Two Bays Whale Project Summary 2021

David Donnelly, John Dickie and Jeff Weir

Postal Address
PO Box 77
Hastings VIC 3195
AUSTRALIA
Phone + 61 (0) 401 011 022
Email Contact killerwhalesaustralia@gmail.com
Website http://www.dolphinresearch.org

Citation

Donnelly, D.M., Dickie, J. and Weir, J.
2021 Two Bays Whale Project Summary

Table of Contents

Figures

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 sighted 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 sighting details and images of southern right whale callosities (unique head patterning composed of raised pale hardened skin) and lateral images of heads are submitted to WhaleFace, an online reporting platform integrated with the State-wide Integrated Flora and Fauna Teams (SWIFFT). Additionally, images of killer whale dorsal fins, eye patches and saddles 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, maintain and build a strong and reliable sightings network through engagement of key stakeholders and the general public (citizen scientists),
- accurately record and archive sightings and movements of large whale species within Port Phillip, Western Port and adjacent waters (Barwon Coast to Inverloch) (Figure 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

The Port Phillip and Western Port regions are then further split into 10 smaller sub-regions (see Appendix 1):

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

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

2. Season summary

2.1. Obtaining sightings

Season 2021 as in 2020, was compromised as a result of the restrictions associated with the COVID-19 pandemic. Subsequently, observer effort was greatly reduced both at sea and on land, resulting in lower whale count numbers.

Sightings were gathered from land and vessels at sea, with some opportunistic sightings contributed by aerial survey scientists transiting the area. To standardise data collection, sighting information from Wildlife Coast Cruises was gathered from the Phillip Island circumnavigation cruises only.

2.2. PodWatch

The web-based app 'PodWatch' was again used as the project's primary form of reporting for citizen scientists. The system functions in essentially the same way as a native app, the main difference being that it resides on the host's (Dolphin Research Institute's) website.

This web-based app option 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 or updates,
- launching from a home-screen icon, and in its own window, as with a native phone app.

The success of PodWatch in years 2019 and 2020 was mirrored in 2021 with 202 contributions, 107 of which were sightings of large whales (Figure 2). This lower number of reports via the app is most likely due to the reduced observer effort as a result of stricter COVID-19 lockdown measures during the whale season.

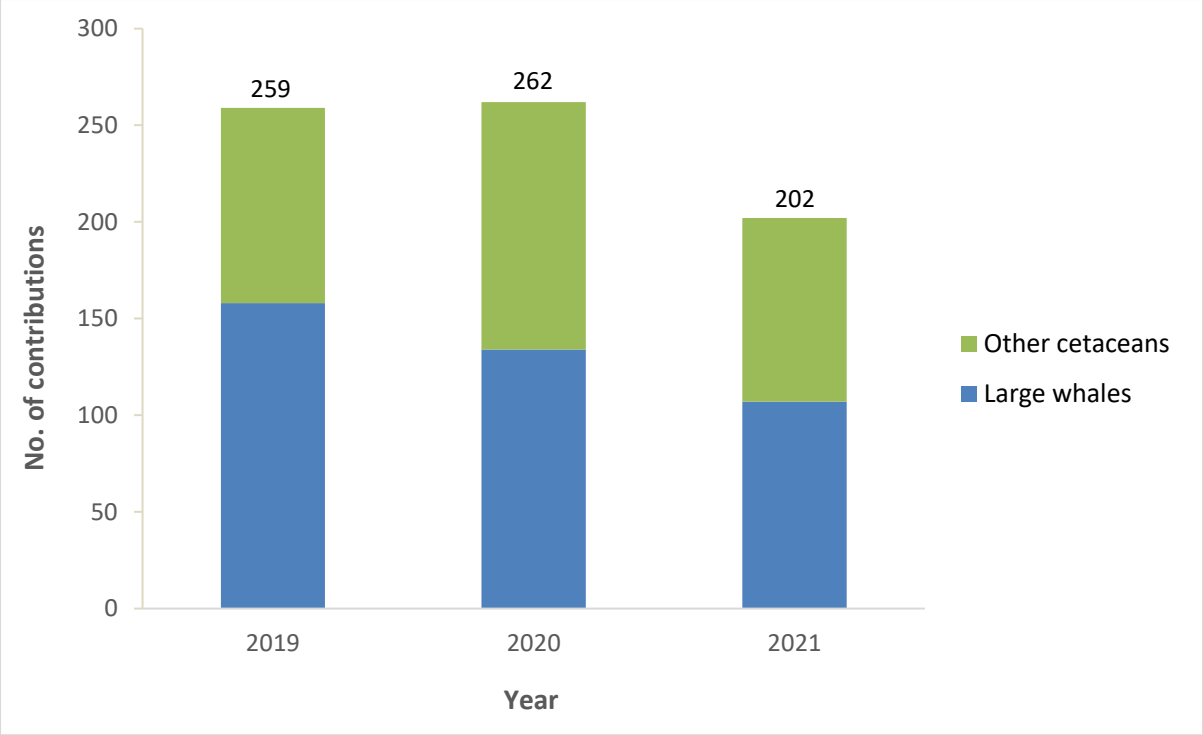


Figure 2 Sighting contributions per year via PodWatch.

Interestingly, the use of and interest in PodWatch has grown considerably with sighting reports now being received from across Victoria, New South Wales and Queensland. Enquiries regarding the development of the app have been received from NGOs and government agencies in South Australia and Western Australia.

2.3. Citizen Science

Outside of sightings information collected by Wildlife Coast Cruises, citizen science is the primary source of data for the Two Bays Whale Project. The data contributed by citizen scientists is validated through a stringent quality assurance and quality control (QAQC) process at the Dolphin Research Institute. Contributions must first pass through a range of checks before they are added to the overall dataset. This process ensures that all data are reliable and auditable.

Citizen science contributions are received via four data streams:

- PodWatch
- social media
- mobile phone
- word of mouth.

2.4. Sightings

Sighting reports were scored for reliability using a 1 to 5 system, with 1 being unlikely to have occurred and 5 being a confirmed sighting event. 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 2021;

- 150 separate validated sighting events
- Estimated 259 individual animals across these sighting events.
- Number of humpback whales per sighting ranged from 1 to 5 individuals, with an average of 1.7 whales per sighting. This average is slightly lower but close to the average pod size (1.8 – 2) for all previous seasons.
- 3 confirmed species (southern right, humpback and killer whale)

Note the figure of 259 individuals is a best estimate after omitting probable and known re-sights. The actual number of individuals is likely to be higher.

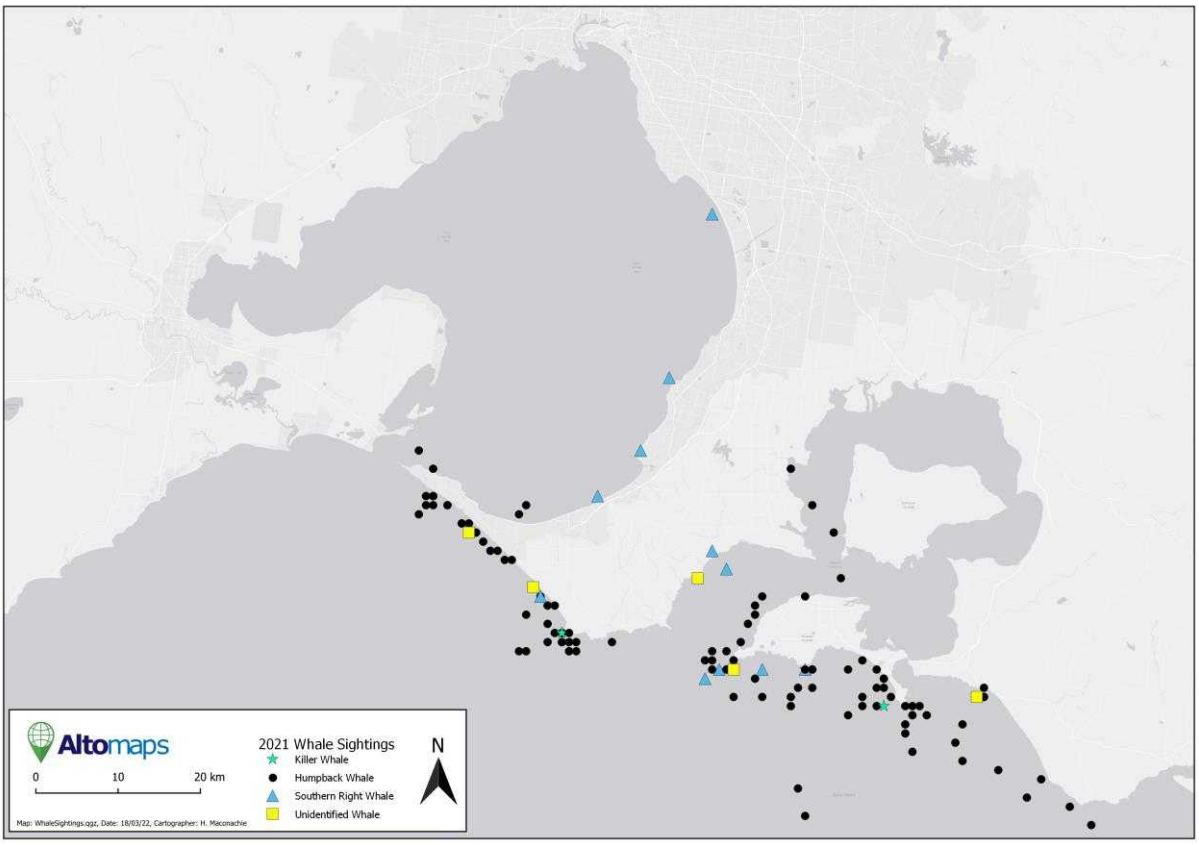


Figure 3 Distribution of large cetacean sightings for the 2021 whale season within the survey area.

2.5. Yearly comparisons

The number of sighting events reduced again in 2021 (Figure 4). This drop is considered to be a result of the effects of the increased COVID-19 lockdown measures applied by the Victorian State government in the peak of the 2021 humpback whale season. Observer effort was largely restricted to citizen scientists who lived within five kilometres of the open coast with small windows of opportunity for others during times of lifted restrictions.

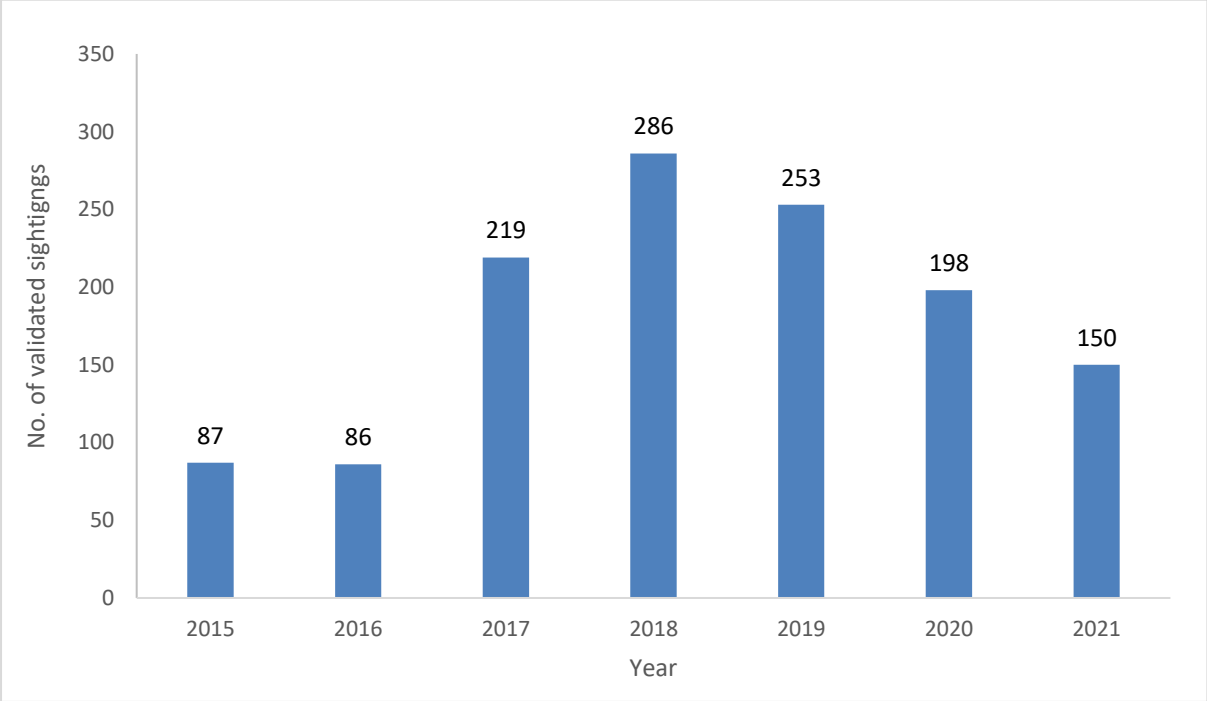


Figure 4 The number of validated sighting events for all recorded species each year.

2.6. Recorded species

A total of three targeted cetacean species were validated through the use of diagnostic imagery in season 2021, these being: humpback, southern right and killer whale.

As in seasons 2018 and 2020, 2021 recorded a higher-than-expected number of sightings of southern right whales in the region. It is unknown whether these sightings were of a relatively large number of individuals or the same few whales moving locally, as insufficient individual identification images were gained to make this determination.

Of interest was the sighting of a well-known group of killer whales which included a new calf and one of Australia's best known killer whales, 'Split Fin' (Figure 5).

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

Figure 5 Killer whale (*Orcinus orca*) and calf (left (Anna Carson)), killer whale known as Split Fin (right (Troy Kersten)).

Figure 6 Southern right whale (*Eubalaena australis*) off Phillip Island. Image courtesy of Kate Newman.

Figure 7 Humpback whales (*Megaptera novaeangliae*) off Seal Rocks, Phillip Island. Image by Wildlife Coast Cruises.

Figure 8 Killer whale (*Orcinus orca*) near The Pinnacles, Phillip Island. Image by Wildlife Coast Cruises.

2.7. 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 (Figure 9). 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 finger print). These fluke images are therefore useful in tracking individual whale movements across vast distances as well as locally. The archive of images curated by DRI has been used to populate a catalogue of flukes for this species in Victoria, a first for the State. This catalogue now totals 205 individual whales, an increase of 55 individuals since 2020. 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' (Figure 10). 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, Tasmania and Victoria.

Figure 9 The fluke of whale VIC_0200. Image by Wildlife Coast Cruises.

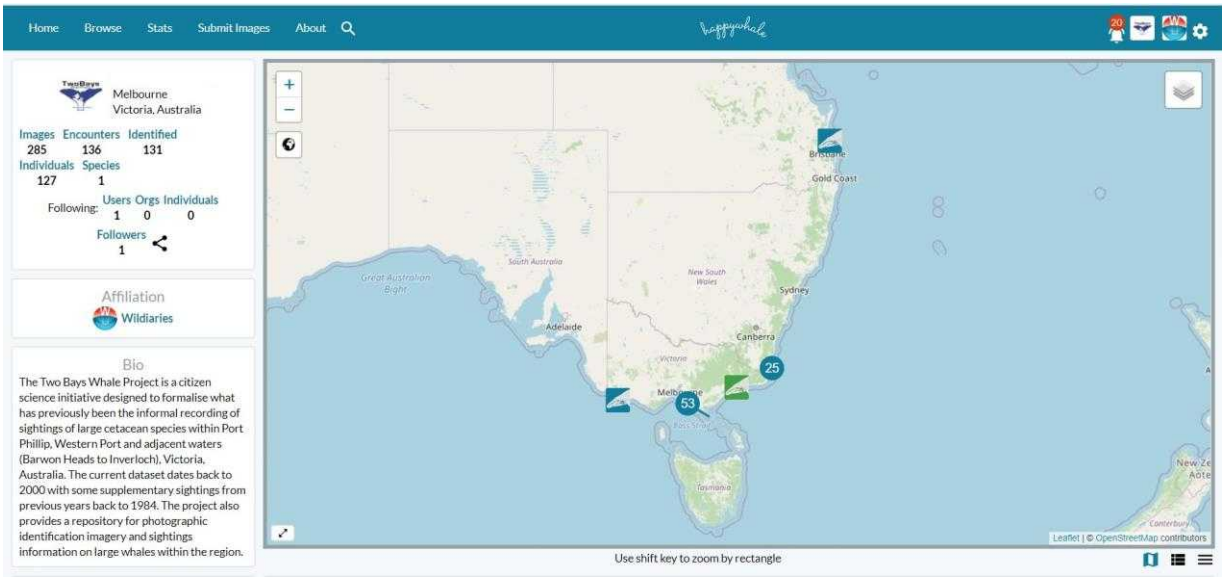


Figure 10 Example of Happywhale citizen science web page.

2.8. Two Bays Tracker

A new dedicated observation strategy was developed for season 2021. This program was titled 'Two Bays Tracker' and involved identifying reliable observers who would dedicate time to observing for whales from one of 10 designated sites:

Western Port region

- Pyramid Rock
- The Nobbies
- Cape Woolamai Surf Club
- Summerlands
- Aussie Track
- Anzacs

Port Phillip region

- Cape Schanck
- Koonya Beach
- Number 16 Beach
- Portsea Back Beach

A specific web-based app was developed for observers who would spend time at a site recording:

- Effort (length of survey from start to end)
- Sighting conditions
- Sightings within the survey time
- All relevant sighting details, including species, direction of travel etc.

Despite the effects of COVID-19, a total of 128.25 hours of effort was recorded. During this time, a total of 31 validated sightings of 4 species were made.

Figure 11 Two Bays Tracker logo.

3. Cetacean emergencies

One cetacean-related emergency (excluding dolphins) was reported in the Two Bays region during the 2021 season.

12 March 2021

A juvenile humpback whale was discovered deceased at the mussel farm located between Mornington and Mount Martha (Figure 12). The animal was found by farm workers and reported to the Victorian Fisheries Authority. Upon retrieval, the whale was found to be in good physical condition, measuring 7.1 metres in length and weighing 4 ton. Biological samples were gathered by wildlife managers and the carcass was disposed of in landfill.

Figure 12 Deceased humpback whale off Mornington.

Note: Rope in image is not associated with the cause of death.

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

The Two Bays Whale Project's primary outreach event for the last five years has been the Island Whale Festival. This three-day event is held annually on Phillip Island and after being cancelled in 2020, the festival returned in 2021, albeit in a modified form.

The event was subject to a range of limitations due to COVID-19 restrictions but overall, was successful. A total of 4171 attendees were recorded by event organisers, which was a great result given the circumstances.

The Two Bays Whale Project team ran four presentations over the weekend, which were all booked out in advance. We also sat on a scientific discussion panel, speaking about career opportunities in marine science and current marine research programs in the Phillip Island region.

At the time of publishing this report, plans were underway for the 2022 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 2022 community outreach program. Below are some dot-points relevant to assessing the value of these forms of communication.

- The Two Bays Whale Project Facebook page continued to grow with the total number of 'Likes' now at 7,412 (up from 6,388 in 2020).

- It is still evident that many of the Facebook followers live in, near or regularly visit the observation area, but it is clear that the project continues to draw attention from interstate and overseas.

- 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 2021. This form of communication has previously been an extremely effective communication tool. However, due to its popularity and the flow-on costs associated with maintaining the system, it is being phased out in favour of the Wildlife Whales app (see below).

- In 2020 Wildlife Coast Cruises created an app called 'Wildlife Whales' with a view to replace the mobile phone whale sighting SMS service. The app proved moderately successful in its first season and has since increased in popularity with currently around 8,500 users. The app provides the user with options to both report and receive sighting information.

- Communication through these means continues to improve community awareness of the presence of whales and attracts winter tourist visitation to Phillip Island and the Bass Coast.

5. New collaborations

During season 2021, the Two Bays Whale Project was approached by the coordinator of the Tasmanian Fluke Project to propose a collaboration. This led to discussions around the sharing of information and imagery of humpback whale flukes. A collaboration has formed whereby both parties now contribute fluke imagery to Happywhale and share re-sight information between the two states. This is a valuable, new collaboration which has already yielded one re-sight and will help to provide information on migratory pathways and timing of migration in the future.

6. 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. This was of particular importance during the ongoing COVID-19 restrictions period which although reduced from 2020, was still impactful across the season. Without the citizen science component, the project would not have functioned in any meaningful way.

The relative success of the 2021 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 were also greatly beneficial to data collection and validation of events. This overall success has ensured the continuation of the project into 2022.

The plan for season 2022 will be to increase dedicated field efforts using the Dolphin Research Institute's research vessel. This is to improve data acquisition in and around Port Phillip, as well as to increase capabilities and quality in fluke identification imagery. Effort will be put into encouraging the citizen science component through targeted pre-season community engagement, as well as regular social media updates. The Two Bays Tracker program will continue with similar effort across the observation area. Finally, the Project will introduce its first dedicated Research Fellow, who will be tasked with a range of duties to ensure the smooth running of the Project across the season.

7. Acknowledgments

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

- 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,
- Heath Maconachie for GIS assistance,
- Victorian Volunteer Coast Guard,
- Fathom Pacific Pty Ltd,
- Barwon Coast Committee of Management and
- Victoria Police Search and Rescue.

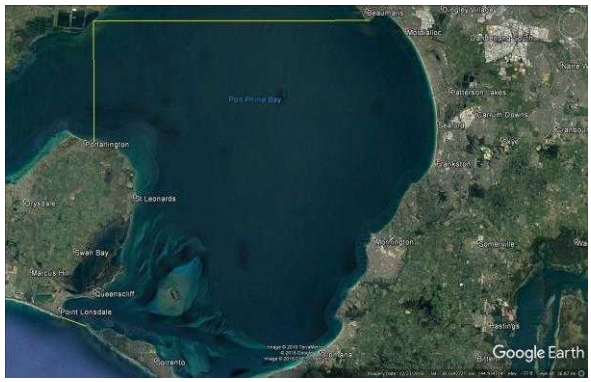
Appendix

Observation Regions

Barwon Coast

Corio

Port Phillip North



Port Phillip South

Peninsula West

Peninsula East

Western Port North

Western Port South

Phillip Island South

Bass Coast

Note: Region borders demonstrated here are representative only and may not be precise.