

**DEPARTMENT OF
PRIMARY INDUSTRIES**

**STATEMENT OF MANAGEMENT ARRANGEMENTS
FOR THE VICTORIAN COMMERCIAL SCALLOP
(*Pecten fumatus*) FISHERY**



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STATEMENT OF MANAGEMENT ARRANGEMENTS FOR SCALLOPS IN THE VICTORIAN ZONE (*Pecten fumatus*) FISHERY

1. FOREWORD

Fisheries Victoria is submitting this Statement of Management Arrangements in the Victorian Scallop fishery for assessment under parts 13 and 13A of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.

Victoria's fisheries resources are a public asset and are available for recreational and commercial use, subject to the *Fisheries Act 1995* and subordinate legislation. The Fisheries Division of the Department of Primary Industries (DPI) is the steward of the State's fisheries resources and, as a regulatory authority, the Department is responsible for their use and conservation. The challenge is to ensure that utilisation of fisheries stocks and ecosystems is sustained to balance the diverse needs of the community and a wide range of interest groups.

Fisheries management is a task that generally has to be achieved in an environment of imperfect knowledge about fish stocks and fisheries ecosystems. The following statement of management arrangements has been compiled to summarise the Department's strategies to ensure the ongoing sustainability of scallop stocks in Victoria.

2. INTRODUCTION

In 1986, management of the Bass Strait scallop fishery was split between the Commonwealth, Tasmania and Victoria through a State/Commonwealth Fishery Arrangement under an Offshore Constitutional Settlement (OCS) agreement. Through this agreement, three zones emerged, the Commonwealth (central zone), Victoria (20 miles from the high tide watermark) and Tasmania (20 miles from the high tide watermark).

The Fisheries Co-management Council and the commercial scallop fishery committee advises Victoria's Minister for Agriculture on scallop fishery matters. Advice is also sought from Seafood Industry Victoria.

3. OBJECTIVES OF THE VICTORIAN FISHERIES ACT 1995

The relevant objectives of the *Fisheries Act 1995* are:

- S. 3 (a) To provide for the management, development and use of Victoria's fisheries, aquaculture industries and associated aquatic biological resources in an efficient, effective and ecologically sustainable manner;
- (b) To protect and conserve fisheries resources, habitats and ecosystems including the maintenance of aquatic ecological processes and genetic diversity;
- (c) To promote sustainable commercial fishing and viable aquaculture industries and quality recreational fishing opportunities for the benefit of present and future generations;
- (d) To facilitate access to fisheries resources for commercial, recreational, traditional and non-consumptive uses;
- (e) To promote the welfare of persons engaged in the commercial fishing industry and to facilitate the rationalisation and restructuring of the industry;
- (f) To encourage the participation of resource users and the community in fisheries management.

4. BIOLOGY AND ECOLOGY OF COMMERCIAL SCALLOPS

4.1 General Description

The commercial scallop, *Pecten fumatus*, occurs along the coast of southeast Australia from central New South Wales through Victoria to South Australia and around Tasmania. Populations are found in Port Phillip Bay (Victoria), Jervis Bay (New South Wales) and Coffin Bay (South Australia) as well as more exposed coastal waters (Young and Martin, 1989). Scallops are found in soft sediments ranging from mud to coarse sand and usually lie buried with only the flat valve visible. Frequently, scallops are aggregated into beds, the orientation of which may be influenced by tidal currents. In Port Phillip Bay (and also Jervis Bay) scallops occur mainly in water of 10 to 20 metres depth but they may be found considerably deeper than this (40 m+) in Bass Strait.

The commercial scallop is hermaphrodite and the gonads are divided into both male and female portions. Individuals usually mature at about 12-18 months of age. Once maturity has been reached (fecundity increases with age), spawning occurs from winter to spring (June to November) although there are periods when spawning may be at a peak. The timing of these peaks may vary according to location and also according to environmental conditions, but appears to be in spring in Tasmania and Victoria (Sause et al 1987a). There is some very limited evidence for a smaller, autumn peak in spawning for scallop populations in Bass Strait (Coleman, 1988a), and there is some evidence for multiple spawning by scallops in Jervis Bay (Young and Martin, 1989; Fuentus, 1994).

The larvae are planktonic and go through a number of larval changes before eventual settlement and metamorphosis to the adult form. The duration of the planktonic phase is also influenced by environmental factors. Larvae initially settle by byssal attachment to filamentous weed but become free moving at about 4-5 mm shell length. Because initial settlement is by byssal attachment, the deposition of silt on otherwise suitable surfaces may inhibit settlement (Minchin, 1992).

Antidotal evidence suggests that, in areas adjacent to Lakes Entrance, scallops grow to marketable size in approximately 18 months but may take longer to reach marketable size in offshore locations in Bass Strait. Scallops also show seasonal and annual fluctuations in meat yield. The scallop fishery is a roe-on fishery and therefore meat yield varies considerably in relation to the reproductive cycle. It is highest immediately prior to spawning.

In a study of Tasmanian scallop beds carried out in the early 1950s, the life-span of *Pecten fumatus* was estimated as being up to 16 years with the majority of scallops in most of the areas studied being 5 to 12 years old (Fairbridge, 1953).

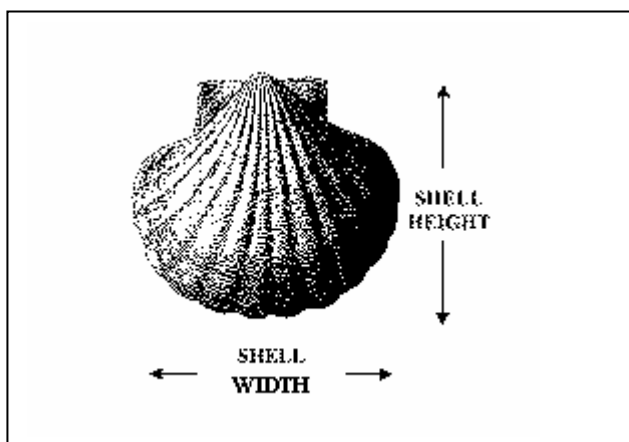


Figure 1. Scallop shell dimensions.

4.2 Predators, parasites and natural and fishing induced mortality

The starfish (*Cosctinasterias calamaria*) and the whelk (*Pleuroploca australasia*) have both been observed to predate on scallops. Over a four year period starfish were reputedly responsible for the death of as much as 80% of a scallop population in the D'Entrecasteaux Channel in southern Tasmania (Olsen 1955). The distribution of *C. calamaria* in Port Phillip Bay has also been associated with the incidence of intact but empty scallop shells (Woo and Woodburn, 1981). Octopus are also predators on scallops (Kailola 1993). The mudworm (*Polydora websteri*) (Dix 1981), and a number of parasites, including bucephalid trematodes (Sanders and Lester 1981) and nematodes (McShane and Lester, 1984) have been reported to cause mortality of *Pecten. fumatus* but the impacts of these species on population levels have not been determined.

Only one study has specifically investigated natural mortality in populations of *Pecten fumatus*. Based on tagging experiments in Port Phillip Bay, Gwyther and McShane (1988) reported an annual mortality rate of approximately 40%.

Natural mortality rates for scallops can vary considerably between species. Estimates for the European scallop *Pecten fumatus maximus* suggest a combined natural and indirect fishing mortality of 10 – 50% per year on fished bed while mortality on unfished bed may be as low as 15% for newly recruited scallops (Gruffyd 1972, 1974). Mortality rates as low as 5% have been reported for unfished populations of the Iceland scallop (Naidu 1988). Between 1982 and 1987, estimated natural mortality ranged from 11% to 51%. Factors influencing natural mortality include population density and bottom type.

4.3 The distribution of larvae and the formation of scallop beds

Investigation of spat settlement (Young et al. 1992) indicates that the distribution of larvae is greatly affected by the strength and direction of winds. In calm summers, beds may be largely self-recruiting but during windy summers, settling larvae may originate from beds some distance away. During 1986 - 1987, a significant relationship was found between numbers of spat per collector and catch rates of commercial scallops taken in the same 1^o square as that containing the spat collectors (Young et al. 1990). However, there is uncertainty as to whether spat settling in the bags had been carried by water currents from areas some distance away or had been spawned, remained and settled all within the same area (Young. 1999).

Hammond et al. (1994) used a numerical model of Bass Strait circulation to simulate larval dispersal over periods of 14 to 28 days between September and March of 1985/86, 1986/87 and 1987/88. Simulations were run for beds, existing in the mid-1980s and also for these beds plus beds known to have been fished before the 1980s. The major finding of the study was that for existing beds self-seeding was common while cross seeding was rare. When both existing and earlier beds were included in the modelling, cross seeding was more common because the density of beds in Bass Strait was higher and the distances between them were less.

A major management implication of this research is that as the number of beds becomes reduced, self-seeding becomes more important as a means of maintaining the viability of beds. If high fishing-induced mortality occurs on a scallop bed once it is fished, the future viability of that bed is in doubt since it cannot be assumed that it will be replenished by settlement of spat from elsewhere.

Current knowledge suggests, therefore, that at the current low stock levels, beds in the east of Bass Strait are unlikely to contribute to recruitment in the west. Contributions towards recruitment from other zones will depend on weather conditions and the extent to which these contribute to the dispersal of larvae away from that zone.

4.4 Environmental Correlations

Little is known about the correlations between environmental conditions scallop growth, condition, reproduction and settlement. During a study of scallop reproduction in Bass Strait (Young 1999), gonad development was found to start when water temperature was lowest and nutrient concentrations were highest. Gonad condition was highest and synchrony in gonad development was greatest where concentrations of phosphate, nitrate and silicate were highest.

Only a limited amount of environmental data exists for the fishery. In addition, much of the data was obtained from areas distant from those in which the fishery occurs. No correlations between environmental, oceanographic and fishery variables were found for the western zone. In the east, significant correlations were found between water temperature and weight per bag and between nitrate and weight per bag one month later. Each one-degree increase in mean monthly water temperature was associated with a small but statistically significant decrease in weight per bag during the same month. Each mg/l increase in the concentration of nitrogen in the water was associated with a small but statistically significant increase in weight per bag in the following month.

The conclusion from the study was that existing data is not sufficient to provide much detail on the way in which environmental conditions are associated with scallop biology and the fishery. This highlights the need for precautionary management using conservative catch quotas.

5. CURRENT MANAGEMENT ARRANGEMENTS OF THE VICTORIAN SCALLOP FISHERY

A description of the management arrangements for the Victoria scallop fishery can be found in the Victorian Fisheries Web site (www.dpi.vic.gov.au/fishing) and in the Fisheries Co-Management Council annual report.

There are 94 licences in the Victorian scallop fishery held by 50 individuals/companies. This is the maximum number of licences that exist. Any reduction would only occur if the licence holder failed to renew their licence or if they were deemed to be not a fit and proper person. Under the current regulations no new licences will be issued in any fishery; however a licence is fully transferable.

Of the 94 licences, only 12 to 20 tend to operate fishing vessels in any fishing season and consequently could be active in the Fishery depending on the market price. The majority of the active licence holders also hold licences for other fisheries and may concentrate their efforts in other fisheries such as the Victorian inshore trawl, Commonwealth Shark Fishery and the Southern Squid Fishery.

The management arrangements for the fishery are developed via a consultative process that includes the scallop industry and the Commercial Scallop Fishery Committee (SCFC) of the Fisheries Co-Management Council (FCC). Membership on any fishery committee of the FCC is expertise based, and the FCC's role is to provide independent policy advice on fisheries management issues to the Minister responsible for fisheries. The FCC includes members with a range of expertise and backgrounds, including conservation and environment. Members of the general public are able to participate in the consultative process through the FCC and by direct representations to the Minister for Agriculture.

This statement of management arrangements is the policy framework within which the Victorian Scallop Fishery operates. It describes the objectives for the fishery and the management methods by which the ecological sustainability of the industry is ensured. The policy framework for management of scallops in Victoria is reviewed annually, both internally and by the Commercial Scallop Fishery Committee of the FCC.

Fisheries Victoria consistently works with both Tasmania and the Commonwealth to ensure that management arrangement across jurisdictions is understood and, if possible, consistent. Fisheries Victoria has official permanent observer status on the Commonwealth's ScallopMAC.

5.1 Brief history

In 1963, the scallop fishery began in Port Phillip Bay in Victoria. The fishery expanded over the next few years but collapsed in 1969 due to over-exploitation of the scallop beds. The fishery recovered and continued until 1996 when Government ceased scallop-fishing activity in Port Phillip Bay. The Victorian Government closed the fishery in Port Phillip Bay to commercial fishers on 31 March 1997. Catches varied considerably from year to year (Table 1). In 1989 and 1990 there were too few scallops to support a fishery. In other years between 1970 and 1996, scallop landings from the Bay (as meat weight) ranged from 18 to 1655 tonnes.

In 1970 scallops were discovered off Lakes Entrance in eastern Victoria and subsequently in other areas of Bass Strait. While there has been a fishery in eastern Victoria since 1970, catches have, as in Port Phillip Bay, been very variable, ranging from 41 to 1419 tonne meat weight.

The closure marked the end of the 30 old year old commercial scallop fishery in the Bay that had been in decline since 1988. At that time, 18 fishers held commercial fishing licences for scallop fishing in the Bay only, while a further 66 held licence for the Bay and ocean fishing.

5.2 Geographical Boundaries of the Fishery

Distribution of Bass Strait scallop fishery which, were settled by OCS arrangements between the Commonwealth, Victoria and Tasmania in June 1986. The Victorian zone is 20 nautical miles out to sea from the high water mark of the coast of Victoria.

In Victoria, scallops are found in two broad zones from the border with South Australia generally to the longitude 146° East (which intersects with the Victorian coastline west of Wilson's Promontory); and from the latitude 39° South, off the eastern shore of Wilson's Promontory generally to a point off the border with New South Wales.

The Victorian-fishing zone extends 20 nautical miles from its coast (**Figure 2, blue area page 13**) with the majority of the fishery being conducted from the ports of Lakes Entrance and Port Welshpool. It should be noted that while no commercial fishing of scallops is permitted in Port Phillip Bay it continues to support a viable recreational scallop fishery.

5.3 Catch and Effort Controls for the Commercial Fishery

The Victorian Scallop Fishery is primarily an output-controlled fishery that has been under Individual Transferable Quota (ITQ) arrangements since June 1998. Other input controls on the fishery are also in place to ensure that catch and effort is sustainable. Regulations controlling the scallop fishing industry are listed under **Appendix 1**.

The Minister for Agriculture who is responsible for fisheries in Victoria is required, under section 64B of the *Fisheries Act 1995*, to consult with the commercial peak body (SIV) and

the relevant consultative body (FCC) on significant management issues. These bodies provide advice to the Minister on matters such as whether the scallop fishery should open and what the quota should be. This advice provided to the Minister is obtained from on-board observers and commercial surveys. This advice is based on information from licence holders who are permitted to fish Victorian waters to determine location, quantity and quality of scallops. Both Fisheries Victoria and FCC set conservative Total Allowable Catch (TAC) based on previous historical catches. However, during the season the TAC can be increased depending on advice received from the SIV, FCC and fishers.

In addition, once a season has been determined each licence holder is given an equal share of the TAC. A quota notice is issued to each licence holder specifying the amount of quota units that can be taken and the value of the quota unit. Since the fishery went to quota, the value of each quota unit has been set at one kilogram. The quota notice also specifies the length of the season. Transfer of quota that occurs during the season is recorded on a database and a new quota notice is sent to both parties after the appropriate transfer form has been signed and approved by the delegate of the Secretary, DPI. Copies of all quota notices are then forwarded to relevant Fisheries Officers in the field.

Scallop Fisher's & Receivers are required to submit logbook returns on a monthly basis. This data is analysed by Primary Industry Research Victoria (PIRVic) and is the basis of Fisheries Victoria's management.

The Victorian scallop fishery was opened on 1 May 2005 and will close on 22 December 2005.

Most of the scallops taken from the Victorian and Central zone Scallop fishery are processed in Victoria.

INPUT CONTROLS

A number of input controls are used in the scallop fishery, in addition to quota measures, to ensure sustainability. This includes limited entry, minimum size limit, trashing/discard rates and meats per kilogram.

Minimum size limit

A minimum size limit has been established to ensure that scallops achieve two spawning events per year prior to being fished. At present, the size limit is a shell width of a minimum of 80 millimetres when measured in a straight line at the widest point across the shell (**refer to figure 1**).

The 80mm-size limit was recommended by Commonwealth Scientific and Industrial Research Organisation (CSIRO) on the basis of research into scallop size and age in relation to fecundity. Recent research work relating shell width to height recommended a shell width of 90mm in order to achieve the two spawning criteria. In both Tasmanian and Commonwealth zones, a size limit of 90mm has been adopted.

The CSFC will discuss the size limit revision at the start of the fishing season on 1 May 2006.

Trashing/discard rates:

An area may be closed to fishing if more than 20% of scallops in the catch are below the

minimum size limit (80mm shell width) The primary reason for this is to prevent fishers working in areas of small scallops, picking out the commercial size scallops and returning the rest to the water. Such a practice could lead to high incidental mortality amongst smaller scallops jeopardising potential future spawning and potential future yield from the bed. If small beds of scallops were located then these areas would be closed to commercial fishing until further monitoring could occur. Another option available if juvenile beds of scallops can be identified is to close that particular bed by a Fisheries Notice for the remainder of the season.

Meats per kilogram

A further limit on the fishery is applied when the number of scallop meats per kilogram (ie how many split individual fish there are to make a kilogram) is in excess of 100 meats per kilogram. In such situations, the management response is to close the fishery until surveys conclude better quality scallops.

Market forces also operate to ensure that the number of meats per kilogram generally remains below 100. Fishers are often unable to market the smaller scallops and so will generally try to avoid fishing such areas.

Compliance

Compliance in the fishery is conducted in a number of ways including inspections at the wharf, inspections at processors' premises and on-board monitoring. The number of inspections is dependent on the amount fishing activity during the fishing season.

Fisheries Victoria conducts compliance for both the Commonwealth and Tasmania through service agreements, as the majority of the scallops are landed and processed in Victoria.

There has been an increase in compliance effort this year with inspections conducted mainly at the wharf.

6. MONITORING AND DATA COLLECTION

Scientists from (PIRVic) and regional fisheries officers undertake routine monitoring of the fishery. The type of monitoring that occurs includes on-board monitoring of scallop size and discard rates, wharf inspections, inspections at fish processor facilities as well as monitoring of catch and effort data supplied by commercial scallop licence holders. Data collected from log book returns includes number of hauls per hour, dredging hours, bottom type, minimum/maximum water depth fished, whether fishing or searching, discarded scallop percentage, number of scallop bags/bins, estimated meat weight of scallops and shell weight and other species collected and standard log book page is shown in **figure 3**. Comparisons of the catch obtained from the log book returns demonstrates how the fishery fluctuates, confirming the boom and bust nature of the fishery - *Table 1*.

Figure 2 indicates where catch effort is concentrated over a five-year period

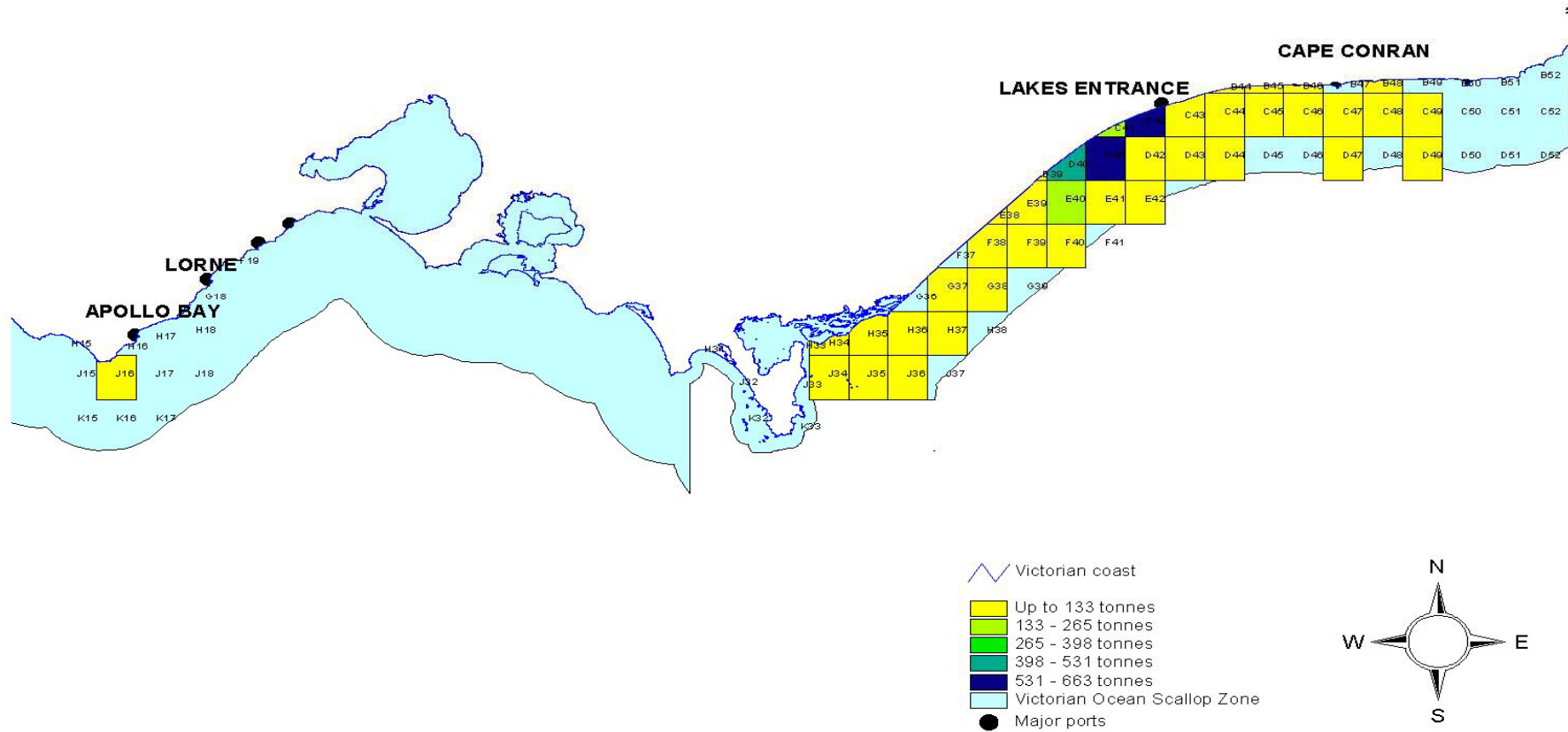
Table 1. Scallop production from Lakes Entrance (does not include Port Phillip Bay).

Year	Meat weight (tonnes)	Shell weight (tonnes)
1970	641	4931
1971	1016	7815
1972	906	6969
1973	294	2262
1974	342	2631
1975	664	5108
1976	120	923
1977	213	1638
1978	997	7693
1979	1176	8200
1980	903	5569
1981	843	1554
1982	214	492
1983	94	446
1984	449	3185
1985	71	997
1986	26	254
1987	157	1077
1988	41	277
1989	49	300
1990	91	262
1991	86	262
1992	1142	6754
1993	1419	8269
1994	359	108
1995	2	2
1996	29	238
1997	42	323
1998	0	0
1999	0	0
2000	123	947
2001	115	886
2002	80	616
2003	95	622
2004	40	261

The actual quota set for 2005 and 2004 was 1504 tonnes each year. From 2000 to 2003 it was 1,974 tonnes year. There was no season in 1999.

Figure 2

Total scallop catch (Est. shell kg) from 1998 to 2003



OCEAN SCALLOP – EXAMPLES																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
									Please Circle							Other species (please specify)					
									Metres												
										Fathoms											
Day of Month	Office Use Only	Boat Registration	Area Code or "TRIP"	Port Code	Operator's Personal File Number	Number of Hauls per Hour	Dredging Hours (hhmm)	Bottom Type (MU, SA, ST)	Depth Minimum m	Depth Maximum m	Fishing (F) / Searching (S)	Discarded Scallops (percentage code)	Number of Scallop Bags	Meat weight of Scallops (kgs)	Shell weight of Scallops (kgs)						
Mixture of 1 day trips and 2 day trips for the month																					
5	OS	XXX	D46	160	##	4	##	SA	15	20	F	1	10		600		estimated				
			TRIP	160									10	84	612		weighed on landing				
																	Weight from processor				
6		XXX	D47	160	##	4	##	SA	16	22	F	1	5		300		estimated				
			TRIP	160									5	45	298		weighed on landing				
																	Weight from processor				
8		XXX	D47	160	##	4	##	SA	16	22	F	1	20		##		estimated				
9		XXX	D46	160	##	4	##	SA	18	24	F	1	7		400		estimated				
			TRIP	160									27	214	##		weighed on landing				
																	Weight from processor				
16		XXX	D47	160	##	4	##	SA	16	22	F	1	25		##		estimated				
			TRIP	160									25	199	##		weighed on landing				
																	Weight from processor				

Figure 3

7. BY- CATCH

It is Victorian Government policy that management of the Victorian scallop fishery must comply with the National Policy on Fisheries Bycatch and bycatch action strategies developed under that policy. In addition, biodiversity conservation and management, as detailed in Victoria's Biodiversity Strategy, is an integral part of the Victorian Government's environment policies and a fundamental element of DPI integrated programs. Bycatch taken by the Victorian scallop fishery includes a variety of fishes and invertebrates. Sixty-six species were identified as the result of on-board monitoring during the 2002 season. All the by-catch species identified are widely distributed throughout southern Australia.

For more information please refer to the attached Fisheries Victoria Research Report titled "By-catch monitoring for the Victorian Ocean Zone Scallop Fishery in 2002."

8. SCALLOP INDUSTRY CODE OF PRACTICE

Victorian fishers in the past have developed a code of practice in conjunction with local recreational fishers in the Lakes Entrance area to close areas around preferred recreational fishing areas including reefs. Fishers have also voluntarily imposed closed areas on water over recognised beds of juvenile scallops ensuring harvesting of under size fish does not occur. An option suggested by fishers is that when juvenile beds have been recognised, plotted and confirmed by fisheries officers then notices would be sent to all licence holders. These voluntary codes of practices have demonstrated the willingness of the scallop industry to implement good fishing practices. Should fishers not abide by the code of practice, legislative measures will be considered by the Department to ensure protection of juvenile scallop beds.

Recently, SeaNet, who are primary funded through the National Heritage Trust; (an Australian Government initiative) approached industry with a view to develop a code of practice. SeaNet extension officers worked with commercial fishers, management and researchers to assist in developing and implementing effective and practical solutions to by-catch issues (the catch of non-target species), encourage environmental best practice and mitigate marine debris code of practice for the Victorian scallop industry

The draft code of practice has been developed in consultation with fishers and processors in particular the affiliated scallop association of Seafood Industry Victoria (SIV). Once finalised SIV will distribute the code of practice to all licence holders.

9. RECREATIONAL FISHERY

The ocean fishery is unsuitable for recreational fishing but there is a small-scale recreational fishery in Port Phillip Bay (PPB). Divers primarily operate in near-shore localities to collect scallops at a depth between 5 to 15 metres. A recreational licence is required to take scallops and a daily bag limit of 100 scallops applies.

The area fished by recreational fishers has not been commercially fished since the Victorian Government closed PPB to commercial scallop harvesting in 1997.

10. INDIGENOUS FISHING

No known evidence exists of harvesting of scallops in Bass Strait, however, there may have been incidental take of scallops washed up on the shore after severe storms.

11. BYPRODUCT AND PROHIBITED SPECIES

There is very little byproduct with scallop harvesting. All scallops are forwarded to the processor who then split the scallop and dispose of the shell and gut to designated tips. Some scallops shells are cleaned and sold to restaurants to improve presentation (ie purchase fresh scallops and present the scallop in the shell). One processor is experimenting by crushing the gut and shell to enhance compost.

The *Fisheries Regulations 1998* permit a take of not more than 10 kilograms of fish per trip other than scallop. In addition, a scallop fisher must not land or possess any abalone, rock lobster, sea urchin, jelly fish or bug. Scallop fishers are also not permitted to take any Commonwealth managed fish listed in the appendix under regulation 302.

The By-catch Monitoring Victorian Ocean Zone Scallop Fishery in 2002 lists all the by-product species taken. This does not contain any protected aquatic biota. Also the Victorian *Flora and Fauna Guarantee Act 1988* is consistent with the Commonwealth in relation to the protection of protected aquatic biota. This Act prohibits the take, trade in or keeping of any fish of a member of a listed taxon or community of fauna.

12. CLOSED AREAS

In addition to Port Phillip Bay which was closed to commercial fishing in 1997 and traditionally had been a substantial fishery for scallops, there exists a number of Marine National Parks (MPA) and Marine Sanctuaries in Victorian waters. In November 2002, the Government created a world class system of 13 MPA and 11 smaller Marine Sanctuaries in Victorian waters. Commercial and recreational fishing ceased in all these parks and sanctuaries on 1 April 2004. Approximately 5.35% of Victoria's coastal waters, including diverse marine habitats and species are now protected from extractive activities such as fishing and petroleum extraction.

As indicated in figure 2, scallop fishing effort is confined to a very small part of Victorian waters.

13. APPENDIX 1

221. Entitlements of Scallop (Ocean) Fishery Access Licence

A Scallop (Ocean) Fishery Access Licence authorises the licence holder or a person employed by the licence holder to act on his or her behalf, using the boat specified in the licence, too—

- (a) use a scallop dredge; and
- (b) take for sale scallop; and
- (c) take for sale fish (other than abalone, bug, jellyfish, rock lobster and sea urchin); and
- (d) use the assistance of one or more people to carry out any activity authorised under the licence-

In marine waters other than Port Phillip Bay, Western Port, Gippsland Lakes or any inlet of the sea.

229. Entitlements of Fish Receivers' (Scallop) Licence

A Fish Receivers' (Scallop) Licence authorises the licence holder to receive for sale from the holder of a Scallop (Ocean) Fishery Access Licence scallop taken under that licence.

301. Conditions of every commercial fishery licence

- (1) Every commercial fishery licence is subject to the conditions specified in this regulation, in addition to any other conditions imposed on the licence by these Regulations and by the Secretary under section 52 of the Act.
- (2) The licence holder or any person acting under the licence—
 - (a) must ensure that any information provided to the Secretary, whether in a prescribed form or otherwise, is provided clearly, legibly, truthfully and accurately; and
 - (b) must notify the Secretary within 28 days of any change to his or her residential address or postal address or, in the case of a corporation, the registered office address; and
 - (c) must not use more people to assist in a fishing operation than the number specified in his or her licence (if any); and
 - (d) must ensure that the licence or a true and accurate copy of the licence is retained on board the boat, or in the case of licensed premises, on those premises, at all times; and
 - (e) must keep any document issued to the licence holder under the Act or these Regulations in a safe place at all times; and
 - (f) if any document issued to the licence holder under the Act or these Regulations is lost, damaged or destroyed, must as soon as practicable notify the Secretary; and
 - (g) if an abalone docket book, abalone docket, abalone transfer certificate, copy of a docket or transfer certificate, stock record, stock record book, small sales return, bin tag or other document issued to the licence holder under the Act or these Regulations is stolen, must as soon as practicable—
 - (i) notify the Secretary; and
 - (ii) report the theft to the police; and
 - (iii) obtain and keep a copy of that report; and
 - (h) must ensure that no abalone docket, abalone transfer certificate, copy of a docket or certificate, stock record, stock record book, small sales return, bin tag or other document issued to the licence holder that has been reported lost, stolen, damaged or destroyed is used and must ensure that any such document that is lost or stolen, if located, and any such document that is damaged, is returned to the Secretary as soon as practicable; and
 - (i) must not take or possess any rock lobster that has a tail fan with—
 - (i) a punched hole in the central segment;or
 - (ii) the posterior quarter of the central segment removed by a traverse cut so that only the anterior three-quarters of the central segment remain attached.

302. Conditions of every access licence (other than Abalone Fishery Access Licence)

(1) Every access licence (other than an Abalone Fishery Access Licence) is subject to the conditions specified in this regulation, in addition to any other conditions imposed on the licence by these Regulations and by the Secretary under section 52 of the Act.

(2) The licence holder—

(a) must ensure that a monthly catch and effort return is completed on the form provided by the Secretary showing all details required by the form; and

(b) must ensure that the catch and effort return completed under paragraph (a) is sent to the Secretary by the 14th day of the month following the period of the return; and

(c) must retain a copy of every catch and effort return completed under paragraph (a) for a period of 3 years; and

(d) must, at any reasonable time when requested to do so by an authorised officer, produce copies of a catch and effort return for inspection by the officer; and

(e) must at all times when in charge of crew during a fishing operation—

(i) ensure that the crew are in his or her actual physical presence; and

(ii) be in control of those crew; and

(iii) ensure that those crew are not engaged in a separate fishing operation; and

(f) must ensure that any fish taken that are not required to be retained, other than noxious aquatic species, are immediately returned to the water with the least possible injury or damage; and

(g) must not take, possess, and retain on board a boat or land from a boat, more than the catch limit of fish of the taxa specified in regulation 504; and

(h) must not take, possess, and retain on board a boat or land from a boat, more than a total of 400 kilograms of fish of the taxa specified in regulation 504; and

(i) must not take, possess, and retain on board a boat or land from a boat, any fish of the following taxa—

Bass, Bass groper and Hapuku;

Gemfish;

Southern bluefin tuna, Northern bluefin tuna,
and Bill fish;

King dory;

Ox-eye oreo;

Smooth oreo;

Spiky oreo;

Warty oreo;

Blue grenadier;

Black oreo;

Orange roughy.

319. Conditions of a Scallop (Ocean) Fishery Access Licence

(1) A Scallop (Ocean) Fishery Access Licence is subject to the conditions specified in this regulation, in addition to any other conditions imposed on the licence by these Regulations or by the Secretary under section 52 of the Act.

(3) The licence holder—

- (b) must not use or have on board a boat any dredge, which exceeds 336 centimetres in width; and
- (c) must not use or have on board a boat a dredge that is not covered with uniform steel mesh with internal mesh openings measuring at least 6.8 centimetres in length by 4.4 centimetres in width; and
- (d) must not have on board a boat, any shucked scallop or any scallop of which the shell has been split; and
- (e) must not land or cause to be landed in Victoria from any boat, any shucked scallop or any scallop of which the shell has been split; and
- (l) must ensure that scallop is not contained on board the boat specified in the licence in any container other than a crate or a sack; and
- (m) must ensure that scallop is not landed from the boat specified in the licence in any container other than a crate or a sack; and
- (s) must not possess on board the boat specified in the licence—
 - (i) more than 10 kilograms of fish other than scallop; or
 - (ii) any abalone, rock lobster, sea urchin, jellyfish or bug; and
- (t) must not land from the boat specified in the licence—
 - (i) more than 10 kilograms of fish other than scallop; or
 - (ii) any abalone, rock lobster, sea urchin, jellyfish or bug; and
- (v) must not within Victoria sell scallop to any person other than the holder of a Fish Receivers' (Scallop) Licence; and
- (w) when on board the boat specified in the licence in the waters of the Gippsland Lakes or any bay or inlet of the sea, must ensure that any dredge is securely stowed on board the boat; and
- (x) must ensure that fish are not transferred in, under or on Victorian waters from the boat specified in the licence to any other boat; and
- (y) must not take more than 8 wrasse on any one day.

325. Conditions of a Fish Receivers' (Scallop) Licence

(1) The holder of a Fish Receivers' (Scallop) Licence is subject to the conditions specified in this regulation, in addition to any other conditions imposed on the licence by the Secretary under section 52 of the Act.

(2) The licence holder, in relation to any scallop taken from Victorian waters—

- (a) must not receive any scallop in the shell other than from the holder of a Fish Receivers' (Scallop) Licence, a Scallop (Ocean) Fishery Access Licence, an aquaculture licence authorising the culture of scallop or any person authorised under the Act to take scallop for sale; and
- (b) must not receive any scallop meat except from the holder of a Fish Receivers' (Scallop) Licence or an aquaculture licence authorising the culture of scallops; and
- (c) must complete a monthly Fish Receivers' (Scallop) return, on the form provided by the Secretary, showing all the details required by the form; and
- (d) must send the return completed to the Secretary by the 14th day of the month following the period of the return.

14. REFERENCES

- Bricelj, V.M. Epp, J and Malouf, R.E. (1987a) Comparative physiology of young and old cohorts of bay scallop *Argopecten irradians* mortality, growth, and oxygen consumption.
- Coleman, N. (1988a) Monitoring of scallop spatfall and growth rates at Lakes Entrance, September 1987 to May 1988.
- Coleman N, Walker t and Peters B (1996) Report No.10 Fisheries Assessment Report Series Scallop 1996
- Conan, G. and Shafee, M.S. (1984) Growth and biannual recruitment of the blackscallop *Chlamys varia* in Lanveoc area, Bay of Brest
- Fairbridge, W.S. (1953) A population study of the Tasmanian “commercial” scallop.
- Fuentes, H.R. (1994) Population and biology of the commercial scallop (*Pecten Fumatus*) in Jervis Bay, NSW.
- Gwyther, D and McShane, P.E. (1988). Growth rate and natural mortality of the scallop *Pecten Alba Tate* in Port Phillip Bay, Australia, and evidence for changes in growth rate after a 20 year period
- Sause, B.L. Gwyther, D., Hanna, P.J. and O'Connor, N.A. (1987a). Evidence for winter – spring spawning of the scallop *Pectan alba* (Tate) in Port Phillip bay, Victoria, Australia,
- Woo, L. O. L., and Woodburn, L. (1982). Stock assessment of the commercial scallop *Pecten Alba Tate* in Port Phillip Bay, Victoria, January 1981
- Young & Martin (1989) The scallop fisheries of Australia and their management. Reviews in aquatic sciences 1,615-638.