disease outbreaks impacting on the surrounding environment; entanglements of marine mammals and sharks in cages; the increasing demand for wild-take fish for farming and as a food source; and the establishment of aquaculture development in sensitive areas eg over seagrass meadows

One of the most commonly promoted solutions to the first four issues is land-based aquaculture. Other ways to help minimise the impacts of aquaculture include ensuring feed levels are kept to an optimum level to minimise the waste; regularly moving cages; and developing fish cages that prevent, or at least minimise, escapes and entanglements.

The use of wild-take fish, both for farming and feed also needs to be addressed. Research currently being undertaken into breeding farmed fish in captivity which will reduce the tonnage of fish caught in the wild, particularly in relation to Southern blue-fin tuna, should be encouraged and supported. Similarly, research into the use of alternatives to fish as sources of feed should be pursued.

Ensuring appropriate sighting of aquaculture to avoid damage to breeding area such as seagrass beds and ongoing independent monitoring of impacts is also needed.

Photo: (c) Wolcott Henry 2005/Marine Photobank

A major issue associated with power stations – apart from their greenhouse gas emissions – is thermal pollution resulting from water that is heated as part of the power generation process.

MINING & EXPLORATION

There are a number of issues related to mining and exploration in the marine environment. These include: oil, gas and chemical inputs into the sea; damage to the surrounding marine environment through both construction and decommissioning; the dumping of 'spoil' from drilling on the seabed; seismic (sound) pollution; and increased localised shipping.

The impacts of gas hydrocarbons (e.g. methane) on fish are not well studied but "observations of both fish behavioural responses and fish mortality suggest a relatively low resistance of ichthyofauna [fish] to the presence of natural gas" (Patin, 1999).

The negative effects of seismic exploration (using high energy sonar to prospect for oil and mineral deposits) on marine mammals is increasingly well documented. The effects on fish species are not as clear but researchers are finding that the effects can be severe and long term including 'deafening' of fish and disturbance of breeding patterns.

Seismic testing near breeding and nursery sights and during migration along known migration paths, should be avoided.

INFRASTRUCTURE

POWER GENERATION

The major issue associated with power stations – apart from their greenhouse gas emissions – is thermal pollution. This results from water that is heated as part of the power generation process, being pumped into the sea. This is a particular problem where the outlet is placed in low energy environments such as protected bays and gulf waters where dispersal of the warm water is limited.

Thermal pollution can lead to changes in the character of the ecosystem with those species reliant on cooler waters being forced to relocate to other areas. In the case of species unable to move elsewhere, there is the potential for them to be wiped out. Other species which are more suited to warmer waters – including introduced marine pests – will subsequently replace the original ones.

There are a number of options available to reduce these impacts. The most effective in the long-term being increased use of renewable energy facilities, such as wind and solar, which don't produce thermal pollution.

Another option to mitigate this threat is to construct outlet pipes that pump the warmer water from existing stations further out to sea where dispersal will be increased – although the construction of the pipes themselves has the potential to cause harm. Similarly if any new coal-fired power stations are constructed, locating them adjacent to high energy coasts will help minimise the impacts.

DESALINATION PLANTS

South Australia, like many other parts of the world, is facing the potential for increasingly severe water shortages. The construction of desalination plants is seen by some as an answer to this problem.

There are however a number of problems associated with such

plants, which will impact on SA's fish, sharks and rays. The major issue is that desalination plants discharge the salt extracted from the water back into the sea, thereby increasing the salinity or the receiving waters. As with the warm water from power stations, it is necessary to avoid discharging the waste into low energy environments.

Discharges into South Australia's gulfs are particularly problematic as they are relatively shallow, subject to dodge tides (low tidal movement), protected from high energy wave action, and have limited flushing currents. They are also home to a number of sensitive habitats such as seagrass meadows, mangrove forests, rocky reefs and mud flats, which are key habitats for a wide variety of fish, sharks and rays.

CLIMATE CHANGE

The major changes forecast in South Australia's climate that will impact on our marine ecosystems are sea level rise, water temperature increase, storm surges and increased intensity of rainfall. While awareness of the impacts of climate change is increasing and efforts to protect against, and mitigate its effects are continuing to increase, more work is required at all levels.

At the state and national levels, it is vital that governments regulate and educate to reduce both industry and domestic greenhouse gas emissions. In addition, increased government funding for the development of renewable energy sources, such as wind and solar, will help decrease our reliance on fossil fuels.

Halting and reversing the decline in terrestrial and marine vegetation will increase the environment's capacity to absorb carbon dioxide from the atmosphere.

INTRODUCED PESTS

"Ballast water from shipping has been responsible for introducing more than 250 species, and possibly as many as 500 species, into Australian waters" (Beeton et al., 2006).

The prevention of incursions of invasive species is vital as their control or eradication can be extremely difficult to achieve, particularly once they become well established. A major step in achieving this is the implementation of the National System for the Prevention and Management of Marine Pest Incursions.

LACK OF KNOWLEDGE

In order to effectively protect and manage SA's fish, sharks and rays, it is necessary to increase our knowledge of the species themselves, their habitat needs, and the functioning of the marine environment generally.

An increase in funding and facilities for research into our marine environments and species – particularly non-commercial species – is required to fill the large knowledge gaps and to inform ecosystem-based management decisions. Habitat mapping, water quality monitoring, oceanographic monitoring, biological surveys and ecological studies are all research priorities.

THE THREATENED SPECIES NETWORK is a community based partnership between WWF-Australia and the Australian Government.
http://wwf.org.au/ourwork/ species/tsn/

Threatened Species Network

Australian Government

WWF

Conservation Council of South Australia Inc

CONSERVATION COUNCIL OF SOUTH AUSTRALIA INC.
1/157 Franklin St., Adelaide 5000
Ph: 8223 5155, Fax: 8232 4782
Email: fsr@ccsa.asn.au
http://www.ccsa.asn.au/fsr