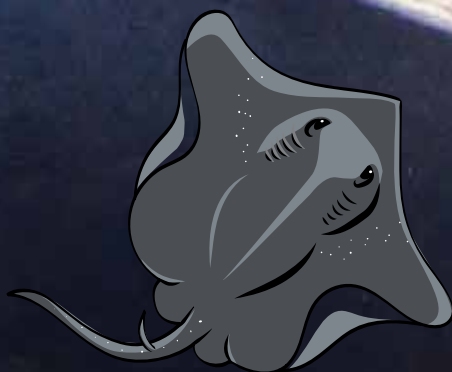


PRAISE OUR RAYS

2017 GREAT VICTORIAN FISH COUNT



TABATHA LOUGHNAN
KADE MILLS
CAITLIN GRIFFITH



VICTORIAN
NATIONAL PARKS
ASSOCIATION
Be part of nature

Victorian National Parks Association

Our vision is to ensure Victoria is a place with a diverse and healthy natural environment that is protected, respected and enjoyed by all.

We work with all levels of government, the scientific community and the general community to achieve long term, best practice environmental outcomes and help shape the agenda for creating and managing national parks, conservation reserves and other important natural areas across land and sea in Victoria.

We are also Victoria's largest bushwalking club and provide a range of education, citizen science and activity programs that encourage Victorians to get active for nature.

ReefWatch

ReefWatch is the Victorian National Parks Association's marine citizen science program. It encourages divers and snorkelers to monitor marine life at their favourite dive sites.

ReefWatch coordinates a number of marine conservation programs, including 'OysterWatch', 'ReefCam', Sea Slug Census and the Great Victorian Fish Count.

In 2012, ReefWatch won an award for 'Excellence in Education' from the Victorian Coastal Council.

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Cover photo courtesy of PT Hirschfield / Pink Tank Scuba.

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Project partners

Parks Victoria

Parks Victoria's responsibilities under the Parks Victoria Act 1998 are to manage the state's parks, reserves, waterways and other public land, including a representative system of terrestrial and marine national parks and marine sanctuaries. It is also the local port manager for Port Phillip Bay, Westernport and Port Campbell.

Parks Victoria works in close partnership with other government and non-government organisations and community groups to manage parks and reserves and encourages community participation within them.

Parks Victoria's philosophy of 'Healthy Parks Healthy People' promotes involvement in activities within parks to maintain and improve the health of individuals and the community as well as contributing to a better understanding of Victoria's parks. Participation in the Great Victorian Fish Count is a great example of this and for connecting people and communities with parks.

Coastcare Victoria

Coastcare Victoria is a statewide program run by the Department of Environment, Land, Water and Planning (DELWP). Coastcare Victoria facilitators work directly with these communities and connect them with the state's coastal management system – coastal and natural resource

management planners, managers of public land, local government and government programs targeting issues in coastal areas. Coastcare supports the Great Victorian Fish Count with funding and by encouraging community participation.

Redmap

Redmap (Range Extension Database and Mapping project) is a national 'citizen science' site that captures data and maps marine species that may be extending their range in Australia in response to changes in the marine environment. In Victoria, Redmap is hosted by Museums Victoria and all recorded sightings are verified by marine scientists. Data collected during the Great Victorian Fish Count contributes to Red Map.

Museums Victoria

Museums Victoria is Australia's largest public museum organisation. As the state museum for Victoria it is responsible for looking after a collection of nearly 12 million objects, documents, photographs and specimens. Its research in the fields of science and humanities uses the museum's collections and expert staff to further what we know about the social and natural history of Victoria and beyond.





Descending for the fish count at Rye Pier.
Photo: Alexis Lazzarotto

Executive summary

The 2017 Great Victorian Fish Count was the most successful marine citizen science event the Victorian National Parks Association has run. It was the first time shark and ray species have been included in the count. In celebration of the additional ten new shark and ray species, the 'Praise our Rays' theme shone strong. The fish count was highly popular with a record breaking number of people partaking to make this event the biggest we have ever seen. There were over 700 participants taking to the water across 38 different sites along our beautiful Victorian coast.

The target list of species now at 35, enables the ongoing monitoring of key species found in Victorian waters.

Key findings were:

- The smooth stingray recorded in nearly 50% of surveys.
- The confirmed sighting of a white-barred boxfish in Port Phillip Bay and the unconfirmed sighting at Eagle Rock indicating that this species may be extending its range in Victorian waters.
- The Blue Throat Wrasse has continued to be the most commonly sighted species and was also recorded in higher abundances than any other fish. Other species recorded in the majority of surveys were:
 - Magpie Perch
 - Six-spined Leatherjacket
 - Zebra Fish
 - Senator Wrass

Victoria's marine parks and sanctuaries are popular for snorkelers and SCUBA divers exploring our unique marine life and, although only 5.3% of our



coastal waters are protected, 35% of surveys were done in marine protected areas. Interestingly, species that do not tend to move far from their patch of reef such as the Southern Blue Devil and eastern and western blue groppers were found more frequently in marine protected areas. This highlights the important role these areas play in preserving species with a small home range.

The results of the thirteenth Great Victorian Fish Count would not be possible without the 700 enthusiastic divers and snorkelers who took part in this large-scale citizen science research project. The Victorian National Parks Association looks forward to seeing you along with your friends and family at the 2018 Great Victorian Fish Count, which will be held from November 17 until December 15. Let's make this one even bigger!

The data collected from the 2017 fish count has been entered into the Atlas of Living Australia and is accessible to scientists, managers and the community to learn more about Victoria's unique marine life.



Big eyes, Popes Eye.
Photo: Kade Mills

Introduction

1.1 Background

The Great Victorian Fish Count is the largest marine citizen science event in Victoria and without doubt ‘the dive that counts’. The fish count is held every year in November and December with dive clubs, conservation groups, ‘friends of’ groups, local dive operators, local community groups, schools, universities and the Victorian National Parks Association’s Wild Families program.

The diversity of habitats along the Victorian coast hosts an array of species, many of which are found nowhere else in the world. Almost a quarter of Australia’s fish are endemic with 60% of these species living only in our southern seas (Bray 2018d). The fish count provides a ‘snapshot’ of some of these species and involves hundreds of divers recording thousands of fish sightings along the coastline. The data collected can be used to investigate changes in species composition and relative abundance at multiple locations throughout the state’s coastal waters.

The Great Victorian Fish Count aims to help passionate people take part in an event that gathers valuable marine data, promotes active learning and the chance to reconnect with their local coastal environment. In turn, this creates understanding, awareness and co-operation between the public, scientists and government agencies.

1.2 Citizen science

Citizen science is the involvement of community members in scientific projects through the collection of

data and/or involvement in project design. It provides an opportunity for participants to learn from each other. For example, the Great Victorian Fish Count brings together scientists, marine managers, divers, snorkelers and the community to increase and share knowledge of fish found in local waters.

In 2017 approximately 700 participants collected data on fish species across the Victorian coastline. Having so many eyes in the water searching for fish provides a large amount of fish distribution data. The data collected shows how citizen scientists can collect a vast amount of information that would be extremely difficult to gather without community support.

1.3 Partnerships with local communities

Over the past 13 years, the Victorian National Parks Association in partnership with Museums Victoria, Parks Victoria, Coastcare Victoria, dive operators and local community groups has led the Great Victorian Fish Count. In 2015, we were pleased to add Redmap to our list of partners for the first time and continued to do so in 2017.

This year we welcomed new community groups including Scuba Scouts, bilingual groups and the Victorian National Parks Association’s Wild Families program. We look forward to seeing more new faces in the years to come.

All project partners benefit the Great Victorian Fish Count by providing



The Warrnambool Sub Aqua Club was one of many clubs that took part in this year's Great Victorian Fish Count.

Photo: Gary Barclay

experience and knowledge about Victoria's marine environment.

Project partners provide:

- Scientific expertise.
- Communication skills and knowledge.
- Local, regional and state-based knowledge on coasts, habitats and fish.
- Local community knowledge.
- Connection with local communities and networks.
- Skills, experience and qualifications to lead diving and snorkelling trips.

This collaborative approach has made the Great Victorian Fish Count a success. We are grateful for the continued support of our partners and look forward to continuing our work with them on future fish counts.

1.4 'Praise our rays'

Healthy shark and ray populations are vital to maintaining healthy oceans and yet their numbers are declining in many parts of the world (Ferretti et al. 2010). This is partly due to changes in the environment such as habitat degradation, pollution and climate change (Field et al. 2009). However, the largest threat to sharks and rays is overfishing (Simpfendorfer et al. 2011). It is estimated that a quarter of all sharks and rays are threatened due to overfishing, according to IUCN Red List criteria (Dulvy et al. 2014).

In Victoria, with the exception of gummy and school sharks, the stock status of sharks and rays is unknown. This year we added some common and not so common sharks and rays to the Great Victorian Fish Count

to learn more. Also, Point Cook Marine Care has been requesting that rays and sharks be added to the fish count for several years – they have observed many in the Point Cook Marine Sanctuary throughout years of participating in the Great Victorian Fish Count. This request and the paucity of information on the relative abundance and distribution of some sharks and rays in Victoria is the reason the following species were added:

- Smooth stingray (*Bathytoshia brevicaudata*)
- Black stingray (*Bathytoshia lata*)
- Southern eagle ray (*Myliobatis tenuicaudatus*)
- Spotted stingaree (*Urolophus gigas*)
- Southern fiddler ray (*Trygonorrhina dumerilii*)
- Port Jackson shark (*Heterodontus portusjacksoni*)
- Varied carpetshark (*Parascyllium variolatum*)
- Spotted wobbegong (*Orectolobus maculatus*)
- Elephant fish (*Callorhinchus milii*)
- Draughtboard shark (*Cephaloscyllium laticeps*)

The addition of sharks and rays also coincided with recent changes to fishing regulations to protect rays in Victoria.

The recent changes to protect rays are:

1. Prohibit the take or possession of sting rays, skates or guitarfish greater than 1.5 m in width.
2. Reduce the combined daily bag limit for rays, skates and guitarfish from five to one, which are smaller than 1.5 m in width.

3. Prohibit the take of these species within 400 m of any pier, jetty, wharf or breakwater.
4. Require these species to be landed whole so they can be measured by fisheries officers.

The Project Banjo action group #RaysAwareness worked tirelessly with the Victorian Fisheries Authority to bring about these changes.

1.5 The 2017 fish ‘face’

The ‘face’ of the 2017 Great Victorian Fish Count was the smooth stingray. The smooth stingray (*Bathytoshia brevicaudata*) is one of the largest rays in the world (Bray 2018a), and it seemed only fitting to make it the face of the largest marine citizen science project in Victoria.

The smooth stingray is found in southern Australia, New Zealand and South Africa. It is commonly seen in shallow waters off beaches and estuaries during the summer months and feeds on fish, bivalves, squid and crustaceans (Torres 2018). The largest smooth stingray to be recorded was 4.3m long and more than 2.1m wide, weighing 350kg (Bray 2018a). Despite its large size and widespread distribution little is known about the biology and ecology of this species.

1.6 The Atlas of Living Australia

This is the second year data collected during the Great Victorian Fish Count was entered into the Atlas of Living Australia. The atlas is a collaborative, national project that brings together biodiversity data from multiple sources and makes it available and



You never know what you'll find on a dive. This gorgeous cuttlefish was spotted at Flinders.

Photo: Kade Mills

usable online. The atlas is an online resource where anyone can retrieve information on any species of interest to them. Data is entered via the BioCollect tool, which was developed by the atlas to support citizen scientists, ecologists, scientists and natural resource managers. Currently there is limited information on the distribution of marine species in Victoria, so the Great Victorian Fish Count is contributing important data – bit.ly/BioCollect-ReefWatch.

The Victorian National Parks Association is in the process of collating and uploading all past Great Victorian Fish Count results to the Atlas of Living Australia.

1.7 Great Victorian Fish Count identification slates

This year, thanks to a Coastcare Victoria grant, ReefWatch was able to update the existing Great Victorian Fish Count slates with the newly added shark and ray species.

1.8 Further sightings of blue groper

In 2016 the blue groper was the 'fish face' of the Great Victorian Fish Count. Now, the Victorian National Parks Association is interested in any further sightings of eastern or western blue groper. Victoria is the only state in which both species are found, however, due to fishing pressures they were thought to have largely disappeared from Victorian waters. Western and eastern blue groper are now protected in Victoria. Reports of sightings would be appreciated and photographs are essential for identification. It can be very difficult to tell the difference between eastern and western blue groper.



CHAPTER 1



Fish fun for all ages.

Photos: Rob Webster, Caitlin Griffith, Kade Mills



Fishy faces from some fish loving participants.

Photos: Port Phillip EcoCentre

Methodology

2.1 Survey period

The Great Victorian Fish Count runs in November and December each year. The 2017 fish count began on November 18 and finished on December 17.

The dates were initially chosen to coincide with the national Coastcare Week, which is held in the first week of December. To allow for the comparison of results to previous years the fish count will continue to be held during the November/December period. Based on feedback from numerous groups, the Great Victorian Fish Count was extended to four weeks this year to provide greater flexibility for participating groups.

2.2 Site selection

Surveys took place all along the Victorian coastline (Figure 1) with participating groups choosing their own sites. To ensure continuity in data over time, groups are encouraged to select a site they are familiar with and will continue to monitor each year.

Below is a list of the sites surveyed during the 2017 Great Victorian Fish Count:

Western Victoria

- Eagle Rock Marine Sanctuary
- Jarosite reef
- Lee Breakwater, Portland
- Lorne
- Merri Marine Sanctuary
- Peas Soup Bay
- Port Campbell
- Port Fairy Coastal Reserve

In and around Port Phillip Bay

- Barwon Bluff
- Blairgowrie Pier
- Blairgowrie Yacht Squadron
- Castle Rock
- Flinders Pier
- Holloways Hall, Brighton
- Jawbone Marine Sanctuary
- Mornington Pier
- Mushroom Reef Marine Sanctuary
- Point Cooke Marine Sanctuary
- Point Lonsdale
- Point Ormond, Elwood
- Popes Eye
- Portsea Pier
- Ricketts Point
- Rye Pier
- Royal Beach, Mornington
- South Channel Fort
- St Leonards Pier
- Wreck of the Hurricane

Eastern Victoria

- Beware Reef – Auckland Wreck, Ridge Park Wreck
- Lakes Entrance – Drews Jetty, Edgors Groyne, New Works
- Phillip Island – George Kermode Wreck, Speke Wreck
- Shack Bay, Bunurong Marine National Park
- Cape Paterson

A large number of sites were surveyed in the Port Phillip Bay region where

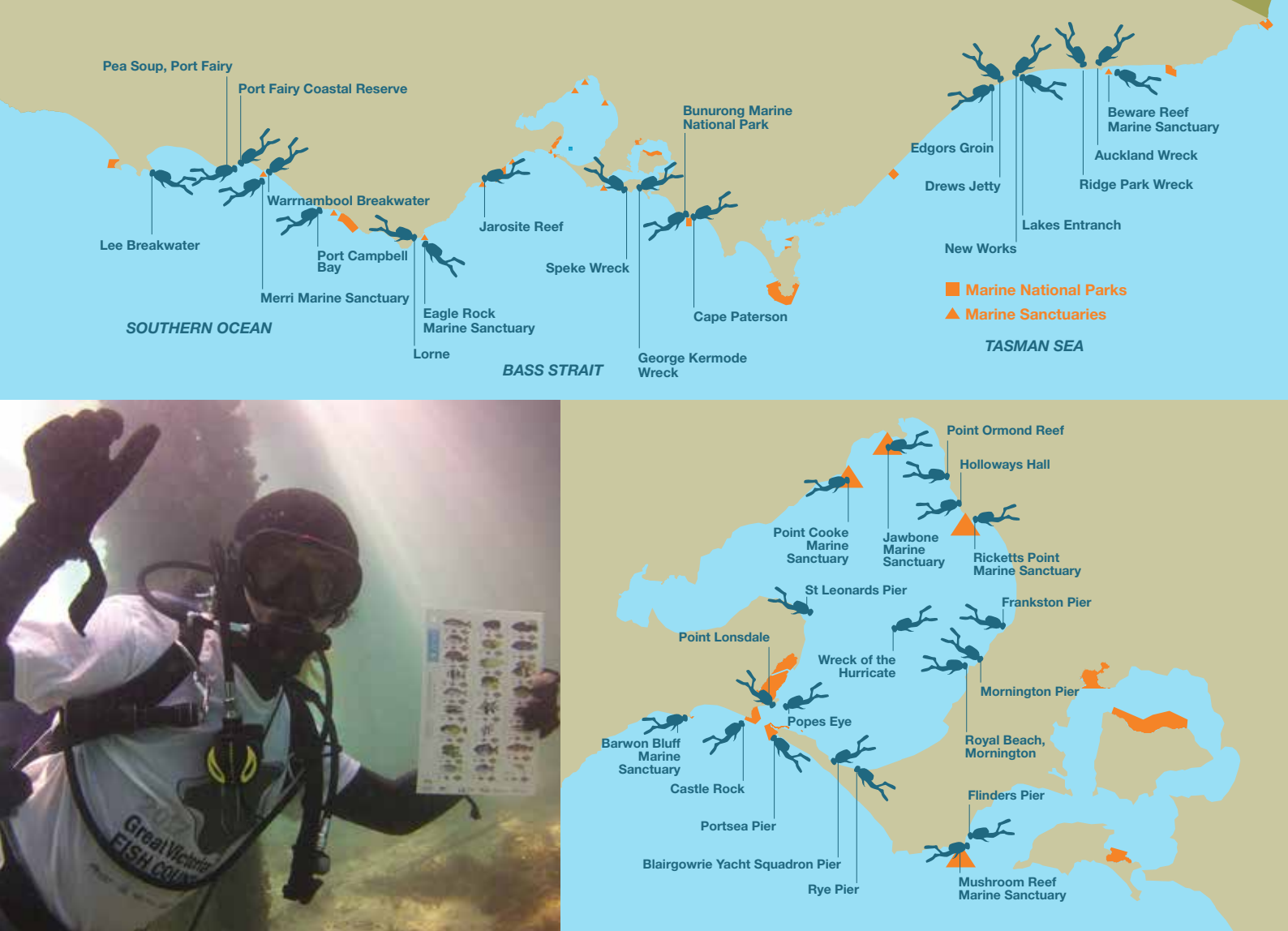


Figure 1. Sites surveyed in 2017.

groups continue to show a high level of participation. Western Victoria was also well represented and it was encouraging to see more surveys from eastern Victoria this year. The Victorian National Parks Association will continue to build stronger networks with local communities outside Port Phillip Bay to improve coverage during future Great Victorian Fish Counts.

2.3 Survey method

Each participating dive operator is supplied with a standard Great Victorian Fish Count kit. The kit contains fish identification training booklets, identification slates and survey forms.

The ‘Roving Diver’ Technique

All participants work in buddy

pairs or small groups and use one identification slate between them. During the survey the roving diver technique is employed, allowing participants to swim freely through the selected site recording identified fish on their monitoring slate. Participants are encouraged to follow a route that does not overlap with other buddy pairs or groups, increasing coverage of a wider area and reducing the number of double ups in data. They are also encouraged to take regular stops to observe fish that may have been disturbed and had been hiding.

During the survey, participants place the fish species they observe into one of three abundance categories on the identification slate (Figure 3). Each category has a corresponding symbol, which is crossed out progressively as increasing numbers of that particular species are observed (Figure 2).

2.4 Data summary

At the end of each survey, the Great Victorian Fish Count data sheet (Figure 4) is completed in the company of all participating buddy pairs and groups. The survey form includes information regarding the survey site location, weather conditions, time spent completing the survey and visibility.

The form is filled out immediately after the dive, and involves consultation with all participants to ensure a good representation of the average result. Names of the 35 target species are listed on the form with additional space for any species the group would like to add. An abundance category is marked for each species observed by the group, with the category based on the average results from all participating buddy pairs.

Participating groups either email or post their results to the Victorian National Parks Association or enter their results and photos directly to the Atlas of Living Australia database <http://bit.ly/biocollect>. Many people have commented on the ease of submitting their results directly to the database and the Victorian National Parks Association will continue to encourage participants to upload their results this way.

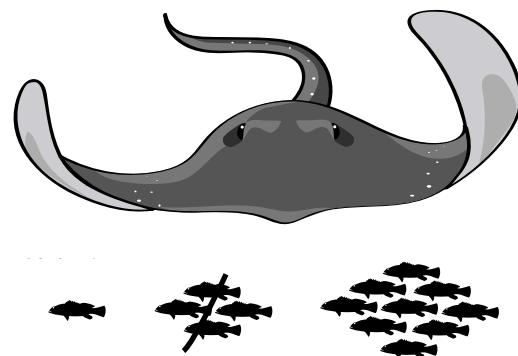


Figure 2. The abundance categories and corresponding symbols used on the Great Victorian Fish Count identification slates.



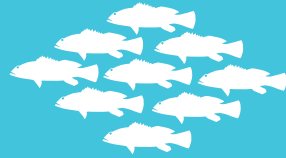
2.5 Data presentation

Survey results emailed or posted to the Victorian National Park Association were entered into the Atlas of Living Australia database, from where all data is downloaded. This year's results are presented to give an overview of main habitats surveyed and survey methods used, to illustrate the occurrence and abundance of species surveyed in 2016 and compare 2017 to previous years.

The results are displayed as a percentage, which was calculated for each of the target species using this formula: percentage occurrence equals the number of surveys the target species was recorded in, divided by the total number of surveys, multiplied by 100. This enables a quick overview of which species were sighted more frequently during the Great Victorian Fish Count. All data is presented in the appendix at the end of this report.



SYMBOL

CATEGORY **1-5 FISH** **6-20 FISH** **20+ FISH**

Figure 3. Key to fish abundance categories.

GVFC Survey Form
 Reef Watch Victoria
 PO Box 666, Melbourne, VIC 3001 • Ph. 03 8341 7446 • www.reefwatchvic.asn.au • info@reefwatchvic.asn.au

Registration Details
 Dive Group (registered dive operator/friends group): _____ Registration N°: _____

Site Details
 Site name: _____

Location:
 Latitude: _____ S Longitude: _____ E
If using a GPS, please use WGS 84 DATUM

Site Description
 Habitat (tick all that apply):
 Large Rocky Reef (>2m face) Low Rocky Reef (<2m face) Rubble
 Artificial Reef (eg. pier, wrecks) Sand/Mud Other

Type of cover (tick all that apply):
 Kelp (long, leathery brown algae) Mixed algae Seagrass
 Sponges, seaquirts & other Other

If Other, please describe:

Site Conditions
The following are the site conditions on the day of the survey

Date of Survey: DD/MM/YYYY Time start: 24 hr time Time finish: 24 hr time

N° of divers: _____ Duration: hours : mins Max. Depth: _____ m Visibility: _____ m Water Temp.: _____ °C

Tide: High Low Swell height: 0m 0.5m 1m 1.5m 2m

Tidal stream: Flood Ebb Slack Current: Strong Weak Nil

Page 1

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Tide: High Low Swell height: 0m 0.5m 1m 1.5m 2m

Tidal stream: Flood Ebb Slack Current: Strong Weak Nil

Page 1

Figure 4. The Great Victorian Fish Count Survey form.

Results

3.1 General summary

3.1.1 Participation and conditions

There were 55 surveys carried out at 38 different sites along Victoria's coastline during the 2017 Great Victorian Fish Count (see appendix 1). The depth of sites varied from 1m to 37m, with visibility ranging from 1m to 25m and water temperature ranging from 15°C to 24°C (see appendix 1).

The number of fish counters in each participating group varied from two (Daktari Surf and Dive, Friends of Point Addis, Friends of Beware Reef, RMIT Underwater Club, Victorian Sub Aqua Group) to 35 (Ocean Divers) with participants spending 30 to 120 minutes conducting their survey.

3.1.2 Survey methods

The majority of surveys were completed by SCUBA divers (73%) (Figure 5). The remainder were completed by snorkelers (27%) (Figure 5).

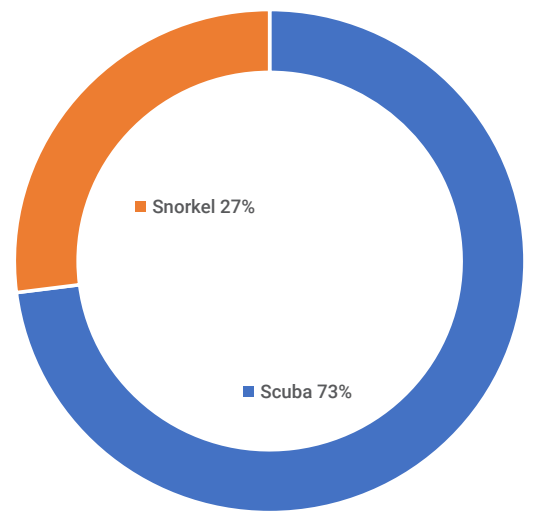


Figure 5. Survey methods used (%) (n=55).



Divers buddy up during the Great Victorian Fish Count.

Photo: Gary Barclay



Divers review their fish count finds at St Leonards.

Photo: Wild Families, Caitlin Griffith

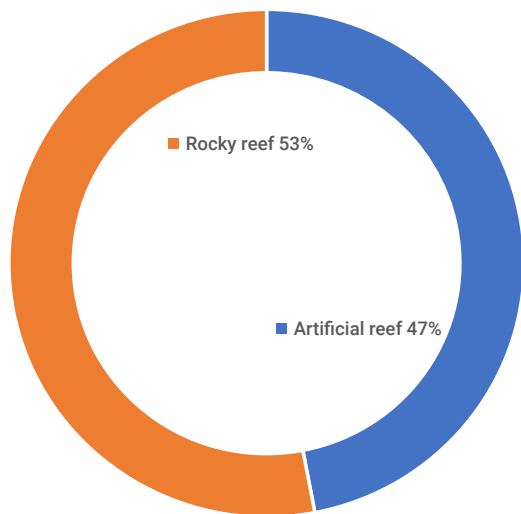


Figure 6. Habitat surveys conducted on (%) (n=55).

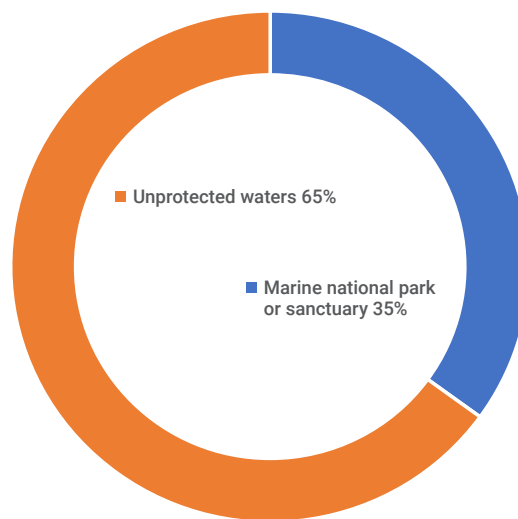


Figure 7. Protection status of survey sites (%) (n=55).

3.1.3 Habitats surveyed

Most surveys were conducted on artificial structures (53%) with the remaining (47%) completed on rocky reefs (Figure 6). Additional habitats present at sites included sponge gardens, seagrass meadows, kelp forests, sandy sediments, mussel beds and sea urchin barrens (Appendix 1).

3.1.4 Protection status of survey sites

The majority of the surveys (65%) were conducted in unprotected waters with the remaining (35%) undertaken within marine national parks or sanctuaries (Figure 7). Many of the snorkeling surveys were conducted in marine national parks or sanctuaries (Appendix 1).



3.2 The fish of 2017

- Blue throat wrasse were mostly recorded in abundances of 20 or more and were the most commonly observed species, recorded in more than 80% of surveys.
- Species observed in more than 50% of surveys were the magpie perch, six-spined leatherjacket and zebra fish.
- Less common species included the eastern and western blue groper, southern blue devil and red morwong, which appeared in less than 10% of the surveys conducted.
- The most commonly sighted of the shark and ray species was the smooth stingray, which was recorded in 44% of surveys.
- Less common species include the spotted wobbegong and varied carpetshark, which were recorded in

less than 10% of surveys.

- Draughtboard sharks and elephant fish were not recorded.
- No sharks or rays were recorded in abundances of 20 or more.

3.3 A comparison of 2017 results to previous years

- Blue throat wrasse were recorded in the highest percentage from 2015-2017.
- The sighting of most species was within 10-15% of previous years, with the exception of horseshoe leatherjacket, senator wrasse, Victorian scalyfin, sea sweep and herring cale, which were sighted less frequently this year. See figure 10.

TARGET FISH SPECIES

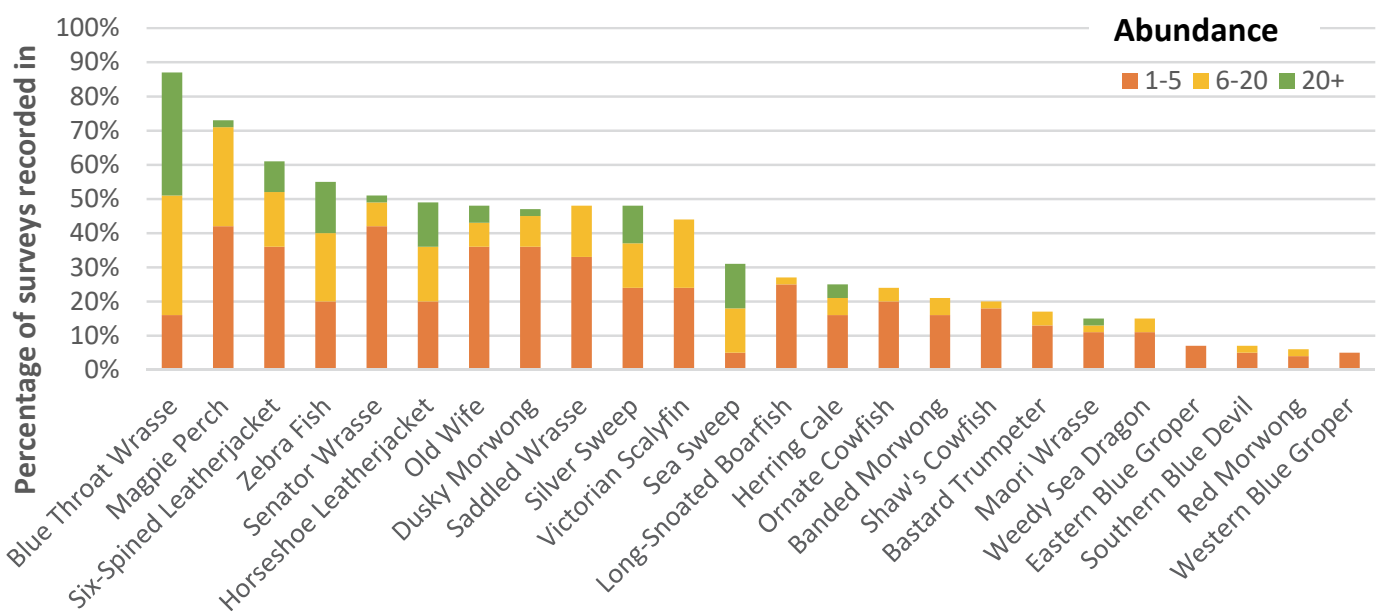


Figure 8. Percentage of surveys each fish species was recorded in and abundance category (n=55).

TARGET SHARK AND RAY SPECIES

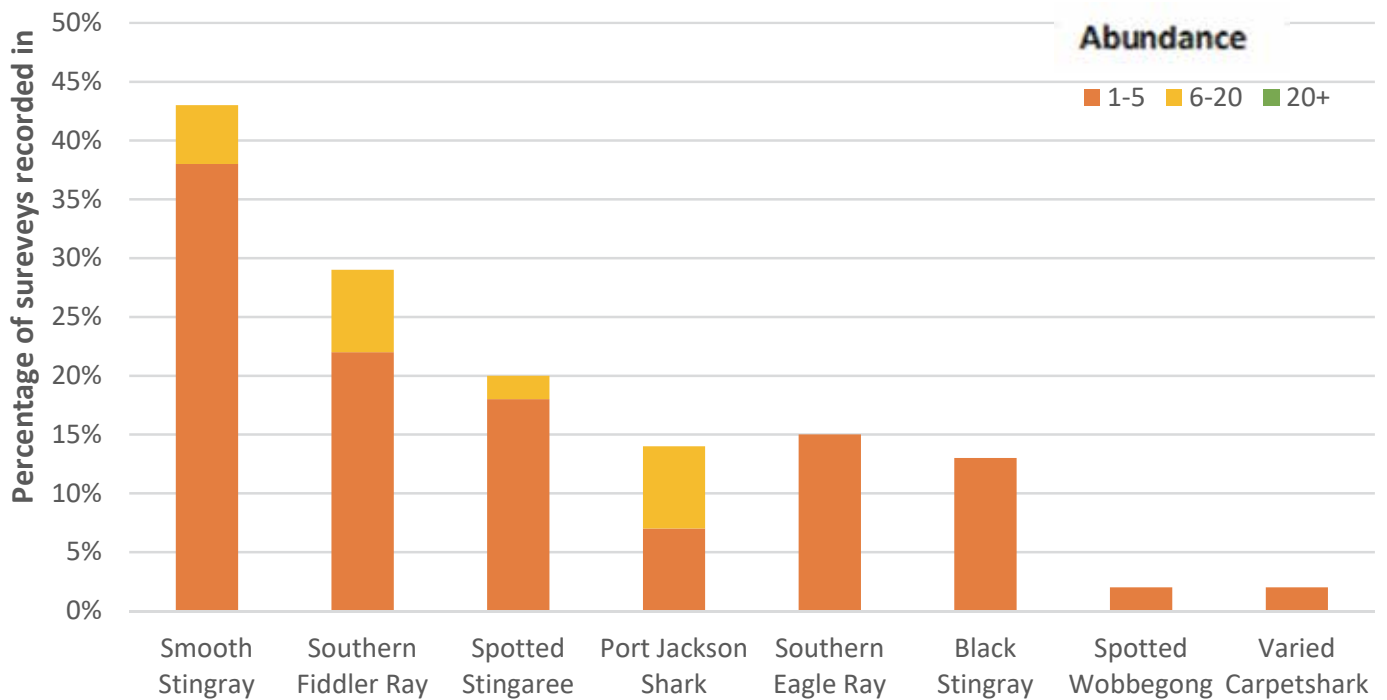


Figure 9. Percentage of surveys each shark and ray species was recorded in and abundance category (n=55).

TARGET SPECIES

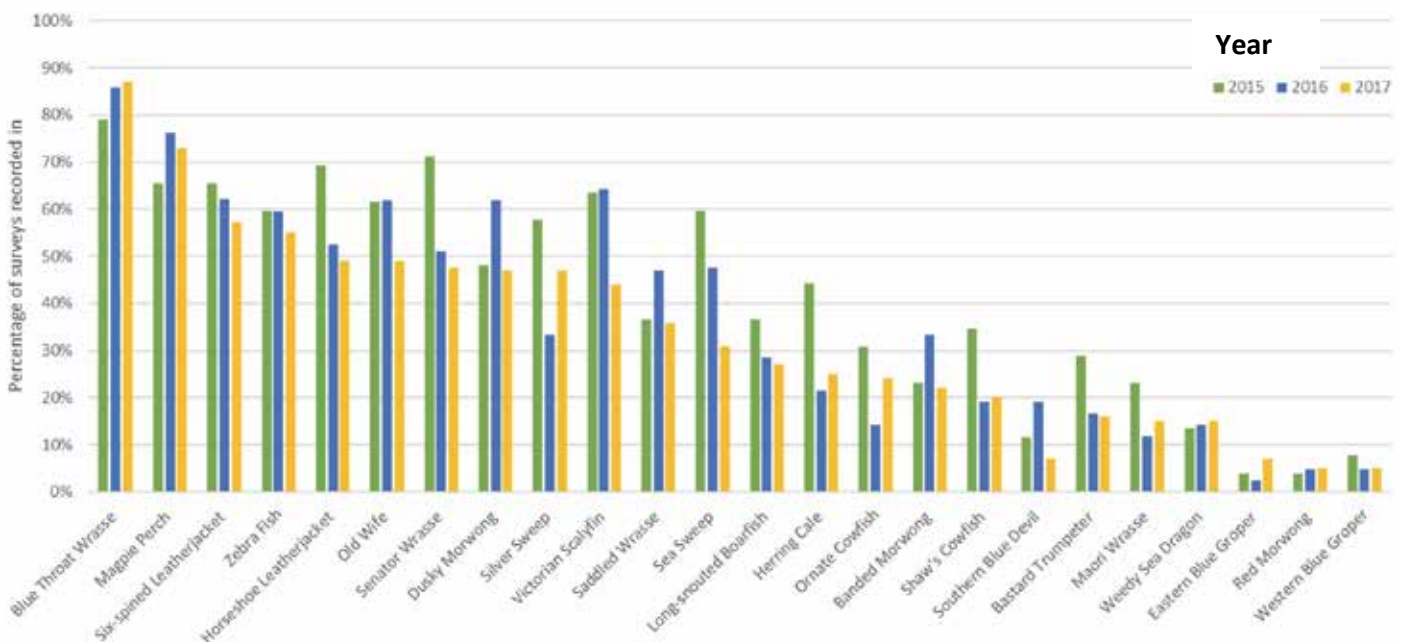


Figure 10. A comparison between the percentage occurrences of each target species* calculated for the 2015 (n=42), 2016 (n=44) and 2017 (n=55) fish counts. The *harlequin fish was removed due to it not being recorded from 2015-2017. Shark and ray target species were excluded from this graph because it is the first year data has been collected on these species.

Discussion

4.1 General summary

4.1.1 Participation and conditions

The range of sites, depths, water temperature and visibility encountered by groups highlights the dynamic nature of Victoria's unique coastline. For example, Port Phillip EcoCentre observed no target species during their fish count due to poor weather conditions (50cm visibility, choppy waters), however, they did see gobies and a baby snapper. At Point Lonsdale the Victorian Sub Aqua Group recorded 13 target species and four non-target species when diving with 25m of visibility.

4.1.2 Survey methods

The large involvement of SCUBA divers is due to the continued support and enthusiasm of local dive clubs. Many surveys undertaken by snorkelers were in marine national parks or sanctuaries, because events in these areas are generally run by Parks Victoria, Marine Care Friends Groups and/or Schools that are restricted to snorkelling.

4.1.3 Habitats surveyed

While only a small portion of Victoria's coastline consists of artificial structures, they are very popular sites for scuba diving. Some of the reasons for their popularity include ease of access, diversity of marine life and suitability in a variety of conditions.

Natural rocky reefs, while the

dominant hard natural substrate along our coastline, are mostly located on exposed coastline that can be more difficult to access.

4.1.4 Protection status of survey sites

Established in 2002, Victoria's marine protected areas include marine national parks and marine sanctuaries. Marine protected areas cover approximately 63,000 hectares – 5.3% of Victoria's state marine waters (Parks 2014). They provide people with the opportunity to experience and observe marine life undisturbed by fishing and other extractive activities. Despite only covering a small percentage of Victoria's marine waters, they are embraced and used widely by the diving community. This is evident from the large percentage of surveys carried out in marine protected areas in comparison to the size of coast they cover.

4.2 The fish of 2017

4.2.1 Blue throat wrasse

Blue throat wrasse are widespread throughout south-eastern Australia. Juveniles have been found to recruit into protected waters onto shallow reefs before migrating to deeper more exposed rocky reefs (Bray 2018b). Juveniles are also commonly seen around artificial structures. Their presence in sheltered and exposed coast along with their use of natural and artificial structures is likely why they are so commonly recorded by



A senator wrasse at Popes Eye.

Photo: Kade Mills

divers during the Great Victorian Fish Count.

4.2.2 Blue groper

The low occurrence of the eastern blue groper during the Great Victorian Fish Count is due to its limited distribution. Eastern blue groper only occur in Victoria east of Wilsons Promontory. With just six surveys conducted in this region around Beware Reef and Lakes Entrance, there were limited opportunities for the fish to be recorded. Encouragingly, it was recorded in four of the six surveys in this region.

The western blue groper on the other hand, only occurs west of Wilsons Promontory. Western blue groper are commonly found on exposed coasts (although there have been sightings at St Leonards and Popes Eye in Port Phillip Bay). With only a limited number of surveys conducted on the open coast, the low occurrence is to

be expected. It was recorded in three surveys at Port Fairy Coastal Reserve, Merri Marine Sanctuary and Barwon Bluff Marine Sanctuary.

4.2.3 Smooth stingray

Smooth stingrays are widespread in the cool temperate waters of southern Australia (Gomon, Bray & Kuitert 2008) and were the most commonly sighted ray during this year's fish count. Smooth stingrays are one of the largest rays in the world (Last et al. 2009), making them an easily recognisable resident for both scuba divers and snorkelers. Anecdotal evidence suggests many species of ray inhabit piers throughout Victoria – especially in Port Phillip Bay – for the 'easy feed' that comes from discarded bycatch and even fishing bait. With more than half of the surveys conducted at artificial reefs this may be one of the reasons they were commonly sighted.

4.2.4 Varied carpetshark

The varied carpetshark is found in a range of habitats including sand, rocky reefs, kelp and seagrass bed (Last et al. 2009). Despite the range of habitats it inhabits, its shy nature and nocturnal feeding patterns (Compagno 2001; Gomon, Bray & Kuitert 2008), coupled with it often taking refuge in caves, crevices and under ledges during the day, may be why it is one of the least commonly recorded species in this year's fish count.

4.2.5 Spotted wobbegong

Low occurrence rates for the spotted wobbegong may be attributed to their limited distribution along the Victorian coast (Bray 2018c). However, recent studies have shown wobbegongs exhibit seasonal movements, with a number returning to the same site during spring and summer (Lee et al. 2015). This is encouraging for the crew at Daktari Surf and Dive as they may have the pleasure of watching wobbegongs return in future years. Anecdotal evidence suggests spotted wobbegongs are common along the western Victorian coast, with divers frequently seeing them "basking in the sun", as fish counter Sharene Collett put it. The spotted wobbegong is a nocturnal predator known to be sluggish during the day, when it often lies motionless (Last et al. 2009). This behavioural trait coupled with the fact it is ectothermic – it needs to maintain its body temperature through the environment e.g. like a lizard (Szcodronski 2006) – may be why divers often catch this shark soaking up the sun's rays. Limited sightings during the Great Victorian Fish Count

are likely due to western Victoria not being surveyed as extensively as other areas of the coast.

4.3 Comparison of 2017 with previous years

The majority of species have been sighted in similar frequencies for the past three fish counts. The fact that less surveys were done on rocky reefs in 2017 than in previous years may explain the decrease in observations of horseshoe leatherjackets, the senator wrasse, Victorian scalyfin, herring cale and sea sweep.

It should, however, be noted that these are only preliminary findings and more detailed surveys would need to be undertaken to determine any patterns. The Victorian National Parks Association is interested to see if these preliminary patterns are observed in future Great Victorian Fish Counts.

4.4 Species not on slates

A number of other species were recorded that do not appear on the official identification slates, particularly globefish, moonlighters, toadfish and other leatherjacket species.

Special mention must be made of Dive2U who, during their dive, recorded a paper nautilus (*Argonauta argo*) at Blairgowrie Pier. Dive2U also conducted a night dive at the pier, showcasing the often bizarre species that can be found in the water once the sun has set. This included different species of octopus, squid and dragonet as well as bearded rock cod, scarlet cardinal and goatfish.

It was also encouraging to note that large schools of fish targeted by recreational fishers were observed at a number of sites, in particular whiting and snapper.

4.5 Reports of ‘fish on the move’

The Victorian National Parks Association has continued its partnership with Redmap Victoria. Once again participants were encouraged to keep an eye out for any fish that seem unusual in the area. The following species indicate that there could be exciting things happening in Victorian waters. However, it should be noted that these are only unconfirmed reports at this stage as species need to be recorded on film for confirmation. The importance of capturing images or footage of any unusual or unfamiliar fish observed when in the water cannot be overstated. The photos can be viewed by staff at the Victorian National Parks Association and referred to marine scientists at both Museums Victoria and Redmap Australia for identification, ensuring the sightings are added to official records.

Harlequin fish

Although not captured on camera, there was a report of a harlequin fish at Blairgowrie Pier. This follows an unverified report from Flinders Pier in 2016. Endemic to Australia from Port Phillip Bay to Western Australia, this species has not been recorded in Victoria since 1889. It is believed that because harlequin fish are a long-lived, site-attached species with a small home range they are more susceptible to localised declines due to fishing pressure and/or changes in the environment, e.g. changes in water

quality (Bryars & Rogers 2016). The Victorian National Parks Association will monitor further reports of the species. Anyone diving in the area is encouraged to keep an eye out for the fish and if captured on film, report it to the Victorian National Parks Association and Redmap Australia.

Red morwong

This fish is rarely found in Victoria west of Wilsons Promontory – it usually exists in the warmer temperate waters of eastern Australia. There were three sightings reported during the 2017 Great Victorian Fish Count, however, it should be noted that each sighting is unconfirmed – no photos were provided for identification purposes. In addition to last year’s report of a red morwong sighting at Phillip Island Nature Park (South Offshore), there was another sighting this year in eastern Victoria at Beware Reef. Interestingly, there was also reports of a red morwong at Ricketts Point Marine Sanctuary and as far west as Portland.

White-barred boxfish

This year there have been two reports of a white-barred boxfish (2015’s feature fish). One was confirmed with an image at the Hurricane Wreck in Port Phillip Bay, the other unconfirmed sighting was at Eagle Rock, coinciding with reports from last year. The confirmed sighting indicates this previously uncommon species may be expanding its range into Victoria. The Victorian National Parks Association and Redmap Australia are particularly interested in any further sightings of the species in Port Phillip Bay.

We look forward to maintaining a watch for ‘fish on the move’ in Victoria and will contribute any recordings to Redmap – just don’t forget to take a photo of your lucky find!

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Appendix

5.1 Table of fish species observed at each site surveyed in west Victoria

Target Species	Barwon Bluff Marine Sanctuary (Friends of Barwon Bluff)	Eagle Rock Marine Sanctuary (Friends of Eagle Rock)	Castle Rock (RMIT Underwater Club) Group One	Castle Rock (RMIT Underwater Club) Group Two	Jarosite Reef (Friends of Point Addis)*1	Jarosite Reef (Friends of Point Addis)*2	Jarosite Reef (Friends of Point Addis)*3	Jarosite Reef (Friends of Point Addis)*4	Lorne (Kade Mills)	Port Campbell (Daktari Surf and Dive)	Port Fairy Coastal Reserve (Daktari Surf and Dive)	Pea Soup (Daktari Surf and Dive)	Portland (Daktari Surf and Dive)	Merri Marine Sanctuary
Dusky Morwong	6 - 20	6 - 20	Nil	6 - 20	1 - 5	Nil	1 - 5	Nil	1 - 5	Nil	Nil	Nil	6 - 20	Nil
Red Morwong	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil
Banded Morwong	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	1 - 5	1 - 5
Magpie Perch	6 - 20	6 - 20	1 - 5	6 - 20	1 - 5	Nil	6 - 20	1 - 5	1 - 5	1 - 5	1 - 5	Nil	6 - 20	6 - 20
Bastard Trumpeter	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Herring Gale	20 +	1 - 5	6 - 20	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	6 - 20	1 - 5
Horseshoe Leatherjacket	20 +	20 +	6 - 20	20 +	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	1 - 5	Nil
Six-spined Leatherjacket	Nil	20 +	6 - 20	20 +	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil
Zebra Fish	20 +	1 - 5	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	20 +	20 +	1 - 5	20 +
Southern Blue Devil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Ornate Cowfish	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Shaw's Cowfish	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Victorian Scalyfin	1 - 5	1 - 5	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil	6 - 20	Nil	Nil	6 - 20	1 - 5
Long-snouted Boarfish	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Old Wife	Nil	1 - 5	1 - 5	6 - 20	Nil	Nil	Nil	Nil	1 - 5	Nil	1 - 5	Nil	1 - 5	Nil

5.2 Table of fish species observed in Port Philip Bay

Target Species	Blairgowrie Pier (Dive La trobe)	Blairgowrie Pier (Aquaholics)	Blairgowrie Pier (Monash Underwater Club)	Blairgowrie Pier (Dive2U)* 1	Blairgowrie Pier (Dive2U)* 2	Flinders Pier (Aquability Scuba)	Flinders Pier (Melbourne University Underwater Club)	Flinders Pier (Ocean Divers)	Holloway Hall (Scuba Scouts)	Hurricane Wreck (Victoria n Sub Aqua Group)* 1	Hurricane Wreck (Victoria n Sub Aqua Group)* 2	Hurricane Wreck (Victoria n Sub Aqua Group)* 3	Mornington Pier (Victorian Sub Aqua Group)	Point Cook Marine Sanctuary (Marine Care Point Cook)
Dusky Morwong	1 - 5	1 - 5	1 - 5	Nil	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	Nil	Nil	Nil	Nil	20 +
Red Morwong	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Banded Morwong	Nil	1 - 5	Nil	Nil	Nil	Nil	1 - 5	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil
Magpie Pe perch	6 - 20	6 - 20	6 - 20	1 - 5	6 - 20	1 - 5	1 - 5	1 - 5	Nil	Nil	1 - 5	20 +	6 - 20	Nil
Bastard Trumpeter	Nil	1 - 5	Nil	Nil	Nil	1 - 5	1 - 5	6 - 20	Nil	Nil	Nil	Nil	Nil	Nil
Herring Gale	Nil	20 +	Nil	Nil	Nil	Nil	1 - 5	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil
Horseshoe Leatherjacket	6 - 20	1 - 5	1 - 5	6 - 20	6 - 20	Nil	Nil	1 - 5	Nil	1 - 5	1 - 5	20 +	Nil	Nil
Six-spined Leatherjacket	1 - 5	6 - 20	1 - 5	Nil	1 - 5	Nil	1 - 5	Nil	Nil	1 - 5	1 - 5	20 +	6 - 20	1 - 5
Zebra Fish	Nil	6 - 20	6 - 20	1 - 5	6 - 20	6 - 20	1 - 5	6 - 20	Nil	Nil	Nil	6 - 20	1 - 5	6 - 20
Southern Blue Devil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Ornate Cowfish	Nil	Nil	Nil	Nil	Nil	1 - 5	1 - 5	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil
Shaw's Cowfish	Nil	Nil	6 - 20	Nil	1 - 5	Nil	Nil	1 - 5	Nil	1 - 5	1 - 5	1 - 5	Nil	Nil
Victorian Scalyfin	Nil	1 - 5	Nil	1 - 5	6 - 20	Nil	Nil	Nil	Nil	1 - 5	1 - 5	6 - 20	6 - 20	Nil

Varied Carpetshark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Draughtboard / swell shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

5.2 (Cont.) Table of fish species observed in Port Philip Bay

Target Species	Point Cooke Marine Sanctuary (Marine Care Point Cook)	Point Lonsdale (Victoria n Sub Aqua Group)	Point Ormond (Port Phillip EcoCentre)	Portsea (Salesian College)	Portsea (Friends of Bewarree Reef)	Ricketts Point (Marine Care Ricketts Point)	Ricketts Point (Victoria n Sub Aqua Group)	Rye Pier (Dive La Trobe)	Rye Pier (Scuba Culture)	Rye Pier (Academy of Scuba)	Rye Pier (Scuba Culture)* 1	Rye Pier (Scuba Culture)* 2	Rye Pier (Wild Families)	Schnapper Point (Harbour Dive)	South Channel Fort (Victoria n Sub Aqua Group)
Dusky Morwong	20 +	Nil	Nil	Nil	1 - 5	6 - 20	1 - 5	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil
Red Morwong	Nil	Nil	Nil	Nil	Nil	6 - 20	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Banded Morwong	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil
Magpie Perch	Nil	6 - 20	Nil	1 - 5	1 - 5	Nil	Nil	6 - 20	1 - 5	Nil	1 - 5	Nil	1 - 5	Nil	1 - 5
Bastard Trumpeter	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil
Herring Cale	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	1 - 5	Nil	Nil	Nil	Nil	Nil
Horseshoe Leatherjacket	Nil	20 +	Nil	Nil	Nil	6 - 20	Nil	6 - 20	6 - 20	1 - 5	20 +	1 - 5	6 - 20	Nil	Nil
Six-spined Leatherjacket	1 - 5	6 - 20	Nil	1 - 5	Nil	20 +	1 - 5	20 +	6 - 20	1 - 5	1 - 5	6 - 20	Nil	Nil	1 - 5
Zebra Fish	6 - 20	1 - 5	Nil	Nil	1 - 5	20 +	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	1 - 5	Nil
Southern Blue Devil	Nil	6 - 20	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Ornate Cowfish	Nil	1 - 5	Nil	1 - 5	Nil	1 - 5	6 - 20	1 - 5	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil
Shaw's Cowfish	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil	Nil	Nil

Elephantfish / Australian ghost shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Varied Carpetshark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Draughtboard / swell shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

5.3 (Cont) Table of fish species observed in Port Philip Bay

Target Species	South Channel Fort (Victorian Sub Aqua Group)	St Leonards Pier (Australian Diving Instruction)*1	St Leonards Pier (Australian Diving Instruction)*2	St Leonards Pier (Bellarine Snorkel Tours)
Dusky Morwong	1 - 5	Nil	1 - 5	1 - 5
Red Morwong	Nil	Nil	Nil	Nil
Banded Morwong	Nil	Nil	Nil	Nil
Magpie Perch	6 - 20	Nil	1 - 5	Nil
Bastard Trumpeter	Nil	Nil	Nil	Nil
Herring Cale	Nil	Nil	Nil	Nil
Horseshoe Leatherjacket	20 +	Nil	Nil	Nil
Six-spined Leatherjacket	6 - 20	1 - 5	1 - 5	Nil
Zebra Fish	6 - 20	20 +	6 - 20	6 - 20
Southern Blue Devil	Nil	Nil	Nil	Nil
Ornate Cowfish	Nil	1 - 5	6 - 20	Nil
Shaw's Cowfish	Nil	Nil	1 - 5	Nil
Victorian Scalyfin	6 - 20	Nil	Nil	Nil
Long-snouted Boarfish	1 - 5	1 - 5	Nil	1 - 5
Old Wife	20 +	20 +	6 - 20	1 - 5
Sea Sweep	Nil	6 - 20	Nil	6 - 20
Silver Sweep	20 +	6 - 20	1 - 5	Nil
Western Blue Groper	Nil	Nil	Nil	Nil
Eastern Blue Groper	Nil	Nil	Nil	Nil

Blue Throat Wrasse	20 +	Nil	6 - 20	6 - 20
Saddled Wrasse	Nil	Nil	6 - 20	Nil
Senator Wrasse	6 - 20	Nil	Nil	Nil
Maori Wrasse	Nil	Nil	Nil	Nil
Harlequin fish	Nil	Nil	Nil	Nil
Weedy Sea Dragon	Nil	Nil	1 - 5	Nil
Smooth stingray	1 - 5	1 - 5	1 - 5	1 - 5
Black stingray	Nil	1 - 5	1 - 5	1 - 5
Spotted stingaree	Nil	Nil	Nil	Nil
Southern Fiddler Ray	Nil	6 - 20	6 - 20	1 - 5
Southern Eagle Ray	Nil	Nil	Nil	Nil
Port Jackson Shark	Nil	6 - 20	Nil	Nil
Spotted wobbegong	Nil	Nil	Nil	Nil
Elephantfish / Australian ghost shark	Nil	Nil	Nil	Nil
Varied Carpetshark	Nil	Nil	Nil	Nil
Draughtboard / swell shark	Nil	Nil	Nil	Nil

Eastern Blue Groper	Nil	Nil	Nil	Nil	Nil	1 - 5	1 - 5	Nil	Nil
Blue Throat Wrasse	6 - 20	20 +	6 - 20	1 - 5	1 - 5	20 +	6 - 20	20 +	1 - 5
Saddled Wrasse	1 - 5	1 - 5	Nil	Nil	Nil	6 - 20	6 - 20	6 - 20	Nil
Senator Wrasse	Nil	1 - 5	Nil	Nil	1 - 5	1 - 5	1 - 5	1 - 5	Nil
Maori Wrasse	6 - 20	Nil	Nil	Nil	Nil	Nil	20 +	1 - 5	Nil
Harlequin fish	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Weedy Sea Dragon	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Smooth stingray	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Black stingray	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Spotted stingaree	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	Nil	Nil
Southern Fiddler Ray	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Southern Eagle Ray	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil	1 - 5	Nil
Port Jackson Shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	1 - 5	Nil
Spotted wobbegong	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Elephantfish / Australian ghost shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Varied Carpetshark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Draughtboard / swell shark	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

5.4 Table of species not found on slates

Survey Site	Additional Species Recorded
<u>Western Victoria</u>	
Eagle Rock Marine Sanctuary	Toadfish, Johnston's Weedfish, Southern Rock Lobster, Jellyfish, Australian Salmon, Globefish, Orange-Barred Boxfish
Castle Rock	Western Blue Devil
Jarosite Reef	Smooth Toadfish, Shovelnose ray, Marblefish, Melbourne Skate, ilodon sexfasciatus
<u>Port Phillip Bay</u>	
Point Lonsadle	Yellow Striped Leatherjacket, Rosy Wrasse, Moonlighter, Barber Perch
St Leonards Pier	Flathead, Globefish, Pot Belly Seahorse
Blairgowrie Pier	Melbourne Skate, Globefish, Pot Belly Seahorse, Giant Cuttlefish, Red Mullet, Pale Octopus, Southern Blue-ringed Octopus, Maori Octopus, Upeneichthys vamingii, Bigscale Bullseye, Rough Leatherjacket, Southern Keeled Octopus, Southern Bobtail Squid, Bearded Rock Cod, Dragonet, Bridled Leatherjacket, Paper Nautilus
South Channel Fort	Longfin pike, Cuttlefish, Goatfish, Moonlighter, Southern Hulafish, Smooth Toadfish, Globefish, Yellowstriped Leatherjacket, Barber Perch, Bearded Rock Cod, Little Weed Whiting
Rye Pier	Bigbelly Seahorse, Moonlighter, Globefish, Mosaic Leatherjacket, Eastern Hulafish, Toadfish, Southern Pygmy Leatherjacket, Flathead, Moonlighter, Longfin Pike, Barber Perch, Southern Cardinalfish, Southern Goatfish, Bigscale bullseye, Castelnau's Wrasse, Blackbanded Seaperch, Yellowstriped Leatherjacket
Hurricane Wreck	Snakeskin Wrasse, Cuttlefish, Humpback boxfish, Goblin fish, Blackbanded Seaperch, Moonlighter, Rockling, Yellow tail, Gurnard Perch, Banded stingaree, Snapper, Goat fish, Bullseye, Rockling, Barber perch, Butterfly perch
Point Ormond	Gobies, Juvenile Snapper
Holloways Hall	Toadfish, Globefish, Flathead, Southern Hula Fish
Flinders Pier	Grass Whiting, Blue Weed Whiting, Globefish, Silver Bait fish, Goatfish, Walking anemone, Flathead
Ricketts Point	Garfish, Toadfish, Globefish, Black Bream, Moonlighter, Snapper, Flathead, Weed Whiting, Southern Hulafish
<u>Eastern Victoria</u>	
Mushroom Reef Marine Sanctuary	Shovelnose Ray, Blenny, Pike, Grass Whiting, Dragonet, Toadfish, Snapper

George Kermode Wreck	Johnston's Weedfish, Bullseye, Long finned pike, King George Whiting
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5.5 Table of the site conditions and habitat types recorded for each survey

Survey Site	Group	Date and time	Water Temp. (°C)	Visibility (m)	Max. Depth (m)	Tide level	Tidal stream	Swell height (m)	Current strength	No. participants	SCUBA/ Snorkel	Habitat Type
West Victoria												
Barwon Bluff Marine Sanctuary (-38.2924 – 144.5014)	Friends of Barwon Bluff	28/12/2017 8:43AM – 10:00AM	17°C	8m	5m	Mid	Flood	0.5m	Nil	2	Snorkel	Large Rocky Reef (>2m), Low Rocky Reef (<2m), Sand/Mud, Kelp, Mixed Algae, Sponges, Seasquirts & Other
Eagle Rock Marine Sanctuary (-38.4681 – 144.1057)	Friends of Eagle Rock	25/11/2017 11:00AM – 12:00PM	17°C	8m	2m	Low	Slack	0.5m	Weak	14	Snorkel	Low Rocky Reef (<2m), Kelp, Mixed algae
Castle Rock (-38.4669 – 144.107)	RMIT Underwater Club	10/12/2017 11:18AM – 12:05PM	21°C	10m	25m	Low	Slack	1m	Weak	2	SCUBA	Large Rocky Reef (>2m), Kelp, Mixed Algae
Castle Rock (-38.4669 – 144.107)	RMIT Underwater Club	10/12/2017 11:18AM – 12:05PM	21°C	10m	28m	Low	Slack	1m	Weak	2	SCUBA	Large Rocky Reef (>2m), Kelp, Sponges, Seasquirts & Other
Jarosite Reef (-38.3804 – 144.2678)	Friends of Point Addis	21/11/2017 7:15AM – 8:00AM	17°C	10m	5m	Low	Slack	0.5m	Nil	3	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Mixed algae, Seagrass
Jarosite Reef (-38.3804 – 144.2678)	Friends of Point Addis	21/11/2017 8:45AM – 9:15AM	18°C	5m	4m	Low	Ebb	0.5m	Weak	2	Snorkel	Low rocky reef (<2m), Sand/Mud, Mixed algae, Seagrass
Jarosite Reef (-38.3804 – 144.2678)	Friends of Point Addis	20/11/2017 6:30PM – 7:11PM	17°C	7m	5m	Low	Flood	0.5m	Weak	2	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Mixed algae
Jarosite Reef (-38.3804 – 144.2678)	Friends of Point Addis	14/11/2017 6:07PM – 7:08PM	17°C	5m	4m	Low	Ebb	1.5m	Weak	2	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Mixed algae, Seagrass
Lorne (-38.5469 – 143.9882)	Kade Mills	26/11/2017 12:00PM – 12:52PM	17°C	10m	5m	Mid	Flood	0.5m	Nil	2	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Mixed algae, Seagrass, Sponges, Seasquirts & Other
Port Campbell (-38.6205 – 142.9912)	Daktari Surf and Dive	25/11/2017 10:00AM – 10:50AM	18°C	5m	8m	Low	Slack	1.5m	Weak	2	SCUBA	Low rocky reef (<2m), Artificial reef, Rubble, Sand/Mud, Mixed algae, Seagrass, Sponges, Seasquirts & Other
Port Fairy Coastal Reserve (-38.3944 – 142.24170)	Daktari Surf and Dive	5/12/2017 6:07PM – 6:53PM	20°C	20m	3m	Low	Slack	0m	Nil	2	SCUBA	Low rocky reef (<2m), Rubble, Sand/Mud, Kelp, Mixed algae, Seagrass
Pea Soup – Port Fairy (-38.392 – 142.2269)	Daktari Surf and Dive	10/12/2017 11:30AM – 12:05PM	19°C	10m	4m	Low	Flood	0.5m	Strong	7	SCUBA	Low rocky reef (<2m), Rubble, Sand/Mud, Kelp, Mixed algae, Seagrass

Lee Breakwater Portland (-38.3438 – 141.6105)	Daktari Surf and Dive	3/12/2017 10:45AM – 11:38AM	18°C	5m	7m	Low	Slack	0m	Nil	7	SCUBA	Artificial reef, Large rocky reef (>2m), Sand/Mud, Kelp, Mixed algae, Seagrass, Sponges, Seasquirts & Other
Merri Marine Sanctuary (-38.4014 – 142.4718)	Daktari Surf and Dive	21/11/2017	18°C	3m	4m	Low	Slack	0m	Nil	3	SCUBA	Low rocky reef (<2m), Kelp, Mixed algae, Seagrass
Port Phillip Bay												
Blairgowrie Pier (-38.3582 – 144.77725)	Dive La Trobe	18/11/2017 3:30PM – 4:10PM		10m	6m			0m	Weak	8	SCUBA	Artificial reef, Sand/Mud, Mixed Algae, Sponges, Seasquirts & Other
Blairgowrie Pier (-38.3582 – 144.77725)	Aquaholics	30/12/2017 11:30AM – 1:30PM	21°C	10m	7m	High	Flood	0.5m	Weak	18	SCUBA	Artificial Reef, Sand/Mud, Mixed Algae, Seagrass, Sponges, Seasquirts & Other
Blairgowrie Pier (-38.3582 – 144.77725)	Monash Underwater Club	9/12/2017 11:00AM – 12:30PM	19°C	10m	8m	Low	Ebb	0m	Nil	4	SCUBA	Artificial Reef, Sand/Mud, Mixed Algae, Seagrass, Sponges, Seasquirts & Other
Blairgowrie Pier (-38.3582 – 144.77725)	Dive2U	25/11/2017 8:00PM – 10:00PM	21°C	6m	5m	High	Flood		Weak	12	SCUBA	Artificial Reef, Sand/Mud, Mixed Algae, Seagrass, Sponges, Seasquirts & Other
Blairgowrie Pier (-38.3582 – 144.77725)	Dive2U	25/11/2017 3:00PM	21°C	6m	5m	Low	Flood		Weak	27	SCUBA	Artificial Reef, Sand/Mud, Mixed Algae, Seagrass, Sponges, Seasquirts & Other
Flinders Pier (-38.4757 – 145.0272)	Aquability Scuba	9/12/2017 10:00AM – 10:45AM	18°C	10m	4m	Low	Ebb			6	SCUBA	Artificial Reef, Sand/Mud, Seagrass
Flinders Pier (-38.4757 – 145.0272)	Melbourne University Underwater Club	18/11/2017 11:05AM – 12:30PM	16°C	5m	5m	High		0m	Nil	17	SCUBA	Sand/Mud, Seagrass
Flinders Pier (-38.4757 – 145.0272)	Ocean Divers	9/12/2017 9:30AM – 11:00AM	18°C	10m	4m	High	Slack	0m	Nil	35	SCUBA	Sand/Mud, Mixed algae, Seagrass
Holloways Hall (-37.9224 – 144.9863)	Scuba Scouts	35/11/2017 8:57AM – 9:45AM	21°C	3m	4m	High	Slack	0m	Weak	4	SCUBA	Low rocky reef (<2m), Kelp, Mixed algae, Sponges Seasquirts & Other

Rye Pier (-38.3688 – 144.8224)	Scuba Culture	25/11/2017 9:43AM – 10:30AM	20°C	5m	5m	Low	Ebb	0.5m	Weak	4	SCUBA	Artificial reef, Rubble, sand/Mud, Kelp, Mixed algae, Sponges, Seasquirts & Other
Rye Pier (-38.3688 – 144.8224)	Academy of SCUBA	19/11/2017		7m	1m					15	SCUBA	
Rye Pier (-38.3688 – 144.8224)	Scuba Culture	18/11/2017 10:05AM – 10:51AM	19°C	5m	5m	Low	Flood	0m	Weak	3	SCUBA	Artificial reef, Rubble, Sand/Mud, Kelp, Mixed algae, Sponges, Seasquirts & Other
Rye Pier (-38.3688 – 144.8224)	Scuba Culture	9/12/2017 9:50AM – 10:36AM	18°C	4m	5m	High	Ebb	0.5m	Strong	3	SCUBA	Artificial reef, Rubble, Sand/Mud, Kelp, Mixed algae, Sponges, Seasquirts & Other
Rye Pier (-38.3688 – 144.8224)	Wild Families	18/11/2017 11:00AM – 12:05PM	17°C	10m	5m	Mid	Flood	0m	Weak	14	Snorkel	Artificial reef, Rubble, Sand/Mud, Mixed algae, Sponges, Seasquirts & Other
Schnapper Point (38.217 – 145.0335)	Harbour Dive	18/11/2017 2:00PM – 2:45PM	16°C	5m	4.5m	Low		0.5m		7	SCUBA	Low rocky reef (<2m), Rubble, Sand/Mud, Mixed algae
South Channel Fort (-38.3067 – 144.8013)	Victorian Sub Aqua Group	10/12/2017 10:45AM – 11:30AM	18°C	4m	9m	High	Ebb	0.5m	Strong	2	SCUBA	Large rocky reef (>2m), Artificial reef, sand/Mud, Mixed algae, seagrass
South Channel Fort (-38.3067 – 144.8013)	Victorian Sub Aqua Group	10/12/2017 10:30AM – 11:30AM	19°C	5m			Ebb	0m	Strong	2	SCUBA	Large rocky reef (>2m), Artificial reef, Mixed algae
St Leonards Pier (-38.1705 – 144.7195)	Australian Diving Instruction	17/12/2017 3:00PM – 4:00PM	19.5°C	5m	4m	High	Flood			18	SCUBA	Artificial reef, Sand/Mud, Kelp, Mixed algae, Seagrass, Sponges, Seasquirts & Other, Rocky wall
St Leonards Pier (-38.1705 – 144.7195)	Australian Diving Instruction	17/12/2017 9:00PM – 10:00PM	19.5°C	1m	4m		Slack			18		Artificial reef, Sand/Mud, Kelp, Mixed algae, Seagrass, Sponges, Seasquirts & Other, Rocky wall
St Leonards Pier (-38.1705 – 144.7195)	Bellarine Snorkel Tours	16/12/2017 10:00AM – 1:15PM	20°C	7m	4m	Mid	Ebb	0m	Nil	10	Snorkel	Low rocky reef (<2m), Sand/Mud, Kelp, Mixed algae, Seagrass, Sponges, Seasquirts & Other
East Victoria												
Auckland Wreck (-37.8125 - 148.7628)	Friends of Beware Reef	12/12/2017 11:00AM – 11:45AM	19°C	15m	27m	Low	Slack		Nil	2	SCUBA	Large Rocky Reef (>2m), Kelp, Mixed algae, Sponges Sea Squirts & Other
Drew's Jetty (-37.88 – 147.96)	Friends of Beware Reef	20/11/2017	16°C	20m	7m	High	Flood	0m	Weak	2	SCUBA	Artificial Reef, Sand/Mud

		11:00AM – 12:00PM										
Edgor's Groyne	Friends of Beware Reef	20/11/2017 1:30PM – 2:00PM	18°C	18m	10m	Low	Slack	0m	Weak	2	SCUBA	Large Rocky Reef (>2m), Artificial Reef, Mixed algae
George Kermodé Wreck (-38.5202 – 145.2454)	Victorian Sub Aqua Group	30/11/2017 9:15AM – 10:00AM	20°C	20m	21m	High	Flood	0.5m	Nil	2	SCUBA	Artificial Reef, Mixed algae, Seagrass
Lakes Entrance (-37.8948 – 147.9936)	Friends of Beware Reef	7/12/2017 1:00PM – 2:00PM	19°C	2m	3m	High	Flood	0m	Weak	3	SCUBA	Low rocky reef (<2m), Artificial reef, Other (Mainly mussels with little codium – codium fragile, dotted below the mussels on rocks)
Mushroom Reef Marine Sanctuary (-38.4815 – 145.0162)	Friends of Mushroom Reef Marine Sanctuary	25/11/2017 10:30AM – 12:00PM	16°C	5m	5m	Low	Flood	0.5m	Nil	11	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Kelp, Mixed algae, Seagrass, Sponges, Seasquirts & Other
Ridge Park Wreck (-37.8125 – 148.7628)	Friends of Beware Reef	12/12/2017 12:45PM – 2:00PM	19°C	7m	16m	High	Flood	1.5m	Weak	2	SCUBA	Large rocky reef (>2m), Kelp, Mixed Algae, Sponges, Seasquirts & Other, Urchin Barrens
Shack Bay (-38.6726 – 145.6581)	Bunurong Coast Education/South Gippsland Conservation Society	10/12/2017 11:15AM – 12:15PM	17°C		4m	Low	Flood	1m	Weak	25	Snorkel	Large rocky reef (>2m), Low rocky reef (<2m), Sand/Mud, Seagrass, Sponges, Seasquirts & Other
Speke Wreck (-38.515 – 145.1757)	Victorian Sub Aqua Group	30/11/2017 11:30AM – 12:15PM	16°C	10m	5m	Mid	Ebb	0.5m	Nil	2	SCUBA	Low rocky reef (<2m), Artificial reef, Rubble, Sand/Mud, Kelp, Seagrass, Scattered pieces of hull wreckage, bollards, anchor winch drum, riveted plating, boom arms.

