



**Australian Government**

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**Department of the Environment and Heritage**

Assessment of the  
**Tasmanian Rock Lobster Fishery**

January 2007

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## **Disclaimer**

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 Parts 13 and 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 Tasmanian  
Rock Lobster Fishery**

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## EXECUTIVE SUMMARY

### Background

The Tasmanian Rock Lobster Fishery (TRLF) was first assessed by the Australian Government Department of the Environment and Heritage (DEH) in February 2002 under Parts 13 and 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in accordance with the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries* (the Guidelines). This assessment was based on the submission provided by the then Tasmanian Department of Primary Industries, Water and Environment in April 2001. The TRLF was declared exempt from the export controls of Part 13A of the EPBC Act and accredited under Part 13 of the EPBC Act. This declaration allowed the export of product from the fishery for five years.

As the 2002 accreditation for the TRLF expires in 2007, the Tasmanian Department of Primary Industries and Water (DPIW) has submitted a document for assessment under Parts 13 and 13A of the EPBC Act. The draft document *Reassessment report: Tasmanian Rock Lobster Fishery* (the submission) was received by DEH in November 2006. The submission was released for a public comment period that expired on 22 December 2006. One public comment was received but no changes were made to the submission as a result of the public comment. A final submission was received from DPIW in December 2006.

The submission reports on the TRLF against the Guidelines. The DEH assessment considers the submission and associated documents.

**Table 1: Summary of the TRLF**

<b>Area</b>	Commonwealth and State waters.
<b>Fishery status</b>	When this fishery was first assessed in 2002, it was considered to be in a stock rebuilding phase. There are indications to suggest that the stocks are rebuilding in most areas of the fishery.
<b>Target Species</b>	Southern rock lobster <i>Jasus edwardsii</i> .
<b>By-product Species</b>	Mainly rock cod and octopus, as well as giant crab and a variety of finfish including wrasse.
<b>Gear</b>	Lobster pots: minimum of 15 pots and a maximum of 50 pots on vessels, maximum of 48 hour soak time, maximum size of 1250 mm x 1250 mm x 750 mm and compulsory escape gaps.
<b>Season</b>	Female season open between 15 November and 30 April. Male season open between 15 November and 30 September.
<b>Commercial harvest 2004/05</b>	1513.8 tonnes.
<b>Value of commercial harvest 2004/05</b>	Approximately AU\$51 million.
<b>Recreational harvest</b>	Estimated annual catch of 119 tonnes. Approximately 15,000 licensed recreational rock lobster fishers in Tasmania in 2006.
<b>Size of fleet</b>	231 active vessels in 2004/05.
<b>Commercial management arrangements</b>	Input and output controls including: <ul style="list-style-type: none"> <li>• limited entry (312 licences);</li> <li>• restricted seasons;</li> </ul>

	<ul style="list-style-type: none"> <li>• gear restrictions and requirements;</li> <li>• a total allowable catch (TAC) of 1,523.5 tonnes;</li> <li>• minimum size limits (105 mm carapace length for females and 110 mm carapace length for males);</li> <li>• the taking of berried females is prohibited; and</li> <li>• a comprehensive monitoring regime, including documentation and real time reporting.</li> </ul>
<b>Recreational management arrangements</b>	<p>Input and output controls including:</p> <ul style="list-style-type: none"> <li>• daily bag (five per recreational licence holder) and possession limits;</li> <li>• restricted seasons;</li> <li>• gear restrictions and requirements;</li> <li>• minimum size limits (as per commercial fishers);</li> <li>• the taking of berried females is prohibited;</li> <li>• the sale or barter of lobsters is prohibited;</li> <li>• resource sharing framework allocating explicit shares between the commercial and recreational sectors; and</li> <li>• all recreational lobsters must be tail clipped within 5 minutes of landing – no tail-clipped lobsters to be sold.</li> </ul>
<b>Export</b>	Live export, primarily to Asia.
<b>Bycatch</b>	Bycatch consists primarily of hermit crabs and rough rock crabs, as well as a wide range of finfish and invertebrate species.
<b>Interaction with Threatened Species</b>	For the period 2004/05, 237 protected species interactions were reported by rock lobster fishers, mainly seals. Little information exists on the post-interaction condition of protected species.

The DEH assessment report of the TRLF in 2002 provided a detailed analysis of the TRLF management characteristics, including fishery area and history, species taken, management structures and harvest control measures, bycatch and protected species interactions and arrangements with other jurisdictions. This 2007 report should be read in conjunction with the 2002 DEH TRLF report, which can be found on the DEH website at: <http://www.deh.gov.au/coasts/fisheries/index.html>.

The 2002 DEH assessment of the TRLF highlighted certain issues and concerns regarding the fishery and focussed on addressing areas of management where more fundamental changes were required to improve the ecologically sustainable management of the fishery. The key issues DEH considered needed addressing were:

- the need for the management regime to take into account management arrangements for the same species in neighbouring jurisdictions;
- the uncertainty with levels of compliance with management arrangements;
- the need to include input from the wider public into all consultative mechanisms;
- the reductions in egg production in the northern part of the fishery;
- the need for a clear commitment to an immediate course of action should a trigger be breached;
- the potential skew in sex ratio between male and female rock lobsters impacting on reproductive viability;

- the low level of knowledge of the biology of juvenile rock lobsters;
- possible inaccuracies in byproduct reporting;
- uncertainties with the level of impact the TRLF has on bycatch species and the need for a structured mechanism for obtaining fishery-dependent bycatch data;
- uncertainties with the level of interactions with protected species in the fishery and the voluntary nature of reporting interactions; and
- uncertainties with broader marine environmental impacts.

DEH made 11 recommendations to improve the management of the TRLF and address these issues during the period of the fishery's 5 year export accreditation.

DPIW has made notable progress against several of the key issues raised in the last assessment of the fishery. These include:

- a number of changes to management arrangements since 2002, outlined below, including the development of a new strategic policy document for the fishery in 2007;
- formal meetings of rock lobster fishery managers and researchers from Tasmania, Victoria and South Australia providing opportunities for discussions on a number of issues of common interest. A number of collaborative research projects have also been undertaken between these States;
- continued monitoring of compliance and enforcement strategies, including ongoing liaison between Tasmanian police and marine resources staff to discuss compliance and operational issues;
- including recreational fishers and community and conservation representatives into the stock assessment working group;
- continued monitoring of egg production in the north of the State through model estimates based on commercial catch rates and research catch sampling;
- continued monitoring of sex ratios at a number of locations around the State;
- reviewing biological reference, target and limit levels and performance measures;
- improving the fishery-dependent data collection system for byproduct species;
- ongoing collection of fishery-independent bycatch data and the development of performance indicators;
- the introduction of a new reporting system at the end of the 2002/03 quota year for fishers to report interactions with protected species; and
- ongoing monitoring of unfished sites around the State to determine differences in the abundance and size-structure of unfished populations of rock lobster.

Several changes to the management arrangement for the TRLF have occurred since the fishery was first assessed by DEH in 2002. These changes include:

- the development of a new management plan, *Fisheries (Rock Lobster) Rules 2006*, which was implemented on 28 February 2006. This plan takes over from the previous management plan, *Fisheries (Rock Lobster and Giant Crab) Rules 2001*;
- a slight increase in the TAC from 1,500 tonnes in 2001 to 1,523.5 tonnes in 2006;
- resource sharing between the commercial and recreational fisheries;
- changes to the quota monitoring requirements when holding or selling rock lobsters, including improved reporting requirements;
- new overcatch provisions, in which three options are provided to fishers if their overcatch is within 30% of the quota unit balance; and
- a minor change to the minimal pot holding system to actively fish.

DEH acknowledges the sound progress made towards addressing many of the significant issues raised in the 2002 DEH assessment and commitments made in DPIW's 2001 submission. DEH notes that there are still a number of sustainability concerns with the TRLF such as: the accuracy of reported detail for protected species interactions in the fishery and a need to further address interactions and gear loss; the potential impact of urchin barrens on the TRLF; the lack of temporal and spatial patterns in fishery-independent bycatch reporting; a need for caution when setting the TAC each year; egg production in the northern areas remaining below the threshold of 25% virgin egg production; and pressure on inshore rock lobster stocks. DEH also notes that a small number of recommended actions are outstanding from the 2002 DEH assessment of the TRLF and are in need of further attention. This is further discussed later in this report.

### **Overall assessment**

The material submitted by DPIW indicates that the TRLF operates in accordance with the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries*. DEH considers that the TRLF 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 new management plan consisting of limited entry, protection of berried female rock lobsters, presence of a TAC, minimum size limits, gear restrictions and seasonal closures, as well as a range of performance indicators, trigger points and strategies underpinned by a detailed statutory management plan for the TRLF suggests that the fishery is being managed in an ecologically sustainable way.

While progress has been made across a range of issues, a number of commitments prepared in the initial assessment of the fishery in 2002, including a number of recommendations arising from the assessment, do not appear to have been fully implemented by DPIW. These include the continuing concern with rock lobster stocks and egg production levels in certain areas of the fishery and the need to develop and provide an assessment of the options for system-based management objectives and associated biological reference levels and performance measures. While this will not affect the immediate sustainability of the target species, these issues and recommendations need to be addressed for the longer term sustainability of rock lobster stocks. The need for a more formal assessment of the risks posed to bycatch species to confirm assumptions relating to low risk of having a significant impact on bycatch species is currently being developed and implemented by DPIW.

In light of a number of these concerns, DPIW have advised that the development of a new strategic policy document incorporating a review of existing objectives, trigger points and performance indicators and the development of new indicators will commence during 2006/07.

A number of other recommendations from the initial assessment of the fishery were considered and examined by DPIW, however after discussions within DPIW and with other jurisdictions, DPIW concluded that progress against these recommendations were not required to improve the ecologically sustainable management of the fishery. These recommendations include working towards a joint stock assessment with other fishery jurisdictions managing rock lobsters and considering broader public notification of the potential to input into the assessment process. DEH notes that a working group involving rock lobster fishery managers and principal researchers from Tasmania, Victoria and South Australia concluded that the recommended joint stock assessments were not practical or feasible as management systems differ. The group did not believe that there were any activities that might occur in other jurisdictions that would be relevant to the Tasmanian stock assessment except the unloading of some Tasmanian rock lobsters at specified Victorian

ports. DPIW also considered that broader public notification of the potential to input into the assessment process was not appropriate or feasible. DEH considers that the current consultative mechanism for the fishery, which involves recreational fishers and community and conservation representatives, is adequate for the fishery.

While the fishery is relatively well managed, DEH has identified a number of risks and uncertainties that must be managed to ensure their impacts are minimised:

- the level of reported detail in the fishery regarding protected species interactions requires improvement;
- an ongoing need to investigate the use of other mitigation measures to further reduce protected species interactions;
- ensure that bycatch monitoring programs have the ability to provide information on bycatch relevant to the spatial and temporal characteristics of the fishery;
- consider environmental factors, such as urchin barrens, when setting the TAC annually;
- monitor egg production levels in northern regions and develop and implement management measures to assist with increasing rock lobster egg production levels in this zone; and
- monitor the level of fishing effort in shallower waters and determine whether management measures are required.

Specific recommendations to address these issues have been developed to ensure that the risk of impact is minimised in the longer term. In conjunction with the implementation of the recommendations and the continuation of a responsible attitude to the management of the fishery, management arrangements are likely to be sufficiently precautionary and capable of controlling, monitoring and enforcing the level of take from the fishery, to ensure the stocks are fished sustainably.

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 *Fisheries (Rock Lobster) Rules 2006* is not likely to cause serious or irreversible ecological damage over this period.

As the official fishery area encompasses Commonwealth as well as State waters, consideration under Part 13 of the EPBC Act is required regarding the impact of the fishery on listed threatened species, listed migratory species, cetaceans and listed marine species.

The TRLF, in force under the *Fisheries (Rock lobster and Giant crab) Rules 2001* was accredited under sections 208A, 222A, 245 and 265 of the EPBC Act in 2002 when it was first assessed. However, the rules have now been changed under the relevant legislation, as outlined in the *Fisheries (Rock Lobster) Rules 2006*. Due to this change in the management regime, consideration under Part 13 of the EPBC Act is required regarding the impact of the fishery, operating under the new *Fisheries (Rock Lobster) Rules 2006*, on listed threatened species, listed migratory species, cetaceans and listed marine species.

A number of protected wildlife species occur in the fishery area, including seals, cetaceans, and marine turtles, however the fishery has minimal interaction with these species. A new reporting system was implemented into the TRLF at the end of the 2002/03 quota year which now includes a component on reporting interactions with protected species. Seals contribute to the majority of reported interactions with protected species in the fishery. A recommendation has been developed

by DEH for DPIW to develop and implement an education program for fishers on species recognition and measures to minimise interactions and to investigate and implement, where appropriate, the use of seal exclusion devices to reduce the impact of the fishery on seal species.

In view of the relatively low number of protected species interactions reported in the fishery, management measures in place, and initiatives such as the 'Clean Green Program' that encourages protected species awareness, DEH considers that the fishery is unlikely to have an unacceptable impact on protected species. DEH recommends that the management regime, operating under the *Fisheries (Rock Lobster) Rules 2006*, be accredited under sections 208A, 222A, 245 and 265 of the EPBC Act. In making this judgement, DEH considers that the fishery to which the regime relates does not, or is not likely to, adversely affect the survival in nature of listed threatened species or population of that species, or the conservation status of a listed migratory species, cetacean species or listed marine species or a population of any of those species. DEH also considers that the management regime requires that all reasonable steps are taken to avoid the killing or injuring of protected species, and the level of interaction under current fishing operations is low. On this basis, DEH is satisfied that an action taken by an individual fisher, acting in accordance with the management regime, would not be expected to have a significant impact on a listed threatened species or listed migratory species protected by the EPBC Act.

Based on this assessment, the following recommendations have been made with regards to the management of the fishery, which will be monitored and reviewed as part of the next DEH review of the fishery in five years time.

## **Recommendations**

1. *DPIW to advise DEH of any material change to the TRLF management arrangements that could affect the criteria on which EPBC Act decisions are based, within three months of that change being made.*
2. *Reports to be produced and presented to DEH annually, and to include:*
  - i. *information sufficient to allow assessment of the progress of DPIW in implementing the recommendations made in the Assessment of the Tasmanian Rock Lobster Fishery 2007;*
  - ii. *a description of the status of the fishery and catch and effort information;*
  - iii. *a statement of the performance of the fishery against objectives, performance indicators and measures; and*
  - iv. *research undertaken or completed relevant to the fishery.*
3. *Within 3 years, DPIW to review the stock assessment model and model predictions for the TRLF to ensure that TAC levels continue to permit significant stock rebuilding for the rock lobster stock. DPIW to consider environmental factors, such as urchin barrens, when setting the TAC annually for the TRLF.*
4. *DPIW to continue to monitor egg production levels in northern regions and to develop and implement management measures to assist with increasing rock lobster egg production levels in this zone.*
5. *DPIW to continue to monitor the level of fishing effort in shallow waters and determine whether further management measures are required to decrease fishing pressure on inshore rock lobster stocks.*

6. *DPIW to ensure that there is ongoing data collection of bycatch species in the fishery and that bycatch data analysis includes information on temporal and spatial patterns relevant to the TRLF.*
7. *Within 2 years, DPIW to develop and implement an education program for fishers on species recognition, mitigation measures to minimise interactions and the requirement to accurately report interactions under the EPBC Act.*
8. *DPIW, in collaboration with industry, to continue to encourage the adoption of programs that minimise protected species interactions and pot loss. DPIW, in collaboration with other jurisdictions, to investigate and implement, where appropriate, the use of seal exclusion devices other than seal spikes to reduce the impact of the fishery on seal species.*

## **PART I - MANAGEMENT ARRANGEMENTS**

The TRLF is managed by DPIW. The fishery was previously managed under the *Fisheries (Rock Lobster and Giant Crab) Rules 2001* under the *Living Marine Resources Management Act 1995*. On 28 February 2006 the rules were altered under the relevant legislation, now outlined in the *Fisheries (Rock Lobster) Rules 2006*.

The management arrangements for the fishery are outlined in the Rock Lobster Fishery Policy Document (1997). The policy, which details the management of this fishery, is currently undergoing revision and DPIW anticipates that public consultation on the new policy document will occur in mid 2007.

All of the following documents associated with the management regime of this fishery are publicly available:

- the *Fisheries (Rock Lobster) Rules 2006* (the management plan);
- the Rock Lobster Fishery Policy Document 1997;
- the Rock Lobster and Giant Crab Fisheries Management Plan Review Information Paper;
- Tasmanian Aquaculture and Fisheries Institute (TAFI) Fishery Assessment Reports;
- the Tasmanian *Living Marine Resources Management Act 1995*; and
- relevant Gazetted notices and licence conditions.

There are a number of other documents, including fishery assessment reports, research reports, scientific literature and discussion papers, which are utilised by DPIW to guide management of the TRLF.

Several changes to the management arrangement for the TRLF have occurred since the fishery was first assessed by DEH in 2002, which are listed in the executive summary of this report. Further amendments to the management arrangements are expected to be determined by DPIW by the end of 2007 that will include discussions on the benefits of considering alternative size limits and the development and implementation of a new strategic policy document. The relevant advisory committees have provided feedback on draft objectives and strategies for the fishery and have commenced a review of biological reference, target and limit levels and performance measures. There is still a significant amount of development work required with the draft policy document, however, it is hoped that new performance measures will be applied to the 2006/07 stock assessment.

DEH considers it important that management arrangements remain flexible to ensure timely and appropriate managerial decisions. Because of the importance of the management arrangements 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. Therefore, 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:** *DPIW to advise DEH of any material change to the TRLF management arrangements that could affect the criteria on which EPBC Act decisions are based, within three months of that change being made.*

DEH also considers it important that reports be produced and presented to DEH annually in order for the performance of the fishery and progress in implementing the recommendations made in this

report to be monitored and assessed throughout the life of the declaration (5 years). Annual reports should include a description of the fishery, management arrangements in place, recent catch data for all sectors of the fishery, status of the target stock, interactions with protected species, impacts of the fishery on the ecosystem in which it operates, progress in implementing DEH recommendations and research and monitoring outcomes.

**Recommendation 2:**

*Reports to be produced and presented to DEH annually, and to include:*

- i. information sufficient to allow assessment of the progress of DPIW in implementing the recommendations made in the DEH Assessment of the Tasmanian Rock Lobster Fishery 2007;*
- ii. a description of the status of the fishery and catch and effort information;*
- iii. a statement of the performance of the fishery against objectives, performance indicators and measures; and*
- iv. research undertaken or completed relevant to the fishery.*

The *Living Marine Resources Management Act 1995* prescribes a consultative process for both the development and review of a management plan. Management and the review process of the fishery incorporates a sound range of consultative mechanisms and a clear commitment to effectively consult with a variety of stakeholders, including community and conservation representatives.

For the 2005 review process of the TRLF management plan, DPIW included the following consultation mechanisms:

- consultation with the relevant Ministerial Fishery Advisory Committee, in this case the Crustacean Fisheries Advisory Committee (CFAC) and the Recreational Fishery Advisory Committee (RecFAC); Consultation with the Tasmanian Rock Lobster Fishermen's Association (TRLFA) as well as the industry peak body, the Tasmanian Fishing Industry Council (TFIC) and TARFish, the recreational peak body;
- the draft plan was released for public comment to licence holders and various recreational, conservation and aboriginal groups; and
- reporting to the Minister on issues raised from the public comment period and recommendations for changes to the draft plan.

Ongoing stakeholder involvement in the management of the rock lobster fishery is through the CFAC. The committee is comprised of: three industry members; a representative of the TFIC; two rock lobster fishers not on the TRLFA board; two giant crab fishers (one owning 15+ quota units); the Executive Officer of the TRLFA; two processing sector representatives; the DPIW fishery manager; a TAFI research representative; a Marine Police representative; the DPIW Chief Fisheries Investigations Officer; and a Conservation and Community representative nominated by the Tasmanian Conservation Trust. The committee meets four to five times per year and the term of appointment is for two years.

The Crustacean Research Advisory Group (CRAG) provides strategic research planning advice for the rock lobster fishery, to TAFI and the Tasmanian Fisheries Research Assessment Board. The CRAG is appointed by the Director of TAFI. This group includes research scientists from TAFI, the Commonwealth Scientific and Industrial Research Organisation, the Australian Maritime College,

commercial and recreational fishery managers and representatives and one conservation/community representative. The group meets one to two times per year.

The Crustacean Fisheries Assessment Working Group provides advice to TAFI, DPIW and the CFAC relating to the assessment of the fishery and the TAC. The group meets one to two times per year.

In addition, a stock assessment working group meets annually to provide feedback to research staff on the presentation and analysis presented in the draft stock assessment. Representation in the stock assessment working group was broadened in 2002 to include recreational fishers from the RecFAC and the community and conservation representative from CFAC and RecFAC.

DEH considers the level of consultation to be adequate and is confident that DPIW will continue to ensure interested parties are consulted appropriately.

The fishery is currently managed according to the policy document described in the Rock Lobster Fishery Policy Document 1997. The objectives are complementary to the stated resource management and planning objectives described in Schedule 1 of the *Living Marine Resource Management Act 1995*. The objectives of fisheries management for the TRLF include:

- to maintain fish stocks at sustainable levels by constraining the total catch and size of individual rock lobster taken by the commercial and recreational sectors. In particular, to ensure that:
  - rock lobster are harvested at sustainable levels;
  - biomass and egg production do not decrease and that reasonable levels of egg production are maintained in all regions of the fishery; and
  - biomass levels are increased over time to the level required for producing the maximum yield from the fishery;
- to take fish at a size likely to result in the best use of the yield from the fishery. To provide measures to protect under size lobster and to minimise incidental fishing mortality as a result of fishing operations;
- to mitigate any conflict that results from competition between different fishing methods for access to shared fishing grounds;
- to maintain or provide reasonable access to rock lobster stocks for recreational fishers;
- to provide for the development of a rock lobster aquaculture industry through the limited and controlled harvest of puerulus (juvenile rock lobster);
- providing socio-economic benefits to the community;
- to minimise the environmental impact of rock lobster fishing methods particularly on areas of special ecological significance and reduce bycatch of juveniles and non-target species; and
- to promote and maintain handling and processing practices which ensure the highest quality rock lobster product for human consumption.

The policy document also outlines a series of performance indicators and trigger points relating to catch per unit effort (CPUE), biomass, egg production, relative abundance of undersized lobster, total annual commercial catch, size of the rock lobster fleet and recreational catch. An assessment of the effectiveness of these measures is included in Part Two of this report.

Management of the fishery is based on a mixture of input and output controls. Such controls include:

- limited entry (312 licences);
- restricted seasons (closed season for females 1 May – 14 November inclusive / closed season for males 1 October – 14 November inclusive);
- gear restrictions and requirements (limits on the number of pots on vessels, restrictions on soak time and pot sizes and escape gap requirements);
- a TAC of 1523.5 tonnes;
- minimum size limits (105 mm carapace length for females and 110 mm carapace length for males);
- the taking of berried females is prohibited; and
- a comprehensive monitoring regime, including documentation and real time reporting.

The reporting requirements for commercial fishers and processors are very comprehensive and provide an auditable documentation system and real time reporting of key steps in the landing, transportation and receipt of fish through a telephone reporting system. A number of changes have been made to the quota monitoring requirements when holding or selling rock lobster, which are described in Part Two of this report. Compliance with the fisheries rules is managed by Tasmanian Police and includes random at sea inspections, regular inspections of unloading at the wharf, checks at processor premises and covert surveillance. The penalties associated with breaches of the reporting requirements, provide a significant deterrent to non-compliance with the management system. Police records indicate that detected illegal activity is low.

The TRLF is assessed annually through the preparation of a fishery assessment report. The assessment is conducted by TAFI and is based on fishery-dependent and fishery-independent data collected.

The fishery is evaluated against the performance measures and indicators specified in the 1997 Rock Lobster Fishery Policy Document. The TAFI assessment also provides other analyses including bycatch of other species, byproduct species, protected species interactions, ecosystem impacts and interactions, spatial distribution of catch and effort, structure of catches including undersize, male/female and discards. In addition, the management plan for the fishery is reviewed every five years, while the objectives, performance measures and indicators contained in the policy document are to be reviewed in 2006/2007.

Fishery-dependent data relating to target, byproduct and protected species is collected on a regular basis in the fishery. Some fishery independent information, including bycatch data, is also collected. Discussion of the information collection system can be found in Part Two 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 is satisfied that the current management arrangements are consistent with all relevant threat abatement plans, recovery plans, the National Policy on Fisheries Bycatch, and bycatch action strategies developed under that policy. The *Living Marine Resources Management Act 1995* contains mechanisms that allow for amendments to management practices so that they comply with any future plans of these types.

**Conclusion**

The management regime for the TRLF is developed through a transparent and consultative process. The management arrangements are strategic, underpinned by objectives and performance criteria by which the level of harvest in the fishery can be controlled, and which allows the effectiveness of the management arrangements to be measured, enforced and reviewed.

DEH is satisfied with the measures in place for periodic review of the fishery, provided a review of the Rock Lobster Fishery Policy Document (including objectives, performance measures and indicators) is undertaken in 2006/07 as committed to by DPIW in their submission. This will allow new information provided by fishery-dependent and independent data and numerous associated FRDC projects to be incorporated into management arrangements to enhance the ecologically sustainable management of this fishery.

## **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 is obtained through compulsory rock lobster catch and effort logbooks. Fishers are required to provide auditable documentation and real time reporting of key steps in the landing, transportation and receipt of fish through a telephone reporting system. This includes reporting information on: unloading; fish cauf (placing lobster in a holding tank); leaving port (to commence fishing); movement (of lobster from one place to another); dispatch (selling lobster outside Tasmania); and commercial quota docket.

The DPIW logbook monitoring section and quota audit unit have a number of validation processes. These include an annual audit comparing the fisher’s catch and effort logbook and quota dockets. The marine police also conduct random inspections of unloadings at the wharf, fish in caufs, at processor factory to validate both telephone report data and quota documentation. The quota audit unit have significant analytical and investigative processes and work closely with the marine police to detect potential breaches of the quota management system.

Since 2002, when the fishery was first assessed by DEH, a number of changes have been made to the rock lobster commercial logbook with a number of improvements to the fishery-dependent data collection system. These include amending the rock lobster catch and effort logbook to incorporate byproduct data and interactions with protected species. This is further discussed later in this report.

Fishery independent data collection in the TRLF is ongoing, with an emphasis on bycatch data collection and exploitation rate and biomass estimates. Fishery independent information has also been collected from major projects funded by the Fisheries Research and Development Corporation (FRDC). These projects, most of which have been conducted in collaboration with other jurisdictions have recently been completed or are currently underway. The settlement of puerulus (the final larval stage, at which lobster "settle" on coastal reefs) is also monitored at several sites around Tasmania as part of TAFI’s pre-recruit monitoring program.

### **Assessment**

A formal assessment of the fishery occurs annually through the preparation of a fishery assessment report by TAFI. The assessment uses all the data described in the previous section to provide an assessment of the fishery evaluated against the objectives, performance indicators and trigger points specified in the Rock Lobster Policy Document 1997. The performance measures and trigger limits against which the fishery is assessed relate to CPUE, biomass, egg production, relative abundance of undersized lobster, total annual commercial catch, size of the rock lobster fleet and recreational catch.

During the period since the last assessment, only one trigger has been activated (in 2004/05). This was the trigger relating to relative abundance of undersize lobster. The TAFI assessment notes that the analysis of this trigger point should consider mitigating factors such as variations in catchability due to weather or variations in moult timing. The Tasmanian rock lobster stock assessment working group considered this trigger point to be of questionable value, given the large annual variation in natural recruitment. It was suggested that future management plans incorporate a trigger based on trends in relative abundance of undersize lobsters over periods of several years. DPIW did not consider that a management response was warranted.

The stock assessment model for the TRLF predicts that the current TAC continues to permit significant Statewide stock rebuilding for the next three years. While these model predictions are positive with regard to the stock status they are only for the next three years, however it is possible these predictions 'roll-on' into future years. DEH considers that caution is required when setting the TAC each year as the continued recovery of the TRLF is dependent upon the balance between catches and recruitment levels. DEH also considers that environmental factors, such as potential threats to the rock lobster fishery through the formation of urchin barrens of the long spined sea urchin (*Centrostephanus rodgersii*) should be considered when setting the TAC annually.

**Recommendation 3:** *Within 3 years, DPIW to review the stock assessment model and model predictions for the TRLF to ensure that TAC levels continue to permit significant stock rebuilding for the rock lobster stock. DPIW to consider environmental factors, such as urchin barrens, when setting the TAC annually for the TRLF.*

### **Management response**

The current TRLF management regime aims to maintain ecologically viable stock levels through a range of input and output controls. These measures were outlined in Table 1 and Part One of this report.

While trends in biomass and catch rate have generally been positive, egg production in all four northern areas remain below the threshold of 25% virgin egg production. Specifically, areas 4 and 5 (northern zones) are a concern. While stock rebuilding in these areas has been good, the levels of egg production appear unlikely to increase above the target of 25% of virgin in projections using the current management arrangements.

While DPIW have expressed that there is currently a shift in the fleet dynamics to the south in response to higher catch rates, there are still concerns and estimates of egg production are low, especially with regards to the north west region. DPIW believes developing long term strategies to increase levels of egg production in these regions would be beneficial, including the possibility of supporting the development of a rule to prohibit the possession of immature but legal size female rock lobster. DEH agrees with this approach, but recommends that DPIW continue to actively monitor these northern regions in respect to egg production and develop management arrangements to ensure that the target species biomass is maintained at ecologically sustainable levels. The development of spatial or separate area-specific arrangements, such as regional size limits may assist with increasing egg production levels in these areas of concern.

In addition, changes in the recreational catch have a similar impact to that of biomass – little change to statewide production but a change to regional production. Even though recreational effort in the north is currently low, an increase in recreational catch would lead to further depression of egg production in northern areas. It should also be noted that more recreational effort occurs in shallow waters where females contribute more to the catch, which may underestimate the impact of increasing recreational effort on egg production.

**Recommendation 4:** *DPIW to continue to monitor egg production levels in northern regions and to develop and implement management measures to assist with increasing rock lobster egg production levels in this zone.*

Quota management of rock lobster fisheries combined with higher prices for shallow water lobsters has driven effort inshore. This has produced an unusual situation where fishers are shifting effort away from high catch rate areas into more depleted areas. Harvest levels of deepwater stocks have dropped from about 250 t ten years ago to around 60 t in 2005, and as mentioned above, more recreational fishing effort occurs in shallow waters. There is now a management need for improved ability to follow trends in stocks at different depths and to evaluate harvest strategies suited to these spatial issues.

Adjusting harvest strategies to take account of spatial patterns in the biology of lobsters and patterns in the fleet has the potential to substantially increase yield, value and sustainability of the fishery. Shifting effort into deeper water by means such as specific deep-water quota would be expected to increase yield given that these stocks are currently under-exploited. To collect data on deepwater stocks, DPIW has proposed to trial a system where commercial fishers volunteer to fish a proportion of their quota units in deep water and collect data on a proportion of their catch. There will also be an extensive tagging program to collect growth data. Fishers who participate will be permitted to harvest an additional 50 kilograms of rock lobster for every quota unit committed to the trial. The 'incentive' kilos will be capped at 35 tonnes, which is outside of the TAC. DEH notes the benefits of this approach, but recommends DPIW continue to monitor the level of fishing effort in shallower waters and determine whether management measures are required to ensure rock lobster stocks are being managed in an ecologically sustainable way.

**Recommendation 5:** *DPIW to continue to monitor the level of fishing effort in shallow waters and determine whether further management measures are required to decrease fishing pressure on inshore rock lobster stocks.*

Potential removals from the TRLF include direct harvest by this fishery, recreational and indigenous harvest, mortality from damaged rock lobsters in pots and discarding. Giant crab fishers cannot take rock lobster unless they have rock lobster quota.

New over catch provisions have been developed to try and resolve the practical issues associated with fishers exceeding their quota unit balance whilst not being able to accurately weigh their rock lobster at sea. It is still an offence to deliberately catch significantly more rock lobster than the quota balance held, however, the old administrative penalty schedule has been deleted. The new provisions provide three options if the over catch is within 30% of the quota unit balance. The fisher can buy or lease quota to cover the over catch, elect to have the over catch taken off next year's quota, or pay a significant financial penalty to DPIW. If the over catch is in excess of 30% of the quota unit balance the fisher will be referred to the Police for investigation.

Mandatory escape gaps minimise the catch of undersize rock lobster. Possession of undersize, berried females or females caught during the closed season is prohibited, these rock lobster have to be immediately returned the water.

Recent developments in tagging models have allowed the different components of "natural mortality" to be evaluated from tagging data. This has lead to some informative results, most importantly that tag-induced mortality can be significant at some times of the year and thus these times should be avoided for research surveys. Discard mortality can be isolated from tagging mortality when lobsters are recaptured with a tag and then released (so that they are discarded, but

not tagged). The DPIW submission indicates that discard mortality appears to be so close to zero that it is not able to be estimated, despite very large sample sizes of many 1000's of tagged lobsters. DPIW is not surprised by this outcome given that the industry relies on the sale of live lobsters into Asia and losses are typically less than 5% through the entire chain of capture, transport by vessel, holding in processing facilities for periods up to weeks, then freight without water for long distances.

DEH is satisfied that the combination of the input and output controls should ensure adequate protection of the target stocks, but notes that this is contingent upon the TAC being set at a sustainable level. The implementation of **Recommendation 4** should assist with increasing levels of egg production in certain areas of the fishery.

Byproduct species taken in the TRLF include octopus, rock cod, wrasse species, leatherjackets, crabs and other various finfish species. Byproduct limits, as listed in the TRLF Management Plan, occur in the TRLF, including a trip limit of up to 100 kg of octopus and a possession limit of up to 10 giant crabs at any one time. Other provisions relate to other byproduct species.

Octopus is the most significant byproduct species taken in the TRLF. Studies to determine if the number of octopus caught and the number of lobsters killed by octopus in rock lobster pots varied over a range of spatial and temporal scales. The hypothesis that locations or times of the year that demonstrate higher lobster catch rate would have corresponding higher catch rates of octopus and lobster mortality was not proven correct in these studies.

When the fishery was first assessed by DEH in 2002, a recommendation was made for DPIW to analyse measures to encourage the accuracy of byproduct reporting with a view to improving data collection, assessment and management responses.

Development of options to improve fishery dependent byproduct data collection commenced in 2006. Previously, rock lobster fishers recorded catch and effort details of byproduct species in the General Fishing catch effort logbook. CFAC has supported progressing an option to amend the rock lobster catch effort logbook to incorporate byproduct data. The advantages of this option include:

- daily byproduct reporting instead of monthly;
- only one catch effort logbook to complete;
- no duplication of fishing operations information in two logbooks; and
- very simple design - have a tick box on the catch & effort page with details on a separate page.

Implementation of the new reporting system together with a fisher information program to highlight the importance of accurate byproduct reporting is planned for March 2007, subject to resources being available to alter the DPIW database systems. Byproduct data from the rock lobster fishery will continue to be incorporated into relevant species stock assessment processes.

## **Conclusion**

DEH is satisfied that the information collection system and management arrangements are generally sufficient to ensure that the fishery is conducted at catch levels that maintain ecologically viable stock levels with acceptable levels of probability.

The major concern for the fishery is the uncertainty with the level of egg production in the northern areas and the need to monitor the level of fishing effort of rock lobster in inshore areas. In light of these concerns, DEH has developed recommendations to ensure the ongoing sustainable harvesting of rock lobsters.

## **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'*

At the time of the last assessment in 2002, there were indications that the rock lobster stock was in a rebuilding phase after previous heavy fishing pressure. Since then, trends in biomass and catch rates have been generally positive, with strong stock rebuilding in most areas. However, there are concerns with certain areas of the fishery where the levels of egg production remain below the threshold of 25% virgin egg production.

Results from the FRDC larval dispersal project suggest that larval settlement in the northwest region is strongly influenced by larvae originating from South Australia. Self recruitment back to the region of origin is also significant. The model results also indicate that a significant proportion of larvae originating from the northwest are lost in Bass Strait and are not an important contributor to other regions of the Tasmanian fishery. However, from a precautionary perspective DPIW believes there would be benefits in developing long term strategies to increase levels of egg production in this region and that the 25% target is appropriate.

A number of potential management strategies have been discussed, with both the recreational and commercial sectors, as part of the consultation process during the review of the management plan. A discussion paper on the benefits of considering alternative size limits was circulated to all commercial fishers and discussed during the annual series of port meetings in May 2006. The next stage in this development process is to draft a specific proposal for discussion by industry in May 2007. Recently CFAC has also supported the development of a rule to prohibit the possession of immature but legal size female rock lobster. Due to the fast growth rates in the northern regions, a proportion of females reach legal size before reaching maturity. These lobsters have distinctive physical characteristics which should enable fishers to immediately return these lobsters to the sea.

Analysis and modelling of the impact of alternative size limits on rock lobster stocks is a component of the FRDC spatial management project, which has just commenced.

### **Conclusion**

While there are some concerns with egg production levels in the northern part of the fishery, DPIW is committed to addressing this issue and is already taking proactive steps in some areas. In addition, DEH has developed a recommendation for DPIW to continue to monitor egg production levels in northern regions and to develop and implement management measures to assist with increasing rock lobster egg production levels and to continue to monitor the level of fishing effort of rock lobster stocks in shallow waters.

## **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**

Fishers are not required to record bycatch in their logbooks. However, DPIW, in collaboration with TAFI, have initiated a program where fishery-independent information will be collected on bycatch species.

TAFI commenced the bycatch data collection project in 2003. The research provides an assessment of bycatch species, an average number per pot and the impact of escape gaps on different bycatch species. This project follows on from the earlier work of Frusher and Gibson (1999) and also compliments an 11 year ongoing fishery independent project that has, as a component of the project, recorded bycatch from research pots without escape gaps.

The 2004/05 TAFI assessment reports that catch sampling continued in October 2004, and similarly up until 2003, 78% of all bycatch recorded in the surveys were hermit crabs (*Trizopagurus strigimands*). Hermit crabs do not contain air spaces and thus show no apparent effect of the pressure change experienced during hauling to the surface. The incidence of other bycatch species by comparison was scarce, although certain wrasse species and draughtboard sharks are commonly caught and released. This observation program will continue during 2005/06 to assist in documenting the impact of escape gaps in the fishery.

DEH considers that developing bycatch reporting programs to include temporal and spatial patterns would be beneficial for the ongoing monitoring of impacts on bycatch species and would complement the fishery independent research programs that have or will be conducted. While the submission states that research programs estimate that there would be an average percentage reduction of bycatch per pot of >40% with escape gaps compared to without escape gaps, this has not been proven. Considering this and the uncertainties surrounding the status of key bycatch species, DEH recommends that DPIW ensure that bycatch monitoring programs have the ability to provide information on bycatch relevant to the spatial and temporal characteristics of the fishery. This data would assist in developing precautionary performance measures and indicators for bycatch species that are to be developed as part of the new policy document for the fishery in 2007.

**Recommendation 6:** *DPIW to ensure that there is ongoing data collection of bycatch species in the fishery and that bycatch data analysis includes information on temporal and spatial patterns relevant to the TRLF.*

## **Assessment**

When the fishery was first assessed by DEH in 2002, there were concerns with the level of impact the fishery was having on bycatch species. A recommendation was consequently developed for DPIW to ensure better recording of bycatch and the need for a more formal risk assessment.

All bycatch data is collected from fishery independent research programs, including projects by Frusher and Gibson (1999) and TAFI (2003), which recorded bycatch from research pots without escape gaps. Hermit crabs appear to make up the majority of all bycatch species in the fishery. Bycatch sampling continued in 2004, with an observation program continuing during 2005/06 to assist in documenting the impact of escape gaps in the fishery.

Preliminary results from the TAFI bycatch data collection project were presented at a recent workshop. The Tri-State (Tasmania, South Australia and Victoria) rock lobster bycatch risk assessment workshop was facilitated by DPIW/TAFI in October 2006. The draft report is still in preparation. The workshop participants included the rock lobster managers and researchers from each State and the conservation representative from the Victorian commercial rock lobster and giant crab committee. The workshop considered the bycatch data collected by each State and undertook a risk assessment of the impact of rock lobster fishing on all known bycatch species.

Significant bycatch species identified at the workshop included octopus, blue throat wrasse, other wrasse species and leatherjacket species. While the risk of rock lobster fishing impacting on these bycatch species populations was considered low to moderate, it is apparent that there is some uncertainty about the status of the key bycatch species populations and a lack of data on bycatch population distribution by depth. **Recommendation 6** should assist with addressing this issue.

Draughtboard sharks are a predator of rock lobster as well as a bycatch species for the fishery. Bycatch research data from 2004 indicated 84 draughtboard sharks were caught and released. While the impact of the fishery on this species is unknown, precautionary management measures should be imposed to counter this lack of information, as well as the lack of general information on the biology of the species.

Development of appropriate performance measures and indicators as identified through the outcomes of the Tri-State rock lobster bycatch risk assessment workshop, will be incorporated in the new strategic policy document for the fishery.

### **Management response**

Potential management actions identified at the 2006 workshop for bycatch species ranked as a moderate risk include improving fisher byproduct reporting, improving confidence in the fishery dependent data and temporal trends (through existing fishery independent data collection).

DPIW will continue to ensure that rock lobster fishery bycatch is included within relevant fishery assessments. This is particularly important where the bycatch from the lobster fishery is estimated to be significant compared with the total catch of the species and where there is uncertainty about the status of byproduct species stock. DPIW have also indicated that adopting the types of performance measures described in the Victorian rock lobster fishery ecological risk assessment report are a sensible approach for the top four bycatch species (Octopus, Blue-throat wrasse, all leatherjacket species, and other wrasse species). DEH considers that draughtboard sharks should also be included in this process. The use of statistical control plots for plotting bycatch trends through time could potentially be used to develop performance indicators relating to bycatch species.

The Rock Lobster Policy Document includes an objective that the fishery minimise the environmental impact of rock lobster fishing methods particularly on areas of special ecological significance and reduce bycatch of juveniles and non-target species. Coupled with this are the management strategies to reduce the impact of the fishery on bycatch species in the TRLF, including limits on the duration on which traps can be set, restrictions on pot sizes and mandatory escape gaps.

The primary measure in place to avoid capture and mortality of bycatch species is the mandatory escape gap in each pot. In accordance with the *Fisheries (Rock Lobster) Rules 2006*, a pot must have either one escape gap at least 57 mm high and 400 mm wide and not more than 150 mm from the inside lower edge of the pot, or two escape gaps at least 57 mm high and 200 mm wide and not more than 150 mm from the inside lower edge of the pot. While DPIW indicate that there would be an average percentage reduction of bycatch per pot of >40% with escape gaps compared to without escape gaps, there has been no research conducted on this assumption. Most research that has been conducted has been related to pots without escape gaps and no comparison to pots with escape gaps has been conducted to date.

No bycatch species has been determined to be suitable as an indicator species. Given the low number of bycatch species, DEH suggests that monitoring general trends of all bycatch appears to be a more appropriate strategy. The development of the new strategic policy document for the fishery will include the development of appropriate performance measures and triggers that could be developed for bycatch. When developing these measures, DPIW should also consider the level of discards or high-grading in the fishery.

### **Conclusion**

DEH is satisfied that there is a high likelihood the fishery is conducted in a manner that does not threaten bycatch species, although data demonstrating this is limited. Should this situation change, or a risk assessment process indicate otherwise, DEH expects that DPIW would undertake appropriate actions to ensure that bycatch species are not threatened by this fishery. The development of appropriate performance measures and indicators as identified through the outcomes of the bycatch risk assessment workshop will be incorporated in the new strategic policy document for the fishery.

A recommendation has been developed to ensure that there is ongoing data collection of bycatch species in the fishery and that bycatch data analysis includes information on temporal and spatial patterns relevant to the fishery. This should ensure that the risk of unacceptable impact on bycatch species is detected and minimised in the longer term.

### **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**

A new reporting system was introduced into Tasmanian rock lobster commercial catch effort logbooks at the end of the 2002/03 quota year in response to a DEH recommendation regarding the lack of a structured reporting and monitoring program into interactions with protected species. The reporting system now contains the means to report interactions with protected species, which involves completion of a protected species interaction form. Fishers are required to return these forms to DPIW on a monthly basis along with their catch and effort logsheets.

### **Assessment**

While the incidence of reported interactions in the TRLF appears to be low, the level of reported detail in the fishery requires improvement. Of the 237 reported protected species interactions occurring in 2004/05, only 24% of reported interactions provided details of the species involved (mainly seals). Of this, the fate of only 20% of the protected species was known. There is a clear need to encourage fishers to improve the information provided. DPIW has also indicated that there appears to be some ambiguity regarding the reporting requirement for an ‘interaction’ and that fishers may not have sufficiently clear guidelines.

DEH regards an ‘interaction’ to be any physical contact an individual has with a protected species. This includes all catching (hooked, netted, entangled) and collisions with an individual of these species. The EPBC Act requires anyone who has an interaction with a protected species in the Commonwealth Marine Area to report the interaction to DEH within 7 days. Not to do so is an offence. To encourage compliance, Memorandum of Understandings have been negotiated between DEH and fishery agencies so that the agency, with the permission of the fisher, takes over the responsibility for reporting a summary of interactions to DEH on a quarterly basis. This does

require fishers to continue to record interactions in their log books. This approach may encourage reporting, in addition to an education program to assist with higher rates of completion and the recording of species-specific details.

**Recommendation 7:** *Within 2 years, DPIW to develop and implement an education program for fishers on species recognition, mitigation measures to minimise interactions and the requirement to accurately report interactions under the EPBC Act.*

### **Management response**

Management of protected species interactions in the fishery relies upon the limited number of fishers and pots, combined with the depth of operation. Fishers must use pots with escape gaps and not set a trap for a continuous period exceeding 48 hours, which should limit the risk of incidental capture of most protected species. While data on protected species interactions in this fishery are not very robust, DEH recognises that the recent introduction of the Protected Species Interaction Monthly Record should address this gap but notes that one of the biggest barriers to successful commercial reporting of protected species interactions is the capacity of the fishers to identify the species involved. In addition, many operators may not be aware of the importance of this reporting. Both of these barriers can be reduced through education programs (see **Recommendation 7**).

When the fishery was first assessed by DEH in 2002, a recommendation involving the investigation of precautionary measures to reduce the interaction of the fishery with seal species was made. This recommendation was made in response to the majority of protected species interactions in the fishery involving seals. In response, DPIW stated that the development of mitigation measures as suggested in the recommendation did not appear warranted to date - the incidence of reported interactions appears to be low, although improvements in the level of reported detail would be of benefit, as discussed previously.

In 2002 a seal/fishery interaction management strategy background report noted that the extent of seal interaction with rock lobster fishing gear is difficult to assess but likely to be small. The most frequently reported interactions included pulling bait out of savers, predation or damage to undersize rock lobsters while being released. The risk of pup seals being caught in pots where they could drown was given a low risk rating by the technical working group assessing fishing risk for Commonwealth marine protected areas (MPA).

A rule, which effectively prohibited the use of seal spikes, was removed from the new management plan. While impacts of this practise on the welfare of seals is currently unknown, DEH has concerns that this method for deterring seals from entering lobster pots may have negative impacts on this species. It also appears that the use and design of seal spikes is not uniform among fishers and it is unclear what the extent of this practise is or the length of spikes. DEH considers that alternative management approaches should be investigated to reduce interactions of seals with pots, such as 'T-bars', which have been trialled in the Western Australian rock lobster fishery. A recommendation (**Recommendation 8**) has been made by DEH to address this issue.

DEH notes that in 2004, the peak industry body representing rock lobster and giant crab fishers, the TRLF, began promoting the adoption of an environmental management system called the 'Clean Green Program'. The environment practice covered by the program includes, among other factors, avoiding seal breeding colonies and whale identification. The program is further discussed under Principle 2, Objective 3.

## **Conclusion**

DEH notes that the likelihood of interactions with protected species in this fishery is minimal and is satisfied 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 suggests that appropriate actions be undertaken to ensure the fishery avoids mortality, injury to these species and avoids or minimises impacts on threatened ecological communities.

Recommendations have been developed to implement an education program for fishers on protected species interactions and to ensure that the risk of unacceptable impact on protected species is minimised in the longer term.

## **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**

DEH notes that minimal data is collected on the impact of the fishery on the marine environment generally. Impacts are believed to be minimal due to management measures in place and the range of external drivers that prevent harvest in certain locations of the fishery area, such as areas closed to fishing.

### **Assessment**

As in most pot fisheries, the potential of the TRLF to impact unacceptably and unsustainably on the environment generally is considered to be low.

A risk assessment of the impact of the rock lobster pots on a range of habitats was conducted by the Technical working group reporting to DEH on fishing risk assessment for the development of MPAs. The risk assessment report indicates that the 'foot print' created by lobster pots for the fishery is small. Lobster pots are heavy enough to avoid movement with currents on the sea bottom and there is a level of natural disturbance of the bottom which increases in shallower depths. The report also suggests that the consequence of damaging fragile species (eg bryozoans) by setting pots on the bottom was likely to be inconsequential. The submission states that the overall risk rating was low.

A recommendation, from the last DEH assessment of the fishery in 2002, for DPIW to establish a program to monitor fished and unfished areas in the fishery to identify changes in the wider marine environment as a result of the fishery has been met. Unfished areas have now been in existence for a decade and have been surveyed regularly throughout this period. Statistically significant differences in the abundance and size-structure of unfished populations of rock lobster have developed over time. Monitoring of these sites continues.

Potential threats to the rock lobster fishery through the formation of urchin barrens of the long spined sea urchin (*Centrostephanus rodgersii*) in eastern Tasmania have been reported in a recent FRDC project (FRDC 2001/044). The urchin is able to overgraze and form 'barren' habitats that are unable to support commercial abalone, rock lobster and scalefish fisheries. The species has spread along the full extent of the east coast where barrens are steadily increasing, and now occurs on the south and west coast.

The FRDC project shows that there is a clear negative relationship between the abundance of *C. rodgersii* and the density of rock lobster. The capacity to predict future patterns of barrens habitat requires better understanding of the mechanisms that initiate barrens formation and that determine the position and dynamics of boundaries between barrens and macroalgal-dominated habitat. However, the extent of incipient barrens that was observed, particularly on boulder substratum, suggests that further expansion of extensive barrens is likely. Given these considerations, the project investigators suggested that management measures to limit the spread of *C. rodgersii* barrens in Tasmania are warranted. This has been addressed through

### **Recommendation 3.**

Furthermore, extensive experiments in Tasmania have indicated that legal-sized rock lobsters are more important predators of sea urchins than are reef-associated fishes, and that fishing of legal-sized rock lobsters is sufficient to account for increases in urchin populations. While management decisions have already been implemented to increase the biomass of legal-sized lobsters, it is unclear to what level this biomass is likely to build and whether it will have any effect on the population dynamics of sea urchins.

A workshop involving DPIW was convened in December 2005 to consider knowledge, research and management of *C. rodgersii*. Recommendations from the workshop included strategies for further monitoring, establishment of a working group to develop strategic planning and development of a research proposal to investigate various management options. These recommendations have been progressed and a research proposal has recently been submitted to FRDC for funding consideration. The planned outcomes of the project are to provide solid scientific evaluation of management options to assist managers in the development of policy and cost effective measures to mitigate the effect of sea urchins overgrazing in Tasmania.

### **Management response**

In 2004, the TRLFA began promoting the adoption of an environmental management system called the 'Clean Green Program'. The initiative contains standards of best practise covering environmental practise, seafood safety and quality and occupational health and safety.

The environmental practises covered by the program includes fishery sustainability, minimising bycatch, minimising ecological interactions, avoiding seal breeding colonies, whale identification, introduced pests, waste disposal procedures, safe refuelling and spill kit use. To date, 39 Tasmanian rock lobster fishers have been accredited with a further 15 fishers completing the latest induction course.

DEH is encouraged by the initiatives in the 'Clean Green Program' but considers that ongoing attention to operator involvement and commitment is required if the benefits are to be realised in the TRLF. In particular, DEH considers that while interactions with seals and whales appear low, there is an ongoing need to monitor the impact of the fishery on these species. As mentioned previously, the fate of seals after an interaction is not well reported and is difficult to assess. While the 'Clean Green Program' acknowledges the importance of protected species, further developments could be adopted, such as trialling seal exclusion devices where appropriate or practises such as using shorter ropes in shallow waters to reduce entanglement.

**Recommendation 8:** *DPIW, in collaboration with industry, to continue to encourage the adoption of programs that minimise protected species interactions and pot loss. DPIW, in collaboration with other jurisdictions, to investigate and implement, where appropriate, the use of seal exclusion devices other than seal spikes to reduce the impact of the fishery on seal species.*

## **Conclusion**

DEH is satisfied that the TRLF is conducted in a manner that minimises the impact of fishing operations on the ecosystem generally. A recommendation has been developed to ensure that the risk of significant impact by the fishery on the marine environment generally is minimised in the longer term.

## REFERENCES

Frusher, SD. and Gibson, ID (1999). Bycatch in the Tasmanian rock lobster fishery. In *Establishing meaningful targets for bycatch reduction in Australian fisheries*. Edited by Buxton, CD and Eayrs, SE. Australian Society for Fish Biology Workshop Proceedings, Hobart, September 1998. Australian Society for Fish Biology, Sydney.

## LIST OF ACRONYMS

CFAC	Crustacean Fisheries Advisory Committee
CPUE	Catch per Unit Effort
CRAG	Crustacean Research Advisory Group
DEH	Australian Government Department of the Environment and Heritage
DPIW	Tasmanian Department of Primary Industries and Water
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FRDC	Fisheries Research and Development Corporation
MPA	Marine Protected Area
RecFAC	Recreational Fishery Advisory Committee
TAC	Total Allowable Catch
TAFI	Tasmanian Aquaculture and Fisheries Institute
TFIC	Tasmanian Fishing Industry Council
TRLF	Tasmanian Rock Lobster Fishery
TRLFA	Tasmanian Rock Lobster Fishermen's Association