



**PRIMARY INDUSTRIES  
AND RESOURCES SA**



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## **SOUTH AUSTRALIAN FISHERIES MANAGEMENT SERIES**

### ***Ecological Assessment of the South Australian Specimen Shell Fishery***

Assessment Report Prepared for the Department of the Environment and Heritage, against  
the *Guidelines For The Ecologically Sustainable Management Of Fisheries*

For the purposes of Part 13(A) of the *Environment Protection and Biodiversity Conservation  
Act 1999*

*August 2004*

Prepared by the Agriculture, Food and Fisheries Division of Primary Industries & Resources,  
South Australia

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25 Grenfell Street, Adelaide  
GPO Box 1625 ADELAIDE 5001

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Primary Industries and Resources South Australia  
GPO Box 1625  
ADELAIDE SA 5001  
[www.pir.sa.gov.au](http://www.pir.sa.gov.au)

ph (08) 8226 2316  
fax (08) 8226 0434

# FOREWORD

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The marine, estuarine and freshwater fisheries resources of South Australia are community owned resources. The role of the Government, as custodian of these resources on behalf of the broader community and future generations, is to ensure that they are used in an ecologically sustainable and economically efficient manner, while at the same time maximising returns to the community.

Experience world-wide has demonstrated that where unrestricted use of fisheries resources is allowed, there is little incentive for individuals involved in harvesting to conserve fish stocks. The resulting competition among and between user groups often leads to reduced biological and economic productivity. Left unmanaged, the increase in fishing effort that results from competition is reflected in lower individual catches in the recreational fishing sector, and over-capitalisation and reduced financial returns in the commercial fishing sector. Loss of these resources to the community can result in significant regional economic problems.

In managing fisheries resources, Governments have the primary responsibility of ensuring long-term sustainability. Governments must also ensure that the basis for sharing fisheries resources among all users is clearly understood and accepted as equitable, and that the allocation of fisheries resources and their level of utilisation are consistent with the needs of present and future generations.

To facilitate better decision-making by the Government in managing South Australia's fisheries resources, a number of fishery-specific stakeholder-based fishery management committees have been established to provide expertise-based advice to the Minister for Agriculture, Food and Fisheries. These committees are comprised of Government managers, research scientists, commercial and recreational fishers, fish processors and members of the general community. Each of these committees is convened by an independent chairperson. Appointment of members and the terms of reference of the committees are embodied in the *Fisheries (Management Committees) Regulations 1995*.

Where there are considered to be threats of serious or irreversible damage to fisheries resources, or the environment upon which they depend, a lack of full scientific certainty or insufficient information will not prevent the Government from making a resource management decision. Where resource management decisions must be made in an environment of uncertainty the Government, in partnership with the fisheries management committee, will take a precautionary approach to the management of South Australia's fisheries resources.

Rory McEwen  
MINISTER FOR AGRICULTURE, FOOD AND FISHERIES

/ /2004

# PURPOSE OF REPORT

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Primary Industries and Resources South Australia (PIRSA) Fisheries, and the South Australian Research and Development Institute (SARDI), have prepared this report.

The purpose of this report is to provide Environment Australia with comprehensive detail of the management arrangements for South Australian specimen shell fishery, against the '*Guidelines For The Ecologically Sustainable Management Of Fisheries*', set out in the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

It is intended that this report serve as the first step in the process to have specimen shells taken from South Australian waters, placed on the list of exempt native species for export, under Part 13(A) of the EPBC Act, for the five year period from 1 January 2005 to the 31 December 2009.

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# A. INTRODUCTION

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## A.1. Background

The specimen shell fishery is based on the taking of a broad range of marine shellfish from the Phylum Mollusca for the purpose of display, collection, cataloguing, classification and sale.

The South Australian commercial Specimen Shell Fishery is a limited entry fishery with licences issued under the *Scheme of management (Miscellaneous Fishery) Regulations 2000*. Currently only one person is licensed to operate commercially in the fishery exerting minimal fishing effort, resulting in little biological, environmental, economic or social consequences.

Commercial operations in the specimen shell fishery commenced in 1985 when two licences were granted for the collection of specimen shells for sale. A further two licences were issued prior to 1988. In the early 1990s, interest in obtaining licences to collect and sell specimen shells grew to a level where the former South Australian Department of Fisheries circulated a discussion paper to a range of interested parties. A number of recommendations came from the paper signalling potential growth in the fishery.

Interest in obtaining licences and the trade of specimen shells commercially has all but diminished since the late 1990s. This has been attributed to a realisation that South Australian waters do not accommodate a number of high value specimen shell species as previously thought in the late 1980s and early 1990s. The remaining licence holder retains his permit for “hobby” purposes as much as to be profitable.

PIRSA Fisheries will continue to manage the specimen shell fishery as a limited entry fishery and has no reason to believe that future interest in the fishery will proliferate to the levels seen in the early 1990s. PIRSA Fisheries are satisfied that the remaining commercial licence holder is fulfilling the objectives outlined in the Specimen Shell Management Plan (see Appendix 1) and as a result will continue to issue the licence on an annual basis.

## A.2. Management of the fishery

The South Australian Specimen Shell fishery is regulated by the licence conditions outlined for the Miscellaneous Fishery pertaining to the South Australian Fisheries Act 1982 *Scheme of Management (Miscellaneous Fisheries) Regulations 2000*. Miscellaneous fishery licences as with all fishery licences in South Australia, are granted for 12 months.

The following licence conditions regulate the single licence holder in the fishery:

- 60 Fish may only be taken in that area of waters defined as 'coastal waters' in the *Fisheries (General) Regulations 2000*.
- 61 Only fish of the following families may be taken pursuant to this licence:  
*Cassidae, Olividae, Spondylidae, Cardiidae, Mactridae, Conidae, Solenidae, Clavagellidae, Carditidae, Marginellidae, Cypraeidae, Cymatidae, Chitonidae, Naticidae, Neritidae, Harpidae, Turridae, Nassaridae, Columbidae, Patellidae, Voluntidae, Vasidae, Eulimidae, Muricidae, Scalidae, Fasciolaridae, Siphonariidae, Mitridae, Cancellariidae, Liotiidae, Tellinidae, Thaididae, Triviidae, Trochidae, Veneridae.*
- 62 Black cowrie (*Zoila friendii thersites*) may not be taken in excess of the bag limit prescribed in the *Fisheries (General) Regulations 2000* of 1 per person per day.

### **A.3. South Australian Specimen Shell Management Plan**

The management arrangements for the South Australian Specimen Shell Fishery are outlined in the 1997 Management Plan prepared by PIRSA Fisheries (see Appendix 1).

The South Australian Specimen Shell Management Plan is listed in the South Australian Fisheries Management Series as Paper No. 15 and is available to all members of the public from PIRSA Fisheries Head Office, located on the 14<sup>th</sup> Floor of the Grenfell Centre, 25 Grenfell St, ADELAIDE SA 5000.

In drafting the Plan, PIRSA Fisheries undertook consultation with fishery stakeholders, including the Marine Scalefish Fisheries Management Committee, which recommends management arrangements to the Director of Fisheries and Minister for Agriculture Food and Fisheries for all South Australian miscellaneous fisheries (refer to A.1. Background - the release of a discussion paper concerning the future management arrangements for the fishery). The consultation ensured that ranges of expertise and community interests were considered when drafting the Plan. Any subsequent review of the management arrangements would again involve the appropriate level of stakeholder consultation.

The Management Plan was due for review by PIRSA Fisheries in July 2002. The fishery is very small in comparison to other South Australian fisheries and commercial interest and effort has consistently decreased, thus reviewing the management arrangements has not been a priority of the resources available to PIRSA Fisheries. In the interim, the fishery has been managed according to the arrangements outlined in the 1997 Plan. It will be a priority of PIRSA Fisheries to review and update the Plan, corresponding with final recommendations from this submission.

To begin the review of the Plan PIRSA has undertaken initial consultation with the commercial licence holder in the fishery. The commercial licence holder has expressed satisfaction that the current list of biological, social, environmental and economic indicators for the fishery detailed in the 1997 Plan complement the directives of the *Fisheries Act 1982*, ensuring that annual harvest levels are sustainable, and future generations may benefit from exploitation of the resource.

## A.4. Harvest of specimen shells

Specimen shells are harvested by hand whilst diving to minimise the potential for damage and thereby maintaining value. The licensee is not entitled to take specimens by dredge as this is not considered to be a practice in keeping with the nature of their access.

There is no indication that stocks of any specimen shells in South Australia are over-exploited or will be in the near future. The commercial fishery exerts an extremely small amount of pressure on stocks and, as entry to the fishery is limited, this fishing effort will only vary slightly on a year-to-year basis.

The single licence holder in the fishery is required to provide the South Australian Research and Development Institute (SARDI) with all fishery dependent data from a compulsory catch/effort logbook program.

PIRSA policy restricts the release of catch/effort data for a fishery where there is a licence count less than 5, unless written permission is provided to the Director of Fisheries from all licence holders permitting data to be released. Data gathered from the fishery is therefore classified as completely confidential. The *Fisheries Act 1982 (Section 66A)* states that no confidential data may be released. For the purposes of this report the single licence holder has permitted that catch/effort data be released.

The most recent SARDI historical data available to the general public pertaining to the commercial catch of specimen shells in South Australia is as follows:

- 2001/02: 11 days fished for a catch of 128 shells.
- 2002/03: 5 days fished for a catch 61 shells.

**Table 1: Specimen Shell Data by Area by Species from July 2001 to June 2002**

Port of Landing	Area Fished	Shell Name	Number
Streaky Bay	10	<i>Ancillia marginata</i>	3
		<i>Cassis fimbriata</i>	2
		<i>Ericusa fulgetrum</i>	4
		<i>Notovoluta verconsis</i>	5
		<i>Paramoria guntheri</i>	2
		<i>Voluta undulata (amoria)</i>	78
	11	<i>Cassis fimbriata</i>	3
	12	<i>Notovoluta verconis</i>	4
	13	<i>Paramoria guntheri</i>	3
	14	<i>Ancillia mariginata</i>	2
	15	<i>Cassis adcocki</i>	1
16	<i>Cypraea thersites</i>	1	
Port Neill	29	<i>Voluta fulgetrum (ericusa)</i>	3
		<i>Voluta undulata (amoria)</i>	6
		<i>Cypraea thersites</i>	2

Tumby Bay		<i>Voluta undulata (amoria)</i>	6
		<i>Voluta exoptuda</i>	1
		<i>Cypraea thersites</i>	2

**Table 2: Specimen Shell Data by Area by Species from July 2002 to May 2003**

Port of Landing	Area Fished	Shell Name	Number
Penneshaw	42	<i>Cypraea marginata</i>	48
		<i>Cypraea thersites</i>	5
		<i>Cypraea reevei</i>	3
Port Lincoln	31	<i>Cypraea comptoni</i>	5

# **1 ESD ASSESSMENT OF THE MANAGEMENT REGIME AGAINST PRINCIPLES 1 AND 2**

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The following sections of this assessment report are presented to address “Guidelines for assessing the ecological sustainability of fisheries management regimes” approved by the Australian Government Minister for the Environment and Heritage.

## **PRINCIPLE 1**

A fishery must be conducted in a manner that does not lead to over-fishing, or for those stocks that are over-fished, the fishery must be conducted such that there is a high degree of probability the stock(s) will recover.

### **1.1. OBJECTIVE 1**

The fishery shall be conducted at catch levels that maintain ecologically viable stock levels at an agreed point or range, with acceptable levels of probability.

#### **Information Requirements**

As part of the fishery assessment process administered by SARDI, fishery-dependent data is collected from the single licence holder in the specimen shell fishery.

Section 46 of the *Fisheries Act 1982* requires the single specimen shell harvester, operating under a Miscellaneous Licence, to submit catch and effort return information to the Chief Executive of PIRSA. This information will be available to the Chief Executives of Department of Transport (DoT) and the Department of Environment, Heritage and Aboriginal Affairs (DEHAA) at their request. This information will be treated confidentially. The return shall be in a form approved by the Minister for Primary Agriculture Food and Fisheries, Minister for Minerals and Energy and Minister for Regional Development. The following information is requested from the licence holder:

- The date the fishing activity took place;
- The Port of Landing of the vessel involved in the fishing activity;
- The area fished;
- The species targeted;
- The name and number of each species taken;
- The method used to process the resource; and
- The use made of the resource.

The above information should be submitted every month of the life of the licence to:

Chief Executive, PIRSA  
C/- PO Box 120  
HENLEY BEACH SA 5022

If the specimen shell harvester fails to submit catch and effort information, the Director of Fisheries may recommend the imposition of a substantial fine or term of imprisonment under Section 46 of the *Fisheries Act 1982*.

Currently, no fishery-independent data is collated for the specimen shell fishery as the fishing effort exerted by the single licence holder does not pose any significant environmental threats worth investigating.

PIRSA is satisfied that the fishery dependent information provided is appropriate for the scale of the fishery.

### **Assessment**

SARDI and PIRSA analyse the fishery dependent data annually to monitor fishing effort, targeted species and fishing efficiency against the reference points outlined in the Management Plan. An annual report of the fishery is prepared by PIRSA for the Minister for Agriculture, Food and Fisheries.

The commercial logbook data collected (see Table 1 and 2) depicts a trend of decreased effort over past years. As previously stated this can be attributed to a realisation that South Australian waters do not accommodate a number of high value specimen shell species as previously thought in the late 1980s and early 1990s.

There is currently no research basis from which to determine ecologically sustainable specimen shell fishing effort in South Australian waters. There is also limited historical catch and effort data for the fishery due to a limited number of licences fished over a relatively short period of time.

#### ***Cypraea friendii thersites* (Black cowrie)**

The Black cowrie shell (*Cypraea friendii thersites*) is native to Central South Australian waters and appears to be a geographically isolated eastern subspecies of the *friendii* complex (Wilson 1993). It is highly sought after by both the single commercial licence holder and recreational fishers. A bag limit of one per person per day is prescribed in the *Fisheries (General) Regulations 2000* and is duly monitored by PIRSA Fishwatch. As the subspecies is geographically isolated, stocks are considered vulnerable. The single commercial licence holder did however take his bag limit on each of the days fished in 2002/03 suggesting that stocks, although vulnerable remain in reasonable numbers. Like many other species of specimens the black cowrie decreases significantly in market value if damaged. It is common practice for the commercial diver to pass over many black cowries (as many as 50) before a shell with optimum value is selected (Kingdon, pers. comm. 2004). The act of searching for species perfection is a passive means of controlling removals from the fishery and aiding stock sustainability.

There is currently no monitoring program in place, apart from reviewing the commercial licence holder's logbook and personal communication with the commercial diver, to ensure the sustainability and growth of the black cowrie stocks in South Australian waters.

### *Voluta undulata (amoria)*

The *Voluta undulata* is a solid, typically oblong-ovate shell with a cream exterior and widely spaced brown or orange, sharply angled axial lines. It grows to approximately 100mm and occurs in Southern Queensland to Tasmania and is also found in South Australia. It inhabits sub-littoral waters but can also be found in inter-tidal waters (Wilson 1993).

The *Voluta undulata* was clearly the most prolific species of shell taken by the commercial licence holder from July 2001 through June 2002. The shell is the most common of those targeted by the commercial fisher in South Australian waters. The *Voluta undulata* is a relatively low value specimen, which is meticulously hand-selected as even slightly damaged shells are worthless at market. It is common practice for the commercial diver to pass over many *Voluta undulata* (as many as 50) before a shell with optimum value is selected. Although targeted, the *Voluta undulata* is usually taken whilst searching for higher value specimens, as simply collecting this species alone would not result in a profitable dive (Kingdon, pers. comm. 2004). The act of searching for species perfection is a passive means of controlling removals from the fishery and aiding stock sustainability.

There is currently no monitoring program in place, apart from reviewing the commercial licence holder's logbook and personal communication with the commercial diver, to ensure the sustainability and growth of *Voluta undulata* stocks in South Australian waters.

### *Cypraea marginata*

The *Cypraea marginata* is a white, heavily brown spotted ovate cowrie. It grows to approximately 70mm and occurs from Central South Australia to Monte Bello Island in Western Australia. It usually inhabits the darker recesses of underwater caves at depths from 5-200m (Wilson 1993).

The *Cypraea marginata* was clearly the most prolific species of shell taken by the commercial licence holder from July 2002 through May 2003. The shell is common in South Australian waters and has a relatively high market value. Like all specimens collected the *Cypraea marginata* decreases significantly in value if even slightly damaged. It is common practice for the commercial diver to pass over many *Cypraea marginata* (as many as 20) before a shell with optimum market value is selected (Kingdon, pers. comm. 2004). The act of searching for species perfection is a passive means of controlling removals from the fishery and aiding stock sustainability.

There is currently no monitoring program in place, apart from reviewing the commercial licence holder's logbook and personal communication with the commercial diver, to ensure the sustainability and growth of *Cypraea marginata* stocks in South Australian waters.

## Recreational and Indigenous fishing

The recreational and indigenous take of specimen shells in South Australian waters is unknown. It is unlikely that many recreational fishers dive to deliberately target specimens, it is more likely that they are taken as a by-catch of diving for other molluscs or crustaceans such as scallops, abalone and lobster.

A number of the high value shells in South Australia inhabit deep waters e.g. Backstairs passage and are therefore protected from a large percentage of recreational fishers who don't have the vessels or equipment to dive in such areas.

There are a small number of dedicated shell "collectors" or "hobbyists" that have an understanding of the biological characteristics of specimens and do dive to target specific shells for their own collections.

Like the commercial licence holder, recreational fishers are unlikely to take damaged shells, rather searching to locate the perfect shell of a particular species. The act of searching for species perfection is a passive means of controlling removals from the fishery and aiding stock sustainability.

The black cowrie is considered a prestigious specimen by recreational fishers as it is considered rare in inshore waters and is native to South Australia. As mentioned previously both the commercial and recreational fisheries are regulated by a per person bag limit of one per day outlined in the *Fisheries (General) Regulations 2000*.

## Fishery productivity

It is difficult to estimate the potential productivity of the Specimen Shell fishery in South Australia, as fishery independent stock assessments have never been conducted. Stock assessments would assist PIRSA in obtaining knowledge of species biomass but would not necessarily outline potential productivity as only a small percentage of specimens are in a condition to meet market requirements. Based on the information provided to PIRSA from the commercial licence holder the fishery does not present as over-exploited.

## **Management Responses**

The Performance Indicators, reference points and management responses for the South Australian specimen shell fishery are outlined and described in the *Management Plan for The South Australian Specimen Shell Fishery 1997* (see Appendix 1). To date none of the reference points for the fishery have ever been exceeded and management responses have not been implemented.

PIRSA believes that the management strategies outlined in the *Management Plan for The South Australian Specimen Shell Fishery 1997* as well as the regulations detailed in the *Fisheries (General) Regulations 2000* are capable of controlling the level of take of specimen shells in South Australia. Considering the degree of uncertainty that exists regarding sustainable effort levels in the fishery it is PIRSA policy to take a precautionary approach when implementing management responses.

PIRSA reserves the right to revoke the *Miscellaneous Fishing Licence* from the commercial specimen shell fisher if he is not complying with the regulations outlined in the *Fisheries Act 1982*. As mentioned previously the Director of Fisheries may recommend the imposition of a substantial fine or term of imprisonment under Section 46 of the *Fisheries Act 1982* if the licence holder is not complying with the regulations outlined in the *Fisheries Act 1982*.

PIRSA also reserves the right to amend or revoke the conditions of the *Miscellaneous Fishing Licence* held by the Specimen Shell fisher given the appropriate circumstances.

### By Product

The *Fisheries (General) Regulations 2000 South Australia* prohibit the commercial specimen shell licence holder from taking other species of commercial value including: abalone, octopus, squid, cuttlefish, scallops, mud oysters, cockles (Genus *Donax* and *Katelaysia*), mussels and razor fish. However, it is likely that the recreational fishery takes these species under the bag limits regulated as a by-product of fishing for specimen shells. It is not possible to put a figure on the level of by-product taken by recreational fishers when fishing for specimens.

### Prohibited fishing areas

The harvesting and removal of specimen shells is prohibited from:

- All Aquatic Reserves proclaimed under the *Fisheries Act 1982*.
- Foreshore adjacent to land under the care, control and management of the Minister of Environment, Heritage and Aboriginal Affairs and gazetted as a reserve under the *National Parks and Wildlife Act 1972*, *Wilderness Act 1992*, *Crown Lands Act 1929* or the *Coast Protection Act 1972*.
- Areas adjacent to lands under the management of the Department of Defence.
- Foreshore restricted by Local and/or District Councils for the purpose of non-development, recreation or conservation reserves.

The harvesting of specimen shells may be subject to specific restrictions relevant to specific locations. Such restrictions will be developed in consultation between PIRSA, DEHAA and Local Governments and may include provisions for the preservation of rare or endangered terrestrial flora and fauna or the prevention of degradation of marine benthic and coastal communities.

## **1.2. OBJECTIVE 2**

Where the fished stock(s) are below a defined reference point, the fishery will be managed to promote recovery to ecologically viable stock levels within nominated timeframes.

### **Management Responses**

The South Australian specimen shell fishery has seen considerable reduction in fishing effort over the past 5 years to a point where now it only consists of a single licence holder fishing historically less than 10 days a year. The extremely small amount of shells commercially harvested ensures that the precautionary principle is applied and that there has been no fishing of the stock to a point below any defined reference point. As a result, no management responses listed in the *Management Plan 1997* have had to be implemented in the fishery.

The enforcement of a bag limit on the taking of 1 black cowrie shell per day outlined in the *Fisheries (General) Regulations 2000* has ensured the sustainability and growth of stocks of this species in South Australian waters.

The enforcement of closed fishing areas as previously discussed in this report ensures the sustainability and growth of specimen shell stocks on a spatial level, where ecosystems are often considered to be under threat.

## **PRINCIPLE 2**

Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

### **2.1. OBJECTIVE 1**

The fishery is conducted in a manner that does not threaten bycatch species.

The South Australian specimen shell fishery is target-specific (i.e. hand selected harvesting) and therefore has no bycatch. The shell is the commodity fished and the commercial diver is extremely particular with the species targeted. As mentioned previously in this report damaged shells have a considerably lower market value than those in pristine condition and are more often than not passed over by the commercial diver.

There is the unavoidable removal of commensal organisms attached or within shells at the time of harvest. However, the extremely low catch rates ensure that these species are not threatened.

The majority (approximately 90%) of shells taken by the commercial diver are living, hence containing mollusc flesh. The commercial diver freezes the living shells for periods of up to a week to kill the shell and enable the successful removal of the mollusc flesh with limited damage to the structure of the shell. The mollusc flesh is discarded by the commercial diver in bins (Kingdon per. comm. 2004).

### **2.2. OBJECTIVE 2**

The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities.

The specimen shell fishery in South Australia, due to extremely low fishing effort, has little to no impact on endangered, threatened or protected species and ecological communities.

The black cowrie shell is protected under the *Fisheries (General) Regulations 2000* through enforcement of a bag limit of 1 per person per day, ensuring stocks are not threatened and remain sustainable.

Diving is the only method regulated to harvest specimen shells and although the fishery is target specific, minor damage to benthic communities, specifically reef, is possible in the act of a dive or in the anchoring of a vessel. As fishing effort is minimal, and historically not specifically localised, benthic damage currently is and will be at a minimum.

PIRSA believes that interest in the specimen shell fishery in South Australia will remain at a minimum and hence the mortality of or injuries to endangered, threatened or protected species and ecological communities as a result of harvesting specimen shells will remain extremely scarce.

### **Information Requirements**

Currently, there is little to no information collected on the interaction between commercial specimen shell fishing and its effects on endangered, threatened or protected species and threatened ecological communities. As the fishery shows no signs of growth there is little reason to suggest this information will be required in the future and such interactions will become a problem.

### **Assessments**

As information is not collected on the impact of specimen shell harvesting on endangered, threatened or protected species and threatened ecological communities no assessments have been completed or plan to be completed.

### **Management Responses**

The appropriate management responses to the specimen shell fishery adversely impacting endangered, threatened or protected species and threatened ecological communities are outlined in the current Specimen Shell Management Plan (see Appendix 1). The occurrence of an interaction causing adverse impacts would breach the environmental, biological and social objectives of the fishery outlined in the Plan. Reference points and performance indicators outlined in the Plan would be triggered and the management responses to a performance indicator being exceeded would be implemented.

PIRSA believes that the specimen shell fishery is highly unlikely to ever trigger the management responses regulating the impact on endangered, threatened, or protected species and threatened ecological communities at its current catch and effort levels.

## **2.3. OBJECTIVE 3**

The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally.

The South Australian specimen shell fishery, operating at its current catch and effort levels, has little to no impact on the general operations of ecosystems. PIRSA believes that interest in the fishery will not increase and hence it is highly unlikely that adverse impacts on the general operation of ecosystems as a result of specimen shell fishing will occur in the future.

### *Physical Habitat*

As previously mentioned in this report, extremely minor impacts could be seen in benthic communities through diving as the harvest technique utilised by the specimen shell fisher. In addition, minor impacts could be seen on localised communities e.g. reefs within the food web because of specimen shell harvests and anchoring of vessels.

### *Water Quality – Bilge discharge*

The only potential risk to water quality from specimen shell harvesting would be a spillage of fuel and oil from vessels and hookah compressors. However, as there is only one vessel in this fishery permitted to harvest, the impacts would be isolated and have limited consequences.

### **Information Requirements**

Currently, there is little to no information collected on the interaction between commercial specimen shell fishing and its effects on the general operations of ecosystems. As the fishery shows no signs of growth there is little reason to suggest this information will be required for the future.

### **Assessments**

As no information is collected on the impact of specimen shell harvesting has upon ecosystems, no assessments have been completed or are planned for the future.

### **Management Responses**

The appropriate management responses to the specimen shell fishery adversely impacting the general operation of ecosystems are outlined in the current Specimen Shell Management Plan (see Appendix 1). The occurrence of an interaction causing adverse impacts would breach the environmental, biological and social objectives of the fishery outlined in the Plan. Reference points and performance indicators outlined in the Plan would be triggered and the management responses to a performance indicator being exceeded would be implemented.

PIRSA believes that the specimen shell fishery is highly unlikely to ever trigger the management responses regulating the impact on the general operation of ecosystems at its current catch and effort levels.

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# **Appendix 1: Management Plan for the South Australian Specimen Shell Fishery**

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## **MANAGEMENT PLAN FOR THE SOUTH AUSTRALIAN SPECIMEN SHELL FISHERY**

**prepared by**

**Primary Industries South Australia**

**for**

**Environment Australia**

**October 1997**

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## **1 Scope of the management plan**

Sustainable management of marine resources is the responsibility of Primary Industries South Australia (PISA) Fisheries under the *Fisheries Act 1982*. The principal objectives of the Act (Section 20) are:

- (a) *ensuring, through proper conservation, preservation and fisheries management measures, that the living resources of the waters to which this Act applies are not endangered or over exploited; and*
- (b) *achieving the optimum utilisation and equitable distribution of those resources.*

This management plan provides a statement of the policy, objectives and strategies to be employed for the sustainable management of the specimen shell fishery in State waters.

Regulations for the management of the specimen shell fishery in South Australia are located in the *Scheme of Management (Miscellaneous Fisheries) Regulations 1991* and the *Fisheries (General) Regulations 1984*.

This management plan shall operate for a **five** year period from 1 December 1997 subject to annual review and amendments as considered necessary by the Minister for Primary Industries.

## **2 Description of the fishery**

### **2.1 Definition of the fishery**

The specimen shell fishery is based on the taking of a broad range of marine shellfish from the Phylum Mollusca for the purpose of display, collection, cataloguing, classification and sale. Specimens may be alive or dead at the time of harvesting and can include beach washed shells.

At present there is only one species (the black cowrie, species *Cypraea*), which is subject to a catch limit that is applicable to both commercial and recreational fishers. This may be extended in the future to include all shells of that particular sub-genus.

There is a significant trade in specimen shells in South Australia, although by comparison to other fisheries it does not produce high levels of catch. It relies upon a small niche market, which can be subject to price fluctuations due to over supply of product. The market for specimen shells is principally based on interstate and overseas sales to hobbyists or retailers, with a small trade in the supply of specimens to institutions such as universities and museums. Although the licensed operations are principally based on the taking of live specimens, there is the potential for a small market in the harvest of drift cast shells for use in ornaments. The annual export market is estimated to be valued at \$2 million nationally (Antram pers. comm.)

### 2.1.1 *The commercial fishery*

The commercial fishery consists of licensed divers operating under an owner/operator policy, collecting a comparatively small number of quality specimens relative to most other wild fisheries. It is a limited entry fishery with licences issued under the *Scheme of Management (Miscellaneous Fishery) Regulations 1984*. The four persons currently entitled to operate commercially in the fishery exert little influence on each other's operations.

Although specimens can be collected from the shore and subtidal zone, the vast majority of commercial shells are collected by hand whilst diving to minimise the potential for damage and thereby maintaining value. Licensees are not entitled to take specimens by dredge as this is not considered to be a practice in keeping with the nature of their access. Commercial fishers are required to comply with licence conditions as well as any bag limits and are entitled to operate in all coastal marine waters of the State, except those areas otherwise closed or protected.

### 2.1.2 *The recreational fishery*

Recreational fishing for specimen shells can be divided into two sectors. The largest group is comprised of those people who collect shore cast shells as an opportunistic beachcombing activity. The second smaller group is comprised of more dedicated hobbyists who are well equipped, have a knowledge of the biological characteristics of shells, target particular specimens and collect by diving.

The hobbyist and casual collector of specimen shells, like the commercial operator, has few restrictions except for a bag limit on the black cowrie *Cypraea (Zoila) friendii thersites* and restricted access to areas such as aquatic reserves. The level of the recreational catch and number of participants involved is unknown.

## **2.2 *Biological characteristics***

Australia has approximately 20,000 species of molluscs, marine, land and freshwater. Given that many of the species are not collected, traded as specimens or are very common, management effort is focussed on those species that may warrant particular protection, such as the rare and most commonly traded species.

While it is correct under the provisions of the *Fisheries Act 1982* to refer to molluscs and their shells as "fish", they are not generally thought of as such, even though there are a number of species which are exploited commercially, principally for their flesh, such as abalone, cockles, scallops, squid and octopus.

South Australia provides a diverse range of marine environments from the cooler temperate waters with large areas of high energy coastline to sheltered bays and gulfs with shallow, warmer waters that have limited water exchange with the Southern Ocean. While the waters do not support a profusion of the

larger more spectacular specimen shells found in tropical waters, there are nevertheless a number of highly valued shells available which are found only in temperate Australia.

### **2.3 Target species**

This management plan covers the taking of all fish belonging to the Phylum *Mollusca* other than those provided for in other commercial fisheries. Commercial specimen shell fishers are permitted to take shells from 40 genera for the purpose of trade or business. The black cowrie (*Zoila friendii thersites*) may not be taken in excess of the bag limit of one per person per day.

Those not to be taken by commercial specimen shell fishers are; abalone, octopus, squid, cuttlefish, scallops, mud oysters, cockles (Genus *Donax* and *Katylisia*), mussels and razor fish. All of these species are taken commercially and recreationally for human consumption and are subject to separate management plans. The specimen shell management plan is specifically intended to cover the taking of shells that are not harvested for the sale of their meat.

### **2.4 History of fishery management**

The taking of any aquatic organism in South Australian waters is controlled under the provisions of the *Fisheries Act 1982*. The taking of benthic organisms in the area of rocky reefs and their waters from the area that extends from the high water mark seawards to a depth of two metres is prohibited.

Commercial operations in the specimen shell fishery commenced in 1985 when two licences were granted under the *Scheme of Management (Miscellaneous Fishery) Regulations 1984* for the taking of specimen shells for sale. A further two licences were issued prior to 1988. Following a number of additional applications for entry to the fishery in 1989, it was decided not to issue any additional licences until an assessment of the primary target species had been made, and interim arrangements for the management of the fishery had been put in place.

There has been an extensive consultative process on managements, including discussion papers released in 1991 and 1992, as well as meetings with and the receipt of written submissions from a broad range of interest groups and individuals. These include the South Australian Museum, the Australian Nature Conservation Agency (formerly the Australian National Parks & Wildlife Service), and interstate fisheries authorities.

The strategies outlined for the management of the fishery are intended to meet the statutory obligations under the *Fisheries Act 1982*, and the requirements for a management plan under the export control regulations of the *Wildlife Protection (Regulation of Exports & Imports) Act 1982* (Commonwealth) and the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES).

Following an increase in the demand for licences for the taking of specimen shells, the former South Australian Department of Fisheries circulated a discussion paper in 1991 to a range of interested parties. The main recommendations of this paper were : (1) that a further five licences be issued; (2) that licensees be limited to one of two zones with the zones to be on either side of a longitudinal line dividing Spencer Gulf; (3) that licences be allocated on a "first come first served" basis from a waiting list; and (4) that molluscs to be taken were not to include abalone, cockles, mussels, razor fish, mud oysters, Tate King and Queen scallops.

As a result of the comments received on the discussion paper, the document "Specimen Shell Fishery - Proposed Management Arrangements" was distributed for comment in July 1992. The issues canvassed in this paper that attracted the most comment were the concept of zoning, the problem of the hobbyist/collector who engages in the practice of swapping or exchanging specimens (as this is in contravention of the provision of the *Fisheries Act 1982*), access to molluscs currently entitled to be taken under other forms of commercial fishery licences and the requirement that licences issued under the *Scheme of Management (Miscellaneous Fisheries)* were required to be allocated under the tender system. The main recommendations in this paper were: (1) that there be a licence limitation and an allocation of an additional four licences; (2) that access in high recreational areas be prohibited; (3) that licence allocation be by tender for a five year developmental period; (4) that harvesting to be by hand and diving only; (5) that the catch return sheet format be amended to allow for more information to be collected; and (6) that the management arrangements should meet the Commonwealth's export requirements.

In 1996, another document entitled, "A Draft Plan for the Management of the Specimen Shell Fishery in South Australia", was released for public consultation. This document outlined the direction to be taken in the management of the specimen shell fishery. A number of the recommendations from that process will be included in a major legislative review that PISA Fisheries is currently undertaking.

The finalisation of the 1996 report led to interim approval of the management arrangements as a plan under the *Wildlife Protection (Regulations of Export & Imports) Act 1982* by the Commonwealth Minister pending the completion of this fishery management plan.

## **2.5 Research and stock assessment**

There is no indication to date that stocks of any specimen shells in South Australia are over-exploited. Research programs investigating the sustainability of specimen shell resources have not been conducted because of the low level of exploitation. The identification of research needs and priorities for management of the specimen shell fishery come under the auspices of the Marine Scalefish Fishery Management Committee.

The South Australian Research and Development Institute (SARDI) is the preferred research provider of the Government and this agency conducts the

majority of the research and monitoring programs for commercial fisheries. SARDI collects some fishery dependant data from a compulsory catch/effort logbook program for all commercial fisheries, including the specimen shell fishery. Currently, data is collected on a broad spatial scale at a daily resolution.

The only SARDI historical data available to the general public pertaining to the commercial catch of specimen shells in South Australia is as follows:

1992/93: 5 fishers dived 162 days and landed 2679 shells.  
1993/94: 3 fishers dived 159 days and landed 3321 shells.  
1994/95: 2 fishers dived 102 days and landed 1376 shells.  
1995/96: 2 fishers dived 57 days and landed 780 shells.

As there are so few participants in the commercial fishery, production data available for general release cannot be presented in a more detailed format without breaching the confidentiality of individual fishers. Catches of individual species are also not currently available.

## **2.6 *Illegal catch***

Should a person engage in a commercial fishing activity and not hold a licence in respect of that fishery, it is an offence and a breach of the *Fisheries Act 1982*. It is also an offence if a person sells, trades or purchases fish taken in waters to which the Act applies without the appropriate licence.

It is difficult to quantify the amount of specimen shells taken and sold illegally by casual collectors, but the problem may be significant. In the long term, this may impact on the sustainability of some shellfish in specific areas.

## **2.7 *Mollusc bycatch from other fisheries***

South Australia and the Commonwealth entered into Offshore Constitutional Settlement (OCS) arrangements in 1987 and 1988. Revised OCS arrangements commenced on 1 January 1997 and under the Memorandum of Understanding (MOU) signed with the OCS arrangements, there is provision for bycatch of certain species by licence holders in the other jurisdiction.

One of the OCS agreements for fisheries in waters adjacent to South Australia provides that invertebrates are to be managed under State law. This includes all species of the Phylums *Crustacea*, *Mollusca* and *Echinodermata* except some deep-water prawn species.

Bycatch arrangements are managed as possession limits applicable for any one trip, regardless of the duration of that trip. These limits are provided in recognition that there are times when there will be some overlapping of species taking during fishing activities, due to the non selective nature of some fishing practices. The State has agreed with the Commonwealth to allow a combined possession/bycatch limit of 500 kg whole weight of all

species in the Phylum *Mollusca*, except for abalone (0 kg), scallops (0 kg) and specimen shells (Class *Gastropoda*) (50 kg).

### **3 Fishery management objectives and strategies**

The priority for management of the specimen shell fishery is to ensure that annual harvest levels are sustainable, so future generations may benefit from exploitation of the resource. Commensurate with this priority are a number of more specific biological, economic, environmental, and social objectives that have been developed to complement the broad directives of the *Fisheries Act 1982* (Section 20).

#### **3.1 Biological objectives**

- 1. To prevent localised depletion of populations of specimen shells and maintain harvesting at a level that provides for a sustainable fishery.**
- 2. Harvest specimen shells at a level which will provide for adequate levels of recruitment.**
- 3. Maintain biodiversity across the range of marine shellfish collection areas.**

#### *Strategies*

- adopt a 'precautionary approach'<sup>1</sup> in the management of the fishery;
- maintain a restriction on the number of commercial specimen shell licences;
- prohibit the removal of specimens from egg masses or when depositing eggs;
- set daily bag limits for shell species considered to be at risk, based on the best available scientific information on the stock;
- where appropriate and possible, set biological reference points and performance indicators, to assist with management of the fishery;
- develop an information system that ensures the management committee has adequate information for assessing stocks; and
- review commercial catch data collected, both in terms of assessing effort in the fishery and in the spatial resolution of the information obtained.

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<sup>1</sup> the management committee shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures to prevent overfishing.

### **3.2 Economic objectives**

- 1. To maintain the specimen shell fishery at a level that provides for economic benefits to licence holders.**
- 2. To recover an economic return from licence holders sufficient to cover the attributed costs of management, research and compliance for the fishery.**

#### *Strategies*

- collate and evaluate economic data available on the fishery including capital structure, management costs, harvesting costs and market information;
- maintain licence numbers at a level that ensures a premium market price for the product; and
- set licence fees at a level sufficient to recover all attributed management, research and compliance costs.

### **3.3 Environmental objectives**

- 1. To minimise the environmental impact of specimen shell fishing and promote conservation measures in habitats worthy of higher conservation status.**
- 2. To monitor the effect of user groups on the marine environment so that specimen shell habitat is not deleteriously impacted by their activities.**

#### *Strategies*

- promote fishing techniques that have minimal impact on the marine environment;
- work closely with Government agencies and the community on proposed planning for marine protected areas;
- support funding of research interactions between specimen shell species and other species; and
- take a holistic ecosystem approach in considering management arrangements for the fishery.

### **3.4 Social objectives**

- 1. To maintain and provide for reasonable access to the specimen shell resource for recreational fishers.**
- 2. To provide for adequate compliance resources to monitor fishing for specimen shells by commercial, recreational and illegal operators.**
- 3. To consider indigenous fishing issues as directed by the Minister for Primary Industries.**
- 4. To inform and educate the community about the specimen shell resource in South Australia.**

#### *Strategies*

- monitor and review management needs for the fishery through a sub-committee of the management committee;
- monitor levels of compliance resources and seek to ensure appropriate response times to all calls received by the Fishwatch telephone service;
- develop public information pamphlets on the specimen shell fishery; and
- provide for an annual review of the management plan and report to the Minister for Primary Industries and Environment Australia on the operations and status of the fishery.

## **4 Compliance and enforcement**

The annual compliance activity for the South Australian specimen shell fishery is principally targeted at illegal recreational fishing and associated activities. A large percentage of compliance effort is directed towards illegal shell collecting within the coastal intertidal zone.

Compliance has both an educational role in ensuring an understanding of the need to harvest sustainably and to conserve marine resources for present and future generations. It also enforces legislation designed to protect areas of significant environmental importance.

Random monitoring of the activities of commercial fishers is also conducted. Investigations are targeted towards the species being taken during fishing operations to ensure that commercial fishers are complying with the legislative requirements and licence conditions.

## **5 Reference points and performance indicators**

Reference points are agreed quantitative measures used to assess performance of the fishery based on clearly defined management objectives.

*Reference points begin as conceptual criteria which capture in broad terms the management objectives for the fishery. To implement fishery management it must be possible to convert the conceptual reference point into a technical reference point, which can be calculated or quantified on the basis of biological or economic characteristics of the fishery (Caddy and Mahon 1995).*

Reference points used for rational exploitation of fish resources can be placed in two categories: target reference points and limit reference points. Target reference points are considered as indicators of stock status which are a desirable management target, whilst a limit reference point is an agreed level at which stock stress may occur, and immediate action is required to remedy the situation before long term damage to resource productivity may result.

Biological reference points and performance indicators will be reviewed on an annual basis. Changes may occur to biological reference points should more scientific information on the status of the specimen shell stocks become available. Other performance indicators may change to ensure that the management of the fishery is subject to a continuous improvement program.

### **5.1 Biological reference points**

Considering the stated biological objectives for the fishery, the following reference points may be used to assess the stock status of the specimen shell fishery:

- Changes in the number of species taken.

*The basis for measuring this indicator is the assessment of the time spent diving (ie searching and collecting) and the number of fish taken at the available level of spatial resolution. It should be remembered that the number of specimens suitable for collecting may have no direct reflection on the size of the population.*

- Changes in fishing patterns.

*Evidence of changes in fishing patterns, particularly when targeted at a specific species, may indicate localised depletion of suitable specimens.*

Specific stock assessment data on specimen shell populations is not available for South Australian waters. The limited data that is available has been compiled from commercial catch return data sheets, therefore any target reference points that may be set would be at rates of change that may be observed from analysing these data. As some stock assessment data is collected, target and limit reference points maybe established for some species.

## **5.2 Economic performance indicators**

Considering the stated economic objectives for the fishery, the following reference points are used to assess the economic status of the specimen shell fishery:

- gross value of product (GVP).
- individual market prices for valuable species.

The annual review of economic performance of the fishery may lead to management changes in response to fishing cost increases, markets or the implementation of improved business practices (eg technology changes).

## **5.3 Compliance performance indicators**

Compliance costs for the specimen shell fishery are a significant part of the overall management costs for the fishery. The effectiveness and efficiency of compliance protocols and programs need to be assessed annually to ensure effectiveness in service delivery and cost minimisation without raising the level of compliance risk.

The following performance indicators are used to assess the effectiveness and efficiency of the compliance and audit operations for the specimen shell fishery:

- reduction in illegal activity as determined by the number of reports for offences relating to specimen shells.
- cost effectiveness of compliance programs.
- greater support from the community for Fishwatch.

## **5.4 Management action on reaching a target reference point**

Where target reference points have been described above, and one or more of the reference points is reached or exceeded, the management committee will undertake the following actions:

1. notify the Minister for Primary Industries and participants in the fishery as appropriate.
2. undertake an examination of the causes and implications of 'triggering' a reference point.
3. consult with the specimen shell fishing sector and PISA Fisheries on the need for alternative management strategies or actions.

4. provide a report to the Minister for Primary Industries and industry, within three months of the initial notification, on the outcomes of a review of the effect of triggering a reference point.

## **6 Review of the management plan**

This management plan is a dynamic document which reflects current understanding of the specimen shell fishery and as such may change over time. No radical departure from the stated management arrangements, biological reference points or performance indicators will occur unless directed by the Minister for Primary Industries during the life of this plan.

Six months before the end of the five year period (1 July 2002) this management plan will undergo a major review.

## **7 References**

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