



Australian Government

Department of the Environment and Heritage

Assessment of the
South Australian Specimen Shell Fishery

November 2004

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This document is an assessment carried out by the Department of the Environment and Heritage of a commercial fishery against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries*. It forms part of the advice provided to the Minister for the Environment and Heritage on the fishery in relation to decisions under Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999*. The views expressed do not necessarily reflect those of the Minister for the Environment and Heritage or the Australian Government.

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Assessment of the ecological sustainability of management arrangements for the South Australian Specimen Shell Fishery

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EXECUTIVE SUMMARY

Background

The Department of Primary Industries and Resources, South Australia (PIRSA) has submitted a document for assessment under Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The draft document *Ecological Assessment of the South Australian Specimen Shell Fishery* (the submission) was received by the Department of the Environment and Heritage (DEH) in December 2003. The submission was released for a thirty-day public comment period that expired on 1 October 2004. No public comments were received.

The submission reports on the South Australian Specimen Shell Fishery against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries*. The DEH assessment considers the submission and associated documents.

Table 1: Summary of the South Australian Specimen Shell Fishery

Area	Waters adjacent to the State of South Australia (State waters only).
Fishery status	Unknown.
Target Species	Marine shellfish from the Phylum Mollusca.
Gear	Hand harvest while diving (SCUBA and hookah gear is permitted) and hand collection of beach washed shells.
Season	Shells can be collected year round.
Commercial harvest 2002-03	5 days fished for a catch of 61 shells.
Value of commercial harvest	Unknown.
Recreational harvest	No quantitative information available, but potentially high.
Commercial licences issued	Limited entry fishery – only 1 license issued currently.
Management arrangements	<u>Commercial fishery</u> : Limited entry, spatial restrictions, species restrictions, bag limit (1 per day) on take of black cowrie, species <i>Cypraea</i> , prohibition on the removal of specimens from egg masses and of those depositing eggs. <u>Recreational fishery</u> : Spatial restrictions, bag limit (1 per day) on take of black cowrie, species <i>Cypraea</i> .
Export	Shells collected by operator for hobby purposes, but are permitted to be traded domestically and internationally.
Bycatch	No bycatch is taken in this fishery due to the highly selective nature of harvesting methods.
Interaction with Threatened Species	Considered low. Possible interactions through boat strike.

The area of the fishery includes waters adjacent to the coast of South Australia. The fishery occurs entirely within South Australian waters and shells may only be taken in that area of waters defined as ‘coastal waters’ in the *Fisheries (General) Regulations 2000*. Catch data from 2001-2003 shows that the ports of landing for harvesting activities were Streaky Bay, Port Neill, Tumby Bay, Penneshaw and Port Lincoln.

The fishery targets a broad range of marine shellfish from the Phylum Mollusca. Species may be alive or dead at the time of harvesting and can include beach washed shells. In the South Australian Specimen Shell Fishery, live shells reportedly constitute approximately 90% of the catch. Species caught between 2001-2003 include:

- *Ancillia marginata*

- *Cassis fimbriata*
- *Ericusa fulgetrum*
- *Notovoluta verconsis*
- *Paramoria guntheri*
- *Voluta undulate (amoria)*
- *Cassis adcocki*
- *Cypraea thersites*
- *Voluta exoptuda*
- *Cypraea marginata*
- *Cypraea reevei*
- *Cypraea comptoni*

No byproduct is taken in this fishery and take of abalone, octopus, squid, cuttlefish, scallops, mud oysters, cockles, mussels and razor fish is prohibited. These species are all taken in other commercial fisheries and are subject to separate management plans.

Australia has approximately 20 000 species of marine, freshwater and terrestrial molluscs. South Australia provides a diverse range of marine environments from 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 shells found in tropical waters, a number of highly valued shells, which are found only in temperate Australia, are nevertheless available. Limited information is available regarding biology of the target species, but most are thought to have broad distributions.

Commercial operations in the specimen shell fishery commenced in 1985 when two licences were granted for the collection of specimen shells for sale. An additional two licences were issued prior to 1988. In the early 1990s, interest in obtaining licences to harvest specimen shells grew, but since the late 1990s, interest in obtaining licences has significantly diminished. This has been attributed to a realisation that South Australian waters do not accommodate the large numbers of high value specimen shell species thought to be there in the late 1980s and early 1990s. Currently, there is one licence holder who holds his permit as much for hobby purposes as to be profitable. According to the submission, PIRSA will continue to manage the fishery as a limited entry fishery and considers it unlikely that future interest in the fishery will increase to the levels seen in the early 1990s.

The catch and effort levels in the fishery have been low in recent years. In 2001-02, one operator fished for 11 days and took 128 shells, while in 2002-03, the operator fished for 5 days and took 61 shells. No information is available regarding the value of the South Australian Specimen Shell Fishery. Nationally, the annual value of specimen shell fisheries is estimated at \$2 million, however South Australia is likely to only make a small contribution to this amount due to the low harvest in the fishery.

Specimen shells are permitted to be harvested by hand while diving in South Australia, and beach washed shells may also be collected. This technique minimises the potential for damage to shells and therefore maintains the value. The licensee currently operating in the fishery is not entitled to take specimens using a dredge as this is not considered to be a practice in keeping with the nature of their access. Fishery management arrangements include limited access, spatial closures, restrictions on species allowed to be taken and a bag limit for the black cowrie (*Cypraea friendii thersites*).

Information on bycatch and protected species interactions is not recorded in the South Australian Specimen Shell Fishery. However, the highly selective harvesting methods and the low level of effort in this fishery renders impacts on bycatch and protected species unlikely. These issues are assessed under Principle Two of this report.

Recreational fishing for specimen shells can be divided into two sectors. The main group is comprised of those who opportunistically collect shore cast shells during beachcombing activity. The second group is comprised of more dedicated hobbyists who are well equipped, have a knowledge of the biological characteristics of specimen shell species, target particular specimens and collect by diving. Both of these groups have few restrictions, apart from a bag limit on the black cowrie and restricted access to areas such as aquatic reserves. The level of recreational catch and number of participants is unknown, but is potentially high.

The fishery is managed under the *South Australian Specimen Shell Management Plan* (MacDonald, 1997), which obtains its authority from the *South Australian Fisheries Act 1982*. Regulations for the management of the fishery are contained in the *Scheme of Management (Miscellaneous Fisheries) Regulations 1991* and the *Fisheries (General) Regulations 2000*.

The management plan was due for review by PIRSA in July 2002, however the small scale of this fishery meant that such a review was not a priority for PIRSA's resources. In the interim, the fishery has continued to be managed according to the arrangements outlined in the 1997 management plan. PIRSA plans to implement recommendations from this assessment simultaneously with the review of the management plan.

Overall assessment

The material submitted by PIRSA indicates that the South Australian Specimen Shell Fishery operates in accordance with the Australian Government *Guidelines for the ecologically sustainable management of fisheries*. DEH considers that the South Australian Specimen Shell Fishery is a well managed fishery that is unlikely to have an unacceptable or unsustainable impact on the environment in the short to mid term. Recommendations have been developed to ensure that the risk of impact is minimised in the longer term. Overall, the precautionary management regime of spatial closures, species restrictions, limited entry and a benign harvesting method suggests that the fishery is being managed in an ecologically sustainable way.

In making its assessment, DEH considers that the information collection systems and management arrangements are sufficient to ensure the fishery is conducted in a manner that does not lead to over-fishing and that stocks are not currently overfished. Considering the management arrangements in place and the particularly selective and benign characteristics of the fishery operations, DEH considers that fishing operations are managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem. Management of this fishery has a history of reacting appropriately to threats to sustainability and DEH is confident that PIRSA will continue to provide this high quality management.

The assessment finds that the fishery is managed in an ecologically sustainable way and its operation is consistent with the objects of Part 13A of the EPBC Act. DEH recommends that the export of species taken in the fishery should be exempt from the export requirements of Part 13A of the EPBC Act, with that exemption to be reviewed in 5 years. DEH considers that the fishery, as managed in accordance with the management plan is not likely to cause serious or irreversible ecological damage over this period.

To further strengthen the effectiveness of the management arrangements for the South Australian Specimen Shell Fishery, and to contain the environmental risks in the medium to long term, DEH has developed a series of recommendations. The implementation of these and other commitments

made by PIRSA in the submission will be monitored and reviewed as part of the next DEH review of the fishery in 5 years time.

Recommendations

1. The Department of Primary Industries and Resources, South Australia to advise DEH of any material change to the South Australian Specimen Shell Fishery's management arrangements that could affect the criteria on which EPBC decisions are based, within 3 months of that change being made.
2. PIRSA to implement the recording of specimen shell status (alive/dead) in logbook returns.
3. PIRSA to ensure that reliable estimates of recreational harvest of specimen shells is obtained and factored into the assessment and management of the South Australian Specimen Shell Fishery.

PART I - MANAGEMENT ARRANGEMENTS

The South Australian Specimen Shell Fishery is managed by the Department of Primary Industries and Resources, South Australia (PIRSA).

The management regime is described in the following documents, all of which are, or will be publicly available:

- The *South Australian Specimen Shell Management Plan*, 1997;
- The *Fisheries Act 1982*;
- The *Scheme of Management (Miscellaneous Fisheries) Regulations 1991*;
- The *Fisheries (General) Regulations 2000*; and
- Relevant Gazetted notices and licence conditions.

DEH considers it important that management arrangements remain flexible to ensure timely and appropriate managerial decisions. Due to the importance of the management plan and documents referred to above to DEH's assessment of the fishery, an amendment could change the outcomes of the assessment and decisions stemming from it. Decisions resulting from this assessment relate to the arrangements in force at the time of the decision. In order to ensure that these decisions remain valid, DEH needs to be advised of any changes that are made to the management regime and make an assessment that the new arrangements are equivalent or better, in terms of ecological sustainability, than those in place at the time of the original decision.

Recommendation 1: *The Department of Primary Industries and Resources, South Australia to advise DEH of any material change to the South Australian Specimen Shell Fishery's management arrangements that could affect the criteria on which EPBC decisions are based, within 3 months of that change being made.*

The South Australian Specimen Shell Fishery is managed under the *South Australian Specimen Shell Management Plan* (MacDonald, 1997), which came into force in 1997. In drafting the plan, PIRSA consulted with fishery stakeholders, including the Marine Scalefish Fisheries Management Committee (MSFMC), which recommends management arrangements to the Director of Fisheries and Minister for Agriculture Food and Fisheries for all South Australian miscellaneous fisheries. Membership of this committee consists of commercial fishers and recreational fishers, a PIRSA Fisheries Manager, a South Australian Research and Development Institute (SARDI) scientist, a committee support officer, extension officer and a community member. An independent Chairperson, appointed by the Minister, chairs the MSFMC. The submission notes that any subsequent review of the management arrangements would again involve such consultation.

Because the management plan is due for review, PIRSA has undertaken initial consultation with the commercial licence holder in the fishery. Given the small size of the fishery, DEH does not consider that it is immediately necessary to formalise consultation arrangements. However, DEH urges PIRSA to identify appropriate groups for consultation through the management planning process.

The *South Australian Specimen Shell Management Plan* (MacDonald, 1997) provides a statement of the policy, objectives and strategies to be employed for the sustainable management of the specimen shell fishery in State waters. This document contains a number of objectives relating to harvest of the target species, namely preventing localised depletion, maintaining recruitment and maintaining biodiversity. In addition, objectives relating to ecosystem impacts are described. These include minimising the environmental impact of specimen shell harvesting, promoting conservation measures in habitats worthy of higher conservation status and monitoring the effects of user groups

on the marine environment. A number of strategies to achieve these objectives are also described in the management plan. In addition, the management plan outlines biological reference points for the fishery (such as changes in the number of species taken and changes in fishing patterns, which could indicate localised depletion of certain specimens), as well as management action to be taken in the event that one or more of the reference points is reached or exceeded. DEH considers that the objectives, performance indicators and performance measures described in the *South Australian Specimen Shell Management Plan* are sound, and that they should be incorporated into the new management plan.

Management of specimen shells is based on a range of measures. Take by the recreational sector is largely unrestricted, although a bag limit for the black cowrie is applicable to recreational harvesters (1/day), as are some spatial closures (eg. aquatic reserves). In the South Australian Specimen Shell Fishery, commercial collectors are subject to the same restrictions as the recreational sector. In addition, precautionary management in the fishery is facilitated through limited entry, prohibition on collection of molluscs from an egg mass or of those depositing an egg mass, and through harvesting restrictions, with shells only being able to be taken by hand.

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 effort is directed toward illegal shell collecting within the coastal intertidal zone. While it is difficult to quantify the amount of specimen shells taken and sold illegally by casual collectors, the problem may be significant. The submission acknowledges that in the long term, this may impact on the sustainability of some shell species in specific areas.

Compliance in the fishery has both an educational role in ensuring an understanding of the need to harvest sustainably, and an enforcement role. PIRSA Fishwatch is a telephone service, established in 1993, to enable fishers to report illegal fishing activity, which has been expanded to include general reporting of non-compliance with recreational and commercial fishing restrictions. Fishwatch is responsible for monitoring compliance of the input controls in the specimen shell fishery and aims to achieve optimal compliance through effective deterrence and by improving compliance through encouraging fishers to voluntarily adopt and support regulations. Random monitoring of the activities of commercial fishers is also conducted, with investigations targeted towards the species being taken during harvesting operations, to ensure that commercial fishers are complying with the legislative requirements and licence conditions. The management plan for this fishery describes a number of compliance performance indicators. These include a reduction in illegal activity as determined by the number of reports for offences relating to specimen shells, and greater support from the community for Fishwatch. DEH considers that the compliance resources that are directed towards the South Australian Specimen Shell Fishery are appropriate to the scale of the fishery, and that they contain the means of enforcing critical aspects of the management arrangements for the fishery.

The *South Australian Specimen Shell Management Plan* was due for review in July 2002. Because the fishery is so small compared to other South Australian fisheries, this review did not take priority and is yet to occur. However, PIRSA note in the submission that they plan to conduct this review, corresponding with final recommendations from this assessment, as a priority.

SARDI and PIRSA analyse fishery dependent data derived from the fishery 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 then prepared by PIRSA for the South Australian Minister for Agriculture, Food and Fisheries. DEH considers that these reporting requirements are sound and allow for the periodic review of the fishery.

Fishery-dependent data relating to the target species is collected on a regular basis in the fishery. Discussion of the information collection system can be found in Part II of this report.

An analysis of the fishery's capacity for assessing, monitoring and avoiding, remedying or mitigating any adverse impacts on the wider marine ecosystem in which the target species lives and the fishery operates is contained under Principle Two of this report.

DEH considers that the current management arrangements comply with the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy. DEH expects that PIRSA will also ensure compliance with any future plans or policies as they are developed.

No threat abatement plan or recovery plan, and regional or international management regimes, to which Australia is a party, are of direct relevance to the fishery. The prime international regime affecting the fishery is the United Nations Convention on the Law of the Sea (UNCLOS). The management regime essentially complies with this. Other international regimes are applicable to fisheries management but do not explicitly involve this fishery, for example the 1992 Convention on Biological Diversity and in particular the 1995 Jakarta Mandate requiring that, in relation to the sustainable use of marine and coastal biological diversity, the precautionary principle should apply in efforts to address threats to biodiversity. While these agreements are not specifically addressed in the Submission, the fishery's compliance with their requirements can be assessed by examination of Part II of this report.

DEH considers it is incumbent on all authorities to develop a thorough understanding of the framework of national, regional and international agreements and their applicability to export-based fisheries for which they are responsible.

Conclusion

DEH considers that the South Australian Specimen Shell Fishery management regime is documented, publicly available and transparent, and is developed through a consultative process. The management arrangements are adaptable and underpinned by appropriate objectives and performance criteria by which the effectiveness of the management arrangements can be measured, enforced and reviewed.

The management arrangements are capable of controlling the harvest through a combination of input and output controls appropriate to the size of the fishery. Periodic review of the fishery is also provided for, as are the means of enforcing critical aspects of the management arrangements.

The management regime adheres to arrangements established under Australian laws and international agreements.

To ensure that the management arrangements remain adequate, DEH has recommended that PIRSA advise of any material changes to the current management arrangements (see **Recommendation 1**).

PART II – GUIDELINES FOR THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF FISHERIES

Stock Status and Recovery

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’*

Maintain ecologically viable stocks

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

Fishery dependent data are obtained through compulsory daily logbooks. The single commercial specimen shell harvester is required to submit catch and effort return information to the Chief Executive of PIRSA on a monthly basis. The information provided by the licence holder includes:

- Date the fishing activity took place;
- Port of landing of the vessel involved in the fishing activity;
- Area fished;
- Species targeted;
- Name and number of each species taken;
- Method used to process the resource; and
- Use made of the resource.

DEH is satisfied that the level of fishery dependent information provided from the South Australian Specimen Shell Fishery is appropriate to the size of the fishery. However, DEH considers that reporting could be improved through a requirement to record the number of dead and live specimens taken. This requirement is currently in place in the Queensland Marine Specimen Shell Collection Fishery, and DEH considers that such information would give PIRSA a better indication of the likely impacts that harvest of specimen shell species may be having on the spawning biomass of target species and on the ecosystem (for example through food chain interactions).

Recommendation 2: *PIRSA to implement the recording of specimen shell status (alive/dead) in logbook returns.*

No fishery independent data is collected for the specimen shell fishery because the effort exerted in the fishery currently is not considered to pose any significant environmental threats. DEH recognises this, but considers that management of the fishery would be improved by some research into species taken by the fishery to address current knowledge gaps, particularly in relation to the biology and stock status of specimen shells in South Australia. This is particularly important given that the submission acknowledges that South Australian waters contain a number of highly valued shells, which are found only in temperate Australia. While extensive research on the target species may not be possible, PIRSA should have a clear idea of what research is essential for improved management of the fishery into the future. DEH encourages PIRSA to identify the research and performance assessment needs and priorities for the fishery and to articulate these in a strategic research plan that can be used to direct research efforts into the future.

The information provided by the specimen shell harvester is not validated through formal means, for example through processor returns. However, because the fishery only has one operator PIRSA

is able to closely monitor catch and this, combined with the compliance and enforcement activities directed toward the fishery, is likely to ensure that information provided through logbooks is accurate.

Overall, DEH considers that there is a reliable information collection system in place appropriate to the scale of the fishery. However, DEH considers that a strategic approach to future research, and continuation of existing data collection systems will be important for the future management of the fishery.

Assessment

The submission states that SARDI and PIRSA assess the fishery dependent data annually against the reference points outlined in the *South Australian Specimen Shell Management Plan*. This annual assessment monitors fishing effort, targeted species and fishing efficiency. An annual report of the fishery is prepared by PIRSA for the South Australian Minister for Agriculture, Food and Fisheries.

No stock assessment has been conducted for South Australian specimen shell species, and the submission states that there is currently no research basis from which to determine ecologically sustainable specimen shell effort in South Australian waters. In addition, historical catch and effort data for the fishery is limited due to the limited number of licences fished over a relatively short period of time. Analysis of commercial logbook data has shown a trend of decreased effort over the past years. DEH considers that this, combined with the low level of take, means it is likely that only a small proportion of the populations of target species is impacted through harvesting activities. The implementation of **Recommendation 2** is likely to improve reporting requirements and give PIRSA a better indication of the impact of taking specimen shells on stocks of these species.

The submission notes that the absence of stock assessments makes it difficult to estimate the potential productivity of the South Australian Specimen Shell Fishery. Further, while stock assessments would be able to give an estimate of species biomass, they would not necessarily outline potential productivity since only a small percentage of specimens are in a condition to meet market requirements. DEH accepts this, but considers that a strategic approach to the research required to address knowledge gaps, not necessarily through a stock assessment, will assist PIRSA in identifying sustainable harvest levels for South Australian specimen shell species.

The submission contains relatively detailed information on the distribution of the Black cowrie (*Cypraea friendii thersites*), a native to South Australian waters, and of *Voluta undulata (amoria)* and *Cypraea marginata*, the two species most commonly caught by number in 2001-02 and 2002-03 respectively. While management measures appear to take into account the distribution of the black cowrie, DEH is not convinced that the distribution of other species taken in the fishery is taken into account in management of the fishery.

The Black cowrie shell is native to central South Australian waters and appears to be a geographically isolated eastern subspecies of the *friendii* complex. This species is highly sought after by both the commercial licence holder and by recreational fishers. For these reasons, stocks of this species are considered vulnerable and there is a risk that this species could become overfished. In response to this concern, PIRSA has prescribed a bag limit for this species of one per person per day under the *Fisheries (General) Regulations 2000*. This bag limit is monitored by PIRSA Fishwatch and is applicable to both the commercial and recreational sectors. DEH considers that this management measure, if enforced, is sound given that it actively limits the amount of specimens of this species able to be removed from natural populations. Further, the compliance resources directed toward the fishery are likely to ensure that enforcement does occur.

Voluta undulata (amoria) is found in waters from southern Queensland to Tasmania, and is also found in South Australia. This species is the most common of those targeted by the commercial fisher in South Australia (comprising 60% of the catch in 2001-02), and is therefore a relatively low value specimen. As such, it is meticulously hand selected since even slightly damaged shells are worthless at market.

Cypraea marginata occurs from central South Australia to Monte Bello Island in Western Australia. In 2002-03, this species comprised approximately 80% of the total annual catch. While DEH recognises that the total numbers of specimen shells caught in this fishery is low, it appears that only a small number of species are targeted, which could lead to depletion of stocks of some species. However, the submission notes that, since all specimen shells decline significantly in value if imperfect, the operator commonly passes over as many as 20-50 individuals of each of these species before selecting a specimen. DEH considers that this act of searching for species with a perfect shell is a passive way of controlling removals from the fishery and aiding stock sustainability.

In addition, DEH notes that the management plan indicates that, while a bag limit is only applicable to the black cowrie, it may be extended in the future to include all shells of that particular sub-genus. DEH considers that such a management measure would be sound as it would ensure that individual species are not over exploited, and urges PIRSA to consider such management arrangements for all species most commonly targeted in the fishery as part of the review of the management plan.

No monitoring program is currently in place for any of these species, apart from review of the commercial licence holder's logbook and personal communication with the commercial operator. However, DEH considers that the monthly collection of logbook data, the annual review of the fishery by PIRSA and SARDI and the performance measures described in the management plan for the fishery ensure that there is a reliable estimate of the take of specimen shells by the commercial fisher and that commercial take in the fishery remains at ecologically sustainable levels.

No information is available on take by either casual recreational fishers or by dedicated hobbyists. The submission claims that a number of high value shell species in South Australia inhabit deep waters, and are therefore protected from many recreational fishers who do not have the vessels or equipment to dive in such areas. Also, like the commercial fisher, recreational fishers are likely to search for a perfect specimen for collection and in so doing, may pass over many imperfect specimens before collecting a shell. DEH accepts that the casual recreational collector is less likely to have a significant impact on specimen shell stocks, but considers that dedicated hobbyists are likely to be able to dive in areas that contain high value species, and are also likely to exert more harvesting effort. The same bag limit is in place for the Black cowrie shell for both the commercial and recreational sector, however unlike the commercial fishery, there is no limit on the number of recreational harvesters. Consequently, the potential harvest by recreational fishers is much larger and should be taken into account when assessing the stock status of specimen shell species. This conclusion is supported in the submission, where it is acknowledged that the illegal sale of specimen shells by recreational fishers may impact on the sustainability of some shell species in specific areas in the long term.

Recommendation 3: *PIRSA to ensure that reliable estimates of recreational harvest of specimen shells is obtained and factored into the assessment and management of the South Australian Specimen Shell Fishery.*

Management response

The current South Australian Specimen Shell Fishery management regime aims to maintain ecologically viable stock levels through a range of measures. These are outlined in Table 1 and Part I of this report.

A number of management measures are currently in place to control take of specimen shell species in South Australia. The limited entry in this fishery has resulted in only one commercial harvester operating currently. While catch and effort was significantly greater in the early 1990s, there was still only a maximum of five participants in the commercial fishery. PIRSA is satisfied that the remaining commercial licence holder is fulfilling the objectives outlined in the management plan and as a result will continue to issue the licence on an annual basis. Similarly, DEH is confident that a limited entry policy in the South Australian Specimen Shell Fishery will aid in ensuring the ecologically sustainable harvest of specimen shell species.

DEH considers that the management arrangements outlined in the management plan for this fishery, combined with the regulations detailed in the *Fisheries (General) Regulations 2000*, are capable of controlling the level of commercial take of specimen shells in South Australia, and acknowledges that within current levels of harvesting, there is no indication that the resource is threatened. This is supported by the fact that to date, none of the reference points contained within the management plan have been exceeded and no management response has needed to be implemented.

Measures such as gear restrictions, bag limits for vulnerable species, spatial closures, prohibition on the take of molluscs from an egg mass and of those depositing an egg mass, and restrictions on species allowed to be harvested, are likely to ensure that the fishery is managed in an ecologically sustainable way. DEH commends PIRSA for employing a precautionary approach to this fishery in the absence of knowledge regarding sustainable harvest levels.

Currently, no specific authorities are required for the collection of marine shells for private use by the recreational sector. Recreational take is only limited through a bag limit for the black cowrie and through some spatial closures. However, as noted earlier, DEH is concerned that the recreational take of specimen shells is likely to exceed the commercial take given that there is no limit on the number of recreational fishers. In addition, there is currently no estimate of take by the recreational sector. DEH has made a recommendation addressing the issue of recreational take (see **Recommendation 3**), and is confident that PIRSA will use the information generated to adequately manage the specimen shell resource.

No byproduct is authorised to be taken in the South Australian Specimen Shell Fishery, therefore no information, assessment or management response regarding byproduct is needed for this fishery.

Conclusion

DEH considers that the management regime in the South Australian Specimen Shell Fishery is appropriately precautionary and provides for the fishery to be conducted in a manner that does not lead to over-fishing. DEH considers that the information collection system and management arrangements generally are sufficient to ensure that the fishery is conducted at catch levels that maintain ecologically viable stock levels with acceptable levels of probability.

DEH considers that there is scope to further refine some of the existing information collection, assessment and management responses and has provided a number of recommendations for improvements in the longer term.

Promote recovery to ecologically viable stock levels

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'*

This objective is not applicable to the fishery at present. Trigger points and management responses are in place to avoid the risk of overfishing mollusc species in South Australia. A precautionary management strategy, including limited entry, species restrictions and bag limits for vulnerable species is likely to ensure that overfishing of stocks does not occur.

Conclusion

DEH considers that the specimen shell stock is not below a defined reference point but should that occur in the future, the fishery is conducted such that there is a high degree of probability the stock would recover to ecologically viable stock levels within nominated timeframes.

Ecosystem impacts

Principle 2: *'Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem'*

Bycatch protection

Objective 1: *'The fishery is conducted in a manner that does not threaten bycatch species'*

Information requirements

The specimen shell harvester is not required to record bycatch on logbooks, as such a requirement is unnecessary due to the highly selective nature of the harvesting technique employed (hand-harvesting) that eliminates the potential for bycatch. DEH does not consider that studies to gather information on the potential for the South Australian Specimen Shell Fishery to impact on bycatch species are necessary.

Assessment

As noted above, bycatch is unlikely in the South Australian Specimen Shell Fishery primarily due to the harvesting technique employed. DEH considers that discards of target species are also unlikely in this fishery since the requirement for shells to be undamaged means that the commercial harvester usually passes over damaged shells without interaction. Because of the limited ability of the fishery to result in bycatch, no formal bycatch risk assessment has been completed. DEH does not consider that such a risk assessment is necessary for this fishery.

Management response

Impacts to bycatch species are primarily avoided through the use of hand harvesting. In addition, the limited scale of the fishery and the small number of operators helps to avoid bycatch in the South Australian Specimen Shell Fishery. For these reasons, there are no threat abatement plans,

recovery plans or bycatch reduction strategies relevant to the fishery. As noted above, DEH does not consider that specific bycatch minimisation measures are necessary for the fishery.

Conclusion

DEH considers that there is a high likelihood the fishery is conducted in a manner that does not threaten bycatch species. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that PIRSA would undertake appropriate actions to ensure that bycatch species are not threatened by this fishery.

Protected species and threatened ecological community protection

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'*

Information requirements

Information on protected species interaction is not recorded in the logbooks used in the South Australian Specimen Shell Fishery. As with bycatch, this is due to the limited opportunity for the fishery to impact on non target species. DEH recognises that interactions with protected species are unlikely to occur in the fishery, and as such, does not consider that a formal recommendation regarding reporting of protected species interaction is appropriate.

Assessment and Management response

Interactions with protected species in the South Australian Specimen Shell Fishery are considered unlikely because of the low level of fishing (ie. only one participant in the fishery currently) and the harvesting method (hand harvesting), although interactions with protected species could occur through boat strikes. While recognising that interactions of this nature are possible, DEH considers that since only one vessel operates in the fishery the likelihood that such interactions would be significant is minimal. No threatened ecological communities have been identified as occurring in the area of the South Australian Specimen Shell Fishery. For these reasons, no assessment has been, or is planned to be, undertaken.

The appropriate management responses to be employed in the event that the fishery adversely impacts on protected species is outlined in the *South Australian Specimen Shell Management Plan*. The submission notes that the occurrence of an interaction causing adverse impacts would breach the environmental, biological and social objectives of the fishery described in the Plan. This would cause reference points and performance indicators to be triggered, and an appropriate management response would be implemented. DEH notes that the management response outlined in the Plan is to notify the Minister, examine the causes and implications of triggering a reference point, consult with appropriate people and report the outcomes to the Minister.

DEH considers that the need for a formal risk assessment with regard to protected species is not necessary for the South Australian Specimen Shell Fishery, given the low likelihood of interaction with such species. DEH is confident that, if this situation were to change, PIRSA would respond appropriately to mitigate such impacts.

Conclusion

DEH notes that there are minimal interactions with protected species in this fishery and considers that 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. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that appropriate actions would be undertaken to ensure the fishery avoids mortality or injury to these species and avoids or minimises impacts on threatened ecological communities.

Minimising ecological impacts of fishing operations

Objective 3: *'The fishery is conducted, in a manner that minimises the impact of fishing operations on the ecosystem generally'*

Information requirements

No studies have been undertaken to document and quantify the impacts on the ecosystem of activities associated with the South Australian Specimen Shell Fishery. The submission acknowledges that currently little to no information is collected on the effects of commercial specimen shell fishing on the general ecosystem. While aware of the lack of information collection and research covering the fisheries impact on the ecosystem and environment generally, DEH considers that the amount of information available currently is appropriate to the size and scale of the fishery.

Assessment

Despite the lack of information collected from the South Australian Specimen Shell Fishery regarding ecosystem impacts, the fishery is generally thought to have minimal impacts on the ecosystem due to the benign collection method and the low level of harvest. Consequently, no risk assessment of impacts on the ecosystem has been conducted. In addition, PIRSA believes that interest in the fishery will not increase, so it is unlikely that such risk assessments would be required in the future.

The most likely impact on the natural ecosystem would arise from the exploitation of the target species and its impact on the size of the spawning biomass of molluscs. While potentially this could be problematic for this fishery given that approximately 90% of molluscs collected are live at the time of capture, the harvest from the South Australian Specimen Shell Fishery is extremely low, with only 61 shells harvested in 2002/03. Even if 90% of these were alive when harvested, that equates to only approximately 50 live shells taken in an entire year. DEH considers that the low number of shells harvested means it is highly unlikely that the spawning biomass of mollusc species would be significantly impacted.

The removal of mollusc species could also potentially have an impact on marine food chains, given that a number of species are known to feed on molluscs. However, as noted above, only a small number of specimens are taken in this fishery. The management arrangements currently in place, such as limited entry and bag limits on potentially vulnerable species such as the black cowrie, are likely to ensure that this remains so. For these reasons, DEH considers that impacts to food chain interactions are unlikely to be significant.

The South Australian Specimen Shell Fishery targets the shell portion of mollusc species and as such, the mollusc flesh is discarded. The practise of discarding overboard could potentially impact on the ecosystem by providing a food source to scavenger species, which could disrupt local food

chain processes. However, the submission reports that the commercial operator freezes the living shells for periods of up to one 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 reportedly discarded by the commercial operator in bins. Given the need for specimen shells to remain in pristine condition, it is unlikely that the operator would hurriedly discard mollusc flesh while onboard, but would rather take the molluscs back to land to be processed properly. Consequently, DEH considers that food chain impacts caused by discarding mollusc flesh overboard are highly unlikely in the South Australian Specimen Shell Fishery. Further, with the currently level of take, DEH considers that discarding mollusc flesh overboard would be unlikely to represent a significant impact anyway.

Physical habitat, such as reefs, could potentially be damaged through anchoring or through diving activity, while water quality could be impacted by spillage of fuel and oil from vessels and hookah compressors. However, DEH considers that such impacts are likely to be isolated and negligible since there is only one operator and one vessel in this fishery.

Management response

No evidence has emerged to suggest that shell collection in South Australia has a significant impact on the ecosystem. The lack of observed impact is likely to be due to the low level of harvest in the fishery, the low number of participants and the benign nature of the harvesting method.

The submission notes that the appropriate management responses to the specimen shell fishery adversely impacting the ecosystem are outlined in the management plan. The occurrence of an interaction causing adverse impacts would breach the environmental, biological and social objectives of the fishery described in the Plan. This would cause reference points and performance indicators to be triggered, and an appropriate management response would be implemented. DEH notes that the management response outlined in the Plan is to notify the Minister, examine the causes and implications of triggering a reference point, consult with appropriate people and report the outcomes to the Minister.

Conclusion

DEH considers that the fishery is conducted in a sufficiently precautionary manner, particularly through the use of hand harvesting only and the presence of only one operator, and that these measures minimise the impact of fishing operations on the ecosystem generally.

REFERENCES

MacDonald, N. (1997) Management Plan for the South Australian Specimen Shell Fishery. *South Australian Fisheries Management Series*, Paper No 15. ISBN 0 7308 0735 5.

LIST OF ACRONYMS

DEH	Department of the Environment and Heritage
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
MSFMC	Marine Scalefish Fisheries Management Committee
PIRSA	Department of Primary Industries and Resources South Australia
SARDI	South Australian Research and Development Institute
SCUBA	Self Contained Underwater Breathing Apparatus
UNCLOS	United Nations Convention on the Law of the Sea