

Victorian Wild Harvest Abalone Fishery Management Plan



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Printed by On Demand Printing, Port Melbourne. March, 2015. Printed on recycled paper.

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ISBN 978-1-74146-348-4 (print)

Accessibility

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Contents

Summary	3
<hr/>	
Policy and statutory context	5
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Objectives and governance principles for fisheries	5
Fisheries Act 1995 and subordinate regulations	5
Offshore Constitutional Settlement	5
Environment Protection and Biodiversity Conservation Act 1999	6
Codes of practice and memorandums of understanding	6
Abalone processing and aquaculture	6
Marine national parks and sanctuaries	6
Translocation guidelines and protocols	7
Other legislation and policies	7
Review of the plan	7
Overview of the abalone fishery	8
<hr/>	
Abalone stocks and catches	8
Abalone biosecurity	10
Management arrangements for the Victorian abalone fishery	11
<hr/>	
General provisions	11
Commerical fishing	11
Recreational fishing	14
Objective 1: Rebuild or maintain abalone stocks	15
<hr/>	
Strategy 1: Developing adaptive harvest strategies for each zone	15
Strategy 2: Setting targets for rebuilding	16
Strategy 3: Formalise Total Allowable Commercial Catch setting process	17
Strategy 4: Conducting structured fishing	18
Strategy 5: Harvesting greenlip abalone for commercial use	18
Strategy 6: Responding to ecological risks	18
Objective 2: Secure access to the resource	20
<hr/>	
Strategy 7: Maintaining access for commercial fishing	20
Strategy 8: Ensuring access for recreational fishing	20
Objective 3: Enable improvements in economic productivity	21
<hr/>	
Strategy 9: Harvesting abalone at a finer spatial scale	21
Strategy 10: Trialling differential legal minimum size limits in the commercial fishery	21
Strategy 11: Delivering cost effective science, management and compliance programs	22
Strategy 12: Applying modern technologies for catch logging and vessel tracking	23
Strategy 13: Accounting for minor over-catches of quota and diseased catch	23
Strategy 14: Improving Economic performance	24

Objective 4: Empower effective industry representation, organisation and funding	25
Strategy 15: Establishing robust governance arrangements	25
Objective 5: Ensure fisheries compliance	26
Strategy 16: Applying a strategic approach to abalone compliance	26
Objective 6: Target monitoring and research	28
Strategy 17: Ensuring adequate knowledge about the biomass	28
Strategy 18: Identify and prioritise research	28
Key elements of the Abalone Fishery Management Plan	31
Glossary	39
References	40

Summary

The Victorian Government's primary objective for the abalone fishery is to optimise its long term value for the Victorian community, in accordance with the objectives and provisions specified in the *Fisheries Act 1995*.

The *Victorian Wild Harvest Abalone Fishery Management Plan* specifies the objectives, strategies and actions for managing the fishery for at least five years from the declaration of the plan.

Victoria is home to one of the last sustainable wild-catch abalone fisheries in the world, with a long history of success since its establishment in the early 1960s. In recent years, participants in the abalone fishery have responded to a range of environmental, social and market opportunities and challenges, including:

- market factors influencing beach prices and profitability for the commercial harvest sector, such as strong demand for abalone in key export markets, competition from domestic and global aquaculture production, currency exchange rates and factors affecting operating costs;
- growth and demographic change in the recreational fishing community which influences fishing preferences for abalone;
- the occurrence or risk of an abalone disease;
- the incorporation of traditional fishing grounds into Marine Protected Areas; and
- an apparent increase in the abundance of sea urchins, particularly along the eastern coastline.

These opportunities and challenges will be addressed by sector participants and the Department of Economic Development, Jobs, Resources and Transport (DEDJTR) in a partnership approach, taking account of commercial fishers' entitlements, recreational and Aboriginal fishers' interests and the Victorian Government's policy and regulatory responsibilities.

DEDJTR reviewed the status of the abalone stock and the existing management arrangements for the fishery following a risk assessment process and consultation with fishery stakeholder groups. DEDJTR also initiated an independent expert process to prepare *A Review of Rebuilding Options for the Victorian Abalone Fishery* to assist in identifying appropriate stock rebuilding strategies, taking account of the state of abalone stocks and other factors in each commercial fishery zone (DPI, 2012).

A major focus of this management plan is to rebuild the abalone biomass through the implementation and progressive refinement of a revised harvest strategy, with new decision rules that provide clear guidance for future management actions and which take account of the circumstances in each zone of the fishery. Total Allowable Commercial Catches will be set at levels that ensure a significant increase in the available biomass over the life of the management plan. The re-building strategy will also be supported by adjusting minimum legal size limits for abalone applicable to all sectors and retaining the use of the daily bag and possession limits for recreational fishing.

Other complementary actions are being assessed as part of the rebuilding strategy and can be activated by industry, government or both through agreement, including options to support the move to manage the harvest of abalone at a finer spatial (reef) scale, mitigate competition from sea urchins and reseed or translocate abalone on selected reefs.

The plan also builds on arrangements that have been endorsed previously and incorporates some adjusted or additional actions, which particularly include:

- Retaining the existing eastern, central and western management zones as the foundation for managing the commercial abalone fishery;
- Retaining the existing arrangements for applying the Total Allowable Commercial Catch and individually transferable quota units for each zone of the commercial abalone fishery;
- Continuing the Victorian Government's funding (approximately \$6.46 million in 2012/13) to significantly strengthen the State's fisheries compliance capabilities as an offset for the incorporation of fishing grounds into Marine Protected Areas. The Victorian Government has stated that no new marine parks will be established;
- Providing an opportunity to formalise and strengthen the management of commercial abalone harvesting at a sub-zonal spatial scale, subject to developing appropriate governance and funding arrangements consistent with the respective responsibilities of industry and DEDJTR. This would include the development of voluntary and mandatory arrangements to enable efficient harvesting operations that are underpinned by agreed arrangements to electronically record and report fishing locations and catches at the sub-zonal level;
- Applying a practical and efficient compliance approach to enable commercial abalone quota holders (and their divers) to land up to 10 kilograms of abalone above their annual individual quota allocations on their last day of fishing in a fishing period;

- Reaffirming the use of the daily bag, possession and minimum size limits as the primary ways to manage recreational fishing for abalone;
- Where applicable, developing governance arrangements to better empower commercial entitlement holders to make collective decisions to deliver selected management functions via a single industry entity for each fishery zone, subject to developing appropriate safeguards to protect the interests of individual entitlement holders and to enable government to satisfy its regulatory obligations for the sustainable and shared use of the community's abalone resource;
- Retaining the combined cost recovery and royalty levy capped at 7.21 percent of the annual Gross Value of Production (GVP) for each fishery zone, as contained in the *Fisheries Act 1995* and subordinate legislation and subject to:
 - Implementing provisions to verify the GVP to satisfy public financial accountabilities and ensure the efficient operation of the levy;
 - Clearly defining the type and level of science, management and compliance services to be delivered by DEDJTR to operate the fishery on the existing zonal basis;
 - Providing the opportunity for industry to collectively modify or request alternative arrangements in agreement with DEDJTR with additional services funded by industry;
 - Establishing and using performance indicators for the abalone fishery and its management; and
 - Recognising the wild abalone fishery's interaction with aquaculture noting that this management plan is not used to manage licensed aquaculture operations.

An implementation schedule for this plan is shown in the section of this document entitled *Key Elements of the Victorian Wild Harvest Abalone Fishery Management Plan*. This schedule includes the actions, targets, key partners, funding sources and performance indicators. Ongoing implementation of this plan will require consultation and action by DEDJTR, fishery participants or both, as relevant.

This management plan for the abalone fishery has been prepared in accordance with the requirements of *the Fisheries Act 1995* and the Ministerial Guidelines published in the *Victoria Government Gazette* (21 June 2007).

The plan shall be interpreted by the Minister or Secretary (as relevant to their legislative authority) within the context of the *Fisheries Act 1995* or subordinate legislation. The plan will be responsive to any other relevant legislation or government policies.

DEDJTR will prepare an annual progress report for the implementation of this management plan, taking account of the key performance indicators described in the plan. These reports will be provided to industry for review at Stock Assessment and Quota Setting Workshops and be available through the DEDJTR website.

Policy and statutory context

Objectives and governance principles for fisheries

The Victorian Government's overarching policy objective is to optimise the commercial, social and cultural value to Victoria derived from the use of fisheries resources and associated ecosystems, within the context of the broader policies and instruments applicable to fisheries that include:

- the *Fisheries Act 1995* and subordinate legislation;
- Offshore Constitutional Settlements;
- commitments made by all Australian governments to manage fisheries according to the principles of ecologically sustainable development; and
- Victorian Government policies to facilitate economic productivity (including reducing regulatory burden) and to conserve environmental assets.

DEDJTR undertakes a risk-based approach to manage fisheries so that the highest risks to fisheries, supporting ecosystems and economic outcomes are addressed as a priority, through appropriate planning, allocation of available resources and monitoring.

Fisheries Act 1995 and subordinate regulations

The *Fisheries Act 1995* provides the legislative basis for managing Victorian fisheries.

The objectives specified in the Act are:

- a) to provide for the management, development and use of Victoria's fisheries, aquaculture industries and associated aquatic biological resources in an efficient, effective and ecologically sustainable manner;
- b) to protect and conserve fisheries resources, habitats and ecosystems including the maintenance of aquatic ecological processes and genetic diversity;
- c) to promote sustainable commercial fishing and viable aquaculture industries and quality recreational fishing opportunities for the benefit of present and future generations;
- d) to facilitate access to fisheries resources for commercial, recreational, traditional and non-consumptive uses;
- e) to promote the commercial fishing industry and to facilitate the rationalisation and restructuring of the industry; and
- f) to encourage the participation of resource users and the community in fisheries management.

DEDJTR is committed to conducting consultation with fisheries stakeholders, in accordance with the principles established under Part 3A of the *Fisheries Act 1995*.

The detailed management arrangements for commercial and recreational abalone fishing are specified in the regulations and other legislative instruments subordinate to the *Fisheries Act 1995*. The regulations include licensing and quota management requirements, gear restrictions, catch limits, size limits, and closed areas. (The *Fisheries Act 1995* and subordinate instruments apply in the case of any inconsistency with this management plan.)

The provisions of fisheries legislation apply to the control of fishing activities. Other human activities (e.g. foreshore management, marine pests) that may directly or indirectly affect fish habitats, fishery resources or the quality of fishing, may be managed by other government agencies under other legislation or policies.

Offshore Constitutional Settlement

The Victorian Government is empowered to manage all abalone harvesting in the State's territorial waters and in defined waters off the whole Victorian coast, by agreement with the Commonwealth Government under the *Arrangement between the Commonwealth and State of Victoria in relation to the fishery for invertebrates to be managed under state law in waters relevant to Victoria* (Commonwealth of Australia Gazette No. S 436, 31 October 1997).

Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth Government has the authority to grant approvals for the export of seafood products under its *Environment Protection and Biodiversity Conservation Act 1999*. This legislation is administered by the Commonwealth Government's Department of the Environment.

The preparation of fishery management plans under the Victorian *Fisheries Act 1995* is not subject to the Commonwealth's legislation. Similarly, the process for industry to obtain or renew an export approval operates separately to Victoria's legislative authority, including this management plan for the abalone fishery. However, the Commonwealth Government generally considers the policy and legislative arrangements implemented by State governments, including fishery management plans, for practical reasons when considering industry plans to export seafood products.

The Victorian Government is seeking changes to enable the automatic accreditation of the legislative provisions and management plans for Victorian commercial fisheries, with a view to streamlining the process to obtain export approvals. In the interim, DEDJTR will continue to apply directly to the Commonwealth Government on behalf of industry to maintain its export approval. This process will include consultation with industry about any conditions that exceed requirements under the Victorian *Fisheries Act 1995*.

Codes of practice and memorandums of understanding

Collective actions implemented by industry participants in each zone of the abalone fishery can provide a cost-effective and flexible way to manage some aspects of commercial fishing. It is sometimes not practical to have all operational matters prescribed in regulations or as licence conditions, given the dynamic nature of fisheries.

Commercial fishers in each of the three management zones have introduced some voluntary measures over time to improve the protection and productivity of the resource. For example, industry and DEDJTR entered memorandums of understanding to encourage divers to ensure a planned distribution of fishing effort across their respective zones.

Each of the three commercial abalone zones have developed codes of practice and operational procedures relevant to the abalone harvesting practices in their zones. These codes of practice and operational procedures are consistent with prevailing government statutory and policy requirements and demonstrate the methods that industry uses to operate in an environmentally sustainable and socially responsible manner.

It is recognised that a memorandum of understanding might not be sufficient in some circumstances, such as in cases where some divers have fished in areas that were closed on a voluntary basis by industry. This has prompted requests from industry for Government to provide regulatory backing for the voluntary arrangements.

DEDJTR will work with the designated abalone industry entity for each zone to develop an agreed way to enable industry participants to make a collective choice to implement any such regulatory proposal.

There is also scope for voluntary programs to be developed as joint investments (cash or in-kind) between DEDJTR and the relevant parties, as per the arrangement implemented to help industry to develop a viable method to cull sea urchins in the eastern zone during normal commercial harvesting operations.

Abalone processing and aquaculture

Management of the abalone processing and aquaculture sectors are outside the scope of this plan.

This fishery management plan addresses the interactions between the wild catch sector and processing sector, which include:

- transfer and purchase of product from fisher to processing facility; and
- part of the quota audit trail for tracking of abalone product.

The number of Fish Receiver (Abalone) Licences is not restricted.

Marine national parks and sanctuaries

The current Victorian Government has stated that it will not create any new marine parks.

The existing marine national parks and marine sanctuaries cover approximately 5.3 per cent of coastal waters to protect selected habitats and species. Commercial and recreational fishing is prohibited in these areas under the *National Parks Act 1975*. Parks Victoria is responsible for the management of these areas.

One marine national park and one marine sanctuary are located in the western zone; ten marine national parks and nine marine sanctuaries are located in the central zone; and two marine parks and one marine sanctuary are located in the eastern zone.

It was reported that 5.1, 14.8 and 8.8 per cent of commercial abalone catch was affected in the western, central and eastern zones respectively, with the introduction of marine national parks and sanctuaries (Essential Economics 2009).

The Victorian Government has since 2001/02 provided on-going funding (approximately \$6.46 million in 2012/13) to significantly strengthen the State's marine fisheries compliance capabilities as an offset. These offsets include additional fisheries officers, special investigators and intelligence analysts to reduce the impact of illegal fishing including for abalone.

Marine Protected Areas are not established for the purposes of managing fisheries, although these areas can provide insight into changes in abalone abundance and size structure.

Translocation guidelines and protocols

The translocation of live aquatic organisms into and within Victoria has the potential to threaten the biodiversity and ecological integrity of the State's aquatic systems. These threats have flow-on consequences, potentially affecting the economic benefits provided by aquaculture; recreational and commercial fishing; domestic and international shipping; and the social and tourism benefits of being able to enjoy waters and foods free of pathogens and diseases.

The Victorian Government developed *Guidelines for Assessing Translocations of Live Aquatic Organisms in Victoria* (DPI 2009) to meet its commitment under the *National Policy for the Translocation of Live Aquatic Organisms* (MCFFA 1999). This policy requires all states to adopt risk-based measures to manage the environmental risks of translocating live aquatic organisms.

An approved translocation protocol may be developed where translocation events have similar characteristics in terms of species, associated media and source and destination type and will be repeated. A translocation protocol has been developed for the abalone aquaculture industry (DPI 2007).

Information on the translocation guidelines and protocols is available at www.depi.vic.gov.au/fishing.

Other legislation and policies

Fisheries and fishing function within a complex natural and anthropogenic environment. This management plan is limited to the scope of the *Fisheries Act 1995* as it relates to the abalone fishery. The plan also identifies some matters that, while outside of DEDJTR's direct management responsibility, can impact on the fishery and may involve action by the fisheries sectors or government agencies to effectively manage the fishery.

Review of the plan

DEDJTR will prepare an annual progress report for the implementation of this management plan, taking account of the key performance indicators described in it. These reports will be provided to industry through the Abalone Industry Committee for review at annual Stock Assessment and Quota Setting Workshops.

Action

1. DEDJTR, in collaboration with the Abalone Industry Committee, will arrange an annual Stock Assessment and Quota Setting Workshops to review progress against the actions in this plan.

Overview of the abalone fishery

Abalone stocks and catches

Victorian abalone stocks are among the few worldwide that have yielded sustainable wild harvests. Until recently, this has been demonstrated by long-term stable abundance indices estimated by fishery-independent surveys and a long-term harvest record that has been managed by Total Allowable Commercial Catch.

Abalone stocks varied among the three abalone fishery management zones during the history of this fishery. Under current management arrangements the stocks in the three zones are fully utilised but there is scope for improvement and productivity. Figure 1 shows the reported commercial catches of abalone by zone from 1965/66 to 2012/13.

Prior to the outbreak of abalone viral ganglioneuritis (AVG), there were no instances under the first Victorian abalone fishery management plan (DPI 2002) where a fishery stock assessment triggered any management response at the zonal level. This does not however take into account localised reef-scale depletions that have occurred in all fishery zones. No other diseases, including AVG, have been detected in Victorian waters since December 2009.

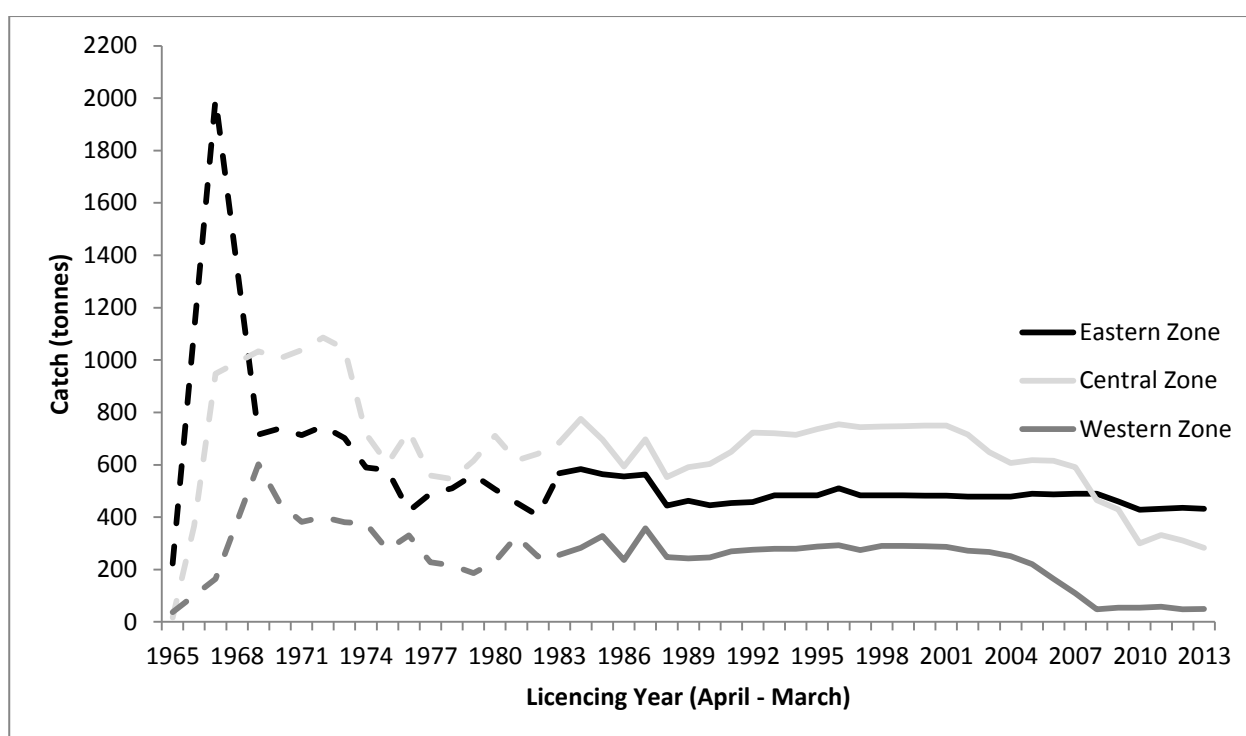


Figure 1. Reported Victorian commercial abalone catches (wet weight) by zone from 1965/66 to 2012/13.

Note: inconsistent catch reporting prior to 1983 means catch data during this period includes a high degree of error. The following changes in management may have also affected the long-term catch trends: introduction of TACCs in 1988; declaration of marine parks in 2003; introduction of quota units in 2005; and establishment of greenlip quota units in 2006.

Eastern Abalone Zone

As is typical for many fisheries during in their early years of development, rapidly increasing effort in the absence of regulatory constraint led to unsustainable catch levels by the late 1960s. Industry then embarked on a process of self-regulation, such as the introduction of size limits, which has continued to the present day. Although these initiatives were reinforced with regulation where necessary, most succeeded as voluntary measures minimising the need for Government legislative controls. Further effort reduction was achieved in 1984 through the introduction of licence transferability on a one for one basis; following requests from industry, the introduction of a quota of 460 tonne four years later reduced the catch by 25 per cent restoring it to a sustainable level.

Localised problems on some heavily fished reefs became apparent during the mid-1990s and industry implemented reef-specific voluntary size limits, based on maintaining adequate egg production and optimising the distribution of fishing effort throughout the zone to reduce the risk of serially depleting the stock.

The introduction of marine parks in 2002 and consequent loss of productive ground to the fishery has had a serious ongoing impact throughout the zone, with a loss of 8120 hectares of reef, representing around 40.7 tonnes of production some of which was displaced to the western end of the zone. More recently, fishing pressure has increased on reefs accessed from Cape Conran and in the Mallacoota Airport area, resulting in a decline in stock abundance in some locations, although this is of less concern in the west because of the historically low levels of fishing effort in that region. Survey observations indicate that although most of the stocks are generally healthy, there are signs of increasing urchin barrens accompanied by localised depletions of abalone on some previously productive reefs.

In response to these pressures, industry recommended quota decreases over the 2009/10 and 2010/11 seasons, which resulted in an overall reduction of 62 tonnes or approximately 12 per cent of the Total Allowable Commercial Catch (TACC). This reduction is expected to assist in improving abalone stocks in the zone and industry is already reporting some positive responses in this regard. A revised quota setting process, which is reviewed annually, has been implemented by DEDJTR in partnership with the Eastern Zone Abalone Industry Association (EZAIA). This process has been very effective in achieving consensus-based decisions about recommendations for TACC and other advice, which have generally been implemented by Government without significant change.

Additionally, DEDJTR and EZAIA co-invested in a project that trialled the development of a cost-effective method to enable abalone divers to cull urchins. This project has shown potential benefits in restoring abalone habitat and serves as a model for future co-investment to address emerging issues. EZAIA is committed to the ongoing removal of urchin infestations to combat range expansion and continues to cull urchins in an expanded program conducted at their own expense.

Central Abalone Zone

Historical levels of blacklip abalone in the central zone remained relatively stable with a TACC of approximately 700 tonne up until 2001. Since 2001, the TACC has progressively declined to 279 tonne in 2013/14. The decline in TACC is largely attributed to the proclamation of marine parks in 2002, environmental factors and, in the western area of the zone, the occurrence of abalone viral ganglioneuritis during 2007–2009. These factors in combination intensified harvesting from a reduced area of fishing grounds with an accompanying risk that the fishery would become unsustainable.

DEDJTR, in consultation with the commercial sector, has reduced the Total Allowable Commercial Catch over a number of years to protect remaining abalone and increase the potential for improvement in the stock. In addition, a mix of spatial management initiatives involving changes to legal minimum size limits and voluntary catch caps have been implemented with varying success.

Opinions about the state of the resource vary among stakeholders. There are signs that the abalone resource is improving in some areas, however overall improvement in quantitative performance measures, such as verifiable trends in catch rates and abundance, will be required over a number of years to provide DEDJTR, in its role as the regulatory agency, with the confidence that sufficient recruitment is occurring throughout the zone to provide the productivity levels required for increases in TACC.

Western Abalone Zone

Prior to the introduction of catch quotas, a long-term decline in abundance in the western zone due to fishing was observed in the Portland region. This was in contrast to the Port Fairy region where stocks remained stable during the same period.

In the period from 2003 to 2006 The Western Abalone Divers Association (WADA) had undertaken a program of stock rebuilding, utilising reduced catch quotas, variable size limits and reef code quota allocations. The management actions initiated by WADA were having a positive effect at the time of the outbreak of abalone viral ganglioneuritis. Consequent to the impact of abalone viral ganglioneuritis, stocks in the western zone have decreased significantly.

Recent commercial catch quotas have continued to be set at conservative levels and focus remains on sustainable harvest practices and stock rebuilding. Re-building abalone stocks may take a number of years, subject to harvesting and environmental factors. The approach for the western zone will be to optimise stock rebuilding while still allowing for commercial access.

Recreational fishing

The total quantity of recreational catch is unknown but is believed to be relatively low in comparison to the Total Allowable Commercial Catch in the central and eastern zone. The relative catch in the western zone is unknown. However at the time of the abalone viral ganglioneuritis outbreak it would have been relatively low in comparison to the Total Allowable Commercial Catch.

Further information about the status of Victoria's abalone stocks can be found in the Fisheries Status Report or at <http://www.depi.vic.gov.au/fishing-and-hunting>.

Abalone biosecurity

Biosecurity is a responsibility for all participants in the abalone fishery and DEDJTR.

Abalone viral ganglioneuritis has been responsible for mortalities between Discovery Bay and Cape Otway. This disease causes inflammation in the major nerve pathways and head and foot of abalone and disrupts the functions of these organs. Infected abalone may have a swollen mouth, a protruding inner mouth part and a curled footpad. Abalone displaying disease symptoms dislodge from the reef and eventually die.

A number of management responses that focus primarily on biosecurity practices, stock protection and rebuilding strategies have been undertaken by the commercial sector and DEDJTR. DEDJTR will continue to work with the wild harvest and aquaculture sectors to put appropriate management and biosecurity controls in place to contribute towards the ongoing sustainability of the resource.

Adoption of effective biosecurity practices by stakeholders is essential in controlling the spread of abalone viral ganglioneuritis by humans. Both commercial and recreational fishers are encouraged to follow the biosecurity practices that have been developed specifically for each sector. These are specified in the document *Biosecurity Control Measures for Abalone Viral Ganglioneuritis: A Code of Practice* (Gavine et al. 2007)

This Code of Practice provides guidance on disinfecting boats, divers and equipment, transport vehicles, farming and processing equipment. The disinfection protocols have been incorporated into the respective industry codes of practices.

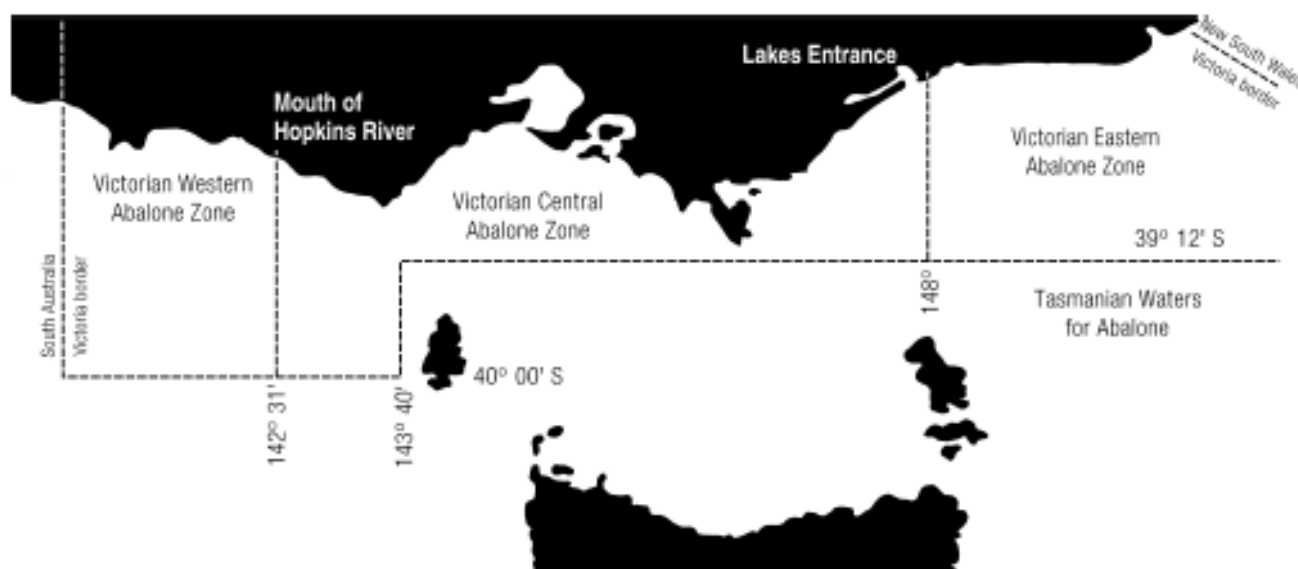
DEDJTR, via its Biosecurity Victoria division, is the lead agency responsible for plant and animal disease management in Victoria, which is managed under the *Livestock Disease Control Act 1994*. This includes preparing strategies and coordinating monitoring, detection and responses to plant and animal disease threats.

Substantial work has been undertaken in applied research, stakeholder consultation, policy development, stock monitoring, quarantining of infected areas and the development of biosecurity codes of practice for all abalone sectors.

Management arrangements for the Victorian abalone fishery

General provisions

Abalone is defined in the *Fisheries Act 1995* as blacklip (*Haliotis rubra*) and greenlip abalone (*H. laevigata*) and all other species, forms, races and hybrids of abalone. The overall area of the abalone fishery, including the three commercial fishing zones, is shown in Figure 2.



Note areas closed to harvesting are not shown.

Figure 2. Overall area of the abalone fishery, including the three commercial zones.

The management controls for the abalone fishery are established in the *Fisheries Act 1995* and subordinate legislation.

A summary of the key management controls applicable to the commercial and recreational (including Aboriginal) sectors of the fishery is presented in Table 1. A general description of the key management controls for each sector and other activities that interact with the fishery is provided within this section of the plan.

Commercial fishing

Entitlements

The Crown owns the wild abalone resource on behalf of the Victorian community. ‘Crown’ is the formal term used to specify the authority of the law in the state of Victoria.

The Victorian Government has allocated a class of permanent entitlements through the issue of Abalone Fishery Access Licences and Abalone Quota Units for the commercial harvest of blacklip and greenlip abalone.

Abalone can only be taken from waters in the zone specified on an abalone access licence. Ownership of abalone passes to the licence holder when they are taken from waters in accordance with the conditions of the licence.

Abalone quota units were separated from the licence entitlement in 2006 under the previous (ie. 2002) fishery management plan when the fishery was unitised.

To operate an access licence, each licence holder is required to attach a minimum of five blacklip abalone quota units to the licence at all times. Quota units within each zonal abalone fishery are separate and independently tradeable.

When used in conjunction with an appropriate abalone quota unit, an Abalone Fishery Access Licence entitles the holder to take abalone for sale, to use or possess commercial abalone equipment and to have other persons carry out activities authorised under the licence in the zone specified in the licence.

The commercial abalone fishery is a limited-entry fishery which confers statutory rights on licensees to exploit the resource to a limited extent. Unless removed by the Secretary or court action, the number of licences and quota units per zone will not change as they are a right akin to property. Licences will not be replaced if cancelled by a court or removed from the fishery. Access licences and quota units are fully transferable.

Table 1. Key management controls for the abalone fishery.

Element	Commercial Fishery	Recreational Fishery
Access to fishery	Entry limited to holders of an Abalone Fishery Access Licence Limited number of licences for each fishery zone Access to the intertidal zone permitted	Open access Recreational Fishery Access Licence (unless exempt) Access to the intertidal zone prohibited
Management zones	Western Zone, Central Zone and Eastern Zone	Statewide
Output control	Total Allowable Commercial Catch and Individual Transferable Quotas	Daily bag and possession limit
Size limits	Legal minimum size limits	Legal minimum size limits
Allowed fishing method and equipment	Abalone tool Skindiving, SCUBA, hookah equipment	Abalone tool Skindiving, SCUBA, hookah equipment
Other input controls (with scope to adjust via regulations, Fisheries Notice or permits)	Permanent closure for greenlip abalone in Port Phillip Bay Fishing only allowed between sunrise and sunset	Permanent closure in central Victorian waters except for nominated open days Permanent closure for greenlip abalone in Port Phillip Bay Fishing only allowed between sunrise and sunset
Method of monitoring	Quota Management System Random and targeted inspections	Random and targeted inspections

Commercial Fishery			
	Western Zone	Central Zone	Eastern Zone
Zone boundaries (Figure 1)	South Australian border to Longitude 142°31'E and south to Latitude 40°S	Longitude 142°31'E to Longitude 148°E and south to Latitude 39°12'S	Longitude 148°E to New South Wales border and south to Latitude 39°12'S
Maximum number of licences	14	34	23
Number of blacklip individual quota units	280	680	460
Number of greenlip individual quota units	14	34	0
Maximum number of licences per boat		Not limited	
Minimum quota holding per licence		5 units	
Maximum quota holding per licence/individual		No maximum	

A Fish Receiver (Abalone) Licence entitles the holder to receive abalone for processing, storage and sale at the premises specified in the licence.

Abalone Fishery Access Licences and Fish Receivers (Abalone) Licences are issued for one year and must be renewed prior to expiry. There is an automatic right of annual renewal of commercial fishery licences and quota units, subject to applying to renew a licence and paying the applicable levies. An exception applies in circumstances where the licence holder is deemed not to be fit and proper to hold a licence, as determined by the Secretary in accordance with the *Fisheries Act 1995*. If this occurs then the licence is cancelled and cannot be re-issued. If a licence is cancelled the maximum number of licences in the fishery will be reduced by one. (See Regulations 21 and 57 of the *Fisheries Regulations 2009*).

DEDJTR can issue abalone trader numbers to businesses that trade in abalone. The entitlement enables a trader to purchase legitimately harvested abalone from Fish Receivers Abalone Licences or interstate processors and sell abalone to retailers. The trader number does not allow the holder to process abalone or remove it from its original packaging.

Total Allowable Commercial Catch and Individual Transferable Quota

The primary instrument for managing commercial abalone fishing is the Total Allowable Commercial Catch set annually for each fishing zone. Each unit holder is assigned a proportion of the Total Allowable Commercial Catch through Individual Transferable Quota units.

The Total Allowable Commercial Catch is augmented with some key input controls, particularly to address biological aspects of the fishery (e.g. minimum size limits).

Each abalone fishing management zone has an assigned number of quota units. A Total Allowable Commercial Catch is set for each zone for a 12 month period. A kilogram value is established for each quota unit by dividing the zonal Total Allowable Commercial Catch by the number of quota units in the zone. A quota notice is issued to each Individual Transferable Quota holder stating: the Total Allowable Commercial Catch for each zone; the kilogram value of each quota; and the period for which the quota notice applies.

The number of quota units is fixed and was established when the quota management system was introduced and quota units allocated. Quota units are tradable and a quota holder may apply to transfer units to the holder of another Abalone Fishery Access Licence within the same zone.

Individual Transferable Quota units may be transferred permanently or for a quota period. A minimum of five quota units must be nominated to an Abalone Fishery Access Licence. There is no limit on the maximum number of quota units that can be held by an individual.

As wild abalone are taken under authority of an Abalone Fishery Access Licence, the weight of the catch is subtracted from that licence's quota balance. When the quota is caught, the licence holder must acquire more quota units or cease fishing until the start of the next quota period.

Additionally, improved spatial management and resource stewardship have been developed over time through informal arrangements between the commercial sector and government. Agreed quota target reference points and minimum size limits are the result of these arrangements and are supported by regulation where necessary.

Quota audit trail

The Abalone Quota Management System (AQMS) is used to track abalone transactions from the point of landing through to point of export or domestic retail sale; monitor the compliance of licence holders against their quota allocations; and monitor inventories of stock held by abalone processors. The system requires that abalone be transported in whole form from place of landing to processors in sealed bins with bin tags attached. Abalone, along with appropriate documentation, must arrive at an authorised abalone processor within 24 hours of landing. No later than 25 hours after landing, the processor must report transaction details to the AQMS.

Cost recovery and royalties

The commercial fishing sector is subject to cost recovery for some research, management, compliance and administrative services delivered by DEDJTR, under the cost recovery policy. The cost recovery policy is based on public good principles where those receiving benefits or increasing risks pay. Additionally, the commercial abalone sector is subject to the application of a royalty.

The Minister for Agriculture and Food Security requested the Fisheries Cost Recovery Standing Committee (FCRSC) to provide advice on the development of a new prospective cost recovery system. This system is being phased in over a three year period which commenced on 1 April 2014.

The combined cost recovery and royalty levy (including the Fisheries Research Development Corporation levy) payable by commercial abalone entitlement holders will continue to be capped at 7.21 per cent of the Gross Value of Product (GVP) for the abalone fishery. The 7.21 per cent of GVP is inclusive of a royalty.

Services provided by DEDJTR are specified in terms of level and cost. These were established in 2013 and documented in schedules for each zone through the FCRSC. Within these limits, the nature and design of services can be adjusted to most effectively deliver the objectives of the plan and statutory obligations, within the capacity of DEDJTR to adjust programs and staff, where this is necessary.

If services are needed above these limits there is some ability for industry to directly commission, for example, additional services from DEDJTR. Alternatively industry zonal associations could directly fund the provision of additional services, including from providers other than DEDJTR, through the use of funds generated from grant levies provided to representative zonal bodies. There are constraints on who can provide some types of services e.g. compliance.

Industry, through the FCRSC and associated consultative processes will play a larger role in the design and delivery of fisheries services to support fisheries managements.

DEDJTR acquires data on beach prices from participating processors to estimate the GVP for the fishery in order to set the current cost recovery levy and any royalty.

Recreational fishing

Unless a person is exempted, a Recreational Fishing Licence is required for recreational take of fish, including abalone, in Victorian waters.

Information on the controls that apply to recreational fishers, including catch and possession limits and legal minimum size limits is gazetted in the fisheries regulations or notices and published in the *Victorian Recreational Fishing Guide*, which is available at many fishing tackle shops, at <www.depi.vic.gov.au/fishing-and-hunting> and as a smartphone app.

The recreational fishing sector is not subject to cost recovery, but instead a substantial contribution is provided from the Recreational Fishing Licence Trust to support the DEDJTR statewide compliance program.

Objective 1: Rebuild or maintain abalone stocks

Strategy 1: Developing adaptive harvest strategies for each zone

Since the previous plan was declared, substantial progress has been made in testing approaches to manage the abalone fishery at a finer spatial scale, including Total Allowable Commercial Catches and legal minimum size limits. It has also been recognised that information collected at the reef scale should inform management arrangements at larger spatial scales, including the zonal scale. The long term plan is to shift the scale of modelling towards more appropriate spatial levels, as well as refining the operation of catch-based performance measures, associated reference points and management responses (refer to Strategy 9). As a key step in this direction, the Total Allowable Commercial Catch setting process under this management plan will operate as a 'bottom up' approach instead of a 'top down' approach, as in the previous plan.

The harvest strategy set out in this management plan will be used as the basis for industry to develop a transparent, repeatable and auditable management advisory process. This includes the development of harvest strategies by each commercial fishing zone for approval by the Minister. Each zonal harvest strategy will be developed in consultation with DEDJTR and must include the use of decision rules and trigger points based on verifiable data such as: catch and effort; abundance; length / frequency; age and maturity. In lieu of harvest strategies not being finalised, Total Allowable Commercial Catches will continue to be set using spatial management unit optimum targets and thresholds.

Size limits are an essential tool in ensuring sustainable harvesting of abalone, in conjunction with quota management. Size limits are best set at a level that conserves sufficient mature abalone to replenish where appropriate the available stock. The minimum legal size limits for abalone will be adjusted, based on scientific data, to reinforce the strategy to enhance abalone stocks and to simplify access.

The annual setting of Total Allowable Commercial Catches will operate under a system of reference points, triggers and decision rules that are described in the principles below. The annual stock assessment and Total Allowable Commercial Catch setting process will take account of best estimates of recreational and illegal catches of abalone. The methodology will need to be cost-effective and peer reviewed. These estimates will be provided to industry prior to the TACC setting process.

The objective of this system is to obtain optimum harvests from the fishery, whilst conserving sufficient reproductive capacity to maintain or rebuild population recruitment and ensuring sufficient aggregations remain on reefs to preclude habitat loss. The approach for the western zone will be to enable stock recovery while still allowing for some commercial access via a structured fishing program and conservative quotas.

Within the context of the indicative targets set for each zone of the fishery under Strategy 1, an initial Optimum Target (OT) will be set for each individual spatial management unit (i.e. reef code or group of reef codes) based on current quota reference points, catch history and stock assessment outputs. The combined value of all OTs will then equate to the Total Allowable Commercial Catch. Total catches for each spatial management unit for the following fishing season are intended to meet the OT.

However, due to natural variation within the ecosystem, human impacts and the fact that the initial OTs may not be set at the most ideal level, it is expected that the OTs may change from year to year.

In the case of the western zone, there will be situations where there will be no recent catch history for spatial management units that have been impacted by disease. Once fishing is to commence on these spatial management units a precautionary OT will be set that promotes continued rebuilding. Once an adequate catch history allows an OT to be established, limits and thresholds will be set in line with above principles.

An Upper Limit and Lower Limit will be specified at a value no greater than 30 per cent of the OT. Narrower limits may be specified to provide more conservatism in specific instances. Thresholds that provide an early warning mechanism will be specified at ± 15 per cent of the OT, unless a narrower range has been used. A graphical representation of the OT and associated Limits and Thresholds is shown in Figure 3.

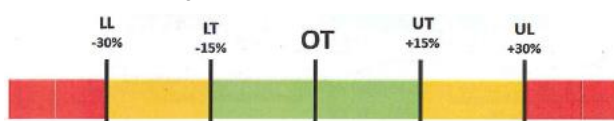


Figure 3. Default limits and thresholds.

Upper Limit

- When the upper limit is reached the spatial management unit is closed immediately and requires review at the next Stock Assessment and Quota Advisory Workshop.

Upper Threshold

- When the catch reaches the upper threshold, the stock status of the spatial management unit will be reviewed as prescribed by zonal harvest strategies.

Target

- When catch is within the target range (between the lower threshold and the upper threshold) the spatial management unit is considered to be performing as expected.

Lower Threshold

- When catch fails to reach the lower threshold, the stock status of the spatial management unit will be reviewed as prescribed in the zonal harvest strategies.

Lower Limit

- When catch fails to reach the lower limit, the stock status of the spatial management unit will be reviewed at the next Stock Assessment and Quota Setting Workshop.

The number and size of spatial management units will be specified in the harvest strategies for each zone. Any mandatory closures will be discussed with industry and implemented by DEDJTR taking account of the provisions in the *Fisheries Act 1995*. This management plan provides for the development of formal partnership arrangements to apply such closures in the future. There is provision for industry to apply voluntary closures as part of the harvest strategies for each zone when catch is outside thresholds but within the limits described above.

Action

2. Develop zonal harvest strategies which must include clear objectives.
3. Amend Fisherweb and AQMS to display new reference points.
4. Investigate the utility and feasibility of collecting information about abalone populations in marine protected areas to inform stock assessment.

Strategy 2: Setting targets for rebuilding

Clear rebuilding targets and objectives are essential for rebuilding stocks for the western zone, the western part of the central zone and other areas as described in the harvest strategy for each zone (e.g. Port Phillip Bay).

DEDJTR initiated the independent expert review *A Review of Rebuilding Options for the Victorian Abalone Fishery* to identify appropriate stock rebuilding targets and strategies.

The review examined a range of options for the fishery with a particular focus on setting conservative Total Allowable Commercial Catches supplemented by stock enhancement methods (e.g. reseeding and translocation) in some areas. These options were reviewed in depth along with their likely relative contributions to stock rebuilding compared with other management measures and the spatial scales appropriate for the fishery. Other measures include size and catch regulation and managed fish downs and could take account of voluntary and regulated approaches to implementation.

Appropriate spatial considerations are essential for rebuilding stocks. Different spatial management units, even those in close proximity to each other, may require different rebuilding strategies or timeframes. Realistic timeframes to achieve targets must be identified as this implies a rate of rebuilding and potential cost-benefits. It is important to ensure that conservative levels of spawning potential are established throughout the fishery in order to meet rebuilding targets.

Each harvest strategy will specify the rebuilding targets and timelines appropriate for each zone. Rebuilding targets will be reviewed in the first year of future plans.

The ability to reach the targets specified in the harvest strategies could be affected by factors that are outside the control of the fishery regulator or the abalone fishing sectors.

Stock enhancement may assist the initial rebuilding effort where the wild fishery has been significantly depleted.

Action

5. Refine target levels for stock re-building for each sub-zone or group of sub-zones in the fishery.

Strategy 3: Formalise Total Allowable Commercial Catch setting process

This management plan provides for the process of implementing improved spatial assessment and management in the commercial fishery, including setting Total Allowable Commercial Catches and minimum size limits, to be formalised.

Zonal Stock Assessment and Quota Setting Workshops will be undertaken to provide advice to the Minister (or delegate) on Total Allowable Commercial Catch and general management issues. In support of the annual TACC-setting process, workshops will be held as specified in the zonal harvest strategies and will be used to refine fine-scale size limits and prioritise spatial management units for review.

Total Allowable Commercial Catch-setting advice will be guided by the catch ranges described above. Alternative values for these thresholds may be considered by industry and DEDJTR during workshops and, once approved, will generally remain fixed during the quota year. Fishery modelling, where available, will be utilised, based on verifiable data and provided prior to the workshop. The model output will be used to provide additional quantitative information to the stock assessment process.

The process of planning management strategies, outcomes and response procedures, including assessment, performance and evaluation, will be undertaken at the Stock Assessment and Quota Setting Workshops the following year. This is designed to:

- identify and maintain sustainable catch levels and appropriate legal minimum lengths for individual spatial management units;
- be responsive to changes in the fishery, both natural and anthropogenic;
- provide flexibility around adjusting legal minimum lengths and reference points;
- facilitate agreement over management actions;
- allow prioritisation of research and stock assessment effort; and
- increase industry participation in spatial management of the fishery.

Stock Assessment and Quota Setting Workshops will be facilitated by an independent chairperson selected by the industry entity for each zone and endorsed by DEDJTR. DEDJTR will formalise a criteria for endorsement. These workshops will be open to all commercial quota holders, commercial abalone divers, representatives of the recreational fishing sector and other relevant stakeholders. The industry entity will arrange the venue and coordinate industry participation.

DEDJTR will advise representatives of the recreational fishing, conservation and Indigenous sectors and other relevant stakeholders of the workshop details and encourage these representatives to attend. DEDJTR will also provide these parties with adequate scientific advice, administrative support and stock assessment and other necessary reports.

Industry may also convene additional workshops, consistent with principles of the zonal harvest strategies, to update catch and size limits.

The following process and timeline will apply to Total Allowable Commercial Catch-setting in the commercial abalone fishery:

- *By mid- January:* Industry and DEDJTR convene zonal Stock Assessment and Quota Setting Workshops.
- *By the end of January:* Zonal Total Allowable Commercial Catches and any adjustments to legal minimum lengths are recommended to the Minister or delegate.
- *By the first week of February:* The Minister or delegate releases the draft Further Abalone Quota Order and any associated Fisheries Notices for public comment.
- Two week consultation period.
- *By the start of March:* The Minister and/or delegate sets the Total Allowable Commercial Catch by approving the Further Abalone Quota Order.
- *1 April:* The commercial abalone fishing season commences.

Action

6. Formalise the process for setting Total Allowable Commercial Catches.

Strategy 4: Conducting structured fishing

Structured fishing surveys provide an option involving prescribed patterns of fishing to provide fishery dependent data to answer specific questions about stock status within a pre-defined area.

The inclusion of structured fishing into assessments of the Victorian abalone fishery requires that it adequately satisfies explicit fishery performance monitoring objectives. Implementation of structured fishing surveys under these circumstances will require oversight by DEDJTR to ensure that they conform to a statistically robust design, which is able to be authenticated and verified where structured fishing is implemented through a legislative instrument. This will include compulsory electronic logging of vessel position, time and date in combination with prior reporting arrangements. Lesser requirements are expected to be implemented where structured fishing are part of voluntary arrangements.

Specific details for structured fishing may form part of the individual harvest strategy documented for the particular zone in which it occurs. Varying the design within a structured fishing survey will require prior agreement where the outputs form advice to DEDJTR about its management decisions. DEDJTR will require that advice from structured fishing surveys be provided in a comprehensive written report to be tabled at Stock Assessment and Quota Setting Workshops with sufficient detail to evaluate the veracity of its conclusions and recommendations. DEDJTR will explicitly consider industry advice resulting from structured fishing.

Strategy 5: Harvesting greenlip abalone for commercial use

Serial depletion of greenlip abalone was identified in the abalone fishery risk assessment as a high risk. A small Total Allowable Commercial Catch for greenlip abalone may, however, be available in the central and western zones.

Past assessments of greenlip abalone have been undertaken as needed. Although fishery independent biological and population data is not collected routinely, abalone catch and effort data are summarised from reported landings and compiled in species-specific reef report cards for the central and western zones.

Available data provides benchmarks for future comparisons and information about growth and reproduction. The absence of ongoing monitoring of their populations reflects the relatively small proportion of greenlip abalone in the total catch throughout much of the history of the Victorian abalone fishery.

Arrangements for harvesting greenlip abalone must be conservative and insure a low risk to the sustainability of the resource.

Action

7. Design and, where available funding permits, conduct assessments of greenlip abalone stocks.

Strategy 6: Responding to ecological risks

Impacts of fishing on the ecosystem

Abalone fisheries do not produce by-catch due to the selectivity of divers whose activities cause negligible direct or incidental impact on non-target species. The main ecological risk posed by abalone fishing is the potential change to the composition of species in other functional groups.

Abalone are, however, responders to habitat change. Fisheries Victoria scientists undertook a desktop review (Jenkins 2004) and experimental study (Hamer et al. 2010) which concluded that impacts from abalone fishing had not caused detectable ecological changes in Victoria.

Ecological risks to the fishery

DEDJTR has an extensive data set of abalone abundance and other key ecological and habitat features at key fishing areas that it has acquired through annual fishery independent surveys undertaken since 1991. This data set which provides an overview of abalone populations in each zone is becoming increasingly augmented at finer spatial scales by fishery dependent data, such as catch length-frequency data and site-specific catch rates, collected during harvesting and biomass surveys undertaken by the industry.

Climate variability has been identified as a risk to the abalone fishery and may increase water temperature, directly affecting the survival, growth rates and distribution of abalone. Ocean currents important to the productivity of the fishery may be affected by climate variability.

As appropriate and where funding is available, DEDJTR and industry will consider the potential impacts on the abalone fishery and will facilitate adaptation of industry and management frameworks to future challenges and opportunities.

An example of changing ocean temperatures impacting on the fishery can be seen in the eastern zone, where some reefs have been subject to major sea urchin incursions. This is largely attributed to the strengthening East Australian Current, which has progressively been extending further south. If this trend continues we may see a significant shift in the distribution of many marine species.

Research undertaken to assess the effectiveness of removing sea urchins from selected reefs has demonstrated its potential for habitat restoration. The extent the restored habitat will support improved abalone and urchin commercial productivity remains to be seen and will likely require periodical removal of sea urchins to maintain the habitat.

Industry and DEDJTR will work together to explore ways to incorporate ongoing sea urchin density control into their routine abalone fishing operations. Removals are, at present, a separate and ongoing activity conducted by abalone divers on several of the more commercially important abalone producing reefs. Apart from removals, commercial abalone divers should refrain from removing abalone at the periphery of incipient sea urchin barrens as this will exacerbate the expansion of these barrens.

DEDJTR has recently transitioned permits to commercially harvest sea urchins to fishery access licences. Any structured programs aimed at removing urchins will require consultation with holders of sea urchin licence/quota entitlements.

Action

8. DEDJTR will assess ecological information relating to potential impacts on the abalone fishery and discuss with industry possible adaptation strategies.

Objective 2: Secure access to the resource

Strategy 7: Maintaining access for commercial fishing

There is neither a need nor a plan for a restructure of the abalone fishery. It is acknowledged that no further Abalone Fishery Access Licences or quota units will be introduced in to the fishery.

In the event of government changing entitlements (licence/quota units), compensation is payable pursuant to Sections 63 and 211 of the *Fisheries Act 1995*.

Current administrative arrangements relating to the number of licences and their entitlement, transferability of licences, zonation of the fishery and quota units will continue under the *Fisheries Act 1995*. Setting of the Total Allowable Commercial Catch and gear restrictions will continue under the *Fisheries Act 1995*. A licence holder may apply to vary the conditions on an access licence relating to the nominated operator or boat.

Strategy 8: Ensuring access for recreational fishing

The Victorian Government is committed to providing opportunities for recreational fishing and associated businesses in regional and metropolitan areas.

The daily bag, possession and minimum size limits will remain the primary tools to manage recreational abalone fishing; recreational abalone fishing will continue to be prohibited in the intertidal zone. The year round closure in central Victorian waters (i.e. marine waters between the Aire River and Arch Rock near Cape Liptrap), except for nominated open days, will also remain.

Approximately sixty open days, on weekends and public holidays between mid-November and the following April and weekdays between Christmas and early January, have been specified annually by Fisheries Notice. This approach is, in terms of administration and the need to prepare annual education and communication materials, inefficient and expensive to implement. It is also confusing for stakeholders because the days on which fishing is allowed change from year to year.

DEDJTR will, from late 2014, implement a simplified model whereby recreational abalone fishing in central Victorian waters will be authorised on:

- weekends and public holidays between and 16 November and the following April 30, inclusive; and
- weekdays between Christmas and the second Sunday in January, inclusive.

A true estimate of the recreational catch and participation in the abalone fishery should be incorporated into stock assessments. DEDJTR will, subject to available funding and in consultation with stakeholders, undertake a rigorous estimate of recreational abalone harvest.

Action

9. DEDJTR will implement a recreational abalone fishing season in central Victorian waters during which time recreational fishing will be allowed on defined days.
10. DEDJTR will, subject to available funding, quantify recreational abalone fishing participation and harvest.

Objective 3: Enable improvements in economic productivity

Strategy 9: Harvesting abalone at a finer spatial scale

Assessment and management of abalone fisheries in Australia at finer spatial scales has been shown to improve the prospects for sustainable outcomes and improved economic productivity. However, the variability of stocks and the difficulty in enforcing regulations at a finer scale poses significant challenges for industry and DEDJTR.

The ongoing development of spatial management practices in Victoria will be focused on developing voluntary and mandatory arrangements to enable efficient harvesting operations. Recently emerging technologies to record catch and location data are paving the way for greater benefits at reduced cost in this regard but will need coupling with robust and responsive management arrangements including performance indicators, harvest strategies and decision rules.

Successful fine scale management will rely on industry stewardship, co-management and government resolve for suitable regulatory frameworks and supporting infrastructure. This is because, in practice, management of abalone fisheries is predominately about managing the behaviour of abalone divers and, to a lesser extent, other stakeholders.

Total Allowable Commercial Catches will continue to be set at the zonal scale, augmented by arrangements developed with industry to manage and, where necessary, rebuild commercial harvesting of abalone stocks at a sub-zonal scale under the harvest strategy to be prepared for each one of the abalone fishery zones. DEDJTR will consider, and where effective and efficient, approve and support these arrangements which will include the application of different minimum size limits and catch limits for commercial fishing at a sub-zonal level.

Any such sub-zonal arrangements must be developed and agreed by the majority of quota unit and licence holders. All sub-zonal arrangements must be in accordance with agreed commercial harvest strategies for each zone and be:

- based on available scientific information and take account of relevant risks;
- cost effective and practical to implement for compliance purposes;
- consistent with the efficient administration between DEDJTR and industry of the established quota arrangements at a zonal level;
- underpinned by agreed arrangements to record and report catches at the sub-zonal level;
- designed to not disadvantage recreational fishing opportunities; and
- satisfy the consultative provisions in the *Fisheries Act 1995* (i.e. Section 3A).

This will be implemented as follows:

Formal arrangements (including different size limits) will be determined by the Minister (or delegate) after considering advice from the annual Stock Assessment and Quota Advisory Workshop. These arrangements will be implemented through Fisheries Notice following appropriate consultation with industry. These arrangements may be underpinned by controls such as data loggers or other agreed methods including sealed bins and bin tags to ensure that accurate catch and effort data is recorded and enable to efficient compliance.

Action

11. Through the zonal harvest strategies, formalise the management of commercial abalone harvesting at a sub-zonal spatial scale, subject to developing appropriate governance and funding arrangements consistent with the respective responsibilities of industry and DEDJTR.

Strategy 10: Fishing at different legal minimum size limits in the commercial fishery

Industry has been seeking the ability to fish more than one legal minimum size zone on a single fishing trip, as part of the move to improve the economic performance of the fishery by harvesting abalone stocks at a finer spatial scale.

The introduction of this aspect of spatial management will present a substantial logistical challenge for fisheries compliance due to the difficulties involved in verifying catches taken from different areas. In particular, it is likely that DEDJTR would incur additional costs due to the need to conduct more inspections at sea. The current regulations prevent the take of abalone from different size zones on a single trip.

By comparison, DEDJTR is able to effectively and efficiently direct its compliance resources towards inspections of the commercial licensed sector at the place of landing, in transit and the processing and retail supply chain under the current arrangements.

Commercial fishing of multiple sizes on a single fishing trip will be supported, subject to additional agreed reporting conditions and costs being funded by industry. Industry participants will be offered the opportunity to collectively decide to request DEDJTR to conduct this activity in their zone, taking account of their assessment of the potential benefits and costs.

Any activity in multiple size zones will be subject to regulatory amendment and review by DEDJTR in consultation with the relevant abalone industry entity. Additional conditions which may apply to this activity include:

- Taking all abalone fished across size zones at the highest legal minimum length;
- sealing fish bins before moving to another size zone; and
- contacting the Interactive Voice Recording (IVR) system to report the number of sealed bins and the bin tag serial numbers.

The results/learnings that result will be used to inform decisions by industry and DEDJTR about the further development (or refinement) of any formal arrangements to harvest abalone stocks at a finer spatial scale. The application of modern spatial technologies for recording and reporting catches and locations, as described in Strategy 12, may be a prerequisite for formalising any arrangement to authorise fishing across areas with different size limits on a single fishing trip. These measures will mitigate risks, remove the logistical challenges associated with compliance activities and provide the transparency required for multiple size zone and finer spatial scale harvesting.

The above measures will only apply to the commercial fishery, given that such arrangements are not practical for the recreational sector.

Action

12. At the request of the relevant industry zonal entity, DEDJTR will develop and implement arrangements to allow commercial abalone harvesting from areas with different minimum legal sizes on a single fishing trip subject to additional agreed conditions which may include prior reporting and appropriate electronic data logging technology, funded by industry or regulatory amendment.

Strategy 11: Delivering cost effective science, management and compliance programs

The combined cost recovery and royalty levy (including the Fisheries Research Development Corporation levy) payable by commercial abalone entitlement holders (refer to Cost recovery and royalties on page 13) is subject to the following provisions to ensure the efficient delivery of DEDJTR services, the efficient operation of the levy and to satisfy public financial accountabilities:

- The type and level of scientific, management and compliance services to be delivered by DEDJTR to operate the commercial abalone fishery on the existing zonal scale under the 7.21 per cent levy are to be clearly defined in consultation with abalone entitlement holders.
- An opportunity will be provided for abalone entitlement holders to collectively request and fund additional science, management and compliance services in their fishery zone (e.g. to enable the harvest of abalone at a finer reef scale). Any proposals for additional services will be discussed and agreed between the relevant zonal association and DEDJTR. Any agreed additional services and associated levies will be set for four years to enable orderly planning and delivery.
- A cost effective method will be implemented to verify the beach price of abalone as the basis for calculating the annual GVP for the fishery (refer to Strategy 14).

The above arrangements came into effect on 1 April 2014 and will continue for the life of this management plan.

It is anticipated that industry participants will continue to directly fund and undertake a range of activities to improve the performance of the fishery in a way that is consistent with and builds on this management plan. The nature and extent of science and management services are contestable provided alternative activities that achieve the same or better outcome are available.

Other quota and licensing fees will continue to be collected under the existing processes.

Action

13. Clearly define the type and level of scientific, management and compliance services to be delivered by DEDJTR to operate the fishery on the existing zonal basis under the combined cost recovery and royalty levy set at 7.21 per cent of the annual GVP for the abalone fishery.
14. Provide an opportunity for abalone entitlement holders to collectively request and fund any additional science, management and compliance services for each zone in the fishery.
15. Improve the administrative efficiency of switching divers listed on abalone fishery access licences.
16. Implement provisions to verify the GVP for the abalone fishery.

Strategy 12: Applying modern technologies for catch logging and vessel tracking

The introduction of electronic data logging technology across the abalone fishery was identified by an independent panel of experts as an important element of responsible investment in stock rebuilding (DPI, 2012). Recently emerging technologies to record catch and location data can enable a more advanced and comprehensive means of monitoring compliance within the fishery, potentially progressing towards formalising finer spatial management.

Catch logging systems allow fishery-dependent data including abundance, length-frequency, dive time and route, dive depth and dive location to be captured during fishing operations. Systems range from simple boat-based shell-length loggers to more complex Vessel Monitoring Systems (VMS) that would allow DEDJTR to monitor commercial operator movements and make precise estimates of spatial trends in fishing effort.

Further, the variety of technologies available may present different costs and benefits for industry relevant to the effective and efficient operation of the abalone fishery.

By comparison, the current IVR system only provides for commercial fishers to report their fishing locations and is subject to telephone reception problems in remote areas. VMS must satisfy criteria for authenticity, privacy, non-repudiation and be auditable before it can be used as a means for regulatory compliance.

Action

17. Examine options for commercial divers to use an approved type of data logger to record their catches and fishing locations to inform the harvesting of abalone at a finer spatial scale.
18. Industry, through the Abalone Industry Committee and in collaboration with DEDJTR, to undertake a review of emerging reporting technologies, associated costs and benefits to the fishery.

Strategy 13: Accounting for minor over-catches of quota and diseased catch

It is an essential requirement of an effective quota scheme that individual quota holders do not exceed their annual quota allocations, that the level of harvesting is sustainable and that all quota holders' entitlements to the annual Total Allowable Commercial Catch are protected.

Commercial abalone divers are generally adept at accurately estimating the weight of their catches. There have been instances, however, where divers have exceeded their quota allocation by a few kilograms at the end of the fishing season resulting in divers landing abalone in unsealed bins or returning excess catch to the water to avoid an offence.

This situation is not satisfactory from a compliance or biosecurity viewpoint. Returning abalone to the reef of origin also creates additional operating costs for industry.

DEDJTR recognises that some commercial divers might *unintentionally* exceed their quota allocation by a few kilograms at the end of a fishing season. To better manage this issue, DEDJTR will allow commercial abalone access licence holders to land up to 10 kilograms above their annual individual quota allocations on their last day of fishing in a season. All catches will be recorded and reported to the AQMS.

Any over catches will be recognised in the Total Allowable Commercial Catch-setting process and quota allocation for the subsequent fishing period.

This approach will provide a practical and low cost solution to this longstanding operational issue.

The existing penalties will continue to apply for quota holders (or divers) who exceed their annual quota allocation by more than 10 kilograms or for any other breaches of the quota system.

Additionally, it is important that commercial abalone divers are encouraged to collect suspected diseased abalone without this catch being subtracted from their quota.

Action

19. Enable commercial abalone quota holders (and their divers) to land up to 10 kilograms of abalone above their annual individual quota allocations on their last day of fishing in a fishing period.
20. Develop a protocol to account for diseased abalone without disadvantaging divers' quota allocations.

Strategy 14: Improving economic performance

The Victorian Government is committed to improving opportunities for commercial fishing.

An important objective of this plan relates to industry profitability and the ability of the industry to move toward optimal economic efficiency. Financial performance of the fishery, particularly in respect of the effects of management and the decision framework for setting Total Allowable Catch, is regularly monitored and the information obtained considered when catch limits and other management arrangements are discussed. DEDJTR currently collects the following economic performance data:

- Commercial catch weight (tonnes);
- Average beach price (\$/kg);
- Estimated commercial catch value (\$);
- Cost recovery (\$); and
- Royalty cost (\$).

DEDJTR has funded an economic survey and analysis of the fishery which has provided a base to improve and develop the reporting indicators for economic performance.

Action

21. Develop a process to report the economic performance of the fishery, subject to satisfactory industry participation.

Objective 4: Empower effective industry representation, organisation and funding

Strategy 15: Establishing robust governance arrangements

Industry needs to develop and demonstrate governance arrangements that ensure that collective proposals are developed for each zone which are consistent with zonal harvest strategies and take account of the interests of individual entitlement holders.

The Minister has signalled his agreement, in principle, to recognise a single abalone industry entity for each zone of the fishery to perform a well-defined role in managing commercial abalone harvesting. This agreement is subject to developing and implementing robust governance and accountability arrangements that take account of the interests of individual quota and licence holders and enable government to fulfil its obligations for the management of a public resource.

The operational costs for the designated industry entities may be incorporated in the levies collected by DEDJTR under regulation from the quota holders in the relevant zone, subject to:

- a supermajority of quota holders in the zone approving the required services and costs with the result binding on all entitlement holders (Note the level that constitutes a supermajority will be determined for each zone in consultation with entitlement holders);
- amending the regulations to set industry levies, following the preparation of a regulatory impact statement; and
- the establishment of direct grant agreements between DEDJTR and each zonal industry entity that include clear conditions governing the specified use of the levy funds raised via government regulation and associated performance and reporting requirements.

Licence and quota unit holders will continue to have an unencumbered right to form associations without a regulated levy and Grant Agreement. Any such association may be formally recognized by government provided it can demonstrate adequate governance arrangements.

Industry levies will continue to be collected under regulation from all commercial fisheries to fund the operation of Seafood Industry Victoria (SIV) and enable it to continue to provide advice to government on strategic issues for the whole commercial fishing sector.

For the life of this plan, SIV, through its duly constituted sub-committee, the Abalone Fishery Committee (AIC), will be the appropriate entity for providing advice to the Minister or DEDJTR on matters concerning the commercial application of this plan.

The AIC is an expertise-based committee comprising representation from each fishing zone and the secondary sector and is best suited to work with DEDJTR to comply with Section 3A(g) of the *Fisheries Act 1995*. It will respond to requests for advice in a timely manner and will inform SIV of the details of requests and its responses. Issues specific to a zone will be dealt with by the relevant zonal association.

The AIC will continue to be funded by a levy collected from each Abalone Fishery Access Licence and Fish Receiver (Abalone) Licence holder and distributed by DEDJTR to SIV on an annual basis, as part of a formal funding agreement.

Action

22. Specify the governance standards that must be satisfied for a single industry entity including the AIC to be recognised to undertake defined functions and to receive direct grant funds raised via regulated levies.

Objective 5: Ensure fisheries compliance

Strategy 16: Applying a strategic approach to abalone compliance

The infiltration of organised crime into fishing sectors and fisheries resources occurs regardless of some of the rules and regulations that are in place. At a national level, reviews have been initiated to determine the vulnerability of fisheries to organised crime and the capacity of governments, fishing sectors and the wider community to deal with this illegal activity. Abalone theft and trade does, however, occur despite the extensive regulatory framework governing Australia's abalone fisheries. Victoria leads nationally in legislation and technical capability.

Deterring, disrupting and dismantling organised fisheries offenders involves putting measures in place to raise the risks for potential offenders through apprehension and strong penalties. This also reduces offender's financial motives by escalating the level of effort and cost that is needed to avoid detection, thereby putting them out of business. This requires strong policy while maintaining a viable commercial industry and reasonable access by recreational fishers. Intelligence and offence data supports the regulatory framework that has been progressively implemented and refined over the last 20 years.

Criminals target fisheries when the opportunity 'is right', such as is the case for abalone. Research on organised criminals shows that they operate at night, in areas that are remote or difficult to access, use sophisticated technology, cross state borders and fish for several days at a time. Abalone theft occurs as large scale operations or the cumulative effect of systematic and sustained low-level theft.

Illegal, Unregulated and Unreported (IUU) fishing is theft of a public resource and compromises the legitimate entitlements of commercial and recreational fishers and the wider community by:

- presenting the biggest known threat to the sustainable utilisation of abalone resources; and
- competing unfairly in the market with abalone harvested from the licensed commercial sector.

DEDJTR is responsible for the delivery of a cost effective compliance program. DEDJTR networks extensively with other jurisdictions to combat illegal fishing and reinforce the integrity of the Victorian Abalone Quota Management System.

DEDJTR has adopted the overarching objective described in the *Australian Fisheries National Compliance Strategy (2005 – 2010)* as "that which holds the level of non-compliance at an acceptable level, which can be maintained at a reasonable cost for enforcement services while not compromising the integrity and sustainability of the resource". Additionally, DEDJTR aims to minimise IUU fishing for abalone without imposing unnecessary constraints on legitimate fishers.

High levels of compliance are best achieved through a combination of maximising voluntary compliance and creating an effective deterrence. Voluntary compliance is driven primarily by education. Deterrence is the function of enforcement and is aimed at substantial and deliberate breaches of regulations using an intelligence-led approach. A partnership between the regulator and stakeholders assists in achieving the best outcomes.

Educating and raising community awareness

DEDJTR will continue to disseminate information about the rules applicable to the abalone fishery and their purpose, as part of its statewide education and enforcement program. This currently includes the publication of recreational bag limits, education programs delivered via the Marine and Freshwater Discovery Centre (including mobile trailers), information about penalty provisions and media releases about infringements and court outcomes.

Action

23. Continue to disseminate information about the risks and rules applicable to the abalone fishery and their purpose, as part of DEDJTR's statewide education and enforcement program.
24. Industry, through the Abalone Industry Committee and in collaboration with DEDJTR to develop an educational package for new entrants in the fishery.

Targeting illegal fishing

DEDJTR will continue to deter potential offenders and apprehend offenders through its intelligence-led enforcement operations, which target substantial and deliberate breaches of the regulations.

The statewide Intelligence and Investigations Group and Fisheries Officers will continue to operate under the auspices of DEDJTR's Statewide Tasking and Coordination Committee to target individuals, groups or activities identified by intelligence holdings, compliance risk assessment and information from legitimate abalone fishers and the broader community.

The Statewide Intelligence and Investigations Group will undertake targeted operations to disrupt and dismantle organised crime. This group will continue to play a major role in targeting individuals and syndicates.

Fisheries Officers will continue to undertake land and water-based patrols to communicate and engage with active fishers and to deter illegal activities by providing a physical presence.

DEDJTR will continue to operate a 24-hour, 7-day a week, statewide offence reporting service- 13 FISH (13 3474)- and will continue to encourage members of the public to report suspected illegal fishing.

Protecting the integrity of the commercial quota scheme and the entitlements of compliant quota and licence holders is a high priority for DEDJTR and industry.

DEDJTR will continue to use the fisheries legislation to sanction commercial abalone entitlement holders and their agents or operators who engage in serious illegal fishing breaches, such as taking more than their quota allocation, taking undersize fish or making false statements in records (See regulations 21 and 53 of the *Fisheries Regulations 2009*).

Action

25. Continue to use information derived from compliance risk assessments, 13 FISH reports and patrol activities to prioritise, plan and target compliance activities to achieve a high level of compliance with fishing regulations.
26. Continue to promote community reporting of suspected illegal fishing activities through 13 FISH.
27. Establish a collaborative compliance risk assessment and management process to incorporate stakeholder input into identification of high-risk areas and priority targets, subject to appropriate safeguards to protect the security of restricted compliance information.

Monitoring compliance patterns and trends

Information on the level of non-compliance within the abalone fishery is important to understand the effectiveness of compliance operations and to inform the stock assessment model.

Work undertaken to date has highlighted the difficulties of making estimates of illegal, unreported and unregulated harvest of abalone.

Previously collected data on offences by type, compliance rates, case management effort, costs of enforcement, illegal catch weight and quality inspections will continue to be collected and analysed to provide increased understanding of compliance patterns and trends.

Action

28. Develop a method to report compliance patterns and trends to stakeholders on a regular basis, subject to maintaining the integrity of DEDJTR's compliance strategy and operational procedures.

Pursuing national efforts to improve compliance

All states, with the exception of Western Australia and the Northern Territory, have made legislative changes that establish a docketing system that enables abalone to be tracked from the point of landing to the point of consumption.

The docketing system in Victoria is complemented by real-time reporting that records all steps of abalone movement from sealing and weighing abalone in bins by divers, labelling and documentation at the processing plants and subsequent consignments.

A consistent national effort to introduce effective labelling and audit systems, which are compatible and allow product to be tracked, would make it more difficult for illegally sourced product to enter the marketplace. The introduction of indictable offences for abalone crimes in other states would further reduce illegal activity outside Victoria and reduce the likelihood of product being illegally harvested in Victoria for interstate markets. This initiative, led by Victoria, minimises the displacement of organised crime from other commodities and other jurisdictions.

Objective 6: Target monitoring and research

Strategy 17: Ensuring adequate knowledge about the biomass

National and international workshops on abalone biology and management held periodically provide benchmarks for scientific advancement and opportunities for shared knowledge and research collaboration. There is a high level of collaboration between adjacent abalone producing states that applies at industry, fisheries management and research levels. The abalone resource is well monitored and understood relative to many other commercially exploited species.

Emphasis was placed in the 2002 management plan on the fishery modelling undertaken by DEDJTR to inform the Total Allowable Commercial Catch and legal minimum length setting process at a zonal level. A number of additional information sources are used to help guide the decision-making process. Under this management plan, setting Total Allowable Commercial Catches and legal minimum lengths will be informed by a weight of evidence approach that may include:

- fishery independent abundance surveys;
- modelling of the fishery;
- digitally logged data such as abalone length frequency and dive related information (e.g. depth, temperature and location);
- diver observations;
- catch rates / catch per unit effort data;
- catch history; and
- other available research such as maturity, spawning potential, natural mortality, growth and biomass estimates.

All of the above information needs to be integrated in a structured process during zonal Stock Assessment and Quota Setting Workshops. The information categories should be complementary, with some informing predominantly at zone scale and others towards spatial management unit scale. Models based on transparent and verifiable data, both existing and new, will continue to be used in various forms where these best integrate the data.

Action

29. Undertake scientific monitoring and research to inform Total Allowable Commercial Catches setting and management actions that aim to rebuild or maintain stocks in each zone.

Strategy 18: Identify and prioritise research

Research is underway in southeast Australia to develop a better methodology to manage the harvest of abalone at a finer scale and to help inform the way that Total Allowable Commercial Catches are set.

Research and development is an important component of abalone fishery management and there has been considerable investment in abalone research in Victoria and the other south-eastern states. The combined expertise and facilities of these states ensures that the abalone resource is well researched and monitored. There are, nonetheless, biological processes and ecological relationships that are not well understood owing to the difficulties posed by conducting manipulative field experiments in areas subjected to strong wave energy. Monitoring early life history processes such as larval, post-larval and juvenile abalone densities has, in addition, mostly proved intractable as a consequence of sporadic spawning and settlement patterns as well as occupancy of cryptic habitat. These patterns and behaviours invariably lead to the need for assumptions or the use of surrogate measures to conduct stock assessments.

Research and development activities will particularly focus on quantifying catches (including recreational catches) and fish stocks and improving knowledge about the biology for key species.

Discussions during workshops and other forums will be used where appropriate to formulate recommendations and advice on relevant research and development priorities which can be presented for further consideration in the annual prioritisation process. Annual research will then be considered by DEDJTR within the context of other fisheries research priorities and the availability of industry and departmental funds. A priority topic may be referred to the Victorian Fisheries Research Advisory Body (VicFRAB) of the Fisheries Research and Development Corporation (FRDC) where consideration will be given to developing a proposal for Commonwealth funding.

This fishery management plan represents a shift away from an exclusively model-centric approach where model outputs linked to biomass target and trigger reference points (performance indicators) were the primary determinants of Total Allowable Commercial Catch decisions. Modelling of Australian abalone fisheries has progressed towards management strategy evaluation (MSE) that provides the best prospects for generating useful management advice from this

technology. Best use of emerging techniques will be made, subject to the availability of valid data, expertise and funding. Performance indicators linked to the various statistical outputs from analyses of available fishery dependent data will need to be refined throughout the life of the plan and beyond.

Key questions focused on information required to compute values for various metrics associated with performance indicators at varying spatial scales comprise:

- What are the annual catches and effort each year?
- What is the seasonality of catches and effort within years?
- How many different divers fish each year?
- What is the annual geometric mean catch rate and standardised catch rate each year?

The following lists some recent and current research projects of relevance to this abalone management plan (with reference to the FRDC project code) from which additional or improved assessment techniques may be adopted:

- 2004/020 – Validation and extension of acoustic reef habitat mapping methodologies in the western abalone zone, Victoria (completed)
- 2004/233 – Investigations on the immunology of stressed abalone (completed)
- 2005/024 – Abalone Industry Development: local assessment and management by industry (completed)
- 2006/029 – Using GPS technology to improve fishery dependent data collection in abalone fisheries (completed)
- 2007/006 – Development of molecular diagnostic procedures for the detection and identification of herpes-like virus of abalone (*Haliotis* spp.) (completed)
- 2007/020 – Identification and evaluation of performance indicators for abalone fisheries
- 2007/066 – Rapid response to abalone viral depletion in western Victoria: information acquisition and reef-code assessment models (completed)
- 2007/033 – Development of a DNA based aging technique for use in fisheries assessments (completed)
- 2008/076 – Cost-benefit analysis of implementing alternative techniques for rehabilitating reefs severely depleted by abalone viral ganglioneuritis epidemic (completed).
- 2008/077 – Developing cost-effective and reliable industry-based surveys to advise reopening and conservative management of abalone populations on AVG-affected reefs (completed)
- 2008/097 – Tactical Research Fund: Developing the use of existing technology in cost-effective and reliable Industry-based structured fishing surveys to urgently replace more costly methods and advise finer-scale management of abalone populations (completed)
- 2009/056 – Understanding the biophysical implications of climate change in the southeast - Modelling of physical drivers and future changes (completed)
- 2009/075 – Determining the susceptibility of remnant populations of abalone previously exposed to abalone viral ganglioneuritis (completed)
- 2009/070 – Risk Assessment of Impacts of Climate Change for Key Marine Species in South Eastern Australia Part 1 Fisheries and Aquaculture Risk Assessment (completed)
- 2009/708 – Seafood CRC: An abalone quality assurance program
- 2009/710 – Seafood CRC: bioeconomic evaluation of commercial scale stock enhancement in abalone
- 2009/714 – Seafood CRC: economic management guidance for Australian abalone fisheries
- 2010/013 – Towards understanding greenlip abalone population structure
- 2010/704 – Seafood CRC: maximising value by reducing stress-related mortality in wild harvested abalone
- 2011/033 – Spatial patterns, landscape genetics and post virus recovery of blacklip abalone, *Haliotis rubra* (Leach), in the Western commercial fishing zone of Victoria
- 2011/046 – Aquatic Animal Health Subprogram: Disease risk assessment for abalone stock enhancement program
- 2011/405 – National Abalone Conference 2011 (completed).
- 2011/762 – Seafood CRC: recovering a collapsed abalone stock through translocation
- 2012/016 – Demographic Performance of Brownlip Abalone: Exploration of Wild and Cultured Harvest Potential.
- 2012/220 – Tactical Research Fund: commercialisation of sea ranching technology for greenlip abalone (*H. laevis*)

More broadly, DEDJTR will continue to work closely with industry and interstate research providers to progressively implement the national research, development and extension strategy for fisheries and aquaculture.

Action

30. Continue to engage the commercial and recreational fishing sectors in the collaborative process of identifying, developing, funding and reporting of research and development projects in which the sectors are co-investors with access to results for industry.
31. Enable industry involvement in the collaborative selection of research priorities and investment and ensure results are made available to industry and DEDJTR.

Key elements of the Victorian Wild Harvest Abalone Fishery Management Plan

Definitions of funding sources: DEDJTR: Government funded, no industry contribution; Industry: Service cost recovered from industry, or in some limited instances, industry self-funded; Recreational: - RFL Trust Account. These funding sources are subject to consideration and confirmation through the cost recovery process. Proposals for funding from the RFL Trust account would need to be submitted to the RFL Grants Program.

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
Policy and statutory context	Review of the Plan	1. DEDJTR, in collaboration with the Abalone Industry Committee, will arrange annual Stock Assessment and Quota Setting Workshops to review progress against the actions in this plan.	An annual progress report is discussed at a workshop each year during the life of the plan.	All actions are completed during the life of the plan.	Every year after plan is declared	DEDJTR	AIC	DEDJTR/industry
1. Rebuild or maintain abalone stocks	1. Developing adaptive harvest strategies for each zone	2. Develop zonal harvest strategies which must include clear objectives.	Appropriate Total Allowable Commercial Catch levels are established each year	Abalone stocks are managed sustainably	Within first year of the plan	Recognised industry zonal entities	DEDJTR	DEDJTR
		3. Amend Fisherweb and AQMS to display new reference points.	Fisherweb displays up to date quota reference point for spatial management units	Fisherweb is a useful tool for abalone quota unit holders to manage their take.	Within first year of the plan	DEDJTR		Industry
		4. Investigate the utility and feasibility of collecting information about abalone populations in marine protected areas to inform stock assessment.	Unharvested abalone stocks provide a benchmark that informs management of the commercial fishery.	Abalone stocks are sustainably managed using all relevant information.	Ongoing	DEDJTR	Parks Victoria	DEDJTR/industry

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
	2. Setting targets for rebuilding	5. Refine target levels for stock re-building for each spatial management unit or group of reef codes in the fishery.	Implementation of stock rebuilding strategies.	Achieve specified stock targets.	Within first year of the plan	DEDJTR	Recognised industry zonal entities.	DEDJTR/industry
	3. Formalise Total Allowable Commercial Catch setting process	6. Formalise the process for setting Total Allowable Commercial Catches.	An appropriate process for setting Total Allowable Commercial Catch is in place.	A transparent and defensible Total Allowable Commercial Catch-setting process	Within first two years of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/industry
	4. Conduct structured fishing	No action specified						
	5. Harvesting greenlip abalone for commercial use	7. Design and, where available funding permits, conduct assessments of greenlip abalone stocks.	Industry funded assessments of greenlip abalone stocks are supported by DEDJTR.	Sustainably managed greenlip abalone fishery	During the life of the plan, subject to available funds	Recognised industry zonal entities	DEDJTR	Industry
	6. Responding to ecological risks	8. DEDJTR will assess ecological information relating to potential impacts on the abalone fishery and discuss possible adaptation strategies with industry.	Perform ecological assessments	Identification of possible adaptation strategies	During the life of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/Industry
2. Secure access to the resource	7. Maintaining access for commercial fishing	No action specified						

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
	8. Ensuring access for recreational fishing	9. DEDJTR will implement a recreational abalone fishing season in central Victorian waters during which time recreational fishing will be allowed on defined days.	A recreational abalone season is established in central Victorian waters	Equitable access for recreational fishers to the abalone resource	During the first year of the plan	DEDJTR		DEDJTR/recreational
		10. DEDJTR will, subject to available funding, quantify recreational abalone fishing participation and harvest.	Quantification of recreational catch and effort	Recreational fishing catch and effort data to inform management	During the life of the plan	DEDJTR	VRFish	DEDJTR/recreational
3. Enable improvements in economic productivity	9. Harvesting abalone at a finer spatial scale	11. Through the zonal harvest strategies, formalise the management of commercial abalone harvesting at a sub-zonal spatial scale, subject to developing appropriate governance and funding arrangements consistent with the respective responsibilities of industry and DEDJTR.	Risk based, cost effective and enforceable spatial management arrangements are considered by DEDJTR and industry.	A more productive and economically viable abalone fishery	Within first two years of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/industry

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
	10. Trialling differential legal minimum size limits in the commercial fishery	12. At the request of the relevant industry zonal entity, DEDJTR will develop and implement arrangements to allow commercial abalone harvesting from areas with different minimum legal sizes on a single fishing trip subject to additional agreed conditions which may include prior reporting and appropriate electronic data logging technology, funded by industry or regulatory amendment.	Harvesting abalone of different legal minimum lengths on a single fishing trip is undertaken in accordance with agreed conditions and funding arrangements.	A more productive and economically viable abalone fishery	Within first two years of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/industry
	11. Delivering cost effective science, management and compliance programs	13. Clearly define the type and level of scientific, management and compliance services to be delivered by DEDJTR to operate the fishery on the existing zonal basis under the combined cost recovery and royalty levy set at 7.21 per cent of the annual GVP for the abalone fishery.	Fishery management services are effectively and appropriately funded in accordance with agreed principles of cost recovery	An economically efficient abalone industry	1 April 2013 and each year thereafter	DEDJTR	Recognised industry zonal entities	DEDJTR/industry
		14. Provide an opportunity for abalone entitlement holders to collectively request and fund any additional science, management and compliance services for each zone in the fishery.	Contribution of additional science, management and compliance services	An efficient, well informed and compliant abalone fishery	Progressive and ongoing process	DEDJTR	DEDJTR	Industry

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
		15. Investigate opportunities to improve the administrative efficiency of switching divers listed on abalone fishery access licences.	Establish efficient means of interchanging operators on access licences	Efficiency in access licence operations	Within first year of the plan	DEDJTR	Recognised industry zonal entities	Industry
		16. Implement provisions to verify the GVP for the abalone fishery.	A means to accurately calculate the abalone fishery GVP is in place	The abalone fishery GVP is known and understood	Within the first two years of the plan	DEDJTR	AIC, Recognised industry zonal entities	DEDJTR/industry
	12. Applying modern technologies for catch logging and vessel tracking	17. Examine options for commercial divers to use an approved type of data logger to record their catches and fishing locations to inform the harvesting of abalone at a finer spatial scale.	An approved data logging system that provides for the recording of catches and fishing locations is in place	An economically efficient and sustainable abalone fishery	Progressive and ongoing process	Recognised industry zonal entities	DEDJTR	DEDJTR/Industry
		18. Industry, through the Abalone Industry Committee and in collaboration with DEDJTR, to undertake a review of emerging reporting technologies, associated costs and benefits to the fishery.	Identification and implementation of new reporting technologies	A transparent, well informed and compliant abalone fishery	Within the first two years of the plan	AIC	Recognised industry zonal entities	DEDJTR/Industry
	13. Accounting for minor over-catches of quota and diseased catch	19. Enable commercial abalone quota holders (and their divers) to land up to 10 kilograms of abalone above their annual individual quota allocations on their last day of fishing in a fishing period.	Greater compliance with over-quota regulations.	A consistent approach to managing minor over-catches of quota.	Within the first six months of the plan	DEDJTR	Industry	DEDJTR/Industry

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
		20. Develop a protocol to account for diseased abalone without disadvantaging divers' quota allocations.	A protocol that outlines how diseased abalone is accounted for in quota is implemented.	All abalone are appropriately handled and accounted for in quota.	Within six months of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/industry
	14. Improving economic performance	21. Develop a process to report the economic performance of the fishery, subject to satisfactory industry participation.	A process of reporting on the economic performance of the abalone industry is implemented.	An economically efficient abalone fishery	Within first two years of the plan	DEDJTR	Recognised industry zonal entities	DEDJTR/industry
4. Empower effective industry representation, organisation and funding	15. Establishing robust governance arrangements	22. Specify the governance standards that must be satisfied for a single industry entity including the AIC to be recognised to undertake defined functions and to receive direct grant funds raised via regulated levies.	Effective and efficient involvement of zonal entities in participatory management of the abalone fishery	Improved governance arrangements between DEDJTR and industry entities	Within the first six months of the plan (for the central zone Fishery)	DEDJTR	SIV, industry	DEDJTR/industry
5. Ensure fisheries compliance	16. Applying a strategic approach to abalone compliance	23. Continue to disseminate information about the risks and rules applicable to the abalone fishery and their purpose, as part of DEDJTR's statewide education and enforcement program.	Information regarding the commercial and recreational abalone fisheries are disseminated in a timely manner.	An informed commercial and recreational abalone fishery.	Ongoing	DEDJTR	SIV, VRFish, Recognised industry zonal entities	DEDJTR/industry/recreational
		24. Industry, through the Abalone Industry Committee and in collaboration with DEDJTR to develop an educational package for new entrants in the fishery.	Information regarding the commercial abalone fishery disseminated to new entrants in a timely manner.	An informed commercial abalone sector.	Within the first two years of the plan	AIC	DEDJTR	DEDJTR/industry

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
		25. Continue to use information derived from compliance risk assessments, 13 FISH reports and patrol activities to prioritise, plan and target compliance activities to achieve a high level of compliance with fishing regulations.	Compliance levels in the commercial and recreational abalone fisheries are maintained at acceptable levels.	An effective and efficient compliance environment in the abalone fishery.	Ongoing	DEDJTR	SIV, VRFish, Recognised industry zonal entities	DEDJTR/industry/recreational
		26. Continue to promote community reporting of suspected illegal fishing activities through 13 FISH.	Utilisation of 13 FISH by the public is maintained at agreed levels.	An effective and efficient compliance environment in the abalone fishery.	Ongoing	DEDJTR	SIV, VRFish, Recognised industry zonal entities	DEDJTR/industry/recreational
		27. Establish a collaborative compliance risk assessment and management process to incorporate stakeholder input into identification of high-risk areas and priority targets, subject to appropriate safeguards to protect the security of restricted compliance information.	Improved compliance risk-assessment process for identification of high-risk areas and priority targets.	An effective and efficient compliance environment in the abalone fishery.	Within first two years of the plan	DEDJTR	SIV, VRFish, AIC	DEDJTR/industry/recreational
		28. Develop a method to report compliance patterns and trends to stakeholders on a regular basis, subject to maintaining the integrity of DEDJTR's compliance strategy and operational procedures.	Compliance patterns and trends are reported to stakeholders on a regular basis.	An effective and efficient compliance environment in the abalone fishery.	Within first year of the plan	DEDJTR	SIV, VRFish, AIC	DEDJTR/industry/recreational

Objective	Strategy	Action	Performance Indicator	Target	Implementation Schedule	Lead Agency	Key Partners(s)	Funding Source*
6. Target monitoring and research	17. Ensuring adequate knowledge about the biomass	29. Undertake scientific monitoring and research to inform Total Allowable Commercial Catches setting and management actions that aim to rebuild or maintain stocks in each zone.	Sustainable catch limits and rebuilding strategies for the abalone fishery are informed by evidence and expert thinking.	An economically efficient and sustainable abalone fishery	Ongoing	DEDJTR	Recognised industry zonal entities, VRFish	DEDJTR/industry/recreational
	18. Identify and prioritise research	30. Continue to engage the commercial and recreational fishing sectors in the collaborative process of identifying, developing, funding and reporting of research and development projects in which the sectors are co-investors with access to results for industry.	Research and development projects are effective and appropriately funded.	The abalone fishery is managed using informed and effective research.	Ongoing	DEDJTR	Recognised industry zonal entities, SIV, VRFish	DEDJTR/industry/recreational
		31. Enable industry involvement in the collaborative selection of research priorities and investment and ensure results are made available to industry and DEDJTR.	Research and development projects are effective and appropriately funded.	The abalone fishery is managed using informed and effective research.	Ongoing	DEDJTR	Recognised industry zonal entities, SIV, VRFish	DEDJTR/industry/recreational

* The agreed principles of cost recovery will apply to the specified funding arrangements.

Glossary

Available biomass: The mass of the abalone stock that is above the legal minimum size limit and therefore available to be harvested.

AVG: Abalone Viral Ganglioneuritis.

Biosecurity: Preventive measures to reduce risks associated with the transmission of diseases, pests and exotic species.

Catch per unit effort: A measure of fishing success with a type or unit of fishing gear.

Hookah equipment: Underwater breathing apparatus that uses an air compressor to supply air through a hose to a diver.

Input controls: Indirect controls on catch including regulation of the amount or type of fishing gear and fishing period (e.g. closed seasons).

Interactive Voice Recognition (IVR): Automated telephone system that allows for the reporting of information.

Intertidal zone: The area of land from the high tide mark to where the water is at least two metres deep.

Legal Minimum Size Limit: The regulated minimum size required to harvest abalone.

Limited entry fishery: A fishery where the number of operators or vessels is restricted.

Output controls: A direct limit on catch in a fishery (e.g. a Total Allowable Catch) or on an access licence holder (e.g. individual transferable quota).

Reef code: A geographically specific statistical reporting unit within a fishery management zone.

Reference point: An indicator level of fishing (or stock size) to be used as a benchmark for assessment or decision making.

Reseeding: The release of hatchery-reared abalone into wild populations for the purpose of building biomass and potentially augmenting catch.

Serial depletion: Shifting from one stock to another as each area declines to a point where fishing is no longer viable.

Spatial management unit: A specific unit of area within a fishery or zone of a fishery that may be used in its management.

Spawning biomass: The mass of stock that has reached sexual maturity and contributes to recruitment.

Total Allowable Commercial Catch (TACC): The mass of abalone that may be taken within a quota period by commercial access licence holders according to the final quota order.

Translocation: The movement of wild abalone from one location to another

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