

**Application for Declaration as an Approved Wildlife  
Trade Operation under the *Environment Protection and  
Biodiversity Conservation Act 1999***

**Export of *Scalaris* Abalone (*Haliotis scalaris*)  
from Tasmanian waters**

**November 2004**



DEPARTMENT of  
PRIMARY INDUSTRIES,  
WATER and ENVIRONMENT

Tasmania

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## EXECUTIVE SUMMARY

The taking of *Haliotis scalaris* from Tasmanian State waters is assessed against the Commonwealth Guidelines for the Ecologically Sustainable Management of Fisheries as required by the *Environment Protection and Biodiversity Conservation Act 1999*.

*Haliotis scalaris* is a species of abalone occurring in Tasmanian waters which had never been commercially exploited or extensively researched until the current fishery. Similar to the high value blacklip abalone in appearance, it is smaller in size, a characteristic which historically gave rise to concerns that allowing its harvest may create an enforcement loophole in the blacklip fishery.

Investigation of the identification issue and consultation with industry eventually resulted in access to *scalaris* being granted for a five year developmental fishing program. Fishing is undertaken in conjunction with scientific research under the authority of a permit issued to a single industry proponent under the *Living Marine Resources Management Act 1995*.

The collection of baseline data from this virgin fishery was the primary aim of the research program as little information about *scalaris* existed. However, the quantity of *scalaris* extracted has been low and significant progress toward the determination of biological and population characteristics for *scalaris* has not yet been achieved. Future access to *scalaris* will depend on the outcome of the developmental fishing program and prevailing circumstances at the time.

The removal of *scalaris* abalone by hand from the substrate results in minimum impact occurring upon abalone habitat, the immediate fishing area and the broader ecosystem. The level of bycatch occurring in the fishery is insignificant.

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The following sections of this assessment report are presented to address the Commonwealth *Guidelines for the Ecologically Sustainable Management of Fisheries* produced by the Department of the Environment and Heritage. The headings, principles and objectives are presented using the same numbering as the guidelines.

## A INTRODUCTION

### A.1 History of the fishery

In Tasmania, fisheries and other living marine resources are managed under the provisions of the *Living Marine Resources Management Act 1995* (the Act). The Minister administering the Act is the Minister for Primary Industries and Water, while the responsible Department is the Department for Primary Industries, Water and the Environment (the Department).

An Offshore Constitutional Settlement between the Australian Government and the Tasmanian Government provides for Tasmania to manage all *Haliotis* species in waters relevant to Tasmania (i.e. Tasmania has jurisdiction for all abalone around Tasmania).

*Haliotis scalaris* is a third species of abalone found in Tasmanian waters. A major fishery presently exists for *Haliotis rubra* (blacklip abalone) and *Haliotis laevigata* (greenlip abalone), but until 2000, *Haliotis scalaris* had never been harvested commercially.

Anecdotal evidence from long term participants in the Tasmanian abalone fishery maintained that *H. scalaris* (known as scalaris abalone or Emma's abalone) could be found in commercial quantities along the north west and north east coasts, and the Bass Strait islands. Scalaris is similar to blacklip abalone but smaller in size growing to approximately 90-100mm in length. It is known to occupy similar habitat as other abalone species, particularly under boulders or in narrow crevices<sup>1</sup>.

Very little is known about the biological characteristics of this species of abalone.

There has long been speculation within the abalone industry whether scalaris could provide an opportunity for a new high value fishery. Many believed that its smaller size offered opportunities for new markets. One abalone diver, now the current permit holder, had a long standing interest in developing the scalaris fishery dating from 1992.

Early applications to develop the scalaris fishery were not approved by the Department or supported by industry because of concern that granting access to the fishery may undermine

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<sup>1</sup> Edgar Graham J (2000): Australian Marine Life: The Plants and Animals of Temperate Waters, pp 228-229

the integrity of the valuable blacklip fishery. A central issue surrounding access to this fishery has always been the issue of identification, namely the ability of industry and enforcement officers to distinguish *scalaris* from blacklip abalone. Its maximum size of around 100mm is less the minimum legal size limits for blacklip and greenlip abalone. Therefore, it was important that should any access be given to *scalaris*, it did not create a potential for divers or processors to be in possession of undersize blacklip.

Later, Tarbath<sup>2</sup> reported in 1997 that *scalaris* could be distinguished from the other two commercial species of abalone “at all times”. This opinion was based on identification primarily by the broad spiral ridges on the upper margin of the respiratory pores. Further consideration by the Department revealed little justification to continue to prevent the development of the fishery subject to compliance issues being resolved satisfactorily and appropriate permit conditions developed. It was recommended however, that further rigorous testing of the conclusion of Tarbath’s report regarding identification should form an integral part of the research program.

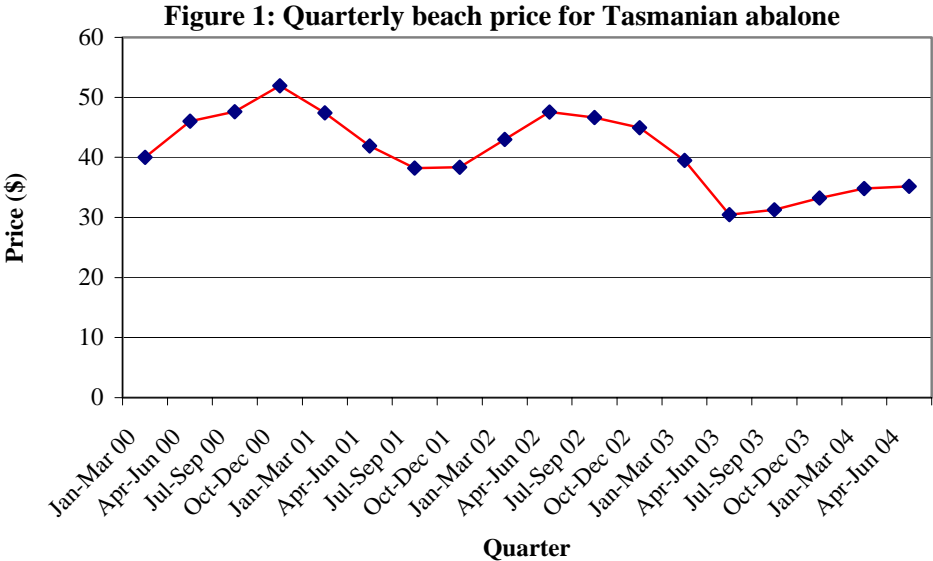
The *Living Marine Resources Management Act 1995* provides for the issue of permits to allow fishing activities which would otherwise be contrary to existing legislation, within prescribed conditions. One purpose for which permits may be issued is the development of fisheries within a specified framework. Usually, a period of developmental fishing is undertaken during which information is collected to assess the viability and potential for the taking of a previously unexploited species such as *scalaris*.

As little information on the life history and population dynamics of *scalaris* was available, significant scope existed for a study of this virgin stock to be undertaken in conjunction with the initial development of a *scalaris* fishery in Tasmania. DPIWE and the abalone industry agreed that the early collection of research information was essential for determining management measures such as size limits and catch levels. It was agreed that this research would be undertaken in conjunction with fishing.

Therefore, in October 2000, after a long process of negotiation, the Minister for Primary Industry and Fisheries approved the development of the *scalaris* fishery by a single industry

proponent in conjunction with a five year research program to assess the long term viability of this resource. A single permit was issued allowing the taking of 10 tonnes of scalaris abalone by diving from north western Tasmania. Four consecutive permits have been issued since October 2000 to take a similar quantity of scalaris, each for a 12 month period. A supporting permit is also issued to a processor nominated by the permit holder to receive and process the abalone.

The five year research program is now in its final year and progress achieving the set objectives has been slow. The collection of baseline information, which is conducted concurrently with the commercial fishing operation, has not been at the levels anticipated primarily because fishing effort has been at a low level. The low quantity of scalaris taken to date has so far yielded inadequate information on which to base any long term biological or management decisions. The more complex research planned has not commenced because the collection of baseline information is incomplete.



The marketing of scalaris has also had an uncertain beginning. Being an abalone it readily found a base market, but the premium market envisaged has not been achieved. External factors have had an impact, including the increasing presence of aquaculture abalone on the market, a direct competitor because of the uniformity of its size and lower price. The SARS

<sup>2</sup> Tarbath, David (1997): Resource Assessment of *Haliotis scalaris* in Northern Tasmania – Interim Report, Marine Research Laboratories, Tarooma, DPIWE

virus and general international unrest caused the beach price of abalone to drop substantially (see Figure 1). This decreased the viability of taking scalaris, fishing for which is more labour intensive than blacklip or greenlip because of its smaller size. The size of scalaris also presented challenges during handling and transporting in live form to overseas markets.

The current developmental fishing process for scalaris does not preempt any later decision by the Minister regarding future access to this species. Any long term management measures beyond developmental status cannot be guaranteed and notably, must be considered in the context of the existing access rights of abalone licence holders. The Minister's decision regarding the future of this fishery will be based on information collected during the research and developmental phase, and other relevant factors at the time.

The five year developmental process inherently includes market and product development. This process has included investigations for export markets. To facilitate export in line with the requirements of the *Environment Protection and Biodiversity Conservation Act 1999*, application for Controlled Specimen status was made in July 2001. Progress and results are detailed in the attached annual summary reports for 2002, 2003 and 2004 (draft), and are summarised in this document.

## **A.2 Context of current management regime**

The permits which allow the taking and possession of scalaris abalone are issued through the Department under Section 14 of the *Living Marine Resources Management Act 1995*. Permits can be issued for specific purposes, in this case, for the development of fisheries, and are issued by the Minister or his delegate subject to certain conditions, for not longer than a 12 month period.

The Act sets out the objectives for the sustainable management of living marine resources in Tasmania and provides the framework for developing and implementing management arrangements for each of the State's fisheries. The objectives of the legislation are provided in Section 7 and Schedule 1 of the Act and are consistent with the objectives of the resource management planning system of Tasmania.

- 7(1) *The purpose of this Act is to achieve sustainable development of living marine resources having regard to the need to -*
- (a) increase the community's understanding of the integrity of the ecosystem upon which fisheries depend; and*
  - (b) provide and maintain sustainability of living marine resources; and*
  - (ba) take account of a corresponding law; and*
  - (c) take account of the community's needs in respect of living marine resources; and*
  - (d) take account of the community's interests in living marine resources.*
- 7(2) *A person must perform any function or exercise any power under this Act in a manner which furthers the objective of resource management.*

#### SCHEDULE 1 - OBJECTIVES OF THE RESOURCE MANAGEMENT AND PLANNING SYSTEM OF TASMANIA

1. *The objectives of the resource management and planning system of Tasmania are -*
  - (a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity; and*
  - (b) to provide for the fair, orderly and sustainable use and development of air, land and water; and*
  - (c) to encourage public involvement in resource management and planning; and*
  - (d) to facilitate economic development in accordance with the objectives set out in paragraphs a, b and (c); and*
  - (e) to promote the sharing of responsibility for resource management and planning between the different spheres of Government, the community and industry in the State.*
2. *In clause 1a, "sustainable development" means managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while -*
  - (a) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and*
  - (b) safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*
  - (c) avoiding, remedying or mitigating any adverse effects of activities on the environment.*

### **A.3 Description of current management regime**

The current permit (Attachment 1) allows the permit holder to take, possess and sell 10 tonnes of scalaris abalone from north west and north east Tasmania, and the Bass Strait Islands. These areas are defined as commercial abalone diving blocks 1A, 1B, 1C, 2A, 2B, 2C, 4A, 4B, 4C, 46, 47A, 47B, 48A, 48B, 48C, 49A, 49B, 49C, 31B, 32A, 32B, 32C, 33A, 33B, 33C, 39A, 39B, 40A, 40B, 40C, 41, 42, 43 (see Attachment 2).

The permit conditions impose a suite of stringent requirements on both fishing, transporting and processing activities (Attachment 1). These provisions include requirements for storing and marking scalaris, prior fishing reports to Police and the Department, reporting measures and requirements to collect certain data.

No size limit has been put in place in the permit to allow collection of data across the size range of the species. This allows collection of information on size composition and sexual maturity which is not confounded by a size limit. In reality, however, commercial fishing does impose a size limit through market and logistical imperatives.

Fishing is restricted to the fishing blocks prescribed in the permit as described above. There are also five abalone 'research areas' in Tasmania, where no abalone of any species may be taken. These areas are set aside as baseline areas for comparisons with fished areas. Three of these areas fall within the area provided for in the permit – no scalaris may be taken in these areas.

The permit holder must hold a fishing licence (abalone dive). Other approved divers may be used but must be directly supervised by the permit holder, who must be in attendance during all diving activities. The authorised divers must also hold a fishing licence (abalone dive). Two such approved divers have been utilised during the last permit period.

Before undertaking a fishing trip, the permit holder must make a prior fishing report to the police and the fishery manager providing relevant information as follows:

- The proposed areas (s) to be fished;
- The name and distinguishing mark of the vessel to be used;
- The name of the processor to whom the scalaris will be consigned;

- The names of the participating divers; and,
- The approximate time the abalone will be received by the processor.

No blacklip abalone can be taken or possessed at sea when fishing for scalaris. Scalaris must be transported and held separately by the fish processor.

A detailed research logbook must be completed for each dive undertaken (Attachment 3). The permit holder is also required to supply three monthly reports to DPIWE summarising catch information and collect fishery and biological information as directed.

The monitoring of the handling and processing of scalaris is executed within the existing quota monitoring system, comprised of phone and logbook reporting, to report activity. These requirements are as provided for in the *Fisheries (Processing and Handling) Rules 2001* (see section A.3.6 for discussion on enforcement and compliance issues).

A levy commensurate with the levy collected from the blacklip and greenlip fisheries is collected from the permit holder.

### **A.3.1 Availability of documented management arrangements**

Permits are publicly available documents, as is generally the practice for releasing details of access and licensing arrangements for wild fisheries resources. Information and copies of the permits can be obtained from the fishery manager, the Marine Resources Division of the Department of Primary Industry and Fisheries on 6233 2044. The *Living Marine Resources Management Act 1995* can be viewed at [www.thelaw.tas.gov.au](http://www.thelaw.tas.gov.au).

Reports compiled by the Department are sent as required to the Department of the Environment and Heritage. These reports are also forwarded to the State Minister and to the Tasmanian Abalone Council. These documents are public documents. Reports from the permit holder are also forwarded to the Tasmanian Abalone Council with commercial in confidence information withheld. These amended reports are also public documents.

The permit holder has also taken the opportunity to detail progress directly to the Tasmanian Abalone Council in fora such as the Annual General Meeting.

### **A.3.2 Consultative process for developing management regime**

The Act describes the consultative process which must be undertaken if the Minister intends issuing a permit for the development of fisheries, requiring that the Minister must consult with the relevant fishing body. Extensive consultation with the Tasmanian Abalone Council was therefore undertaken prior to the issue of the first permit in 2000 and has been repeated each year as subsequent permits were issued, particularly if there were any changes to permit conditions. Management arrangements for the fishery, including the objectives, are developed by the fishery manager in consultation with industry participants. In particular, the area to be fished and amount to be harvested are reviewed and negotiated each year depending on total catch levels. The Marine Police are consulted about reporting and enforcement provisions of the permits.

### **A.3.3 Expertise and community involvement in management of the fishery**

Management of the *scalaris* abalone resource in Tasmania is the responsibility of the Marine Resources Group of DPIWE in consultation with local community representatives where appropriate, including other abalone harvesters, processors, and any non-extractive users of State waters where *scalaris* is found.

Tasmanian Aquaculture and Fisheries Institute (TAFI) scientists from the Abalone Section provide expert scientific advice and act as consultants in setting research objectives and methodologies. Advice is ongoing in an *ad hoc* manner, however, progress and research assessment has been impacted by the low level of activity and catch to date.

### **A.3.4 Objectives of the management regime**

Below are the objectives of the management regime for the *scalaris* abalone fishery which are complementary to the stated resource management and planning objectives described in Schedule 1 of the *Living Marine Resources Management Act 1995*. A precautionary approach to this fishery has been adopted by restricting initial access in the early stages of development to avert any possibility that pressure to over-exploit the fishery could lead to overfishing or habitat degradation.

Results are summarised in through yearly progress reports (attached). Progress is summarised further in this report in the assessment section (section B). However, progress has been limited by the low level of activity under this permit. Catch and effort have been limited and the level of catch envisaged at the start of the permit process has not come close to being realised. Correspondingly, progress on biologically based data collection has also been limited.

#### Research objectives

- To obtain information on patterns of distribution and abundance by taking representative population samples from selected locations.
- To obtain from these samples information on morphometrics and reproductive development;
- To determine 50% size at first sexual maturity for the purpose of deriving a commercial minimum size limit.
- To assess the productivity of scalaris abalone by determining growth and ageing parameters both within and between individual populations.

#### Developmental fishery management objectives

- Assess the development potential for establishing a scalaris abalone fishery in Tasmania using the information collected in the research program.
- Limit the number of participants in fishery by restricting permit issue (1 permit holder).
- Limit total scalaris abalone catch by permit condition.
- Restrict fishing methods used in scalaris abalone harvest.
- Monitor performance of scalaris abalone fishery, primarily through catch, in sufficient detail to recommend alteration to management methods if necessary.

#### Environmental impact management objectives

- Minimise any environmental impact of scalaris abalone fishing methods by specifying hand selection by diving as the fishing method, particularly in areas of ecological significance.
- Minimise any bycatch of non-target species.

### Compliance and enforcement objectives

- Prevent persons who are not authorised under the *Living Marine Resources Management Act 1995* taking scalaris abalone.
- Prevent any breach of scalaris abalone permit conditions by permit holders.
- Monitor the harvest of scalaris abalone monthly to restrict or adjust management controls where necessary.

### Socio-economic objectives

- To equitably recover an economic return from permit holders to contribute to the costs of research, management and compliance for the scalaris abalone fishery, sufficient to achieve cost recovery over time.
- To recover resource rent for scalaris abalone where appropriate.

### Processing and marketing objectives.

- To achieve handling and processing practices which ensure the highest quality scalaris abalone product reaches the market.
- To assess market demand for scalaris abalone and investigate viability of individual marketing strategies.

### **A.3.5 Controls on level of harvest in the fishery**

Management controls in this developing fishery are controlled by permit condition. At present, only a single permit is issued for a 12 month period with a fixed catch allocation, allowing for frequent review of the conditions. The Minister has the power to vary any condition of a permit by notice in writing served on the person who holds the permit. In particular, this allows for the swift introduction or alteration of management controls such as catch levels, size limits and area restrictions. The Minister can also revoke a permit by notice in writing to the permit holder.

As discussed in Section A.1, a 5 year framework was implemented for developmental fishing under permit. This framework provided for only a single permit holder, so that developmental fishing could be undertaken in a highly constrained manner. No additional permits have been issued.

The conditions of the permit are open for review each year. However, limited catches have not seen major issues of any concern arise. The major change has seen the area open to fishing expanded to include the north east of Tasmania, in an effort to collect data from a larger spatial area.

There is no recreational fishing for *H scalaris* because it does not occur above the recreational size limit. Similarly, indigenous fishing for scalaris is constrained by abalone size limits.

Policing of size limits or illegal take is undertaken by Tasmania Police through normal enforcement measures in place for abalone generally.

#### **A.3.6 Enforcement of management arrangements**

Tasmania Police Marine and Rescue Division are responsible for enforcement of fisheries legislation in Tasmania, including fishing operations conducted under permit. The police were involved in the initial development of permit conditions for the scalaris fishery and a number of officers have received instruction in distinguishing scalaris from other abalone species. There is also a dedicated Abalone Task Force within the Marine Police Section which operates exclusively on abalone enforcement. The permit holders initially met with task force members and agreed to some extra reporting measures as requested.

As detailed below, stringent reporting requirements, which mirror those applying in the commercial abalone fishery, have been imposed on the permit holder to minimise any opportunity for illegal fishing and to maximise the opportunity to detect breaches.

This includes the requirement that fishers must prior report to police and DPIWE before launching on the water. Subsequent reporting requirements are designed to track fish through the chain from diver to processor and then via export. Approved logbooks must be completed prior to any scalaris being removed from the point of landing for processing. The completed daily scalaris fishery logbook must be forwarded to the fishery manager within 24 hours of landing. The permit holder must carry a copy of the permit with them when fishing. A three monthly report is forwarded to DPIWE containing complete fishery, processing and marketing details.

Processors must only receive scalaris taken by the permit holder and ensure that it is stored separately to other species of abalone. The weight of scalaris taken, the number processed and rejected, the date, consignment number and average sale price must be accurately recorded in a processors logbook. Any abalone that are exported also require appropriate AQIS certification. Export must also be in accordance with approvals for export as provided for under the *Environment Protection and Biodiversity Conservation Act 1999*.

Compliance checks are carried out by Tasmanian Marine police officers based on the north west coast as required including during fishing, at the landing site and the processing facility. To date, there have not been any recorded offences within the fishery. The Department is satisfied that the permit holders have complied with the reporting conditions of the permit within the timeframe agreed to.

Wild Fisheries Management staff have also monitored fishing activities in person. Departmental officers have assisted in data collection, monitored progress by the permit holder and identified any likely compliance issues. The permit holder continues to report that at no time has he or divers assisting him encountered difficulty distinguishing between scalaris and blacklip or greenlip abalone.

### **A.3.7 Provision for periodic review of the fishery**

Permits for the development of fisheries under the *Living Marine Resources Management Act 1995* cannot be issued for a period longer than 12 months. The current permit for harvesting scalaris have a duration of 12 months.

A review of the developmental research program for scalaris abalone is conducted upon the expiry of each permit and an extensive appraisal is undertaken annually. These include examination of the stock levels, impact on fish stocks and the environment, a review of management, research or compliance costs, product handling and marketing. An overall evaluation of whether the fishery is likely to be commercially viable and suitable for further development is also appropriate at this stage.

The most recent review, undertaken in August/September 2004 prior to the expiry of the fourth permit of the five year developmental fishing program included revision of catch levels, areas to be fished and consultation with the abalone industry. There will be a final assessment of the development potential of scalaris fishery prior to the expiry of the current permit in October 2005.

#### ***A.3.8 Assessment of any adverse impacts of the fishery on marine ecosystem***

The size of the fishery is such that any adverse impact of the fishery on the marine ecosystem is minimal.

#### ***A3.9 Compliance with abatement and recovery plans and bycatch action strategies***

Abatement and recovery measures appropriate to the scale of this developing fishery are in place. Bycatch for this fishery, due to its scale and the method of fishing, is negligible.

## **B ESD ASSESSMENT**

### **B.1 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.**

#### ***B.1.1 Objective 1.***

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

##### ***B.1.1.1 Information requirements***

***1.1.1 There is a reliable information collection system in place appropriate to the scale of the fishery. The level of data collection should be based upon an appropriate mix of fishery independent and dependent research and monitoring.***

Scalaris abalone had not been harvested in Tasmania prior to the issue of the first permit in October 2000, so the information collection process began from scratch. Other than the anecdotal evidence of abalone divers, some preliminary information is provided in Marine Resources Division Internal Report No 36 titled *Resource Assessment of Haliotis scalaris in Northern Tasmania – Interim Report* (Tarbath (1997))

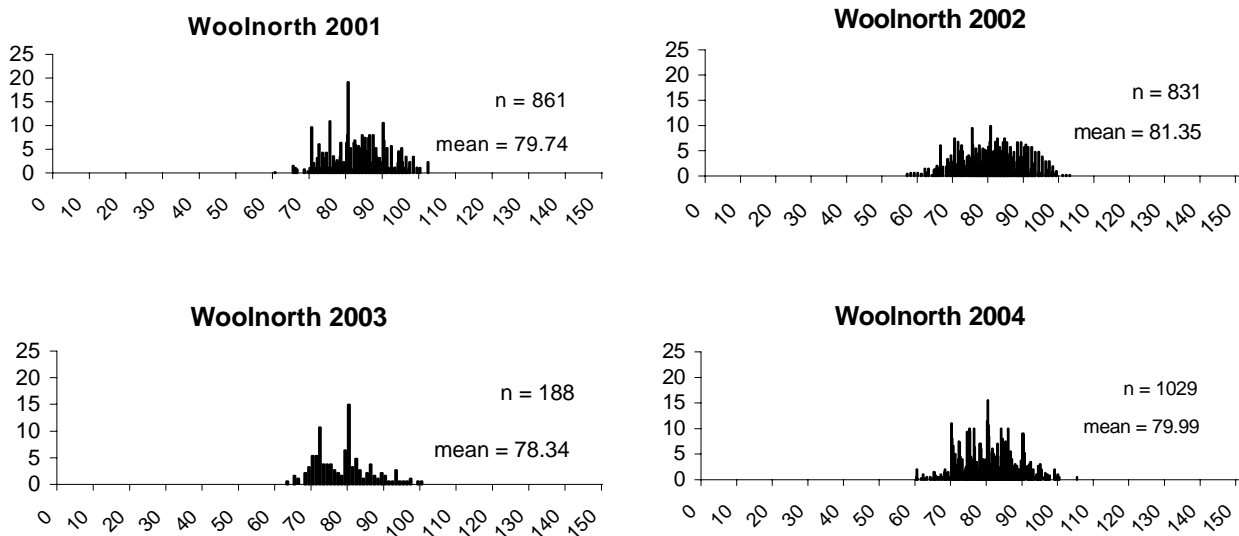
Fishery dependent data is collected by the permit holders who are required to complete a Scalaris Abalone Fishery Logbook containing the following catch data:

- Date harvested
- Dive start and finish time

- GPS Coordinates for dive start and finish
- Weight and number of abalone
- Fishing site details including location by name, substrate details, exposure details, history (whether previously fished and when) and Block No

The size composition of the catch is recorded for each fishing trip undertaken. This length frequency information for the commercial catch is obtained from measuring 20% of the daily catch, or a minimum of 100 fish from one site, whichever is the greatest, after each fishing trip. This information is compiled by the Developmental Fisheries section within the Wild Fisheries Management Branch and reported in the annual report to DEH. As most data has been collected from the Woolnorth area, meaningful information or time series is restricted to this area.

**Table 1: Percentage length frequency for commercial catches of *H. scalaris***



Fishery independent information is collected from each new site. A new site is based on the density of fish in the site and estimated by the catch of total available size class of animals per hour. From each new site, a sample of 300 fish are to be taken and information collected on length, total weight, meat weight and the viscera preserved from 50 large fish. The shells are labelled and retained for aging.

This data is collected cooperatively between the permit holder and the Department. The permit holder provides vessel and diver support whilst the Department measures and collates this data.

As the spatial extent of fishing has been limited, 'new' sites have been correspondingly minimal. The fishery has become concentrated mainly in the Woolnorth area. This data is also limited due to low catch levels.

Population information is collected by taking a sample of 300 fish from previously commercially heavily harvested areas, measured, then returned. The collection of this sample is dependent on the frequency of commercial fishing operations in that area. A sample is taken every 3 months in an area regularly fished and a sample every 6 months from infrequently fished areas. This sample should be collected from the smallest area possible, with the diver taking every fish detected and a record kept of the time taken to collect the sample.

This length frequency data is compiled by the Department and forms the basis of the length frequency compositions reported in previous reports. As Woolnorth is the preferred fishing area, this data is limited to that area. The temporal spread of effort has also been low, thus samples are also limited.

Information to determine the size at first maturity for *scalaris* is gained by taking samples of 30 fish each month when fishing occurs during the spawning period (around October to February). A limited amount of this information has been collected to date, insufficient to make any accurate determination.

The logbook returns and associated paperwork have been monitored closely by a section within the Wild Fisheries Management Branch of DPIWE with the assistance of the Quota Audit Unit. Fishing operations are also monitored in person, depending on the frequency of fishing

### ***B.1.1.2-5 Assessment***

*1.1.2 There is a robust assessment of the dynamics and status of the species/fishery and periodic review of the process and the data collected. Assessment should include a process to identify any reduction in biological diversity and/or reproductive capacity. Review should take place at regular intervals but at least every three years.*

The collection of fisheries dependent information by the permit holder has yielded some length frequency information based on the commercial catch. However, conducting a population assessment across the distribution of all known *scalaris* stocks is not justified because of the small size of the fishery and the concentration of fishing effort in one main location.

The limited spatial distribution of effort to data is an issue for the developmental process underway. As a result, data collected come from a small area with little information or data available more widely across the distribution of the *scalaris*.

DPIWE assesses the research objectives and all fishery information annually at the end of each permit period. Catch per unit effort is monitored and to date, no significant variations have occurred (see attached yearly reports for CPUE data).

Possible depletion of the Woolnorth area may arise as an issue. While no concern regarding catch rates has been expressed, the catches realised have also been low. If catches were to reach the level allowed under the permit, then this issue may need to be considered. Mechanisms to spread the catch, such as a cap in the Woolnorth area, may be appropriate.

No robust assessment of reproductive capacity has been achieved. Finding immature *scalaris* can be difficult and the numbers of fish taken at a small size has been low. As identified, overall fishing levels have also been low.

Information on the effect on biological diversity from this small fishery is not readily available. Information is being collected on the habitat from which the abalone is harvested.

The complexity of the interrelationships between the various invertebrates that inhabit these beds would require extensive survey and assessment to provide any meaningful information. The size and value of this fishery does not currently justify expending the significant resources this would require.

*1.1.3 The distribution and spatial structure of the stock(s) has been established and factored into management responses.*

The known distribution of scalaris abalone in Australia is believed to be from eastern Victoria to Geraldton in Western Australia including Tasmania<sup>3</sup>.

Some progress has been made toward gaining further information about the distribution of scalaris in State waters but this is limited due to the low level of extraction since the first permit was issued in October 2000. Around four sites have been fished on the north west corner of the state, one in a more concentrated manner. DPIWE are collating GIS information on all sites fished. To date, the north east coast and the Bass Strait islands have not been fished (see Attachment 4).

*1.1.4 There are reliable estimates of all removals, including commercial (landings and discards), recreational and Aboriginal from the fished stock. These estimates have been factored into stock assessments and target species catch levels.*

The allocated catch level of 10 tonnes set each year has not been reached in any year (see Table 1). Therefore, the level of removals is not high enough to be factored into a stock assessment.

It is recognised that the 10 tonne catch limit is not set upon any biologically based assessment of the resource. As such, this initial limit was reached through negotiations between the permit proponent, the Department and a sub-group of members of the Abalone Fishery Advisory Committee (which includes industry and conservation membership). Requests for an increase in the tonnage from the permit holder have not been approved.

There is no recreational or indigenous fishing recorded for scalaris abalone for reasons previously explained.

**Table 1. Harvesting History *Scalaris Abalone***

<b>CATCH BY YEAR (Tonnes )</b>	
Nov 00-Oct 01	0.949
Nov 01-Oct 02	2.686
Nov 02-Oct 03	0.0563
Nov 03-Oct 04	1.159
<b>Total</b>	<b>4.850</b>

*1.1.5 There is a sound estimate of the potential productivity of the fished stock/s and the proportion that could be harvested.*

Not possible at this time.

***B.1.1.6-9 Management responses***

*1.1.6 There are reference points (target and/or limit), that trigger management actions including a biological bottom line and/or a catch or effort upper limit beyond which the stock should not be taken.*

Progress towards development of trigger points and biological targets has not been necessary because insufficient information has been collected at this stage of the development of the fishery due to low levels of fishing.

If fisheries dependent information currently collected indicated significant changes in catch per unit effort and population dynamics such that immediate action is required, the Minister can respond by using his powers under the Act to immediately vary permit conditions or revoke the current permit.

*1.1.7 There are management strategies in place capable of controlling the level of take.*

Input controls include a limit on the number of fishers participating in the fishery and the limit imposed on their commercial level of catch by the permit. The number of permits in this

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<sup>3</sup> Shepherd, S A 1973: Studies on southern Australian abalone (Genus *Haliotis*). I. Ecology of five sympatric species. Australian Journal of Marine and Freshwater Research. 24: 217-257

developmental process is limited to one. The method of collection is by hand collection by diving.

As previously discussed, there are three abalone research areas within the area open to fishing where no abalone of any species can be taken.

Recreational and indigenous fishing does not occur under the Act.

*1.1.8 Fishing is conducted in a manner that does not threaten stocks of by-product species.*

The areas fished are primarily high energy rocky reef habitat of a depth generally less than 10 metres. The method of fishing is hand harvesting by a diver. This is a highly selective fishing method with little physical damage occurring to abalone habitat, other than removal of the target species. Other species taken incidentally as bycatch are negligible, consisting primarily of minute quantities of invertebrate species attached to the abalone shell.

*1.1.9 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.*

Fishing can cease absolutely at the end of each permit period, or the permit revoked by the Minister during the period of the permit. Long term access to fisheries granted by permit is not guaranteed.

The five year developmental framework is detailed previously in this document. The results and progress made in that period are to be used to assess if any further fishing for *scalaris* should proceed, if further research is required, or if formal management measures could be considered.

Given the progress to date, the data and information on which to base long term decisions is exceedingly limited. It is more likely that an assessment will need to be made if fishing should cease, or if further research/development should be undertaken. This decision will need to be made in consultation with the current permit holder, the Tasmanian Abalone Council and the Abalone Fishery Advisory Committee.

When/if any long term access or management issues are to be determined the *Living Marine Resources Management Act 1995* stipulates the statutory process that must be undertaken.

### **B.1.2 Objective 2.**

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

#### **B.1.2.1-2 Management responses**

*1.2.1 A precautionary recovery strategy is in place specifying management actions, or staged management responses, which are linked to reference points. The recovery strategy should apply until the stock recovers, and should aim for recovery within a specific time period appropriate to the biology of the stock.*

This is currently not applicable, as reference points have not been established because the fishery is in a research stage.

To comply with the objectives of the *Living Marine Resource Management Act 1995*, the Minister must take appropriate action to ensure a fishery is managed sustainably. The Act provides powers to review or revoke management plans or to take emergency action to rectify threatening actions.

*1.2.2 If the stock is estimated as being at or below the biological and / or effort bottom line, management responses such as a zero targeted catch, temporary fishery closure or a 'whole of fishery' effort or quota reduction are implemented.*

Currently not applicable.

## **B.2 PRINCIPLE 2.**

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

### ***B.2.1 Objective 1.***

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

#### ***B.2.1.1 Information requirements***

*2.1.1 Reliable information, appropriate to the scale of the fishery, is collected on the composition and abundance of bycatch.*

No structured information is collected on bycatch species, which are negligible for the scalaris abalone fishery.

#### ***B.2.1.2 Assessments***

*2.1.2 There is a risk analysis of the bycatch with respect to its vulnerability to fishing.*

No specific risk analysis on bycatch species has been undertaken because their take has been found to be infinitesimal. The scalaris fishing area is a small area relatively similar to coastal regions throughout the state where the incidental invertebrate bycatch species from this fishery also occur.

#### ***B.2.1.3-6 Management responses***

*2.1.3 Measures are in place to avoid capture and mortality of bycatch species unless it is determined that the level of catch is sustainable (except in relation to endangered, threatened or protected species). Steps must be taken to develop suitable technology if none is available.*

Scalariis are hand selected by an experienced abalone diver. This fishing method is the most effective way to prevent bycatch being taken and has the least impact on abalone habitat.

*2.1.4 An indicator group of bycatch species is monitored.*

Not currently applicable. None of the bycatch species are taken in sufficient numbers to warrant monitoring in this manner. At present, there is no intention to determine if any of the bycatch species are good indicator species.

*2.1.5 There are decision rules that trigger additional management measures when there are significant perturbations in the indicator species numbers.*

Not applicable at this stage.

*2.1.6 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.*

Not applicable at this stage. However, the Act provides for emergency responses that could be used to protect a species that was perceived to be under threat. In the absence of a targeted research program to monitor bycatch species, it is likely that in the first instance the Department would become aware of any concerns via anecdotal information from fishers or from the catch sampling program.

**B.2.2 Objective 2.**

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

Not applicable as there is no known interaction between this fishery and any known endangered, threatened or protected species at this stage.

### **B.2.3 Objective 3.**

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

#### **B.2.3.1 Information requirements**

*2.3.1 Information appropriate for the analysis in 2.3.2 is collated and/or collected covering the fisheries impact on the ecosystem and environment generally.*

The impact on the ecosystem and environment generally from the removal of scalaris abalone is negligible. The scale of the fishery is such that information is not currently collected in regard to this.

#### **B.2.3 Assessment**

*2.3.2 Information is collected and a risk analysis, appropriate to the scale of the fishery and its potential impacts, is conducted into the susceptibility of each of the following ecosystem components to the fishery.*

##### *1. Impacts on ecological communities*

- *Benthic communities*
- *Ecologically related, associated or dependent species*
- *Water column communities*

##### *2. Impacts on food chains*

- *Structure*
- *Productivity/flows*

##### *3. Impacts on the physical environment*

- *Physical habitat*
- *Water quality*

No information about the role of *scalaris* in the ecosystem or the effect of their removal has been gathered at this time due to the small scale of the fishery. Some research into the other commercial abalone species in Tasmania and the impacts of commercial harvesting on their wider habitat has been pursued by TAFI. Monitoring of marine reserves is also providing data for comparisons of fished and unfished areas.

An area of particular interest is the interrelationship between abalone and some algal species. Abalone appear to be particularly reliant on coralline and encrusting algae for successful settlement of larval abalone. Perturbations that affect such coralline algae could have a significant impact on abalone settlement.

Part of the original research proposal included setting three areas aside as 'no take' areas for *scalaris* fishing. These areas were to be used as research comparison areas. Preliminary work to identify these areas has commenced, however because of the low numbers of fish taken – this research has not commenced.

Several abalone research areas relating to research on all *Haliotis* species already exist in Northern Tasmania. No person may dive or take any kind of fish by diving in those areas, either recreationally or commercially. The Act contains powers for declaration of such research areas, and specifies the restrictions to be imposed.

#### ***B.2.3.3-5 Management responses***

***2.3.3 Management actions are in place to ensure significant damage to ecosystems does not arise from the impacts described in 2.3.1.***

Not applicable.

***2.3.4 There are decision rules that trigger further management responses when monitoring detects impacts on selected ecosystem indicators beyond a predetermined level, or where action is indicated by application of the precautionary approach.***

No management responses are required at this time.

*2.3.5 The management response, considering uncertainties in the assessment and precautionary management actions, has a high chance of achieving the objective.*

Not applicable.

## **C REFERENCES**

Edgar Graham J: *Australian Marine Life: The Plants and Animals of Temperate Waters* (Revised Edition), pp 228-229

Tarbath, David (1997): Resource Assessment of *Haliotis scalaris* in Northern Tasmania – Interim Report, Marine Research Laboratories, Taroona, Department of Primary Industries and Fisheries Tasmania

## **D GLOSSARY OF ABBREVIATIONS**

TAFI – Tasmanian Aquaculture and Fisheries Institute

TAC – Tasmanian Abalone Council

TFIC – Tasmanian Fishing Industry Council

DPIWE – Department of Primary Industries, Water and Environment

‘The Act’ – The *Living Marine Resources Management Act 1995*

‘The Minister’ – The Minister for Primary Industries, Water and Environment

## **E ATTACHMENTS**

1. Example of permit issued under Section 14 of *Living Marine Resources Management Act 1995*
2. Commercial abalone catch blocks
3. Example of scalaris abalone catch logsheet with definitions
4. Map – Distribution of scalaris abalone