IMPLEMENTATION OF AN ENVIRONMENTAL MANAGEMENT SYSTEM FOR VICTORIA'S BAY AND INLET FISHERIES

Pascale Baelde

Ross McGowan (Principal Investigator)

VBIFA
Victorian Bay and Inlet
Fisheries Association Inc.

Australian Government
Fisheries Research and Development Corporation

Sustainable Fishing - Healthy Seafood
Seafood Industry Victoria Inc.

Project No. 2002/090

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Published by Seafood Industry Victoria

ISBN 0-9579124-2-0

* Seafood Industry Victoria, Level 2/177 Toorak Road, South Yarra, VIC 3141

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NON TECHNICAL SUMMARY

2002/090	Implementation of an environmental management system for Victoria's bay and inlet fisheries

PRINCIPAL INVESTIGATOR

Ross McGowan
Executive Director
Seafood Industry Victoria
Level 2/177 Toorak Road
South Yarra VIC 3141

OBJECTIVES

1. To document and review fishing practices in Victoria's bays and inlets
2. Review and analyse existing codes of conduct and/or amend or develop new codes as required
3. Develop an environmental management system (EMS)
4. To address community and other stakeholders' perceptions of bays and inlets fisheries
5. Analyse options for maximising profits from implementing an EMS
6. To identify options for environmental certification with independent audit

NON TECHNICAL SUMMARY

OUTCOMES ACHIEVED TO DATE

Several outcomes are being achieved through this project:

1. The environmental award received by VBIFA for their work on the EMS, followed later by the Victorian Minister for Fisheries launching the completed EMS, are clear signs of the community's increasing recognition of, and support for fishers' environmental initiatives.
2. Shortly after the launch of the EMS, VBIFA already had an opportunity to use it as a mechanism to follow up complaints against a member about dead penguins. Through the monitoring and reporting that is undertaken as part of the EMS, VBIFA members were able to investigate the penguin deaths and found that they were from natural causes. The EMS also provided an opportunity for VBIFA members to communicate with government agencies and community members.
3. Work on the EMS has highlighted how current conservation legislation can impede fishers in recording interactions with protected wildlife species. The Department of Sustainability and Environment and Fisheries Victoria are now seeking ways to resolve these issues.

Victorian bay and inlet commercial fisheries are amongst the oldest Australian fisheries, having existed for over 170 years. They offer a unique service to the community by providing healthy, high quality and fresh seafood on a daily basis.

Victorian bays and inlets are very popular areas for tourists and commercial fishing is most visible and open to public scrutiny. Clearly, this gives commercial fishers strong incentives for complying with regulations and for minimising their impact on the environment. More importantly, they know very well that it is in their interest to look after the environment on which fish stocks, and their livelihood, depend. However, this is not always recognised by the community and concerns about commercial fishing is growing. Opposition to commercial fishing in the bays and inlets tends to be driven by conflict over access to fish resources and fueled by misinformation and misconceptions.

Commercial fishers acknowledge that the community's poor understanding of their activities, and subsequent loss of support, represent a major threat to the future of their fisheries. By developing an Environmental Management System (EMS) they want to address community concerns and better promote their role as seafood providers.

In 2001, a group of commercial fishers created the Victorian Bay and Inlet Fisheries Association Inc. (VBIFA). In 2002, VBIFA went through the Marine Stewardship Council's pres-assessment, which report concluded that there is sufficient evidence to show that the bay and inlet fisheries are sustainable. Recommendations for future work were concerned with the impacts on fish stocks of external factors, including recreational and charter boats, exotic species, pollution and water quality.

VBIFA members began work on the EMS in late 2003 after winning FRDC funding and securing the assistance of an EMS Project Officer (Dr Pascale Baelde). Developing an EMS is a voluntary, industry-driven environmental initiative. It is an approach that promotes industry self-governance and that is increasingly supported by governments. It recognises that commercial fishers themselves are in the best position to develop and implement best practices that meet both environmental needs and food production needs. It also recognises that fishers' knowledge and expertise are assets to the community.

VBIFA members developed their EMS collaboratively through a series of workshops facilitated by the EMS Project Officer. They followed well-established steps, including: description of the fisheries, risk analysis, development of an action plan; and implementation of a mechanism for regular performance review. The VBIFA EMS covers the four major fishing methods (haul seine, mesh net, purse seine, demersal longline) allowed in Port Phillip Bay, Western Port; Corner Inlet and Gippsland Lakes.

The risk analysis focused on environmental internal risks. That is risks posed to the environment by the four major fishing methods and which fishers can address directly by changing the way they work. Other risks created by other activities in the bays and inlets and catchment areas (external risks) were also briefly discussed. VBIFA members conducted the analysis following recommended procedures (Fletcher *et al*. 2002) and looked at four key components: commercial species, bycatch species, environment (fish habitat, water, etc) and wildlife. Each identified risk was then ranked based on both the *likelihood* and *consequence* of its impacts (Fletcher *et al*. 2002). The analysis was qualitative and based on current conservation and fisheries legislation, available scientific information and fishers' own knowledge and expertise.

Results of the risk analysis showed that commercial fishing in the Victorian bays and inlets generally presents low risks to the environment. Over the years, commercial fishers have responded to environmental concerns, modifying their fishing equipment and the way they fish to minimise their impact. This is supported by scientific studies, which have shown that commercial fishing in the bays and inlets has little impact on the environment and that changes in fish stocks are mostly driven by environmental factors.

VBIFA members' major goal in developing the action plan was to maintain environmental risks at existing low levels by formally documenting their best fishing practices and collectively re-affirming their commitment to them. Documenting best practices in this way will also assist less experienced fishers. VBIFA members identified two key principles in minimising risks:

1. Focusing on prevention of risks first, then mitigation of risks when necessary;
2. Promoting cooperation between fishers (i.e. recognising that communication and information sharing are very effective tools to minimise environmental risks).

Developing an EMS is based on the principle of continuous improvement and, as such, the VBIFA EMS is a living document that will be reviewed annually and improved as necessary. The first review is scheduled for April 2006. Various stakeholder groups were invited to comment on this first EMS, which is available from VBIFA and from the Seafood Industry Victoria website (www.siv.com.au) and the Victorian Fisheries Co-Management Council website (www.fcc.vic.gov.au).

VBIFA members believe that the EMS demonstrates their commitment to environmental best practices and addresses the community's concerns, hopefully improving its confidence in their industry. In 2004, VBIFA was awarded a High Commendation in recognition of their work on the EMS, as part of the Victorian Coastal Awards for Excellence presented by the Victorian Minister for the Environment.

ACKNOWLEDGMENTS

The project investigators and members of the Victorian Bay and Inlet Fisheries Association thank the Fisheries Research and Development Corporation for providing funds for this project. The development of VBIFA EMS was also supported through the Natural Heritage Trust EMS Pilot Project. We are grateful to the many people who have supported this work over the past twelve months: PIRVIC researchers provided fisheries data, maps and reports; researchers at the Phillip Island Nature Park provided expert advice and illustrations on wildlife species; Seafood Services Australia provided training material; and Seafood Industry Victoria helped with the production, distribution and launch of the EMS documents.

1. BACKGROUND

In recent years, the environmental performance of the fishing industry, in general, and of more visible sectors like the bay and inlet fisheries, has come under increasing scrutiny. Unfounded negative perceptions of the fishing practices of bay and inlet fishers has led to a high level of conflict with other user groups and damaging press coverage. This has left operators of Victorian Bay and Inlet Access Licences with high levels of uncertainty over security of access to resources.

At the same time, a number of initiatives have been or are being implemented that directly address the environmental performance of the fishing industry. These include the development of an ESD framework for Australia's fisheries, the development of the Seafood EMS Chooser by Seafood Services Australia, eco-labeling initiative (e.g. Marine Stewardship Council) and various environmental management planning at more local levels.

A successful voluntary buy-out of Victorian Bay and Inlet Access Licences was completed in 1999-2000. The buy-out removed most of the latent and part time operators from bay and inlet fisheries. Overall, more than half the licences were removed, leaving 103 fishers in the Port Philip Bay, Westernport Bay, Corner Inlet and Gippsland Lake fisheries. With the success of this buy-out, it is critical that those fishers who chose to remain in the industry take proactive steps to secure their access to the resources they harvest and to the environment they operate in.

As a first step, the bay and inlet fishers held an industry workshop in July 2000 to identify and discuss the issues that need to be addressed to ensure their fisheries have a sustainable future. Fishers made hard decisions about their fisheries and their commitment to ensure that their activities measured-up against best practice when it comes to managing the resource, by-catch, habitat and the marine environment. An important outcome of the workshop was for the industry to move toward environmental certification based on the approaches taken by the Southern Fishermen's Association in South Australia and Bribie Island fishers in Queensland.

After this meeting a funding application was made to FRDC to facilitate the progression towards environmental certification for the bay and inlets fisheries. That application was unsuccessful. Since then bay and inlet fishers have canvassed many options for financing the development of an Environmental Management System (EMS) for their fisheries.

This led to another workshop held at Welshpool in October 2001. During this workshop, fishers agreed that, although the fisheries in the bays and inlets are managed separately, and have separate industry associations, the issues confronting them are common to all bays and inlets and these issues should be dealt with on a state-wide basis. As a result, a state-wide industry association was formed to facilitate the development and implementation of the EMS. It was also agreed that the new industry association, the Victorian Bay and Inlet Fisheries association Inc. (VBIFA), would have a close affiliation with SIV.

Since then, VBIFA has been selected by Seafood Services Australia as one of six EMS pilot projects across Australia, as part of the National Seafood EMS Pilot Project funded by the Natural Heritage Trust.

2. NEED

After the workshops and the creation of VBIFA, and despite all fishers' effort, it proved very difficult to progress the development of an EMS any further. A dedicated project officer needed to be employed to coordinate the development and implementation of an EMS across the all the bay and inlet fisheries. The lack of resources to employ an EMS Project Officer has been VBIFA's main barrier to commencing the EMS process.

3. OBJECTIVES

1. To document and review fishing practices in Victoria's bays and inlets
2. Review and analyse existing codes of conduct and/or amend or develop new codes as required.
3. Develop an environmental management plan (EMS)
4. To address community and other stakeholders perceptions of bay and inlet fisheries
5. Analyse options for maximising profits from implementing an EMS
6. To identify options for environmental certification with independent audit

All objectives have been achieved, except objective 5 which was not addressed in this project. Ted Loveday, Managing Director of Seafood Services Australia (SSA), and Tim Mirabella, Chairman of the Victorian Bay and Inlet Fisheries Association Inc. (VBIFA), have agreed that the type of work required under objective 5 will be more appropriately and more effectively undertaken as part of SSA's ongoing EMS evaluation process. This

evaluation process is undertaken by Tor Hundloe and Daryl McPhee, University of Queensland.

4. METHODS

The project comprised two major components:

1. Compile available information on the Victorian bay and inlet fisheries, including review and analysis of scientific studies, seafood production statistics, government fisheries and conservation policies, current legislation, etc; and
2. Assist VBIFA members develop their EMS.

The second component was obviously the most important and also the most challenging. An EMS is an industry document and it was essential to ensure that VBIFA members were committed to, and maintained ownership of their EMS. To achieve this, particular attention was paid to:

1. Increase fishers' initially limited understanding of EMS principles and practice;
2. Facilitate communication between fishers within and across the different bays and inlets;
3. Adopt an iterative approach to ensure that every fisher 1/was aware of, and agreed with every step of the EMS process and 2/actively input into the process.

This required the EMS Project Officer to develop a good working relationship with commercial fishers involved and to maintain it throughout the project. Initial contacts were made through face to face, semi-structured interviews with all VBIFA members. The aims of these interviews were to:

1. Explain to fishers the principles and practice of EMS;
2. Collect information from fishers on fishing gear and fishing practices;
3. Develop a vision statement for VBIFA, which was signed by all members;
4. Define the scope of the VBIFA EMS.

The EMS Project Officer also went on several fishing trips during this period to further learn about the fishing methods used in the bays and inlets and build a relationship with fishers. After this introduction to the project, fishers were ready to undertake the subsequent steps of the EMS process in a more collective way through workshops facilitated by the EMS Project Officer.

Contacts with VBIFA members during the project can be summarised as follow:

- Twenty-one face-to-face interviews and fishing trips;

- Eight meetings with regional and State-wide (VBIFA) professional fishers' associations;
- Facilitation of thirteen regional workshops for conducting the risk analysis, developing the action plan and preparing the launch of the EMS; and
- Extensive follow-up communication by phone.

VBIFA EMS focuses on the assessment of internal environmental risks, i.e. risks related to fishing in the bays and inlets and which fishers can address directly by changing the way they fish. VBIFA risk assessment is qualitative and based on current conservation and fisheries legislation, available scientific information and fishers' own knowledge and expertise.

5. RESULTS: VBIFA ENVIRONMENTAL MANAGEMENT SYSTEM

For clarity of this FRDC report, the VBIFA Environmental Management System is presented at the end of the report.

6. VBIFA REFERENCE BOOKLET

VBIFA members also developed a water-proof Reference Booklet as part of the EMS. The booklet, which is to be carried onboard vessels, contains a phone list, sea safety inductions, description of recommended best practices to deal with marine pests, report tagged fish and bird bands, and photo identification of key wildlife species. The major aim of the booklet is to help fishers report their observations at sea and identify marine species accurately. A copy of the booklet is shown at the end of the report.

7. ENVIRONMENTAL CERTIFICATION

The VBIFA Committee has investigated the merits of various options for third party environmental certification. Of the two main certification processes available, ISO 14001 and the Marine Stewardship Council (MSC), the Committee chose the MSC process because it has been developed especially for commercial fisheries.

In 2002, VBIFA successfully applied for a grant from the Sustainable Fisheries Fund, United States of America, to undertake a Marine Stewardship Certification pre-assessment by the accredited auditing firm TQCSI-MSC. The MSC pre-assessment report concluded that the bay and inlet fisheries were, collectively, certifiable but that the

unit of certification needed to be carefully defined in these multi-gear, multi-species fisheries. The unit of certification can be defined by any combination of area, gear or species (Duncan Leadbitter, pers.com.) Only the species that are included in the unit of certification could carry the MSC logo.

In the report, recommendations for proceeding to full certification were mostly concerned with the need to better understand the 'full picture'. In particular, the need to understand the impacts on fish stocks of external factors, including recreational and charter boats, exotic species, pollution and water quality, and harvesting by other users across jurisdictions. The report stressed that VBIFA needed to become an active participant in the management of trans-boundary stocks. It also stressed that it was vital for VBIFA to get support from, and collaborate with, the Department of Primary Industries, where required data are held.

Finally, the MSC report stated that VBIFA would have to develop a certification management system to manage the post certification process, including annual audits and implementation of specific actions to address potential conditions on certification. This would require the association to delegate responsibilities to particular members for ensuring compliance.

While encouraged by the positive comments on the sustainability of the bay and inlet fisheries, the VBIFA Committee felt that the tasks recommended by the MSC pre-assessment report, and associated costs, were quite significant and would need some time to undertake. Thus, VBIFA decided to concentrate on the development of the EMS, which was already well advanced by the time the MSC pre-assessment report was finalised. VBIFA believes that, given the complexity of their multi-gear, multi-species fisheries, and their geographical spread along the coast, developing a voluntary, State-wide EMS is a necessary first step towards demonstrating their environmental performance. A well designed and properly audited EMS may assist VBIFA members should they choose to pursue third party certification at a later stage.

8. BENEFITS AND ADOPTION

The bay and inlet commercial fisheries will benefit most from the VBIFA EMS. Expected benefits are not financial. VBIFA members expect that their EMS will increase community confidence in their fishing and, as a result, give them more security of access to fish resources. Even though not all bay and inlet commercial fishers are members of

VBIFA, they will all benefit from the work done by VBIFA members. The finalisation of the EMS will hopefully give more bay and inlet fishers the incentive to join VBIFA.

The Department of Primary Industries and the Department of Sustainability and Environment will also benefit from VBIFA voluntary EMS initiative. Not all fisheries and conservation issues can be resolved through regulations and voluntary industry initiatives can assist the management of natural resources.

The VBIFA EMS will help the community in general, and other users of fish resources in particular, better understand commercial fishing practices in the bays and inlets and, thus, dispel some misconceptions and improve relationships between stakeholder groups. By making their EMS accessible to the public, VBIFA members hope to increase community support and reduce conflict with some user groups.

9. FURTHER DEVELOPMENT

Now that VBIFA members have completed their first EMS, they need to focus their attention on:

1. Seeking funds for the annual audit process (maintaining an effective audit mechanism is what will keep the VBIFA EMS 'alive');
2. Exploring third party accreditation further;
3. Developing a logo for VBIFA.

As an industry initiative, the VBIFA EMS also needs tangible support from other parties if it is to deliver expected benefits for the community, industry and government. This project highlighted two key issues that need to be addressed:

1. The position of the Department of Primary Industries on the usefulness of industry EMS in managing fish resources and broader environmental issues is unclear; and
2. In its current form, conservation legislation hampers fishers' attempts at documenting interactions with protected species.

The capture of species classified as protected is totally prohibited by conservation legislation. As is often the case, most of these species are neither threatened nor endangered, but penalties for their capture are very high and without actual ecological threat being documented (Rick Fletcher, pers. com.). Ecological risk assessment for protected species tends to be confounded by public concerns for iconic species. In the Victorian bays and inlets, it is generally accepted that interactions between protected

species and commercial fishing are minimal, in terms of both their frequency and ecological impact. However, there is insufficient data to demonstrate this. The development of the EMS has highlighted that, in its the current form, conservation legislation is an impediment to fishers collecting data on the nature and extent of interactions with protected species.

Work on the next version of the VBIFA EMS will be informed by comments received on this first version of the EMS, which has been widely distributed to other stakeholder groups (Appendix 2). Comments received are summarised below.

All comments received were very supportive of VBIFA in developing an EMS. VBIFA's achievement was not only seen in the production of a written document at the end of the EMS process. It was also seen in having industry members keeping up with a demanding and unfamiliar EMS process and working collaboratively on assessing their fisheries. The EMS document itself was believed to be useful in providing the general public with information on the bay and inlet fisheries and the measures being undertaken to minimise impacts on bycatch and the broader environment.

URS Australia Pty Ltd commented that the VBIFA EMS satisfied many of the components of ISO 14001 and provided advice on what would be required from VBIFA should they decide to go ahead with ISO certification.

VBIFA members were also encouraged to seek 'Statement of Attainment' certificates for their work on the EMS, based on units in the Seafood Training Package and using FarmBis funding.

The major comment on the VBIFA EMS related to interactions with protected species. It was felt that the EMS did not cover this topic comprehensively enough. In fact, VBIFA members discussed at length the risks from interactions with protected species when preparing their EMS. They even began work on the design of a reporting form to record data on the nature and extent of these interactions. However, as discussed above (Section 9), the current conservation legislation impedes this type of voluntary industry initiative. VBIFA has initiated discussion with Fisheries Victoria in an attempt to resolve this issue. Fisheries Victoria has since raised the issue with the Department of Sustainability and Environment and VBIFA is awaiting their advice.

Probably the most positive outcome from VBIFA's call for comments has been the offer by Fisheries Victoria to assist VBIFA members in the preparation of the next version of their EMS. This is a tangible step towards industry and government working together on

resolving some complex issues (e.g. the need to develop mechanisms for fishers to collect data on interactions with protected species).

In support of VBIFA's work, the Fisheries Co-Management Council has also offered to incorporate the VBIFA EMS on its website.

10. PLANNED OUTCOMES

It is generally accepted that the Victorian bay and inlet fisheries are inherently sustainable. This is partly due to the overall small number of operators (owner-operators) and to the rather benign fishing methods used. It is also due to fishers themselves who, over the years, have developed and adopted practices that minimise the impact of their fishing. By formally and publicly documenting these best fishing practices, the VBIFA EMS promotes their wider adoption among all bay and inlet fishers.

VBIFA members' major goal in developing an EMS is to secure their access to fish resources by increasing community confidence in their commercial fishing operations. The EMS demonstrates to the community the good environmental performance of the bay and inlet commercial fisheries. The EMS is also the product of fishers' collaborative work across the bays and inlets in addressing environmental issues.

In 2004, in recognition and support for the bay and inlet EMS initiative, the Victorian Coastal Council awarded VBIFA a High Commendation as part of the Victorian Coastal Awards for Excellence. This was a positive sign of recognition by the community.

VBIFA has already initiated work towards third party accreditation. The MSC pre-assessment that they went through in 2002 concluded that their bay and inlet fisheries were good candidates for third party accreditation. VBIFA regard their EMS as a necessary first step in this direction.

11. CONCLUSION

Developing an EMS has given VBIFA members a very good opportunity to demonstrate their environmental credentials in a public document. The EMS document shows that the bay and inlet fisheries are well managed and sustainable. The small number of operators and the benign fishing methods used ensure that these fisheries have minimum impact on the environment. The EMS also highlights that bay and inlet fisheries may be small, but

they play an important role for the community by providing high quality and fresh seafood on a daily basis.

The EMS concept is still new in fisheries today. It is new both as a management tool and as a voluntary industry initiative. The bottom-up, voluntary approach on which the EMS concept relies represents nothing short of a cultural change. Developing an EMS is a learning experience for everyone involved, commercial fishers, EMS facilitators and fisheries scientists and managers.

VBIFA members had to familiarise themselves with the rather formal EMS process. They also had to overcome some significant challenges posed by the complexity of their multi-gear, multi-species fisheries and geographical dispersion. Both environmental issues and fishing practices differ between the bays and inlets, as does the relationship between fishers and local communities and authorities. Work on the EMS has resulted in stronger relationships between VBIFA members and a more consistent approach to addressing environmental issues. A key challenge in developing the EMS was to accurately describe the diversity of fishing practices.

To successively develop this EMS, it was essential for the EMS Project Officer to establish a good relationship with fishers, based on mutual trust and shared understanding of issues. This took time and could not be rushed. Then, it was important to ensure that VBIFA members maintained ownership of their EMS.

Developing the EMS increased VBIFA members' work load well beyond their normal fishing operations and, naturally, they initially tended to delegate the task to the EMS Project Officer. To avoid this, an iterative approach was used, which proved effective. The work was conducted in small steps, with fishers being asked to read, comment and input on various documents at every step. This was also time consuming because VBIFA members did not all share the same views or concerns and did not prioritise issues in the same way. Also, to maintain fishers' ownership of their EMS, it was necessary to find a balance between what is usually expected, in theory, from an EMS and what fishers could realistically commit to in practice. The fact that this was the first version of the VBIFA EMS was an important consideration.

Tangible benefits can be derived from the VBIFA voluntary EMS for the community, the industry and management agencies. However, this partly depends on the level of support from management agencies. Industry voluntary initiatives can suffer from differing expectations between fishers and resource managers. For example, the rationale behind an industry-driven risk analysis will differ from the rationale behind a risk analysis

conducted by government agencies. Work on the VBIFA EMS has also highlighted the fact that, in its current form, conservation legislation can hamper fishers' environmental initiatives. Industry EMS and government resource management systems need to be more formally recognised as complementary processes.

12. REFERENCES

Please see references on page 45 of the standalone EMS document presented at the end of this report.

13. APPENDIX 1: STAFF

NAME	POSITION	% OF TIME
Mr Ross McGowan	Principal Investigator	20
Dr Pascale Baelde	Project Officer	100

14. APPENDIX 2: VBIFA EMS DISTRIBUTION LIST

The Hon. Robert Cameron, MP	Minister for Agriculture
Rosy Buchanan	Member for Hastings
Seafood Industry Victoria (SIV)	All Board members
Fisheries Co-Management Council (FCC)	All Council members
Dr Peter Appleford	Executive Director, Fisheries Victoria
Steve McCormack	Manager Commercial Fisheries, Fisheries Victoria
Dallas d'Silva	Acting Manager Commercial Fisheries, Fisheries Victoria
Dr Murray McDonald	Manager Bay and Inlet Recreational Fisheries, Fisheries Victoria
Dave Ryan	Media and Communication Officer, Fisheries Victoria
Professor Lyndsay Neilson	Chief Administrator, Department of Sustainability and Environment
Mark Stone	Chief Executive, Parks Victoria
Tim Allen	Marine and Coastal Community Network
Margaret Moore	Senior Policy Officer, World Wildlife Fund
Dr Dave Smith	Director, Primary Industries and Research Victoria
Dr Patrick Hone	Executive Director, Fisheries Research and Development Corporation
Professor Tor Hundloe	University of Queensland
Dr Daryl McPhee	University of Queensland
Dr Rick Fletcher	Leader ESD Reporting and Assessment Subprogram (FRDC)
Anissa Lawrence	Executive Officer, SeaNet
Jim Newman	SeaNet Extension Officer, Victoria
Denis Ballam	SeaNet Extension Officer, Queensland
Claire van der Geest	SeaNet Extension Officer, South Australia
Emma Bradshaw	Executive Officer, Ocean Watch
Duncan Leadbitter	Regional Director, marine Stewardship Council
Brian Pierce	Director, Fisheries Innovation Strategies
Ted Loveday	Managing Director, Seafood Services Australia
Adam Knapp	National Seafood EMS Development Coordinator, Seafood Services Australia
Emma Thomson	Seafood EMS Project Officer, Seafood Services Australia
EMS Officers, National Seafood EMS Project	Kellie Williams, Charlie Hewitt, Samara Miller, Col Dyke, Brett McCallum, Ralph Mitchell.
Ross Ord	Aquaculture EMS Coordinator, Seafood Services Australia
Liz Johnstone	Chairperson, Central Coastal Board, Victoria
Duncan Malcolm	Chairman, Gippsland Coastal Board, Victoria
Diane James	Chairperson, Victorian Coastal Council
Jason Prowd	Port Albert Light Game & Angling Club

VICTORIAN BAY AND INLET FISHERIES

ASSOCIATION INC.

(VBIFA)

ENVIRONMENTAL MANAGEMENT SYSTEM

(EMS)

VICTORIAN BAY AND INLET FISHERIES

ASSOCIATION INC.

(VBIFA)

ENVIRONMENTAL MANAGEMENT SYSTEM

(EMS)

March 2005

PREFACE

Over recent years Victorian bay and inlet commercial fishers have come under increasing pressure from recreational and conservation groups. They have maintained that much of the criticism leveled at their fishing activities has been based on perceptions rather than facts. Scientific research has generally found that commercial fishing activities in Victorian bays and inlets have no adverse impact on the fish stocks or the environment.

Traditionally commercial fishers have not put much emphasis on engaging the broader community in how they harvest what is accepted as a community resource and have probably suffered from the resulting isolation. When defending their practices commercial fishers often suggest to their critics that they should have a trip out on a commercial boat and observe a fishing operation before they pass judgment. On the odd occasion that this offer has been taken up the response has invariably been one of pleasant surprise at the obvious environmental approach commercial fishers take to their day-to-day activities.

While it is not often practical to take people out fishing, VBIFA members feel that one way to help the broader community understand their practices and their relationship with the environment is through the development of an Environmental Management System. VBIFA members believe that as we harvest fish on the community's behalf, the community is entitled to feel confident that their fish are being harvested in a sustainable manner.

The development of this EMS is an initiative of VBIFA members and we believe that it represents a genuine partnership approach to the management of Victorian bay and inlet fish resources.

Tim Mirabella

Chairman
Victorian Bay and Inlet Fisheries Association (VBIFA)

THE VICTORIAN BAY AND INLET FISHERIES

ASSOCIATION INC.

VISION STATEMENT

"VBIFA members recognize and will at all times accept their role as custodians of marine resources and the environment.

VBIFA members will promote and demonstrate united, ecologically sustainable and thriving bay and inlet Fisheries.

VBIFA members will ensure the continued supply of high quality, locally caught fresh seafood, which is valued by the Victorian community."

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ACKNOWLEDGMENTS

VBIFA wishes to thank Dr Pascale Baelde for her assistance in developing this EMS and the Fisheries Research and Development Corporation (FRDC) for funding the project. The development of the VBIFA EMS was also supported through the Natural Heritage Trust EMS Pilot Project. We are grateful to the many people who have assisted us over the past twelve months: PIRVic researchers provided fisheries data, maps and reports; researchers at the Phillip Island Nature Park provided expert advice and illustrations on wildlife species; Seafood Services Australia provided training material; and Seafood Industry Victoria helped with the production, distribution and launch of the EMS.

EMS: A VOLUNTARY, INDUSTRY-DRIVEN ENVIRONMENT INITIATIVE

Victorian bay and inlet commercial fisheries are amongst the oldest fisheries in Australia, having existed for over 170 years. Many of us are third generation fishers[1]. We offer a unique service to the community by providing healthy, high quality and fresh seafood on a daily basis. The health benefits of seafood are now increasingly promoted by nutritionists.

Victorian bays and inlets are very popular areas for tourists and our commercial fishing operations are most visible and open to public scrutiny. Clearly, this gives us strong incentives and motivation for complying with regulations and for minimizing our impact on the environment. More importantly, it is in our interest to look after the environment on which fish stocks, and our livelihood, depend. However, this is not always recognized by the community and, over the years, concerns about commercial fishing in the bays and inlets have grown. Sadly, opposition to our fishing tends to be driven by conflict over access to fish resources and is all too often fueled by misinformation and misconceptions, disregarding our true environmental performance. We have recently lost significant access to fish resources in order to give way to marine protected areas and recreational fishing.

The community's poor understanding of our fishing activities, and subsequent loss of support, represents a major threat to the future of our industry. We want to address community concerns and better promote our role as seafood providers. This is the aim of our Environmental Management System (EMS).

As a first step, we created the Victorian Bay and Inlet Fisheries Association (VBIFA) in 2001, a legally incorporated association[2]. Then, we successfully applied for funding from the Fisheries Research and Development Corporation (FRDC) to secure the assistance of an EMS Facilitator (Dr Pascale Baelde). At the same time, some of us completed formal training in environmental management in order to learn about the principles and practices of EMS[3].

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[1] In 2002, the Lakes Entrance Family History Resource Centre published 'Casting the net', an historical review of early fishing families on the Gippsland coast (available from the Centre, PO Box 674, Lakes Entrance, 3909).

[2] The association rules are available from the VBIFA Committee and also from Seafood Industry Victoria. VBIFA Statement of Purposes is shown in Appendix A.

[3] The training was funded through FarmBis subsidy and delivered by nationally registered course providers (Frank Lee Services and Burnham & Associates).

The concept of EMS recognizes that primary producers themselves, including commercial fishers, are in the best position to develop and implement best practices that meet both environmental needs and food production needs. It also recognizes that fishers' knowledge and expertise are assets to the community. An EMS is based on the principle of continuous improvement and follows well-established steps, including:

1. Review of fishing practices and identification of risks and impacts;
2. Development of an action plan to minimize risks and impacts; and
3. Regular review of the performance of the EMS and implementation of corrective actions when necessary.

More details on the process of developing an EMS can be found in Seafood Services Australia's publications (www.seafoodservices.com.au). Our first EMS covers the four major fishing methods[4] (haul seine, mesh net, purse seine, demersal longline) allowed in the Victorian bays and inlets under the following fishing licences:

- Western Port-Port Phillip Bay Access Licence;
- Purse Seine (Port Phillip Bay) Fishery Access Licence;
- Corner Inlet Fishery Access Licence; and
- Gippsland Lakes Fishery Access Licence.

VBIFA members developed this EMS collaboratively and, by signing it, they have committed to comply with it. This is a living document that will be reviewed regularly and improved as necessary. We believe that it demonstrates our commitment to self-governance and to environmental best practices and we hope to have successfully addressed the community's concerns and improved its confidence in our industry. The EMS is available by phoning VBIFA (03-5979 4277) or Seafood Industry Victoria (03-9824 0744). It is also available on the Seafood Industry Victoria website (www.siv.com.au) and the Fisheries Co-Management Council website (www.fcc.vic.gov.au).

The Hutchins Fish Shed, Mornington. Built by commercial fishers in the 1850's, still operating and now listed under the Victorian Heritage List.

[4] Other less frequently used fishing methods are not considered in this first EMS, but will be included in future versions.

MEMBERS' COMMITMENT TO COMPLY WITH
VBIFA ENVIRONMENTAL MANAGEMENT SYSTEM

Name	Address	Date
Arthur Allen Signature:	30 Lakeview Drive, Lakes Entrance, 3194	21/2/5
Dave Allitt Signature:	PO Box 529, Lakes Entrance, 3909	29/01/05
Len Beazley Signature:	60 Dow Street, Port Melbourne, 3207	3.2.05
Robert Carabott Signature:	4 Taegtow Way, Altona Meadows, 3028	23/01/05.
Neville Clarke [1] Signature:	PO Box 1067, Port Franklin, 3964	30/1/05
Wayne Cripps Signature:	PO Box 1066, Port Franklin, 3964	30/01/05.
John Gazan Signature:	52 Beach Road, Rhyll, 3923	10/02/05
Sam Georgiou Signature:	13 Sharam Avenue, Mentone, 3194	23/01/05
Dalton Hutchins Signature:	6 King George Avenue, Mornington, 3931	8/02/05
Neville Hutchins Signature:	6 King George Avenue, Mornington, 3931	8/02/05

CONT'D/...

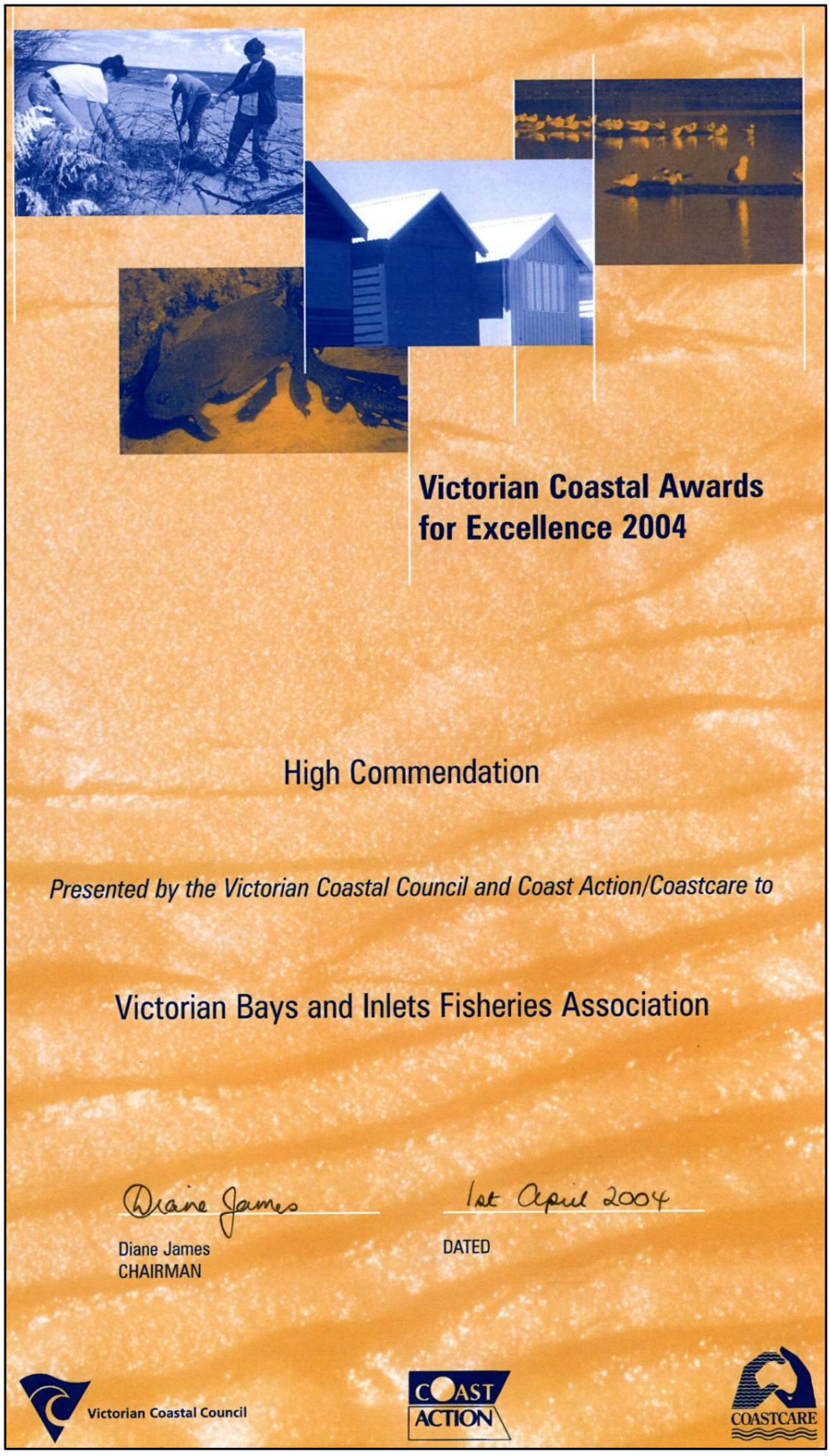
Name	Address	Date
Matt Jenkins Signature:.....	PO Box 297, Lakes Entrance, 3909	29-1-05
Max Laub Signature:.....	1 Nelson Street, Port Albert, 3971	30-1-05
Gary Leonard [2] Signature:.....	PO Box 666, Lakes Entrance, 3909	29/1/05
Pasquale Mateira Signature:.....	50 Margaret Street, Werribee, 3030	26/2/05
Phillip McAdam Signature:.....	71 Gordon Street, Newport, 3015	23/1/05
Name: **Tim Mirabella** [3] Signature:.....	PO Box 402, Hastings, 3915	8/2/05
Robert Morecroft Signature:.....	1 Bay Road, Eagle Point, 3878	29/1/05
John Murdoch [4] Signature:.....	PO Box 545, Geelong, 3220	23/1/05
Angelo Xenos Signature:.....	8 Lester Avenue, St Albans, 3021	23/1/05

1: VBIFA Secretary and Corner Inlet Committee member

2: VBIFA Treasurer and Gippsland Lake Committee member

3: VBIFA President

4: Port Phillip/Western Port Bay Committee member



In 2004, in recognition and support for our EMS initiative, the Victorian Coastal Council awarded us a High Commendation as part of the Victorian Coastal Awards for Excellence.

BACKGROUND INFORMATION ON THE BAY AND INLET COMMERCIAL FISHERIES

Commercial fishing in the Victorian bays and inlets is conducted by small family businesses. Most of us operate on small 7-8 meter long aluminum boats with outboard motors; only a few wooden boats with diesel engines remain. Except for pilchards caught in Port Phillip Bay, which are mostly snap-frozen for the bait market, all our seafood products are caught daily and sent fresh to the Melbourne market and local retailers. Some fishers have their own retail shop from which they sell their catch directly to customers.

FISHING METHODS

As is typical of coastal fisheries, commercial catches in the Victorian bays and inlets are made of a mix of several species, the abundance of which fluctuates with natural changes in the environment. We harvest these species using a variety of fishing methods, adapting our fishing patterns to seasonal fluctuations in fish stock abundance. In this way we do not put excessive pressure on any particular species. This is essential to the sustainability of our fisheries. This type of fishing also ensures a diversified supply of seafood products on the market.

Haul seining and mesh netting are the most widely used fishing methods, followed by purse seining and demersal longlining (also referred to as bottom set longlining). Trawling and Danish seining are not permitted in the bays and inlets. Over the past five years, of the total annual catch in the Victorian bays and inlets, 48% on average was caught by haul seine, 24% by mesh-net, 21% by purse seine, 3.7 % by longline, and 3.7% by other minor fishing methods.

Haul seine

The term haul seine is generic and refers to several seining techniques, including beach seine, estuary seine, garfish seine, and ring seine. These mostly differ in their mesh size and method of deployment. The design of haul seines varies between the bays and inlets, depending on the species targeted and the type of area fished, but, overall, is based on the same fishing principles.

A haul seine works by herding the fish into a bag or bunt. We set the net in a U-shape and draw both ends, or wings, together to enclose and trap fish in the bag. The mesh size

varies along the length of the net, with larger meshes used in the wings and smaller meshes in the middle sections (shoulders) and bag.

A beach seine is set from the beach. After hauling, we sort the catch standing in the water.

Beach seining (setting).

Beach seining (hauling).

Haul seining in Gippsland Lakes. The seine is carried on the tender.

In Port Phillip Bay and Gippsland Lakes, we set the seines from a tender (or dinghy) anchored in shallow water. Sorting the catch (bunting) is also done standing in the water.

Ring seines (only used in Corner Inlet) are set and hauled over deeper water. They have one short wing that is anchored, while the long wing is towed around in a circle. When the two ends meet, the bottom of the net is pursed by pulling a rope going through rings attached to the footline.

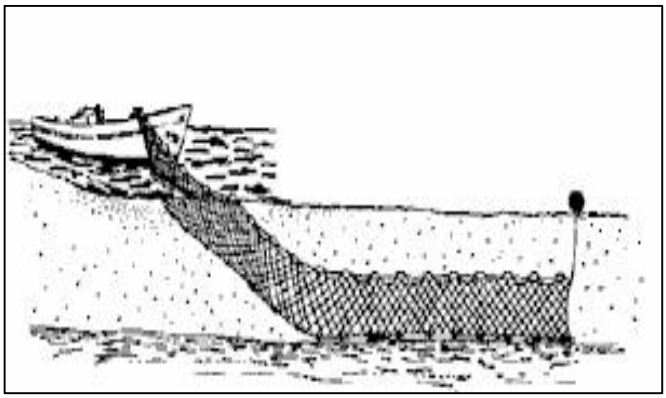
Ring seining (start of hauling).

Garfish seines are floating seines with smaller mesh size used to catch garfish near the surface. Except for these specialized garfish seines, haul seines catch a mix of species of varying size and shape, with some species being retained (commercial species) and others being released alive (bycatch species).

Mesh net

Ring seining (end of hauling).

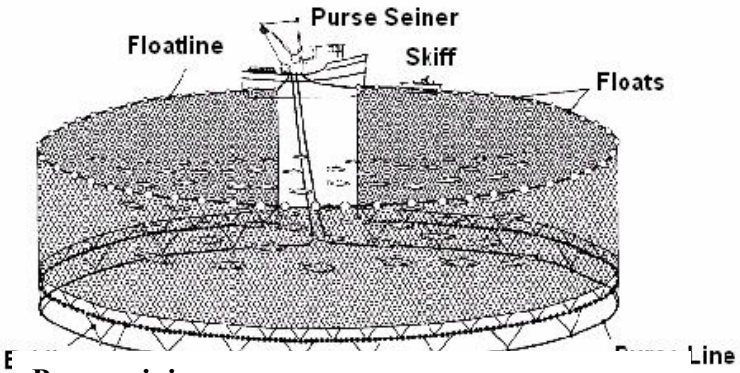
A mesh net is a footline and a floatline to maintain it in an upright or oblique position over the sea floor. We use different nets, with different mesh sizes, to target different fish sizes or species in different seasons and on different fishing grounds.



Mesh netting.

Mesh netting.

Overall, haul seines and mesh nets catch similar species, including King George whiting, black bream (mostly in Gippsland Lakes), flathead, tailor, silver trevally, yellow eye mullet, Australian salmon. Mesh nets tend to catch more demersal species such as flathead, flounder, mullet, etc and haul seines catch more pelagic species such as garfish and southern calamari.



Purse seining.

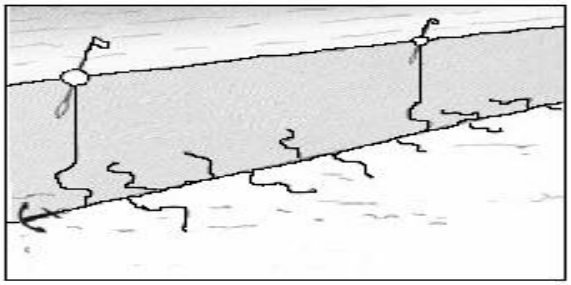
Purse seine

A purse seine is designed to catch schools of small pelagic species at or near the surface. The net is set in a circle around the fish

school and kept suspended from the surface with floats. A purse line, threaded through rings attached to the leadline, is used to close the bottom of the net. The net is then brought alongside the vessel and the fish are scooped out. This fishing technique is only allowed in Port Phillip Bay. Today, species caught with purse seines include pilchards, anchovies and sandy sprats and are used both for bait and, increasingly, for human consumption.

Demersal longline

Short snoods with baited hooks are attached to a longline that is set near the sea floor using weights and anchors and marked at both ends with buoys and flags. Longlines are usually set before dawn and retrieved after a couple of hours. They are mostly used to target snapper and, occasionally, gummy shark.



Demersal longline.

Other fishing methods that are occasionally used, and their targeted species, are shown below:

- Stake net: eastern school prawn, eastern king prawn;
- Hand line: snapper, King George whiting, southern calamari;
- Dropline: snapper, gummy shark;
- Pike net: pike;
- Fish trap: leatherjacket, red mullet;
- Crab pot/hoop net: sand crab, black crab;
- Pot: octopus;
- Hooker dive: mussels; and
- Various fishing methods: sand worm pump, drag shrimp net, spider crab trap, pipi rake or pump, anchovy ring net.

MANAGEMENT FRAMEWORK

Commercial fishing is tightly controlled under the *Fisheries Act 1995* and *Fisheries Regulations 1998*[5]. Fishing regulations in the bays and inlets have built up over the years

[5] Recreational fishing is also controlled under the *Fisheries Act 1995* and the *Fisheries (Recreational) Regulations 1998*.

and are very complex. They are described in detail in the *Fisheries Regulations 1998*. Overall, they include restrictions on:

- Types and configuration of fishing methods (restrictions on mesh size, length of nets, number of lines and hooks, etc);
- Restrictions on fishing areas (seasonal and permanent areas closures);
- Restrictions on fishing times (week-end closures in Western Port, Corner Inlet and Gippland Lakes, seasonal closures in each bay and inlet); and
- Restrictions on the size of fish caught.

It is a condition of licence that fishers fill in fishing returns in which they record daily catch by species, including details of fishing grounds, fishing gear used and number of shots conducted per day. Our fishing activities are also controlled by conservation legislation concerned with the protection of marine species, implementation of marine protected areas, pollution control, etc (see Appendix B).

Fisheries Victoria, within the Department of Primary Industries (DPI), is in charge of managing all commercial and recreational fishing activities in Victoria. Primary Industries Research Victoria (PIRVic, formally MAFRI) is the scientific agency responsible for assessing the status of fish resources and essential fish habitats.

The Fisheries Co-Management Council (FCC) was established in 1996 by the *Fisheries Act 1995* to promote the co-management of fisheries and to provide independent fisheries advice to the Minister for Agriculture (both commercial and recreational sectors are represented on the FCC).

Seafood Industry Victoria (SIV) is the peak body of the Victorian commercial fishing industry. It was established in 1989 under the *Victorian Fishing Industry Council Act 1979* and is an incorporated body. The role of SIV is to liaise, provide advice and circulate information between industry, government and interested groups.

Our fisheries have undergone significant changes over the years. Entry to the bay and inlet fisheries was closed in 1968 and in 1987 two-to-one restrictions were imposed on the transfer of licences (creating consolidated licences that then become transferable on a one-to-one basis). This led to a reduction in the number of Fishery Access Licences, from 244 in 1989 to 214 in 1998 (bait and mussel-dive licences not included). Then, between 1999 and 2000, a voluntary buy-back scheme was implemented, further reducing the number of licences from 214 to 104 (see Table 1).

Table 1: Reduction over time in the number of commercial fishing licences in the Victorian bays and inlets.

Fishery	No. of licences in 1989*	No. of licences before buy-out (before 1999)**	No. of licences after buy-out (after 2000)**	No. of licences in 2004***
Anderson Inlet	4	4	0	Closed
Corner Inlet	39	30	20	20
Gippsland Lakes	37	32	19	18
Lake Tyers	13	10	3	Closed
Mallacoota Inlet	8	8	4	Closed
Shallow Inlet	5	5	0	Closed
Tamboon Inlet	4	4	1	Closed
Port Phillip/Western Port	134	121	57	55
TOTAL	**244**	**214**	**104**	**93**

Bait and mussel-dive licences (20 in 2004) not included.

* Natural Resources and Environment Committee Report (NREC 1991).

** Adapted from Morison (2001).

*** Data from Fisheries Victoria – Commercial Fish Production Information Bulletin.

The licences removed by the buy-back scheme represented 14%, 10% and 27% of the total catch (all species) recorded in Port Phillip Bay/Western Port, Corner Inlet and Gippsland Lakes, respectively, for the 1995-99 period (Morison 2001).

Finally, a series of spatial closures was declared in the early 2000s. In 2000, commercial fishing was closed in Anderson Inlet, Shallow Inlet and Tamboon Inlet, followed in 2003 by the closure of Lake Tyers and Mallacoota Inlet in order to create recreational only areas, further reducing the number of licences and access to fish resources. In 2002, Marine National Parks and Sanctuaries were declared in Port Phillip Bay, Western Port and Corner Inlet, again reducing our access to fish resources. Today, our commercial operations are restricted to Port Phillip Bay, Western Port, Corner Inlet and Gippsland Lakes, with only 93 licences remaining (Table 1 and Figure 1).

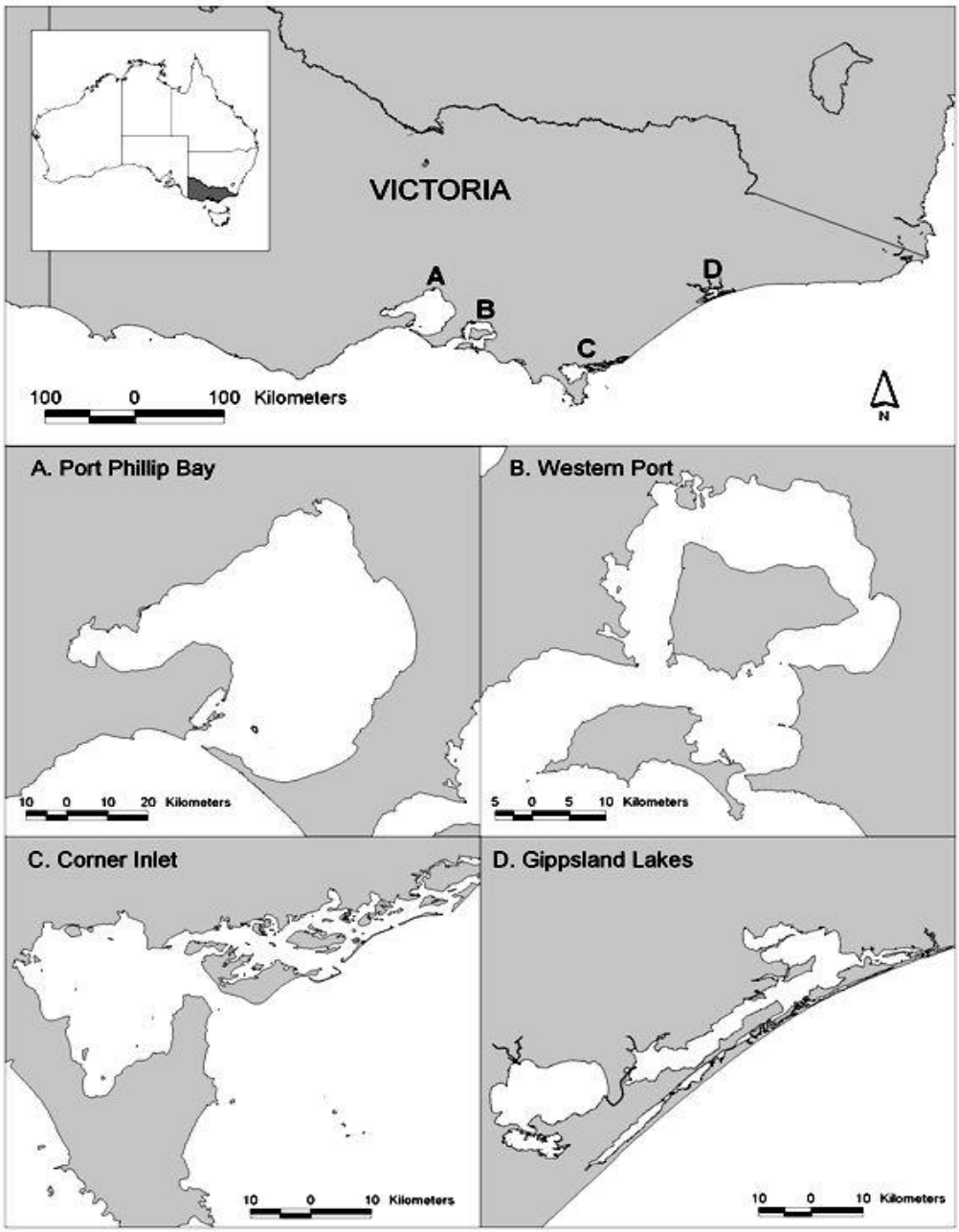


Figure 1: Maps showing Port Phillip Bay, Western Port, Corner Inlet and Gippsland Lakes.

INDUSTRY VOLUNTARY CODES OF PRACTICE

In addition to existing government regulations, we have over the years developed Voluntary Codes of Practice to address local issues with fish stocks, control potential increase in fishing effort and limit interactions with the growing recreational fishing sector.

Port Phillip Bay-Western Port Professional Fishermen's Association (PPBWPPFA)

For this area, the Code of Practice includes:

1. Haul seining: conduct no more than two shots per night, bunt in depth greater than 80cm and use net material that minimize the meshing of fish;
2. Mesh netting: set nets so that they catch fish near the sea floor and use the appropriate mesh size and hanging ratio for the target species;
3. Demersal longlining: use the appropriate type of hooks and baits and fish at the appropriate time and location for the target species.

Corner Inlet Fisheries Habitat Association (CIFHA)

For this area, the Code of Practice includes:

1. No more than two seine shots per day;
2. Seine nets to be shot along the channel and towed in at right angle to the channel when using two boats[6];
3. Seine nets must be shot and closed up within 45 minutes when using two boats;
4. Seining allowed only in one side of the 'Middle Ground' line in any one day.

East Gippsland Estuarine Fisherman's Association Inc. (EGFA)

For this area, the Code of Practice includes:

1. No fishing in several specified places during holiday periods in order to minimize interactions with recreational fishers;
2. Compliance with a haul seine design that allows the release of non target catch;
3. Compliance with prescribed best prawn netting practices.

More information on these Codes of Practice can be obtained from the associations. An important function of the codes is to ensure that new, and less experienced, fishers rapidly adopt best practices that have been developed by long-established and more experienced fishers. Commercial fishers working within an area also rely on another form of self-regulation known as 'Gentlemen Agreements'. These agreements are informal and evolve over time; they are negotiated as needed following, for example,

[6] This in effect limits the area fished during a shot.

changes in fishing technology or environmental conditions. They are not formally enforced but there is high mutual expectation for fishers to comply.

SEAFOOD PRODUCTION

Over the last 15 years, fishing effort in our fisheries has steadily decreased as a result of the reduction in the number of fishing licences discussed above. Consequently, catches have also decreased over time, but catch rate has remained fairly stable at around 100kg/day (see Figure 2). The dollar value of catch per day has increased regularly during the same period (Figure 2).

Our fisheries currently produce an average of 1300 tonnes of seafood per year (see Appendix C), valued at around $7 million on the wholesale market. Our total scalefish catch contributes between 50% and 59% of the total scalefish catch in Victoria (based on data from 1998/99 to 2002/03). This contribution varies between species, with our catches typically made of some of the most highly valued species in Victoria. For example, between 1998/99 and 2002/03, the majority of King George whiting (100%), rock flathead (100%), sea garfish (100%), southern calamari (97%), black bream (88%), snapper (70%), and silver trevally (67%) were caught in the bays and inlets.

The Natural Resources and Environment Committee Report (NREC 1991, Parliament of Victoria) provides an excellent overview of bay and inlet commercial catches from 1910 to 1990. It shows that catches of many species are highly variable (e.g. Southern Sea garfish, Australian salmon), or cyclical (e.g. snapper). This variability is mostly driven by environmental factors, although other factors also influence catch level. For example, the report discusses how bay and inlet catch level can be influenced by market dynamics and competition from ocean-based catches (e.g. flathead species) and by some management measures (e.g. minimum legal size for black bream).

In 1995, and again in 1998-99, a massive mortality of pilchards occurred all along the southern, eastern and western Australian coastline and significantly affected the purse seine fishery in Port Phillip Bay. CSIRO researchers detected a virus from the gills of dead pilchards that could have caused their deaths. Historically, the pilchard purse seine fishery was a major component of the Port Phillip Bay fishery, but catches fell from about 2000 tonnes per year in the early 1990s to 38 tonnes in 1998-99.

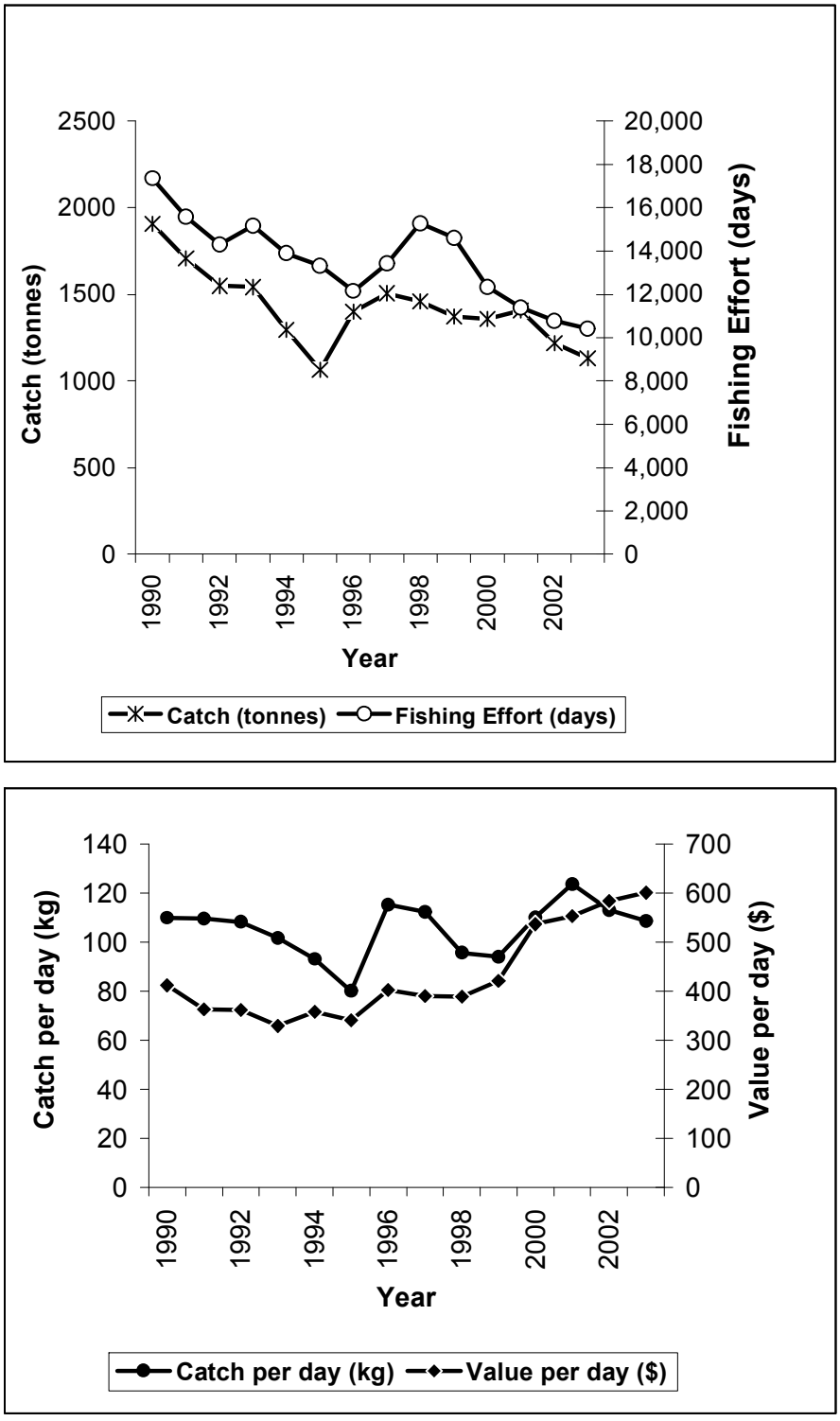


Figure 2: Top graph: annual catch and fishing effort (all species, all bays and inlets, all fishing methods, except purse seine catches); bottom graph: catch per day (kg) and value of catch per day (value estimated from the Melbourne Fish Market auction prices).

Influence of environmental factors

Environmental conditions in the bays and inlets fluctuate markedly and scientific stock assessments for major commercial species (black bream, sand and rock flathead, King George whiting, snapper) indicate that environmental changes are having greater impacts on fish resources than fishing pressure. The Department of Sustainability and Environment (DSE) website states that:

"Variations in total catch and species composition between each bays or inlets, or over time within a bay or inlet, are thought to be more a reflection of variable habitat and environmental conditions affecting fish reproduction and survival than the impact of commercial (or recreational) fishing itself. Fish habitat and environmental conditions in Victorian bays and inlets are influenced by natural climatic factors and also by a range of human 'development' activities other than fishing".

Detailed information on each species is available from PIRVic stock assessment reports, some of which are listed at the end of this document.

Gippsland Lakes is particularly affected by changes in environmental conditions and the recent decrease in black bream catches illustrates this well. Recruitment of black bream is notoriously variable, among the most variable of all harvested fish species in Australia (FCC 2004), and driven by environmental factors (i.e. recruitment depends on high water temperature around spawning time and high rainfall after spawning). Catches of black bream were fairly stable throughout the 1990s (between 120 and 185 tonnes per year) before declining sharply to 24 tonnes in 2002-03 and to 35 tonnes in 2003-04. Fishers and scientists agree that this decline mostly results from the sustained eight year drought conditions in the Gippsland Lakes.

In six of the past eight years, recordings of annual rainfall near Bairnsdale in the Gippsland Lakes area have been well below the yearly average of about 700mm (see Figure 3). The drought situation is aggravated by the perturbation of natural flood patterns from dams. Recent State government commitments to release water from the Thomson Dam should assist in improving the health of the Gippsland Lakes ecosystem (FCC 2004). Researchers at PIRVic have now applied for funding to look at the impact of freshwater flow on fisheries production.

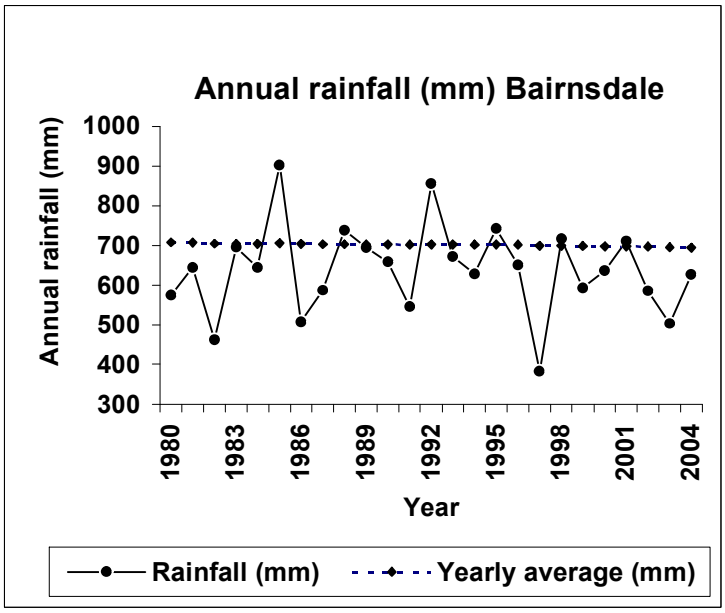


Figure 3: Annual rainfall and yearly average recorded near Bairnsdale, Victoria. Yearly average calculated each year using rainfall data recorded since 1880. Data published by 'The Primary Producer", Bairnsdale.

The stock of black bream has also been affected by a marked increase in predation by cormorants in the Gippsland Lakes since the early 1990s (Coutin 2002). Predation by cormorants was estimated to be equivalent to the combined effect of commercial and recreational fisheries (Reside and Coutin 2001).

However, there are signs that the situation could be improving, with scientific surveys showing an increase in abundance of juvenile black bream in 2003 and 2004. In the past, black bream catches have shown similarly low levels in the 1940s and 1950s, before rising again in the 1960s (NREC 1991).

Our contribution to research

One way or another, we are constantly contributing to research in the bays and inlets, taking scientists onboard our vessels and sharing our knowledge and experience. For example:

- We assist scientists at sea during annual surveys of juvenile fish abundance (e.g. black bream, snapper).
- We assist scientists at sea during tagging survey (e.g. snapper).
- We collect and measure fish during normal fishing operations on an ongoing basis (e.g. snapper, King George whiting, rock flathead, gummy shark).
- We collect samples for water and fish quality analysis.

RECREATIONAL CATCH

The National Recreational and Indigenous Fishing Survey conducted in 2000-01 showed that, in Victoria, recreational fishers caught more black bream, King George whiting, snapper and flathead than commercial fishers.

Table 2: Comparison between commercial and recreational catches for some major species in Victoria.

Species	Commercial catch (statewide, tonnes) 2002-03	Recreational catch (tonnes) (Estimates with 95% confidence limits) 2000-01*
Black bream	51	203 (126-279)
King George whiting	111	215 (138-291)
Snapper	75	332 (187-478)
Sand flathead	15	597** (360-834)

Data from Fisheries Co-Management Council Annual Report 2003-04.

* Data from the National Recreational and Indigenous Fishing Survey (see Henry and Lyle 2001)

* *Includes unknown quantities of sand, yank and dusky flathead.

The Natural Resources and Environment Committee pointed out in its 1991 report that fishing pressure exerted by recreational fishers is at least as high, if not higher, than pressure exerted by commercial fishers (NREC 1991).

ANALYSIS OF INTERNAL RISKS

Our EMS focuses on the assessment of environmental risks that our four major fishing methods (haul seine, mesh net, purse seine and demersal longline) might pose to the bays and inlets[7]. We refer to these risks, which we can address directly by changing the way we fish, as internal risks. Other risks created by other activities in the bays and inlets and catchment areas are referred to as external risks. While we cannot address external risks directly, they are of great concern to us and will be briefly discussed in this analysis.

We identified risks related to our fishing through a series of workshops facilitated by Dr. Pascale Baelde over a 12 month period. We have followed recommended procedures for conducting environmental risk assessment (Fletcher *et al*. 2002; SSA 2004) and looked at four components:

- Commercial species;
- Bycatch species;
- Environment (fish habitat, water, etc); and
- Wildlife.

Some VBIFA members at work during one of our regular workshops developing this EMS.

Each identified risk was then ranked based on both the *likelihood* and *consequence* of its impacts (see Tables 3 to 6). For example, a risk which is likely to occur (e.g. likelihood = 5) but generates low level impact (e.g. consequence = 1) would be attributed a lower rank (5 x 1 = 5) than a risk less likely to occur (e.g. likelihood = 2) but causing higher impact (e.g. consequence = 4; rank = 2 x 4 = 8).

Our assessment is qualitative and based on current conservation and fisheries legislation, available scientific information and our own knowledge and expertise. Our main goal is to address the community's concerns about, and expectations of, commercial fishing in the Victorian bays and inlets. The list of identified risks, together with their ranking and justification for ranking, are summarized in Table 7. More detailed explanation is presented after the table.

[7] Other management systems are already in place to address risks related to seafood quality (responsibility of Prime Safe) and risks related to occupational health and safety (responsibility of the Victorian WorkCover Authority). Marine Safety Victoria is responsible for maintaining standards of seaworthiness of Victorian commercial vessels and the competence of their crew.

Table 3: Likelihood of a risk happening

Likelihood	Score	Definition
Remote	1	Never heard of, but not impossible.
Rare	2	May occur in exceptional circumstances.
Unlikely	3	Uncommon, but has been known to occur.
Possible	4	Some evidence to suggest it may possibly occur.
Occasional	5	It may occur.
Likely	6	It is expected to occur.

Table 4: Consequence if the risk does occur

Consequence	Score	Definition
Negligible	0	Very insignificant impact. Unlikely to be measurable.
Minor	1	Possibly detectable but minimal impact on structure and function.
Moderate	2	Maximum acceptable level of impact. Recovery measured in months or years.
Severe	3	Wider and longer impact. Recovery measured in years.
Major	4	Very serious impact. Recovery measured in years to decades.
Catastrophic	5	Widespread and permanent/irreversible damage or loss will occur. Recovery unlikely to occur.

Table 5: Risk ranking = Likelihood x Consequence

	Consequence					
Likelihood	**Negligible**	**Minor**	**Moderate**	**Severe**	**Major**	**Catastrophic**
Remote	0	1	2	3	4	5
Rare	0	2	4	6	8	10
Unlikely	0	3	6	9	12	15
Possible	0	4	8	12	16	20
Occasional	0	5	10	15	20	25
Likely	0	6	12	18	24	30

Table 6: Risk categories

Risk Rank	Risk Category
0	Negligible risk
1– 6	Low risk
8-12	Moderate risk
15-18	High risk
20-30	Extreme risk

TABLE 7: ANALYSIS OF INTERNAL RISKS						
RISK	**FISHING METHOD**	**LIKELIHOOD (1-6)**	**CONSEQUENCE (0-5)**	**RANK**	**RISK CATEGORY**	**JUSTIFICATION (SEE MAIN TEXT FOR MORE DETAILS)**
NON-COMPLIANCE WITH REGULATIONS						
Fisheries regulations (protection of fish stocks)	All	2	2	4	Low	Professional fishers know Fisheries Regulations well. The number of Penalty Infringement Notices sent to bay and inlet professional fishers is very low.
Conservation regulations (protection of the environment, e.g. MPAs)	All	1	1	1	Low	Professional fishers are well aware of conservation regulations regarding pollution control, MPAs and marine protected species.
WASTE OF COMMERCIAL CATCH (Loss of catch at sea, or loss of fish quality, i.e. non-marketable catch, due to unforeseen poor fishing conditions)						
Rapid deterioration of fishing conditions due to: • Un-forecast bad weather conditions • Engine problems • Fishing gear problems • Personal injury	All	2	2	4	Low	Understanding potential causes of injury, avoiding mechanical problems and understanding weather conditions are all essential skills for professional fishers, which they have gained through both formal training and practical experience.
Unmanageable catches due to exceptionally large quantity of fish caught	Haul seine & mesh-net & purse seine	3	2	6	Low	Professional fishers avoid catching too many fish because of subsequent waste of catch and waste of fishing time. Fishing experience minimizes the risk of ending up with unmanageable, large catches.
	Demersal longline	1	0	0	Negligible	Number of fish caught limited by number of hooks set.
WASTE OF FISH BYCATCH (Fish bycatch here refers to released undersize commercial species and non-commercial species)						
Death of fish bycatch before release	Haul seine	3	1	3	Low	Fishing nets and practices are designed to keep fish alive in water while sorting catches. See Knuckey *et al.* 2002.

TABLE 7 continued.

RISK	FISHING METHOD	LIKELIHOOD (1-6)	CONSEQUENCE (0-5)	RANK	RISK CATEGORY	JUSTIFICATION (SEE MAIN TEXT FOR MORE DETAILS)
	Mesh-net	3	1	3	Low	Mesh nets are size selective by design and catch little bycatch; if bycatch is caught, it is carefully un-meshed and released alive.
	Purse seine	2	0	0	Negligible	Purse seines rarely catch bycatch.
	Demersal longline	1	0	0	Negligible	Longlines are selective and catch very little bycatch; if bycatch is caught, it is carefully freed and released alive.
Death of fish bycatch after release	Haul seine & mesh-net	3	1	3	Low	Professional fishers have developed best handling practices to maximise the survival of released bycatch species. They: 1/carefully avoid injury to fish during bunting (haul seine), un-meshing (mesh net), and measuring; 2/carefully avoid predation by birds during release.
DAMAGE TO THE ENVIRONMENT						
Damage to seagrass						
Damage from propeller	All	2	1	2	Low	Professional fishers know the value of seagrass for fish stocks and have the skills and local knowledge necessary to avoid physical impact on seagrass.
Damage from dragging anchor	All	2	1	2	Low	Professional fishers generally prefer to anchor on sand patches where anchors hold best.
Damage during fishing	Haul seine	2	1	2	Low	Haul seines are designed to work just above the seabed, 'feathering' seagrass leaves without damaging them.
	Mesh-net	1	0	0	Negligible	Very light contact with seagrass.
	Purse seine	1	0	0	Negligible	No contact with seagrass.

TABLE 7 continued.

RISK	FISHING METHOD	LIKELIHOOD (1-6)	CONSEQUENCE (0-5)	RANK	RISK CATEGORY	JUSTIFICATION (SEE MAIN TEXT FOR MORE DETAILS)
	& Demersal longline					
Damage to water quality						
Chemical spill	All	1	0	0	Negligible	Professional fishers do not carry chemicals onboard.
Pollution from outboard motors	All	3	1	3	Low	Professional fishers use outboard motors which comply with required environmental standards. They also maintain them in good working condition.
Fuel spill (leak from fuel tank, rupture of rubber fuel hose)	All	2	1	2	Low	The good working condition of boats and equipment is checked by Marine Safety Victoria each year. Also, given the small quantities of fuel carried onboard, any fuel spill would be very small.
Marine debris						
Risk to marine wildlife from lost or discarded fishing equipment	All	2	2	4	Low	It is very rare for professional fishers to lose their fishing equipment. When occasionally a piece of equipment breaks away, they easily find it and retrieve it within the small and shallow areas where they work. They do not intentionally discard fishing gear in the bays and inlets.
Risk to marine wildlife from discarded marine debris (plastic bags, bottles, etc)	All	2	2	4	Low	Professional fishers are increasingly aware of the impact of marine debris on marine life; they retain any rubbish onboard for later disposal on land. Also, their types of fishing operations generate very little rubbish.
Marine pests						
Spread of marine pests from one bay to another	All	2	3	6	Low	Professional fishers experience first hand the impact of marine pests on the environment and fish stocks. They

TABLE 7 continued.

RISK	FISHING METHOD	LIKELIHOOD (1-6)	CONSEQUENCE (0-5)	RANK	RISK CATEGORY	JUSTIFICATION (SEE MAIN TEXT FOR MORE DETAILS)
						have learnt and adopted recommended best practices to avoid spreading them.
INTERACTION WITH WILDLIFE (Injury to protected marine species during direct interactions with fishing)						
Birds	All	2	1	2	Low	1/The level of interaction (likelihood) with protected species is low because the fishing fleet is small and fishing practices used are not prone to interactions. 2/The impact of interaction (consequence) on wildlife populations is also low because the majority of wildlife species that occupy the same areas where fishers work are abundant and neither threatened nor endangered.
Seals	All	2	1	2	Low	
Dolphins & whales	All	1	3	3	Low	
Great white sharks	All	1	3	3	Low	
Pipefish, seahorse, seadragon	All	1	1	1	Low	

JUSTIFICATION FOR RISK RANKINGS

NON-COMPLIANCE WITH REGULATIONS: LOW RISK

Commercial fishing is a highly regulated industry and complying with regulations is essential to running our fishing businesses effectively. Fines for not complying with regulations are high[8] but, more importantly, VBIFA members also support regulations that are designed to ensure the sustainability of our fisheries.

We keep ourselves well informed of fisheries regulations and of their subsequent amendments through regular communication with our peak body (Seafood Industry Victoria), local Fisheries Officers and/or by checking the DPI website. Some of us have also purchased our own copies of the *Fisheries Act 1995* and *Fisheries Regulations 1998*.

We are also well aware of, and comply with the various conservation laws that affect our fishing activities (Appendix B). For instance, after our active engagement in the recent MPA debate and after having successfully re-negotiated some MPA boundaries with the Government, we know and comply with MPA-driven fishing restrictions.

WASTE OF COMMERCIAL CATCH: LOW RISK

Here we consider situations where working conditions at sea would deteriorate rapidly due to unforeseen events, including:

- un-forecast bad weather conditions;
- engine problems;
- fishing gear problems;
- personal injury;
- exceptionally large and/or unmanageable catches.

In such situations, working at sea and handling catches would become 1/too dangerous and fish would have to be abandoned at sea or 2/too difficult and slow and fish would lose their quality and become un-marketable.

Un-forecast bad weather conditions, engine and fishing gear problems, personal injury

In the bays and inlets, we are rarely caught in conditions so bad that we risk losing our catch. This is a matter of professional experience. Spending most of our working life at sea, we know how to avoid such situations by checking weather conditions before leaving the shore and while at sea, and by maintaining our fishing equipment in good working

[8] Most offences described in the *Fisheries Regulations 1998* carry maximum fines of '20 penalty units', each unit being worth $100.

condition. From our formal training as skippers and practical experience at sea we know all potential sources of physical injury and it is our professional responsibility to ensure the safety of everyone onboard.

Exceptionally large and/or unmanageable catches

In the case of haul seining, the risk is of catching an amount of fish larger than the carrying capacity of our small boats. This is unlikely but it may occur under unfavorable circumstances. For example, at certain times of the years, species such Australian salmon, mullet, trout, silver trevally, etc can form unexpected large schools. Purse seining may run into similar problems when targeting schools of pelagic species. The handling and sorting of catches that are too big could be lengthy and stressful for the fish. It would be possible to bring onboard only a portion of the catch, while the rest could die of asphyxia in the net and be wasted at sea. In the case of mesh netting, normal size catches can at times be difficult to process if they comprise too many fish with appendices, such as elephant fish or leatherjacket, because of the time required to unmesh these fish.

It is clearly not in our interest to end up with catches that we cannot manage efficiently because of the potential loss of fish resources, fishing time and revenue. Again, fishing experience is the key to minimizing this risk. Most of us are well established fishers with long-term experience in our fishery. We know the movement of species and know where and when to set our nets in order to avoid unmanageable, or unwanted catches. Problematic catches may happen with less experienced fishers or at the transition between fishing seasons when new species arrive on fishing grounds. However, within a few days, we quickly learn from each other's mistakes and avoid risky areas.

WASTE OF FISH BYCATCH: LOW RISK

Here we consider the risk of wasting fish resources through death of released fish bycatch (undersized commercial species and non-commercial species). This mostly concerns haul seine and mesh net fishing methods. By regulation, any fish (other than noxious species) not retained must be immediately returned to the water with the least possible injury or damage. Non-commercial bycatch species include porcupine fish, toad fish, cobblers, eagle ray, black stingray, banjo shark, Pork Jackson shark, sandy crab, etc.

Haul seine

Haul seines are designed to catch a variety of species of different size and shape, including a significant amount of bycatch, which we then endeavour to keep alive for release.

A few years ago, in Port Phillip Bay and Corner Inlet, we had some problems with the meshing of undersized King George whiting in the wings of our haul seines. As a result, we modified our seines to minimize meshing this species, and, indeed, most other species. The modifications include adjusting mesh size so that juvenile fish 1/either escape through the nets (larger mesh on the wings of the net) or 2/are trapped in the bag and later released alive (smaller mesh on the shoulder and bag). We have also adopted thicker material (either by using conventional nylon nets with high 24-ply, or by using polyethylene nets), which further limits the meshing of fish. Even species with spikes and appendices, such as cobblers and porcupine fish, roll over the thick and small mesh nets without getting meshed.

Over the years, we have developed practices to bunt and sort fish in the water in order to maintain them in good condition and maximize the survival of bycatch. These practices include:

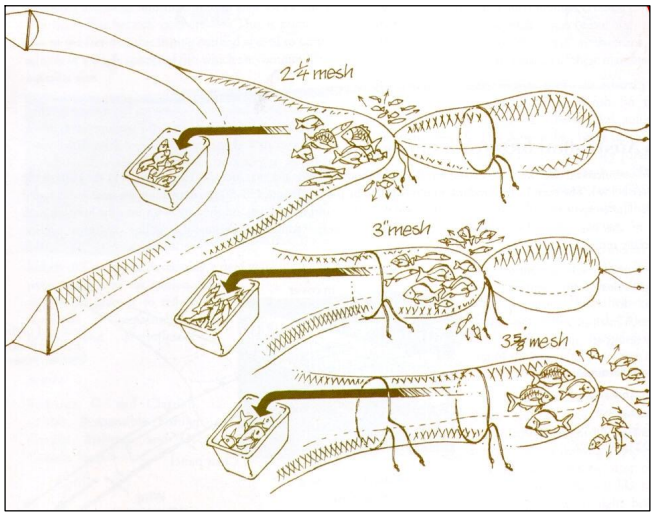
- Slow hauling speed;
- Sorting fish in sufficiently deep water and not too tight in the bag;
- Sorting fish using a deep-net and/or gloved hands;
- Releasing bycatch species that may injury others (porcupine, jelly fish) and species that are most fragile first (undersize fish), before sorting commercial species of interest;
- Minimizing sorting time and fish handling to limit stress and avoid loss of scale.

Bunting in water.

Bunting from the boat using a sorting pen and dip net.

In Gippsland Lakes, where our most important species, black bream, has a high body-shape, we have developed a haul seine that sorts fish while ensuring the survival of bycatch. We have designed a three chamber haul seine that sorts species according to

their overall size/shape. Each chamber is individually closed by a rope and the mesh size increases from the first chamber at the mouth of the bag to the third chamber at the end of the bag. All fish caught in the seine enter the first chamber and, standing in waist-deep water, we remove adults of small-size species (e.g. yellow-eye mullet, tailor, bay trout), while juveniles of the same species escape. The second chamber is then opened to let the remaining larger species in: adults of luderick and silver trevally are removed while their juveniles escape. Similarly, the third chamber is opened to let largest/highest species (black bream) in and remove the adults while juveniles, and all remaining fish, are set free. The fish are constantly kept in the water and suffer minimum stress.



Three chamber haul seine used in Gippsland Lakes.

A recent study conducted by PIRVic scientists (Knuckey *et al.* 2002) showed that under current fishing practices the chance of survival for caught and released fish was very good; the survival rate averaging 90% across all species. Short tow duration, slow hauling speed, sorting the catch in the water and using thicker net material, all contribute to maximizing the survival of bycatch. The study also found that up to 60% of small fish simply avoid capture by passing through the meshes. The results of the study should increase public confidence in the haul seine fishery.

Checking that fish are over the size limit.

Mesh net

By varying the size and shape (hanging ratio) of meshes we can design our nets to catch fish of certain size/shape. It is well recognized in Victoria, and elsewhere, that mesh nets catch little bycatch (Halliday *et al*. 2003). Avoiding bycatch is very important for us as a lot of fishing time can be wasted un-meshing unwanted fish.

Fish caught are still alive when we haul the nets and the few fish occasionally caught as bycatch are carefully removed and released. A recent study in NSW (Gray 2002) reported high survival rates for released bycatch in the inshore mesh net fishery. In some areas, when birds become seasonally more abundant (e.g. pelicans in winter), we use a 'release chute' to protect released fish from predation.

Release chute used when predation by birds increases. The chute (made of a PVC pipe) is kept in the water alongside the boat.

Purse seine

Purse seining is also a fishing method that catches very little bycatch. Today, purse seine fishers in Port Phillip Bay target species like anchovies and sandy sprat. Because of the small size of these species they have also adopted smaller meshes and thicker net material to avoid meshing them.

DAMAGE TO THE ENVIRONMENT: LOW RISK

Seagrass beds

The ecological importance of seagrass for fish stocks is well documented and we are very aware that the sustainability of our fishing and our livelihood depend on a healthy marine environment and healthy seagrass beds in particular. It is generally recognized that mesh netting and longlining have little physical impact on habitats or the marine environment (NREC 1991). Several studies and reviews have showed that our haul seining also has little impact on seagrass in the bays and inlets (WBM Oceanics Australia 1997, Knuckey *et al*. 2002).

We have designed our haul seines to have minimum contact with seagrass. The design differs slightly between the bays according to different physical characteristics, but the objective is the same. We use a footline that is about 15-20% longer than the headline, and thus slacker and towed behind the headline. As a result, the footline glides over seagrass leaves without damaging them. The net just lays the seagrass leaves down as it goes over, and the leaves stand straight back up afterward. This has been well illustrated in underwater footages taken by DPI staff (see Bycatch Video No.10 available from Dave Ryan at DPI). Further, haul seines would not fish effectively if they were too heavily weighted or 'bogged' in the seabed.

When traveling at sea we carefully avoid scarring seagrass with our propellers. By experience, we know, at every moment, the type of substrate underneath our boat, the water depth and, most importantly, how tide cycles affect water depth. We avoid anchoring and bunting on seagrass because anchors tend to hold better on sand and fish tend to escape under the net when bunting over seagrass.

Members of the Corner Inlet Fisheries and Habitat Association (CIFHA), representing professional fishers in Corner Inlet, are currently collaborating with Coast Action/Coastcare and Parks Victoria on a community education programme aimed at minimizing the impact of recreational boating on seagrass beds.

Water quality

The small size of our fishing fleet, small traveling range and limited fuel consumption means that our fishing operations generate limited pollution. Spending so many days at sea, we also need to maintain our outboard motors in top condition. We tend to replace them regularly, thus continuously upgrading to the latest and most environmentally friendly models.

Most of us carry two PVC 30 litre tanks (a main and a spare), which is well above our average daily use. Thus we never run out of fuel and do not need to refuel while at sea. Fuel tanks are normally filled on land at service stations. Marine Safety Victoria checks our fuel tanks and connecting hoses annually to ensure that they are in good working condition. We do not carry any chemical detergents at sea and we clean our boats and fishing gear with sea water immediately after fishing. Fish bins are thoroughly cleaned, on land, by wholesalers.

Marine debris

We invest a lot of money and time in building our fishing equipment and we do not want to lose any of it. We do not purposely abandon derelict fishing equipment at sea either. Occasionally, mesh nets may break away under strong tides, or after being tampered with, and roll on the seabed. Seine nets may snag on rocks and demersal longlines may break away. However, we always manage to recover our equipment, even if damaged. It would be difficult for us to lose fishing gear because of the small and shallow areas we work in and because we generally stay with our fishing gear.

Fishing trips in the bays and inlets rarely last more than four to seven hours and we do not need to take anything onboard besides our fishing equipment and, sometimes, a lunch box. Any rubbish that we may generate is kept onboard and carefully disposed of on land.

Marine pests

The Northern Pacific seastar which spread in Port Phillip Bay and the European carp which spread in Gippsland Lakes are the marine pest species that impact most on our fishing. Other pests include European shore crab, black stripped mussel, European fan worm and the Japanese wakame. High traffic by domestic vessels and fouling on their hull can potentially contribute to the spread of marine pests.

Again, the small size of our fishing fleet and our limited traveling range minimize the risk of spreading marine pests. Most of us use trailer aluminum boats that attract little fouling. The few remaining wooden boats that stay on the water are regularly cleaned on approved slipways. These slipways have to comply with strict regulations regarding water pollution and spread of marine pests. We also tend to limit our fishing activities to a few areas within one bay or inlet, launching and retrieving our boats at the same ramp. When occasionally fishing in another bay, we travel by road with trailer boats, not by sea.

After every fishing trip, particularly in Port Phillip Bay, and before going back to the boat ramp and trailers, we clean and inspect our boats, fishing equipment and anchors for the presence of marine pests. We carefully remove any seastars that we might find attached to our mesh nets or longlines and dispose of them in rubbish bins on land.

INTERACTIONS WITH WILDLIFE: LOW RISK

In this section we discuss the risks of injury to protected marine species during fishing operations. It is generally acknowledged that, in the Victorian bays and inlets, there are few interactions with commercial fishing that lead to injury of protected species (see Norman 2000, Commonwealth of Australia 2003, TQCSI - MSC 2004). Having a small number of boats and appropriate fishing practices reduce the likelihood of such interactions. A study in NSW also found a low level of fatal interactions with seabirds in the estuarine mesh net fishery (Gray *et al*. 2003).

Birds

Each Victorian bay and inlet is inhabited by different species of birds because of their different environmental characteristics. While we frequently observe seagulls and Australian pelicans in all three bays and inlets, cormorants (black cormorants and pied cormorants in particular), Eurasian coots and some duck species (like chestnut teal and musk duck) are mostly observed in the more brackish waters of the Gippsland Lakes. Short-tailed shearwaters and fluttering shearwaters, Australasian gannets, little penguins, and crested terns prefer the more marine waters of Port Phillip Bay. All of these species are protected by law, most are abundant and none is threatened or endangered. The only

two species listed as threatened are the fairy tern and little tern, which we rarely see in the areas where we work.

We mostly fish at nighttime when birds are less active, thus avoiding interaction with them. Some species, like coots, tend to form large temporary flocks that remain in one area and we can set our nets away from them. Even when birds, usually seagulls, are around during longline operations, they can't get to the baited hooks which sink rapidly in the water. Sometimes we need to free a pelican caught on nets by its tag.

Seals

According to seal experts at the Phillip Island Nature Park, Australian fur seals represent 99% of the total seal population in Victorian bays and inlets, with New Zealand fur seals, leopard seals and elephant seals only rarely seen in Port Phillip Bay and Western Port. All these seal species are protected by law, none is listed as threatened or endangered and the population of Australian fur seal is markedly increasing. Our fishing methods do not cause injury to seals and Australian fur seals, the only seals to come close to our fishing equipment, easily enter and exit haul seines and purse seines and easily tear off mesh nets to get to the fish.

Dolphins and whales

There is a resident population of bottlenose dolphins in Port Phillip Bay. It has been listed as endangered. The dolphins usually stay away from fishing boats and do not interact with our operations. Common dolphins are only occasionally seen in the bays and inlets. Southern right whales occasionally enter Port Phillip Bay but have never interacted with commercial fishing.

Other species

Great white sharks are sometimes observed in Port Phillip Bay but are not known to have interacted with commercial fishing. Seahorses, seadragons, pipefish and turtles may, on occasion, get caught in mesh nets and haul seines and we carefully free and release them without injury.

ACTION PLAN

The risk analysis has shown that our fishing activities in the Victorian bays and inlets generally present low risks to the environment. Over the years, we have modified and improved our fishing gear and fishing practices, successfully minimizing our impact on the environment.

What is important now is to maintain our fisheries at these low risk levels by formally documenting our best practices and re-affirming our commitment to them. Formally documenting our best practices here will assist new and less experienced fishers in adopting them. This is particularly important today as previous fisheries regulations, which required new licenced fishers to demonstrate minimum fishing experience, have been abolished under the National Competition Policy. We recognize two key elements in minimizing risks:

3. Focusing on prevention first, then mitigation of risks when necessary;
4. Promoting cooperation between fishers (i.e. using communication and information sharing as tools to minimize environmental risks).

TABLE 8: ACTION PLAN

INTERNAL RISKS	OBJECTIVES	ACTIONS
NON-COMPLIANCE WITH REGULATIONS		
Includes fisheries regulations and conservation regulations.	*Prevention*: all VBIFA members to be well aware of, and have access to existing legislation that affects fishing.	VBIFA members to familiarize themselves with the regulation reference list (Appendix B) and contact VBIFA Committee whenever in doubt. VBIFA Committee to rapidly communicate any changes in regulations to its members.
	Prevention: maintain existing high level of compliance.	VBIFA Committee to check the Compliance Rate recorded by Fisheries Victoria for bay and inlet fishers.
	Mitigation: encourage reporting of non-compliance.	VBIFA members to use the DPI reporting system whenever they witness illegal fishing activities (check number on VBIFA water-proof reference booklet).
	Mitigation: VBIFA's preparedness to deal with serious cases of non-compliance by its members (e.g. fishers involved being investigated or prosecuted by Fisheries Victoria).	VBIFA Committee to apply the Association's rules in cases of serious offences by its members, including: 1/ Rule 8: Mediate with fishers involved to check their continued commitment to VBIFA EMS; 2/ Rule 7: Discipline, suspension and expulsion for repeat offenders. VBIFA Committee to report actions taken to Fisheries Victoria.
WASTE OF COMMERCIAL CATCHES		
Due to unforeseen poor fishing conditions: • **Unforecast bad weather conditions;** • **Engine problems;** • **Fishing gear problems;** • **Personal injury;** • **Exceptionally large catches.**	*Prevention*: appropriate measures taken to avoid being caught in poor fishing conditions.	• Give induction on sea safety rules to new crew and occasional visitors e.g. scientists, observers (check VBIFA water-proof reference booklet); • Check weather conditions before going out and while at sea; • Ensure fuel tanks are full prior to each fishing trip; • Maintain fishing gear in good working condition; • Avoid areas and times where problematic catches are likely (e.g. catch too big or containing too much bycatch); • Have emergency numbers accessible onboard (carry VBIFA reference booklet).
	Mitigation: 'Catch Rescue'	**Important: actions below only apply to situations where no personal injury has**

TABLE 8 continued.

INTERNAL RISKS	OBJECTIVES	ACTIONS

	procedures.	**occurred. In case of injury, the safety of people onboard takes precedence over rescuing catches.**
		
		Haul seine and purse seine:
		• Release the entire catch alive, or reduce the catch to manageable size, as soon as working conditions become too difficult;
		• Seek another fisher's assistance to bring more fish bins and/or handle the catch, as required;
		• If fish have died accidentally and have spilled out of the net:
		  o Inform local Fisheries Officers immediately;
		  o Seek other fishers' assistance to collect dead fish, as required.
		
		Purse seine: Share the handling work and sale of large catches with another fisher, as appropriate.
		
		Mesh net:
		• Retrieve one net, or fleet of nets, at a time and un-mesh fish in a sheltered area; successively retrieve remaining nets in similar way;
		• Seek another fisher's assistance to un-mesh fish, as required;
		• If the situation is too dangerous:
		  o Give up fishing and come back as soon as it is safe to do so;
		  o Inform local Fisheries Officers if nets had to be left in the water.

WASTE OF FISH BYCATCH		
Fish bycatch includes undersize commercial species and non-commercial species.	*Prevention*: bycatch avoidance.	All fishing methods: At times when bycatch species abound on fishing grounds, share or seek information on their movements with other fishers; Haul seine: Use the largest mesh size possible for the targeted species (for haul seine used in Gippsland Lakes);

TABLE 8 continued.

INTERNAL RISKS	OBJECTIVES	ACTIONS
		Mesh nets: Share information with other fishers on optimal net design (e.g. hanging ratios) to increase selectivity of mesh nets.

	Mitigation: maximize survival of bycach.	Haul seine
		• Bunt in sufficient water depth to minimize crowding (at, or over, regulated depth);
		• Handle fish carefully during sorting, measuring, and releasing;
		• Use shallow dip nets, or gloved hands, when sorting catch to minimize scale damage;
		• Release bycatch species as quickly as possible and before sorting commercial catch;
		• Keep measuring board on the boat easily accessible;
		• Release fish away from birds:
		  o Use a release chute, as required;
		  o Release fish in shady areas between/under boats whenever possible.
		
		Mesh net:
		• Handle fish carefully during un-meshing, measuring, and releasing;
		• Unmesh fish as the net comes onboard and immediately:
		  o Release bycatch;
		  o Measure commercial species, as required;
		• Keep measuring board on the boat easily accessible;
		• Release fish away from birds and/or use a release chute, as required.

DAMAGE TO THE ENVIRONMENT		
Damage to seagrass	Minimize physical impact on seagrass.	• Avoid motoring through seagrass; • Avoid anchoring over seagrass when possible; • When anchoring over seagrass is necessary, prevent anchor from dragging over seagrass.
Damage to water quality	Minimize pollution from fishing boats.	• Keep engines in best possible condition (at, and above, the performance checks required by Marine Safety Victoria);

TABLE 8 continued.

INTERNAL RISKS	OBJECTIVES	ACTIONS
		• Only use outboard motors that meet required environmental standards; • If re-fueling at sea is necessary, use a funnel or siphon hose when pouring fuel into drums or tanks; • Carry absorbent rags in case of spillage (contain any spilled fuel onboard for disposal on land).
Marine debris	*Prevention*: no loss of fishing equipment at sea.	• Check fishing gear regularly for defects and recondition or dispose of appropriately on land; • When disposing of derelict nets on land, strip the nets off the lines to stop anyone re-using them; • Share information on hook-ups with other fishers.
	Prevention: no discarding of any other marine debris.	• Not discarding, at sea, any plastic bags and bottles, confectionery wrappers, strapping; bands, synthetic ropes, floats, rubber gloves, cigarette butts, etc; • Carry a rubbish container or bag on the boat; • Carry an adequate ashtray onboard, as required.
	Mitigation: retrieve any fishing equipment accidentally lost at sea.	• Recover all fishing gear accidentally lost at sea, whenever possible and safe; • Seek another fisher's assistance when necessary; • Inform local Fisheries Officers when lost fishing gear cannot be retrieved immediately; • Inform local Fisheries Officers when nets have been stolen or tampered with.
	Mitigation: retrieve marine debris found at sea.	• Whenever practical and safe, retrieve marine debris found at sea (particularly floating pieces of wood – for boating safety) and dispose of at an appropriate onshore disposal facility; • If the marine debris is too big to be carried onboard, report to Parks Victoria or Marine Safety Victoria.
Marine pests	Correct identification of marine pests.	VBIFA members to familiarize themselves with correct identification of marine pests (check VBIFA water-proof reference booklet).
	No spreading of marine pests.	VBIFA members to familiarize themselves, and comply, with DSE recommended best

TABLE 8 continued.

INTERNAL RISKS	OBJECTIVES	ACTIONS
		practices to avoid spreading of marine pests (check VBIFA water-proof reference booklet).
	Report all sightings.	Immediately report new sightings of marine pests to DSE (take pictures when in doubt).
INJURY TO PROTECTED SPECIES		
Marine birds, seals, dolphins, whales.	*Prevention*: avoid interactions with protected species.	<u>All fishing methods</u> • Fish at nighttime whenever appropriate to minimize interaction with birds (especially during summer months); • Avoid areas/times when birds and seals are in the area; • Share/seek information with other fishers on whereabouts of interacting birds and seals. <u>Mesh net</u> • Avoid setting nets in shallow waters near bird rookeries or colonies; • Retrieve mesh nets as soon as seals are spotted around; • Avoid excessive slack in buoy line.
	Mitigation: avoid injury to wildlife species.	• Carefully free and release any wildlife species that may be caught in fishing gear. (copies of 'Protected Species Handling Manual' have been ordered for distribution to members); • Comply with regulatory minimum distance (150m) and maximum speed (5 knots) allowed near dolphins and whales.
	Report injured or dead protected wildlife species observed at sea.	• VBIFA members to familiarize themselves with the correct identification of protected wildlife species (check VBIFA water-proof reference booklet); • Report injured or dead wildlife species to DSE or Parks Victoria; • Take pictures when in doubt about species identification.
	Report unusual sightings.	VBIFA members to report (and take pictures when possible): • Unusual sightings of wildlife species; • Recovered bird bands.

RESPONSIBILITIES

In order to comply with the best practices listed above in the most effective manner, VBIFA members will:

1. Carry necessary equipment at sea, including:
   a. Radio or mobile phone[9];
   b. Phone numbers of other fishers working in same area;
   c. VBIFA water-proof reference booklet;
   d. Disposable camera.
2. Endeavour to respond to calls for assistance from other fishers in handling difficult catches, whenever possible;
3. Keep a log of all reports made to government agencies and NGOs;
4. Keep looking for new ways to further improve the environmental performance of our fishing methods.

Information contained in the VBIFA water-proof reference booklet includes:

- Phone list;
- Sea safety inductions;
- Procedures to report offences, tagged fish and bird bands;
- Photo identification of marine pests and procedures to avoid spreading them;
- Photo identification of key bird, seal, dolphin and whale species.

VBIFA members will also assist land and water managers by reporting blue-green algal bloom events or other biological contaminants.

The VBIFA Committee will:

1. Administrate VBIFA and collect information from members;
2. Update information in the reference booklet;
3. Keep up to date with changes in regulations and new fishing technology (e.g. follow up on the new release chute being trialed in Corner Inlet). The Committee will seek information through regular contact with Seafood Industry Victoria, Fisheries Victoria, PIRVic, DSE, Parks Victoria and SeaNet;
4. Maintain regular communication with VBIFA members;
5. Organise the annual review of the EMS performance (as described below).

[9] Conditional Agreement: Arthur Allen will not be required to carry a mobile phone or disposable camera.

REVIEW OF EMS PERFORMANCE

In accordance with the concept of continuous improvement, the performance of this EMS will be reviewed annually and improved as required. The review will be conducted by a three-member panel, including:

- A member with expertise on the Victorian bay and inlet fisheries;
- A member with expertise on industry-driven EMS and environmental issues in the bays and inlets;
- A member who can make decisions on behalf of VBIFA.

In conducting its review, the Committee will seek feedback from:

- Individual VBIFA members;
- Government agencies;
- Other stakeholder groups with an interest in the bays and inlets.

It will also take into consideration any change that might have affected the fisheries since the implementation of the EMS, including:

- Changes in management;
- New scientific information;
- Information on new techniques and technologies that minimize bycatch and impact on the environment.

The VBIFA Committee will organize the first review, due in April 2006, by:

- Nominating members on the review panel by February 2006;
- Seeking funding to finance the review; and
- Publish an audit report two months after the review is completed in June 2006.

Daybreak in the bays.

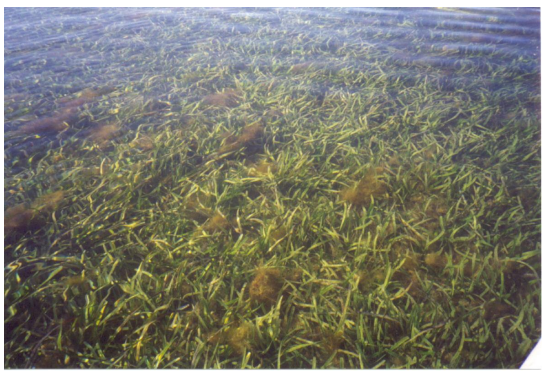
EXTERNAL RISKS

Over the years, as community concerns for the environment have grown, we have taken up the challenge and actively worked towards improving our fishing gear and fishing practices and minimizing our impact on the environment. Today, while accepting that we need to continually improve, we believe that we have successfully, and significantly, reduced our impact. However, we remain very concerned about the external environmental risks that continue to affect fish stocks and their environment and, thus, our livelihood.

It is well known that water pollution and habitat degradation from land-based activities, introduced species, illegal fishing and black marketing are serious threats to the environment and fish resources in the Victorian bays and inlets. These external risks threaten the sustainability of fishing, both commercial and recreational. We are not in a position to address these external risks directly, but in our role as custodians of marine resources we will continue to raise community awareness of these very important issues.

Catchment activities

Over the years, housing, industrial and tourism development, construction of dams, sewage outfalls and port development have significantly impacted on the bays and inlets environmental health. The 1991 report by the Natural Resources and Environment Committee (NREC, 1991) stated that eutophication and damage to fish habitats resulting from urban and industrial development threatened the viability of fish stocks in the bays and inlets. Land-based activities contribute to increasing input of nutrients, sediments and pollutants and to increasing occurrence of algal blooms. Changes in water quality and higher turbidity are believed to be behind the severe decline in seagrass observed in the 1970s in Western Port (70% of seagrass was lost, with limited recovery to date) and, to a lesser extent, in Corner Inlet[10]. In addition to providing food and shelter for many species, seagrass beds also contribute to sediment stability and water quality. The West



Seagrass: essential habitat for fish.

[10] This human-induced damage to seagrass must not be confused with the natural and seasonal seagrass die-off process. In this natural die-off process seagrass leaves are detached and washed up along the shoreline, especially during strong wind periods in autumn and winter.

Gippsland Catchment Management Authority (CMA) has just received Natural Heritage Trust funding to monitor the health of seagrass in Corner Inlet. The project, which will be conducted by PIRVic scientists, will use a combination of chemical analyses, monitoring programs and seagrass habitat mapping to trace the source of possible contaminants and link changes in water quality to the health of seagrass ecosystems.

Illegal fishing and illegal marketing of fish

We regularly witness illegal marketing of fish and this is an issue of particular concern to us. However, there is little available information on the extent of these illegal activities. The Natural Resources and Environment Committee has identified illegal sales as a serious issue undermining the economic viability of licenced fishers (NREC 1991). A recent investigation conducted for the NSW government (Palmer 2004) concluded that:

"...illegal harvesting and black marketing of fish is a serious, widespread, entrenched and growing problem in NSW. The activities and practices involved threaten resource sustainability and have serious potential consequences for public health and safety...and the ability of the legitimate fishing industry to properly plan and manage its business affairs. The environmental (sustainability) and health (public risk) dimensions of this situation are very significant and cannot be overstated."

Increasing populations of predatory bird and seal species

The growing populations of black cormorants and Australian fur seals are increasingly interfering with commercial fishing (and recreational fishing). Birds and seals affect our work by predating and/or damaging fish caught in nets and on lines and by damaging fishing equipment.

In 1992 the population of black cormorants in Gippsland Lakes increased dramatically to over 7,800 birds. Many of them were young birds born on inland waters and driven towards the coast by the drought. Their number then declined to 3,500 in 1998. Dietary studies conducted at that time estimated that the quantity of fish (all species) consumed by cormorants was about 530 tonnes, including 340 tonnes of black bream, their preferred prey species. This represented more than the combined commercial and recreational catches in 1998 (Reside and Coutin 2001, Coutin 2002). Also, most black bream eaten by birds were juvenile fish.

Black cormorants and pelicans remove fish caught in mesh nets underwater. Besides eating significant amounts of fish, they also damage fish by trying to pull them off the nets, rendering them non-marketable. Black cormorants swim and dive inside haul

seines, chasing and eating some fish and damaging others by scaring them into the meshes of the nets.
Interactions with seals are usually distinguished into two components: 'operational interactions' and 'trophic interactions', the latter relating specifically to competition for fish resources between seals and fishers (Goldsworthy *et al*. 2003). Scientists have developed various mathematical models in an attempt to predict the impact of increasing seal populations on commercial fisheries (Goldsworthy *et al*. 2003, Kearney *et al*. 2003). They suggest that the impact depends on the trophic relationships that exist between seals and fish species. For example, according to some models, the abundance of whiting would increase while the abundance of flathead would decrease under increasing seal abundance (Goldsworthy *et al*. 2003). It is also anticipated that fur seal populations will continue to increase significantly in the next 15 to 30 years, with serious implications for fisheries. Victoria has the two largest colonies of Australian fur seals, on Lady Julia Percy Island and Seal Rocks, which account for more than 50% of the entire Australian population (estimated at between 82,400 and 105,900 in 2002).

The mathematical models referred to above address seal issues at broad national or regional scales. At the smaller scale, individual fishers in the Victorian bays and inlets are confronted with increasing 'operational interactions' with seals. Seals learn to follow fishing boats and take fish from nets and lines, hampering or interrupting fishing. They go from fish to fish, selectively eating the stomach and abandoning the rest. Besides wasting catch they cause great damage to mesh-nets which they easily tear off. They also swim in and out of haul seines and purse seines, predating on the catch and scaring the fish into meshes.

Reducing the impact of seals on fisheries will require concerted action between industry, government and community at State and Commonwealth levels. We welcome the news that, at the Commonwealth level, the Department of Agriculture, Fisheries and Forestry is currently developing a National Seal Strategy to address increasing interactions between seals and fisheries, aquaculture and tourism industries, and we look forward to an opportunity to comment on the draft.

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REGULATIONS

All Acts and regulations are available from the internet: www.dms.dpc.vic.gov.au (Victorian Legislation and Parliamentary Documents), www.dpi.vic.gov.au; www.dse.vic.gov.au.

VIDEOS ABOUT THE BAYS AND INLETS FISHERIES

The Department of Primary Industries produced the 'By-catch Series'. Of particular interest are Bycatch No. 10: 'Sustainable Seining in Corner Inlet' with underwater footages of haul seining over seagrass, and Bycatch No. 8: "Beach seining the easy way".

USEFUL CONTACT DETAILS

ORGANISATION	CONTACT NAME	PHONE	WEBSITE
VBIFA	Tim Mirabella	03-5979 4277	
Seafood Industry Victoria (SIV)	Executive Officer (Ross McGowan)	03–9824 0744	www.siv.com.au
	EMS Project Officer (Dr Pascale Baelde)	03-9824 0744	
Fisheries Victoria (DPI)	Manager commercial fisheries	03-9658 4361	www.dpi.vic.gov.au
Fisheries Co-Management Council (FCC)	Executive Officer (Nik Phizacklea)	03-9347 9299	www.fcc.vic.gov.au
Seafood Services Australia (SSA)	Managing Director (Ted Loveday)	1300 130 321	www.seafoodservices.com.au
Parks Victoria (DSE)		131963	www.parkweb.vic.gov.au
Marine and Coastal Community Network (MCCN)	Victorian Office (Tim Allen)	03-9341 6508	www.mccn.org.au
Gippsland Coastal Board			www.gcb.vic.gov.au
Central Coastal Board			www.ccb.vic.gov.au
Victorian Coastal Council			www.vcc.vic.gov.au
Catchment Management Authorities	Port Phillip and Western Port	03-9785 0187	www.ppwcma.vic.gov.au
	West Gippsland	03-5175 7800	www.wgcma.vic.gov.au
	East Gippsland	03-5153 0462	www.egcma.vic.gov.au

APPENDIX A

THE VICTORIAN BAYS AND INLETS FISHERIES ASSOCIATION INC. STATEMENT OF PURPOSES

The purposes of the Victorian Bays and Inlets Fisheries Association are:

1. To provide a representative body for eligible members regarding bay and inlet fishing in Victorian waters.
2. To promote and develop ecologically sustainable development of fisheries in Victorian bay and inlet waters.
3. To promote community awareness of the economic value of fishing in Victorian bay and inlet waters and the importance of fish as food.
4. To promote security of access to Victorian waters and fishery resources for commercially licensed bay and inlet fishers.
5. To promote security of licence rights and entitlements under the *Fisheries Act* 1995 (Victoria) and/or its successor in legislation for the benefit of commercial fishers in the Victorian bay and inlet fisheries.
6. To promote consistent, objective, and efficient management of fisheries in Victorian bay and inlet waters in accordance with the principles of ecological sustainable development.
7. To undertake and promote research and development in bay and inlet fisheries in Victorian waters.
8. To promote environment certification as to fishing methods in Victorian bay and inlet fisheries.
9. To promote quality certification of fish taken from Victorian waters in bay and inlet fisheries.
10. To work collaboratively with other entities in identifying options and opportunities for maximising of profits for commercial fishers in Victorian bay and inlet waters at all times having regard to the principles of sustainable development.
11. To provide information and education to licensed fishers in the bay and inlet fisheries in Victorian waters.
12. To take out membership of such bodies as the Association feels will assist and enhance commercial fishers in the Victorian bay and inlet fisheries.
13. To document and review fishing practices in the bays and inlets of Victorian waters.
14. To develop codes of conduct for use by commercial fishers in Victorian bay and inlet waters.
15. To promote and develop an environmental management plan for commercial fishing in bay and inlet fisheries in Victorian waters.

APPENDIX B
REGULATION REFERENCE LIST

REGULATIONS	TYPE OF RESTRICTIONS	ACTS AND REGULATIONS	AUTHORITY
Commercial fishing restrictions			
Fisheries Regulations	Legal size for fish species; Fishing gear restrictions; Closed areas; Closed seasons.	Fisheries Act 1995 Fisheries Regulations 1988	Fisheries Victoria
Marine National Parks and Sanctuaries (no-take zones)	Boundaries for parks and sanctuaries are shown on the Parks Victoria website.	Parks Victoria Act 1998 National Parks Act 1975	Parks Victoria Fisheries Victoria
Heritage Areas	It is an offence to enter protected zones around shipwrecks (7 protected zones in Port Phillip Bay)	Heritage Act 1975 (State Waters)	Heritage Victoria (DSE)
No Boating Zones	It is an offence to travel through No Boating Zones.	Marine Act 1988	Water Police and Parks Victoria
Protected species			
All marine reptiles, turtles, birds and mammals protected under wildlife legislation. All seahorses, seadragons, pipefish protected under fisheries legislation.	It is an offence to intentionally cause injury or death to a protected species.	Wildlife Act 1975 Flora and Fauna Guarantee Act 1988 Fisheries Act 1995	Department of Sustainability and Environment Fisheries Victoria
Whales and dolphins	Exclusion zone around marine mammals (minimum 150 m distance and maximum 5 knots speed).	Wildlife Act 1975; Wildlife (Whale) Regulations 1988.	Parks Victoria
Pollution control	The discharge of oil residues, chemicals, garbage, sewage, litter or any other waste is prohibited in any waters of Victoria.	Environment Protection Act 1970 Pollution of Waters by Oil and Noxious Substances Act 1986 Marine Act 1988	EPA (Environment Protection Authority) Marine Safety Victoria (oil spill coordination and response)
Marine debris	Total prohibition on the disposal of plastics into the sea.	International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)	Intergovernmental responsibilities
	Marine debris[11] is listed as a threatening process; it includes plastic garbage, recreational and commercial fishing gear and solid non biodegradable floating materials. Risks to wildlife include entanglement in nets and ropes and ingestion of pieces of filament and hooks.	EPBC Act 1999	Department of Environment and Heritage (DEH)

Corner Inlet, Gippsland Lakes, Port Phillip Bay (western shore) and Western Port are listed as 'Wetland of International Importance' under the Ramsar Convention (1971) (www.ramsar.org).

[11] The exact nomination title is "Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris" (see www.deh.gov.au/biodiversity/threatened/ktp/marine-debris.html).

APPENDIX C

Average annual commercial catch by species in the bays and inlets.

Common name	Scientific name	Average annual catch (tonnes) in last five years (98-99 to 02-03)*
King George whiting	*Sillaginodes punctata*	169.4
Black Bream	*Aconthoparus butcheri*	141.4
Southern anchovy	*Engraulis australis*	124.8
Pilchards	*Sardinops sagax*	117
Southern sea garfish	*Hyporhamphus melanochir*	109.8
Yellow-eye mullet	*Aldrichetta forsteri*	98.8
Southern calamari	*Sepioteuthis australis*	74.2
Australian salmon	*Arripis spp*	73.4
Rock flathead	*Platycephalus laevigatus*	69.4
Sandy sprat	*Hyperlophus vittatus*	61.4
Snapper	*Pagrus auratus*	53.8
Silver trevally	*Psuedocaranx dentrex*	50.2
Tailor	*Pomatomus saltatrix*	46.8
Gummy shark	*Mustelus antarcticus*	28.4
Greenback flounder	*Rhombosolea tapirina*	23.2
Luderick	*Girella tricuspidata*	16.8
Sand flathead	*Platycephalus bassensis*	15.2
Sea mullet	*Mugil cephalus*	15
Leatherjacket	*Monacanthidae*	12
Yank flathead	*Platycephalus speculator*	9.4
Dusky flathead	*Platycephalus fuscus*	7.8
Short-fin pike	*Sphyranea novaehollandiae*	7
Stranger	*Haletta semifasciata*	4.4
Elephant fish	*Callorhinchus milii*	4
Total		1333.6

* Data from DPI website

Victorian Bay & Inlet Fisheries Association Inc.

(VBIFA)

Reference Booklet

2005

Victorian Bay & Inlet Fisheries Association Inc. (VBIFA)

Environmental Management System
(EMS)

Reference Booklet
2005

PHONE LIST

VBIFA COMMITTEE	
Port Phillip Bay/Western Port……Tim Mirabella	(03) 5979 4277
John Murdoch	(03) 5251 3472
Corner Inlet……....Neville Clarke	(03) 5686 2608
Gippsland Lakes……Gary Leonard	(03) 5155 3005
FISHERIES	
Fisheries Victoria Head Office……....Commercial fisheries	(03) 9658 4361
Recreational Fisheries	(03) 9658 4371
Regional Offices…….……Geelong	(03) 5226 4667
Mornington	(03) 5975 4779
Yarram	(03) 5183 9100
Bairnsdale	(03) 5152 0400
Lakes Entrance	(03) 5155 1539
Reporting Fishing Offences	133 474*
PIRVIC (Primary Industry Research Victoria, DPI)	(03) 5258 0111
Water Police	1800 135 729
CONSERVATION	
Parks Victoria……...Statewide	131 963*
Regional Offices……Queenscliff	(03) 5258 4030
San Remo	(03) 5678 5247
Foster	(03) 5683 9000
Yarram	(03) 5183 9100
Bairnsdale	(03) 5152 0600
DSE Customer Service Centre	136 186
EPA (Statewide)……..Litter Report	1800 352 555
Pollution Watch Line	1800 444 004*
Regional Offices……East and South Gippsland	(03) 5176 1744
South Metropolitan	(03) 8710 5555
West Metropolitan	(03) 9695 2722
South West Metropolitan	(03) 5226 4825

PHONE LIST

CONSERVATION (CONT'D)	
Oil or pollutants spills……Marine Safety Victoria	1800 000 464
Australian Maritime Safety Authority	1800 622 153
Harbour Master……..Port Phillip Region	(03) 9644 9777
Port of Geelong	(03) 5226 6300
Western Port Region	(03) 5983 9406
Regional Coastcare Facilitator…….Statewide Coordinator	(03) 9412 4651
Geelong	(03) 5226 4669
Port Phillip Region	(03) 9296 4532
Yarram	(03) 5183 9116
Bairnsdale	(03) 5152 0439
SeaNet	(03) 9824 0744
MCCN (Marine Coastal Community Network)	(03) 9341 6508
Fishcare Volunteers……..Port Phillip/Western Port	(03) 9296 4530
Gippsland	(03) 5152 0456
VICTAG (to report tagged fish)	1800 677 620
Australian Bird and Bat Banding Scheme (to report bird bands)	(02) 6274 2455
Victorian Wader Study Group……..Chairman	(03) 9589 4901
Gippsland contact	(03) 5182 5470
Penguin and seal rescue/research……Earthcare St Kilda	0500 832 784
Phillip Island Natural Park	(03) 5951 2800
Melbourne Museum	131 102
SEA SAFETY	
Marine Safety Victoria	(03) 9655 3399
Australian Search and Rescue (24hrs)	1800 641 792*
Bureau of Meteorology	(03) 9669 4916
EMERGENCY	000

*24 hour numbers

SEA SAFETY INDUCTIONS

Basic safety rules for new deckhands and occasional visitors:

- Instructions from the vessel's skipper must be obeyed at all times;
- One hand for yourself; one hand for the boat;
- Keep hands and legs well clear of ropes and winches;
- When moving around, never jump, run or take unsafe short cuts;
- Keep a constant lookout;
- Keep the deck clean and tidy; contain any fuel spills onboard;
- Keep all rubbish, including cigarette butts, in bag for disposal on land;
- Do not lift heavy weights (nets, fish boxes) on your own, use lift gear when available or ask for assistance;
- Alcohol and drugs are strictly prohibited at sea;
- Check location of mobile phone/radio and emergency numbers on the boat;
- Beware of touching fish as some species can cause physical injuries; always check with the skipper first; do not attempt handling rays, cobblers and gurnards;
- Use adequate clothing for protection against cold weather, rain and sun (use sun cream); avoid loose clothes and wear adequate footwear.

REPORTING FISHING OFFENCES

The Department of Primary Industries encourages reports of suspected illegal activities anywhere in Victoria. The number to call is 13 FISH (133 474):

- This number will be answered 24hrs a day seven days a week
- You will be asked to leave your telephone number and name
- The officer on duty will be paged and will return your call
- All information will be treated in strict confidence

Helpful information includes:

- Time, date and location
- Descriptions of people involved
- Vehicle/boat registration
- Type of activity
- Equipment used

REPORTING TAGGED FISH

Research agencies and recreational fishers tag and release fish to learn more about their growth and movement. If you catch a tagged fish, record the date and location of the capture, the fish's fork length and the tag number.

If you intend to keep the fish then retain the tag, some scales and, if possible, freeze the fish frame. If the tag does not display a phone number report your capture on **1800 652 598** or VICTAG on **1800677 620**.

If you intend to release the fish, do not remove the tag as the fish might be caught again by another fisher and provide useful insights into the fish movements and growth.

REPORTING BIRD BANDS

If you find a bird or bat with a band, wing tag or some other marking, write, email or telephone the ABBBS with the following information:

- The band number
- Where you found the band
- When you found the band
- What you think happened to the bird
- Where the bird is now
- Where the band is now
- Notes about any other marks on the bird

Contact:
The Australian Bird and Bat Banding Scheme (ABBBS)
GPO Box 8
CANBERRA ACT 2601
Telephone (02) 6274 2407
Fax (02) 6274 2455
Email: abbbs@deh.gov.au

If the bird is dead, and if possible:

- Take the band off
- Gently straighten it as much as you can
- Stick it to some cardboard
- Write the band number onto the cardboard
- Write whether you have telephoned the ABBBS about this band
- Send the band to the ABBBS

AQUATIC PESTS: TREAT 'EM MEAN – KEEP YOUR BOAT CLEAN

The Department of Sustainability and Environment (DSE) recommends six Ds to deter pests. Every action taken reduces the chances of spreading pests and must be carried out every time you take your boat or gear out of the water and especially when moving to different locations. Remember to check water restrictions in your area.

Six Ds to deter pests	Areas to target in your boat	Why
1. **DISLODGE** all plants and animals and bin them	**FOULING SURFACES** including hull, hull fittings (propeller, rudder etc) water intake pipes, anchor and anchor ropes/chains	To stop pests growing on or in your boat
2. **DRAIN** water from boat and gear. Try not to let it drain back into the water	**DAMP PLACES** including water in the bottom of the vessel, gear compartments, anchor wells, buckets	To kill any eggs and small pests in water or damp places
3. **DISPOSE** of unwanted live bait in a bin	Any species removed from water for bait or bait packing	To kill any pests used as bait or bait packing
4. **DOUSE** your boat and gear with freshwater. Try not to let it drain back into the water	**FOULING SURFACES** including hull, hull fittings (propeller, rudder etc) water intake pipes, anchor and anchor ropes/chains	To wash away and kill any eggs or small pests
5. **DRY** your boat and equipment	**GEAR** including nets, wetsuits, life jackets fishing rods, tackle boxes, buckets, trailers and towing accessories	To kill any eggs and small pests in water or damp places
6. **DON'T FORGET** to apply an authorised antifoulant where appropriate (within the antifoulant maximum in–service period and as directed on the can)	**HULLS** rudders, sea intakes and other underwater appendages	To stop pests growing on your boat

MARINE PEST IDENTIFICATION

Northern Pacific seastar

A large seastar with a small central disc and five distinct arms that taper to pointed tips. It is predominantly yellow in colour and often seen with purple or red detail on its upper surface. There are numerous small spines with sharp edges on the upper body surface that are arranged irregularly along the arm edges. The underside is a uniform yellow in colour. Fully grown individuals can reach 40-50 cm in diameter.

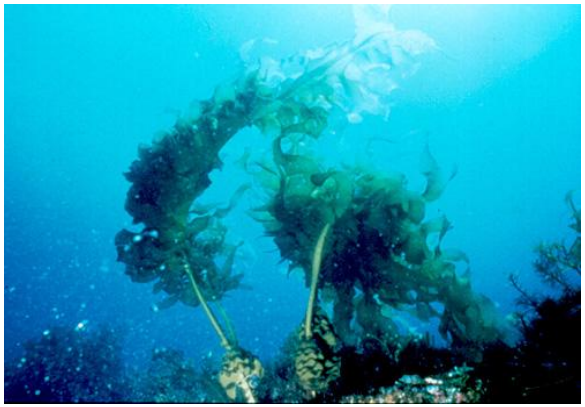
European shore crab

A medium-sized crab that attains a width across the carapace of up to 80mm, but more typically 65mm. The crab has five distinct spines on the outside edge of the carapace on either side of the eyes. The colour of the upper surface in adults is distinctively green but tends to red-orange on the under surfaces of larger animals. Juvenile crabs are generally lighter in colour than adults. The ends of the fourth walking legs are slightly flattened with acute tips.

MARINE PEST IDENTIFICATION (CONT'D)

Black stripped mussel
A small, finger-nail sized mussel, growing to an average size of 25mm. It has a varied shell colouration, from black through to a light colour, with some small individuals having a light and dark zigzag pattern. The right valve overlaps the left valve, and is slightly larger. It settles in clusters, and is rarely seen as a single individual.

European fan worm
Large worm, tube length can exceed 300mm. Crown colour varies from distinct orange, white and red-brown bands to pale fawn throughout with distinct bands. Crown with two lobes, only one of which is spiralled. Crown can be completely withdrawn into tube if worm is disturbed.



Japanese Wakame
A brown seaweed that can reach an overall length of 1-3 metres. It is an annual species with two separate life stages. The macroscopic stage, usually present through the late winter to early summer months and a microscopic stage, present during the colder months. The macroscopic stage is golden-brown in colour, with a lighter coloured stipe.

CORMORANTS

Great Cormorant
Widespread and most abundant cormorant species. Commonly fly in formation and congregate in large numbers to feed.
(size: 70–90cm)

Little Black Cormorant
Widespread and abundant.
Feed and roost in large flocks.
(size: 58-63cm)

CORMORANTS (CONT'D)

Little Pied Cormorant
Widespread and abundant. Small groups or individuals roost along shorelines.
(size: 50-60cm)

Pied Cormorant
Total population less than 150 birds in the Gippsland Lakes.
(size: 66-84cm)

Black-faced Shag
Occurs in small flocks of 10-20 birds. The Black-faced Shag can be confused with the Little Pied Cormorant, but is much larger and has a relatively longer bill.

GULLS

Silver Gull (seagull)
The familiar seagull is white with pale silver-grey underparts. The wings have black tips and are marked with white spots. The tail is white and the bill and legs are red. The eye is whitish.
(size: 40-42cm)

Pacific Gull
Sometimes mistaken for an Albatross the black and white Pacific Gull is a very large gull, but a bird of the shore rather than of the oceans. It has a massive yellow bill with a red wedge shaped tip and yellow legs. It is much less common than the abundant and aggressive Silver Gull.
(size: 63cm)

Kelp Gull
A large, robust sea-bird. White on head and body. Wings black above and white below with white edges. Wings with small white patches towards tip. Broad, rounded, white tail. Dark brown eyes. Stout beak, expanded toward the tip, slightly hooked, dull yellow with a dull red spot near lower tip. Yellow-green legs.
(size: 57 cm)

TERNS

Little Tern
Rare. Adult beak is pale yellow with black tip, legs yellow, cap black with white forehead extending to eye. More common east of Wilson's Promontory. Little Tern and Fairy Tern very similar in shape and size.
(size: 20-28cm)

Fairy Tern
Rare. Very similar in size and shape to the Little Tern. More common west of Wilson's Promontory.
(size: 25-26cm)

Crested Tern
The most common tern. Largest tern with yellow bill, shaggy black crest on crown, and black legs. Sometimes wrongly named sooty tern.
(size: 44-48cm)

Sooty Tern
Very rare occurrence in Victoria. Black above and white to pale grey underneath. Bill distinctively black.
(size: 40-47cm)

DUCKS

Musk Duck
Large black duck. The male has a pendulous lobe of skin beneath the bill. Generally, musk ducks are seen in small numbers on deep, sheltered, permanent freshwater lakes and swamps throughout all of southern Australia.
(size: 47-70cm)

Chestnut Teal
The male has a glossy green head and a white flank patch which can be seen in flight. The female and juvenile males are darker and lack the white throat.
(size: 38-44cm)

SHEARWATERS

Fluttering shearwater
The head to below the eye, upperparts and thigh patch are dark greyish brown. The underparts and flank patch are white and the white underwings have brownish borders and the armpits are dusky-grey. A partial collar is faintly mottled and the bill is fine.
(size: 33cm)

Short-tailed Shearwater
Completely dark brown with occasional traces of white in the centre underwing.
(size: 40-43cm).

GREBE

Great Crested Grebe
Large water bird. Grey to brown on the back with a white silky breast and long white neck. The straight bill is long and pointed. In adults the dark, double horned crest is formed by prominent ear-tufts and can be expanded.
(size: 50cm)

Hoary-headed grebe
Light grey back, white below. Black crown and throat, with white and grey face. Construct floating nests using algae and other water plants.
(size: 29-30cm)

SEALS

Australian Fur Seal
Represent 99% of all seals in the Victorian bays and inlets. They can exhibit several colours from brown, cream, grey to black. They jump and roll in the water and swim in an up and down motion using their flippers.

Leopard Seal
Rare occurrence in the Victorian bay and inlets and easily identified. Swim like a fish using their tail in a sideway motion.

New Zealand Fur Seal
Rare occurrence in the Victorian bays and inlets. They are smaller and more uniformly grey/silver in colour than Australian fur seals, but they have the same swimming pattern and both species are difficult to distinguish in water.

Elephant Seal
Rare occurrence in the Victorian bays and inlets and easily identified. Swim like a fish using their tail in a sideway motion.

DOLPHINS

Bottlenose dolphin
Bottlenose Dolphins are largely grey on the back and pale below without distinctive features. They have a robust beak and a tall swept back dorsal fin.

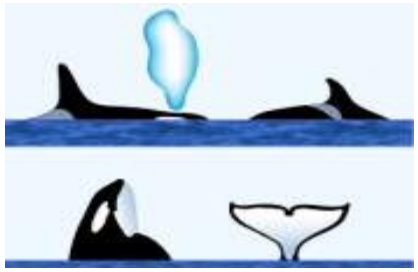
Common dolphin
Common Dolphins have a striking `figure-of-eight` pattern on the side of the body, with the front part over the chest typically pale yellowish, and the hind part usually pale grey. The dorsal fin is triangular and in many animals has a central pale patch visible in good light. Common dolphins only occasionally enter the bays.

WHALES

Humpback Whale
The humpback whale is one of the most easily recognisable of the large whales. A dark grey or black body with white patches on its belly, pectoral fins and underside of the tail flukes. Pectoral fins are scalloped or serrated on the trailing edge. Has a small dorsal fin.

Southern Right Whale
Black/brown with white patches underneath. Huge callosities (growths) on the head. Southern Right Whale has broad pectoral fins and no dorsal fin. It has two blowholes forming a wide V-shaped and up to 5m high blow.

WHALES (CONT'D)



Killer Whale
A strikingly marked animal with contrasting areas of intense black and white. Rounded head, indistinct beak, large pointed teeth and prominent upright dorsal fin.