



Two Bays Whale Project Summary 2019

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1. Introduction

1.1. Background

The Two Bays Whale Project (TBWP) is a citizen science initiative created through collaboration between the Dolphin Research Institute (DRI) and Wildlife Coast Cruises. The project officially began in 2015 and is designed to formalise the recording of sightings of large cetacean species within Port Phillip, Western Port and adjacent State waters (Barwon Heads to Inverloch to 3 nautical miles seaward). The current dataset dates back beyond the commencement of the project to 2000 with some supplementary sightings from previous years 1984 - 2000.

The key species for this citizen science project are; humpback whale (*Megaptera novaeangliae*) and southern right whale (*Eubalaena australis*) but may also include other species' such as killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*) and blue whale (*Balaenoptera musculus*), also occasionally seen in the observation area.

The project is intended to have the capability to provide a repository for and subsequently a catalogue of humpback whale flukes (tails). All images of southern right whale callosities (unique head patterning composed of raised pale hardened skin) and lateral images of heads are shared with the pre-existing Victorian southern right whale catalogue. These images are also submitted to the State-wide Integrated Flora and Fauna Teams (SWIFFT) online reporting system and shared with the Australasian Right Whale Photo Identification Catalogue (ARWPIC) through the SWIFFT system. Additionally, images of killer whale dorsal fins, eye patches and saddle patches are contributed to the Killer Whales Australia database and catalogue. Finally, the image repository may also accept images of other cetacean species which may assist in validating any unidentified species photographed within the Two Bays region.

1.2. Two Bays Whale Project Objectives

The objectives of this project are to;

- create a strong and reliable sightings network through engagement of key stakeholders and the general public (citizen scientists),
- accurately record and archive sightings and movement of large whale species within Port Phillip, Western Port and adjacent waters (Barwon Coast to Inverloch) (Fig. 1),
- provide a repository for identification images (primarily for humpback whales and southern right whales) which is then shared with researchers and key stakeholders,
- provide accurate information on large cetacean movements within the observation area and
- contribute these data to support current and future cetacean management plans and research projects.

1.3. Observation area

The observation area is split into two regions; Port Phillip (Barwon Heads to Cape Schanck) and Western Port (Cape Schanck to Inverloch) (Figure 1)

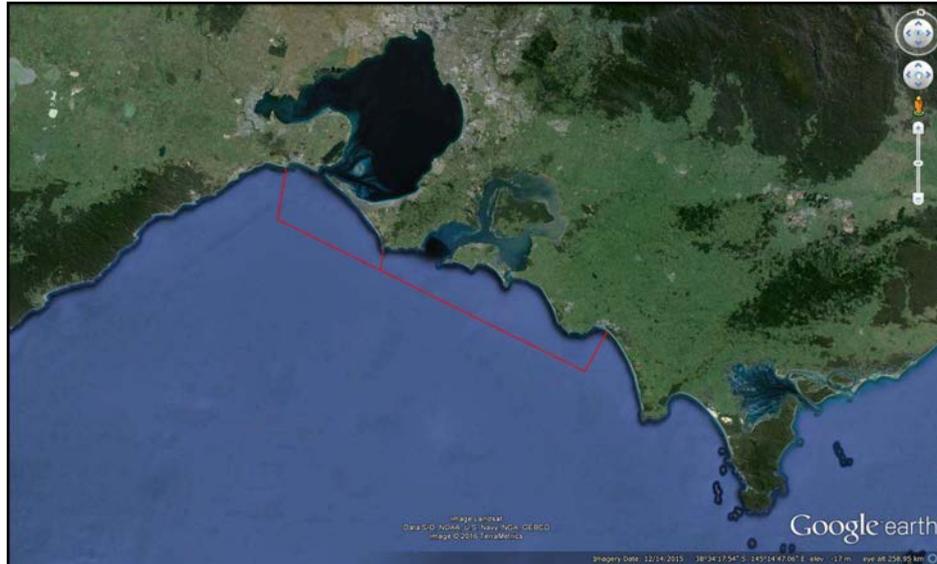


Figure 1 Observation area of the Two Bays Whale Project encompassing Port Phillip, Western Port and adjacent waters (Barwon Heads to Inverloch).

1.4. Observation Sub-Regions

Season 2019, again used the 10 sub-region approach for assigning sightings (see appendix):

- Barwon Coast
- Corio
- Port Phillip North
- Port Phillip South
- Peninsula West
- Peninsula East
- Western Port North
- Western Port South
- Phillip Island South and
- Bass Coast

The reason for this was to streamline reporting and encourage 'ownership' of regions for citizen scientists.

2. Season summary

2.1. Obtaining sightings

Season 2019 experienced a mix of weather conditions with good to very good weather prevailing for the most part. Sightings were gathered from land, vessels and helicopter. The primary platforms for observations this season were the tourist vessels ‘Kasey Lee’ and ‘Brianna Lee’. These vessels are owned and operated by Wildlife Coast Cruises based on Phillip Island. Regular whale watch cruises were responsible for gathering much of the sighting data presented here.

2.2. PodWatch

A new reporting system was introduced to the Two Bays Whale Project this season, which proved highly successful in streamlining sighting reports and acquisition of images. The system, a web-based “Progressive Web App” titled ‘PodWatch’ was introduced at the beginning of the season. The system functions in essentially the same way as native app, the main difference being that it resides on the host’s website. The system enables:

- reduced costs in development and hosting (initial and on-going),
- data residing on the DRI website database giving security and control,
- one version to operate on any phone, tablet or PC without additional downloads,
- launching from a home-screen icon, and in its own window, like a native phone app.

Funding for the development of the reporting system was sourced by DRI via a government Landcare grant. This grant also enabled the Two Bays Whale project outreach to be expanded through delivering off-site workshops across the region which were delivered by DRI staff. A combination of the introduction of PodWatch and the increased outreach is thought to have contributed to a marked increase in new contributors in 2019 (**Figure 2**).

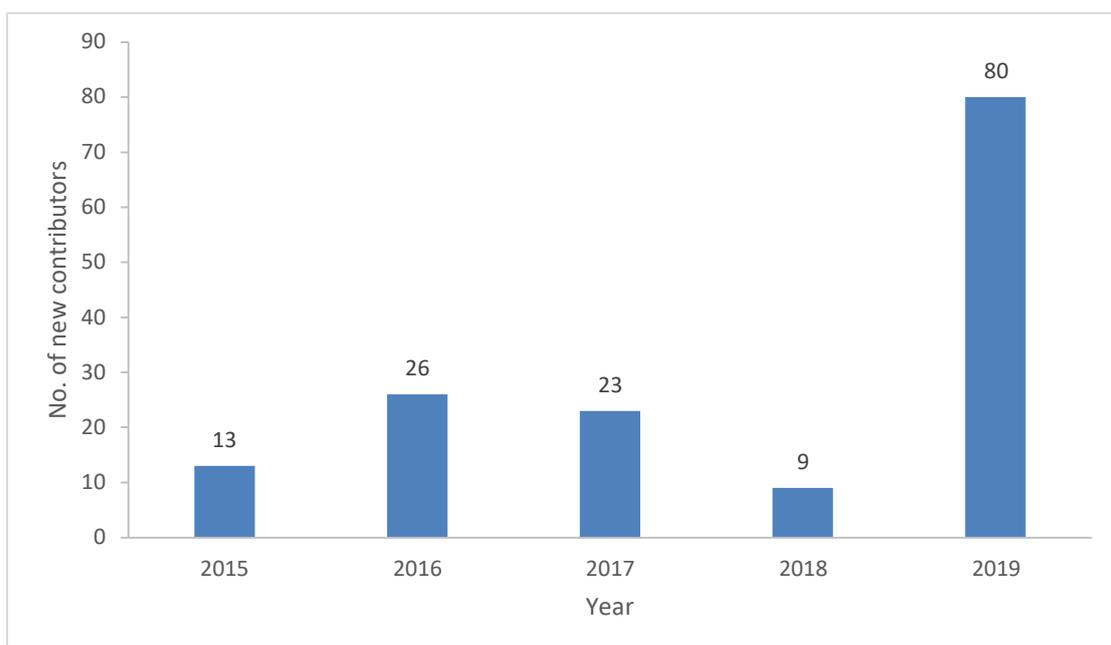


Figure 2 New sighting contributors per year, 2015 to 2019

2.3. Sightings

Sighting reports were scored for reliability using a 1 to 5 system, with 1 being unlikely and 5 being validated with imagery (video or photograph). A validated sighting was considered to be one which had accompanying imagery or came from a highly reliable source (scores 4 and 5).

Sightings were spread across the region with the highest density being along the southern side of Phillip Island (Figure 3).

Overall sighting figures for 2019;

- 253 separate validated sighting events plus 23 re-sights (276 records in total)
- Estimated 487 individual animals across these sightings.
- Number of humpback whales per sighting ranged from 1 to 5 individuals, with an average of 1.9 whales per sighting. This average humpback whale pod size is consistent with all previous seasons with the exception of 2018, where average pod size was 1.7.
- 3 confirmed species (southern right, humpback and killer whale)
- 1 unconfirmed species (likely sei whale)

Note; the figure of 487 individuals is a best estimate after omitting, probable and known re-sights. The actual number of individuals is likely to be higher.

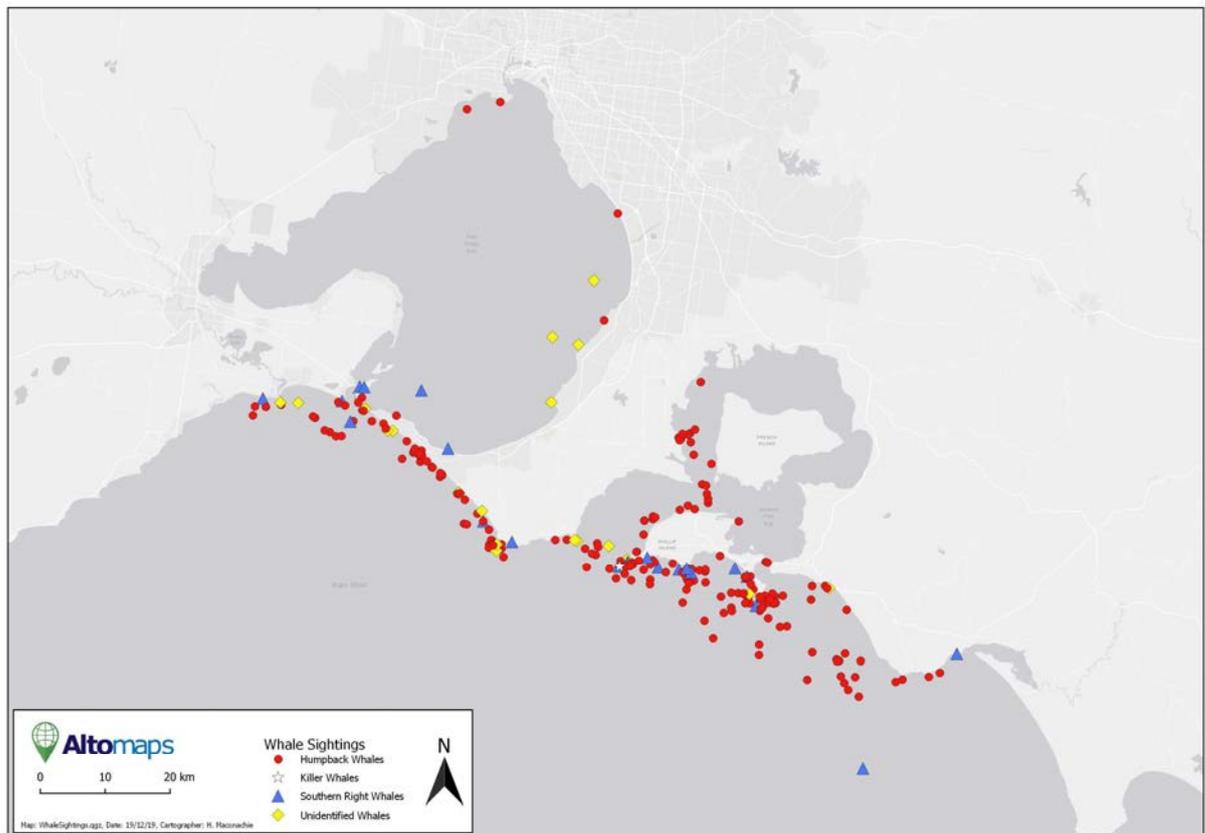


Figure 3 Distribution of large cetacean sightings for the 2019 whale season within the survey area.

2.4. Yearly comparisons

The number of sighting events in 2019 did not increase as it did in the previous four years (**Figure 4**). This is in spite of the growth of 80 new sighting contributors in 2019, being more than the sum of all new participants for the previous four years.

It is possible that there were fewer whales migrating through the observation area and data collected in future seasons may offer explanations for this if it is so. However other possibilities such as reporting methodologies, variation in citizen science effort and the possibility of some whales migrating further offshore could also account for this variation.

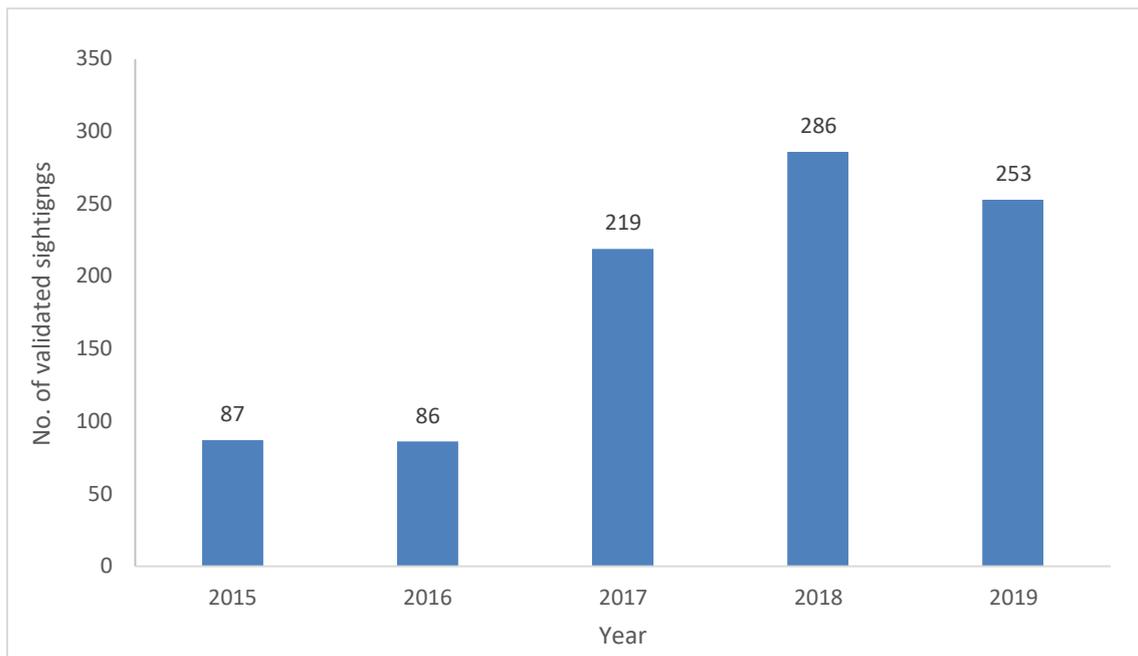


Figure 4 The number of confirmed sighting events for all recorded species each year.

2.5. Recorded species

A total of three species were validated through the use of diagnostic imagery in season 2019, these being: humpback, southern right and killer whales. A fourth species was sighted and filmed, however footage provided was not clear enough to confirm species. After analysis, the animals in the footage were able to be confirmed to be medium sized Balaenopterids, likely sei whales.

As in season 2018, 2019 recorded a higher than expected number of sightings of southern right whales in the region. Whether these sightings were of a relatively large number of individuals or the same few whales moving locally is unknown as insufficient photo identification images were gained to make this determination.

Of interest was the unusual sighting of a humpback whale and southern right whale associating off Cape Schanck. The pair were observed for over one hour, always remaining within five body lengths of one another (Figure 5).

Example images showing all three validated species obtained from citizen scientist contributions are provided in Figure 6, Figure 7, Figure 8 and Figure 9.



Figure 5 Southern right and humpback whale associating off Cape Schanck.

Image courtesy of Nathan Woods.



Figure 6 Southern right whale (*Eubalaena australis*) off Phillip Island.

Image courtesy of Wildlife Coast Cruises.



Figure 7 Humpback whale (*Megaptera novaeangliae*) off Seal Rocks, Phillip Island.

Image courtesy of Barb Wallace.



Figure 8 Killer whale (*Orcinus orca*) at Port Phillip Heads.

Image courtesy of Nelson McKiggan.



Figure 9 Medium-sized balaenopterid (possibly sei whale), in southern Western Port.

Image courtesy of Adam Wallace

2.6. The Victorian Humpback Whale Identification Catalogue

Both during and prior to the Two Bays Whale Project's existence, images of the underside of humpback whale flukes have been archived by DRI. Over the course of many decades, images such as these have been proven to be a reliable means of identifying individual humpback whales globally (much like a human figure print). These fluke images are therefore useful in tracking individual whale movements. The archive of images has been used to populate a catalogue of flukes for this species in Victoria...a first for the State. This catalogue now totals 100 individual whales (Figure 10). The Victorian catalogue is small in comparison to other east Australian catalogues. Nonetheless it is a very useful reference and a great achievement given the catalogue relies almost entirely on citizen science contributions.

Images from this catalogue are also shared with the online citizen science fluke matching platform 'Happywhale'. This platform provides an automated fluke ID matching system which operates at the global level. To date, flukes contributed by the Two Bays Whale Project have been matched to sightings in Queensland, New South Wales and Victoria.



Figure 10 The fluke of whale 100, contributed to the TBWP catalogue. Entered as VIC_0100.

Image courtesy of Wildlife Coast Cruises.

3. Cetacean emergencies

Three cetacean emergencies (excluding dolphins) occurred within the Two Bays region during the season. Details of these events are summarised below.

24 May 2019

A single, sub-adult humpback whale became entangled in commercial fishing gear off the coast of Barwon Heads (**Figure 11**). The incident was managed by the Department of Environment, Land, Water and Planning with support from the Victorian Fisheries Authority. Due to environmental conditions, the animal was unable to be disentangled and was not relocated in the following days.



Figure 11 Entangled humpback whale 24 May 2019.

21 September 2019

A decomposed carcass of a young male humpback whale washed ashore at St Andrews Beach on the Mornington Peninsula (Figure 12). Due to the condition of the carcass, cause of death could not be determined.



Figure 12 Humpback whale at St Andrews Beach 21 September 2019.

Image courtesy of Josie Jones

15 October 2019

A highly decomposed carcass of a large whale thought to be a humpback was found near Kilcunda. The carcass was in pieces with portions of the animal floating at sea while other parts were located on rocks along the nearby coast (Figure 13). The presumed pectoral fin has been outlined in this image to demonstrate evidence of this to almost certainly being a humpback whale. Thanks to colleagues at the South Australian Museum for their expert anatomical assistance.

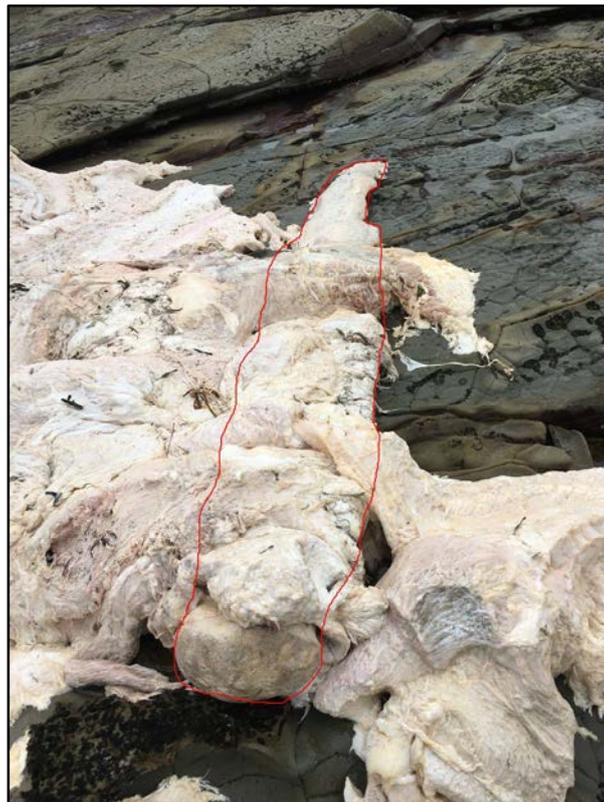


Figure 13 Part of a large whale, thought to be a humpback, near Kilcunda, 15 October 2019.

Image courtesy of Victorian Fisheries Authority

The Department of Environment, Land Water and Planning (DELWP) are tasked with responding to cetacean emergencies and should be contacted as a first port of call in the event of a cetacean emergency such as strandings, vessel strikes or entanglement. See details below.



4. Two Bays Whale Project Outreach

As part of the Two Bays Whale Project communication and outreach plan, the 'Island Whale Festival' was held again in 2019. Led by Destination Phillip Island, the festival was the most successful to date. An estimate of 10,000 attendees was recorded by event organisers. The support of Wildlife Coast Cruises, the Dolphin Research Institute, Phillip Island Nature Parks, Bass Coast Shire and the increased support from the International Fund for Animal Welfare (IFAW) were crucially important in ensuring the three-day event's success.

Government and non-government groups were represented from across the Two Bays region and beyond. The involvement of indigenous groups grew from the previous year with guests travelling from interstate to share stories and be involved in most aspects of the festival. Traditional owners from the Bunurong performed a welcome to country to open the event while several other activities focussing on indigenous culture were offered to visitors. Indigenous artwork was again created and displayed during the festival as well as featuring in the closing ceremony (Figure 14)



Figure 14 An example of the indigenous artwork created for and displayed at the Island Whale Festival.

Continuing with communication and outreach, the Two Bays Whale Project Facebook page again proved to be a useful communication tool as did the whale sighting hotline. These two platforms, combined with the DRI outreach workshops, formed the basis of the 2019 community outreach program. Below are some dot-points relevant to assessing the value of these forms of communication.

- This year, under the Landcare grant, the Two Bays Whale Project was able to run a series of 36 workshops throughout a range of community and interest groups in the Two Bays region. These workshops included topics such as species identification, the Two Bays Whale Project and becoming a citizen scientist. A total of 1,489 people were engaged.
- The Two Bays Whale Project Facebook page increased its following and now has 4,988 followers (up from 3,203 in 2018), an increase of 1,785.
- It is still evident that many of the Facebook followers live in, near or regularly visit the observation area, though the project is now generating interest further afield.
- The Facebook page continues to be an integral part of the communication and outreach component of the Two Bays Whale Project. It provides a central hub that is accessible to anyone interested in contributing sightings or simply wishing to learn about whale movements in and around our bays and nearby coasts.
- The whale sightings hotline and SMS alert were again run by Wildlife Coast Cruises in 2019. This form of communication both receives and circulates whale sighting reports amongst its members in the Bass Coast region and beyond in near real time. The current number of subscribers to this service stands at 2,535, this number represents an increase of 690 from the 2018 number of 1,845.
- Communication through these two means continues to improve community awareness of the presence of whales and attracts winter tourist visitation to Phillip Island and the Bass Coast.

5. Summary

The Two Bays Whale Project again proved that a citizen science approach to data collection that includes the use of social media, a sightings hotline and scientific expertise is a useful and reliable means of monitoring whale presence and movements. The addition of the reporting system 'PodWatch' allowed for streamlining of the processes associated with running this citizen science project and improved data collection, participation and reliability in reporting.

The success of the 2019 season can be attributed to an excellent collaboration between the Dolphin Research Institute and Wildlife Coast Cruises as well as a growing network of enthusiastic supporters. Broader collaborations with State agencies and domestic organisations was also greatly beneficial to data collection and validation of events. This overall success has ensured the continuation of the project into 2020.

The plan for season 2020 will be dependant on the level of restrictions applied in relation to the COVID-19 pandemic. Regardless of restrictions the project will endeavour (within the limitations of restrictions) to expand networks, continue to improve our methods and increase the contribution of data toward improving the understanding and management of whales in Victorian waters.

Planning is currently underway to ensure a standardised data collection method is achieved for season 2020 which complies with evolving COVID-19 restrictions.

6. Acknowledgments

The authors of this summary would like to acknowledge the contributions made by our Citizen Scientists in the general public, without which, a large percentage of sightings would not have been available for this report. We would also like to acknowledge:

- The Australian Government National Landcare Program
- Department of Environment, Land, Water and Planning (DELWP),
- Parks Victoria,
- Phillip Island Nature Parks,
- Destination Phillip Island,
- Killer Whales Australia,
- Phillip Island Helicopters,
- South Bay Eco-Adventures,
- Port Phillip Sea Pilots,
- Polperro Dolphin Swims,
- Moonraker Dolphin Swims,
- Sea-All Dolphin Swims,
- RedBoats Diving,
- WaterMaarq,
- Searoad Ferries,
- Victorian Volunteer Coast Guard,
- Rusty Water Brewery,
- Fathom Pacific Pty Ltd,
- Barwon Coast Committee of Management and
- Victoria Police Search and Rescue.

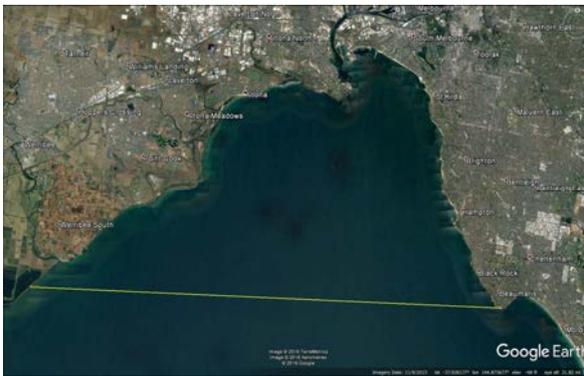
7. Appendix Observation Regions



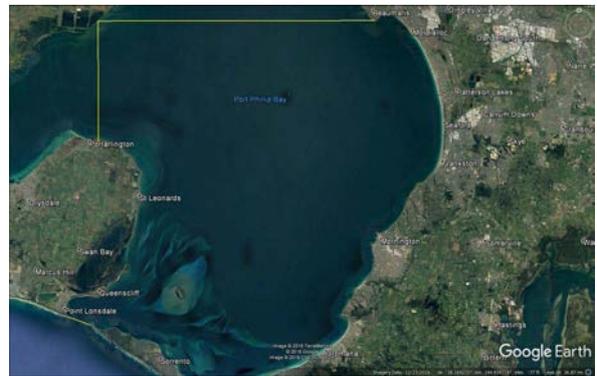
Barwon Coast



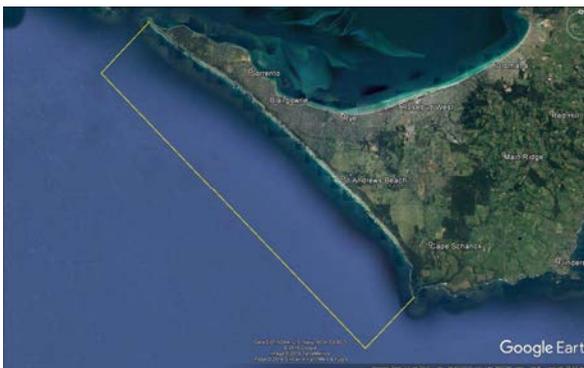
Corio



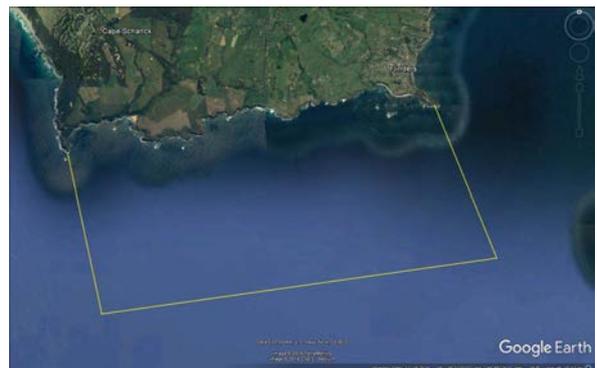
Port Phillip North



Port Phillip South



Peninsula West



Peninsula East

