



Two Bays Whale Project Summary 2020

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>

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Donnelly, D.M., Dickie, J. and Weir, J.

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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 and 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 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 and maintain a strong and reliable sightings network through engagement of key stakeholders and the 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)

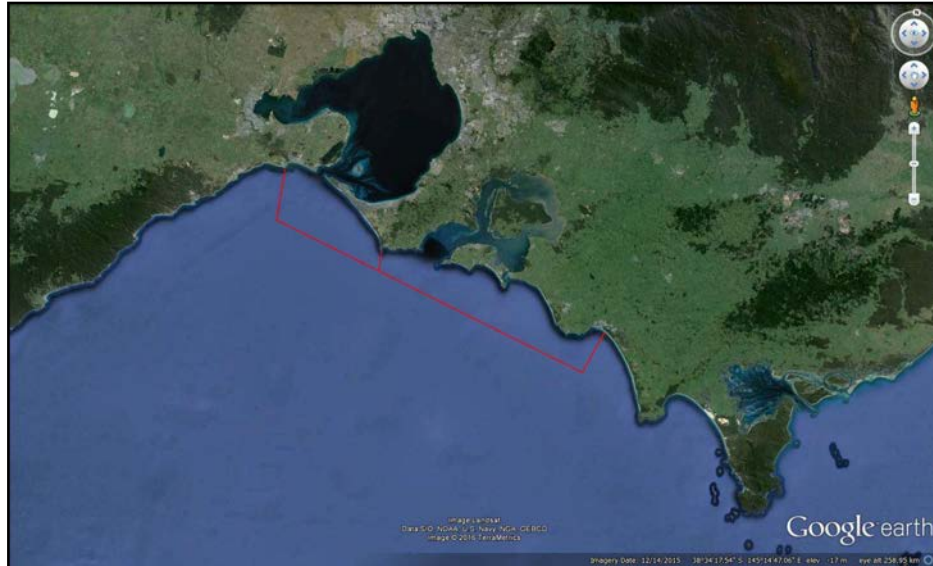


Figure 1 Observation area of the Two Bays Whale Project encompassing Port Phillip, Western Port and adjacent waters (Barwon Heads to Inverloch).

1.4. Observation Sub-Regions

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 2020 was severely 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 count numbers.

Sightings were gathered from land-based vantage points, as well as both commercial and recreational vessels. To standardise data collection, sighting information from commercial tour operator Wildlife Coast Cruises, was gathered from the Phillip Island circumnavigation cruises only. Data collected from other whale watch cruises run by this company was archived but not included in this summary. One day of dedicated field research effort was undertaken by the Dolphin Research Institute. All field research activities operated under the Dolphin Research Institute's research permit, number 10008727.

2.2. PodWatch

The web-based App. 'PodWatch' was again used as the project's primary form of reporting for citizen scientists. The success of the system in 2019 was mirrored in 2020 with 66 new contributors (**Figure 2**) logging sightings of large whales as well as numerous dolphin sightings (not reported on herein). This figure is down from 80 in 2019, however this lower number of reports via the app is most likely due to the reduced observer effort as a result of COVID19 restrictions. 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.

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

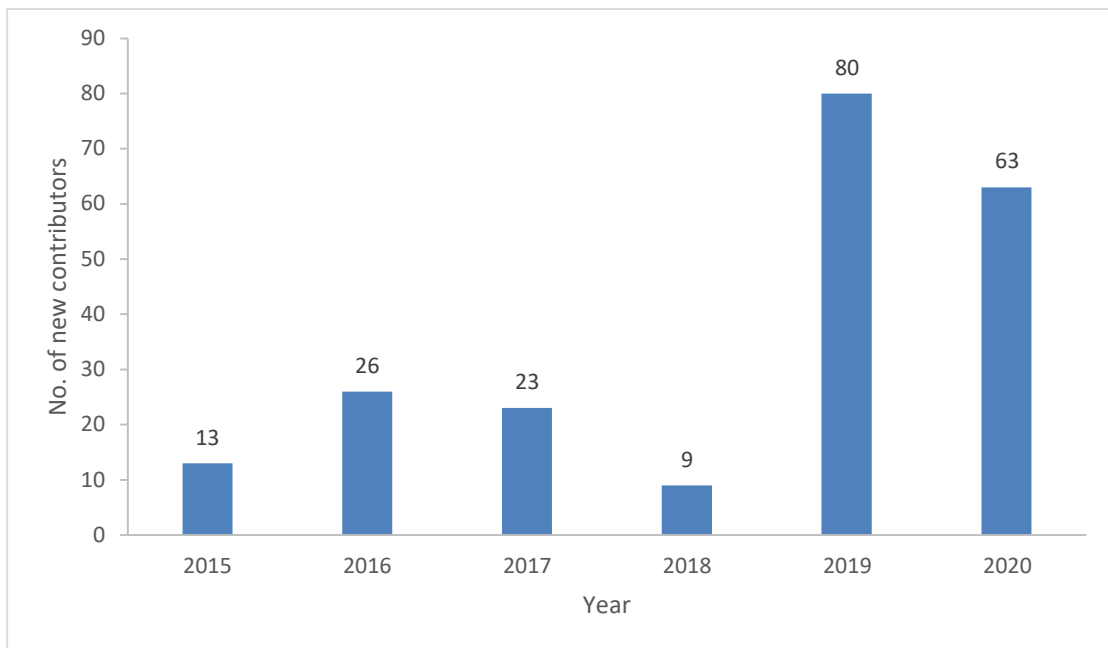


Figure 2 New sighting contributors per year 2015 to 2020

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 process by an experienced team at the Dolphin Research Institute. Only after contributions pass through a range of checks are they added to the overall dataset. This process ensures that all data are reliable and auditable.

The primary citizen science platform for data contribution is the web-based app. PodWatch.

2.4. Sightings

Sighting reports were scored for reliability using a 1 to 5 system, with 1 being unlikely and 5 being a confirmed sighting event with a high level of reliability. 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 2020;

- 198 separate validated sighting events plus 14 re-sights (212 records in total)
- Estimated 360 individual animals across these sighting events.
- Number of humpback whales per sighting ranged from 1 to 5 individuals, with an average of 1.8 whales per sighting. This average is slightly lower but close to the average pod size for all previous seasons (1.9 - 2).
- 3 confirmed species (southern right, humpback and killer whale)
- 1 likely species (dwarf minke whale)

Note: the figure of 360 individuals is a best estimate after omitting, probable and known re-sights. The actual number of individuals is likely to be higher.

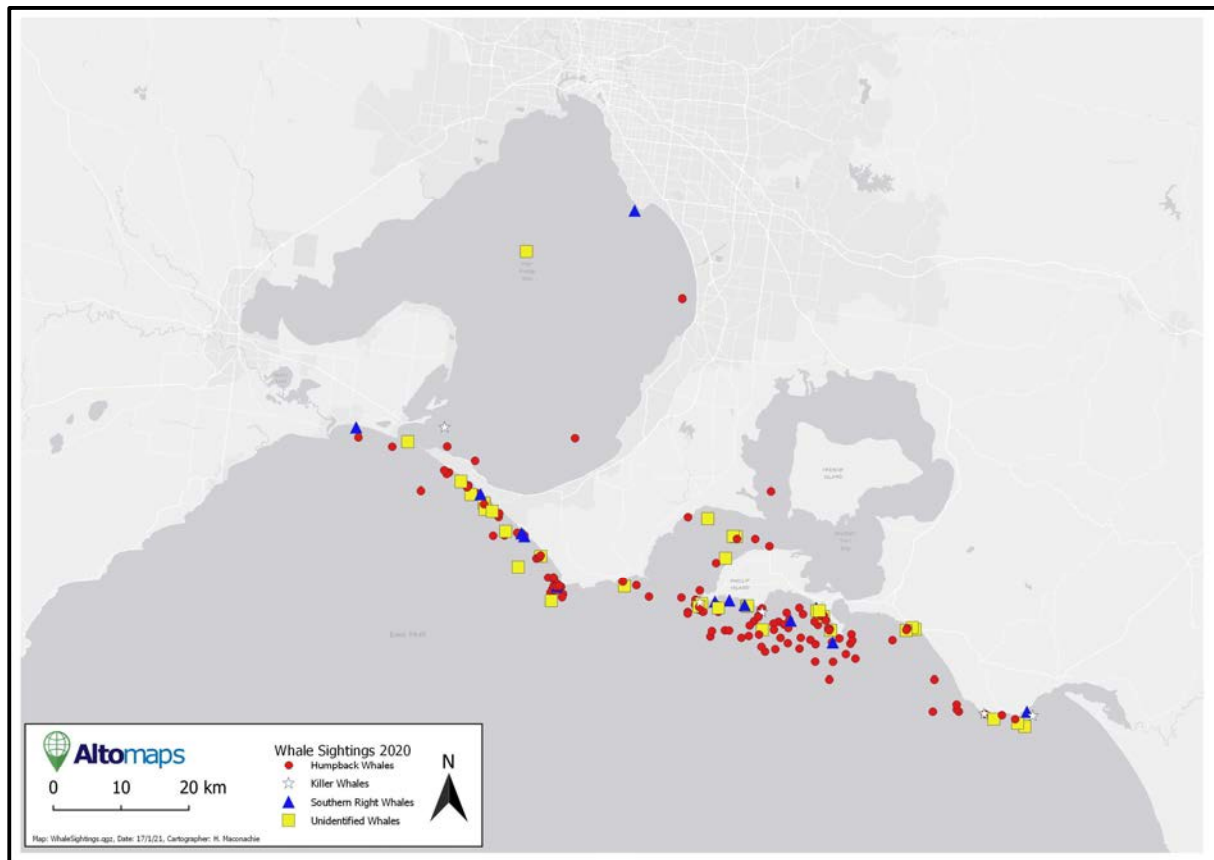


Figure 3 Distribution of large cetacean sightings for the 2020 whale season within the survey area.

2.5. Yearly comparisons

The number of sighting events reduced in 2020 (**Figure 4**). This drop is considered to be as a result of the effects of the COVID-19 pandemic and subsequent lockdown measures applied by the Victorian State government. 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 which were limited to the early migratory season for humpback whales.

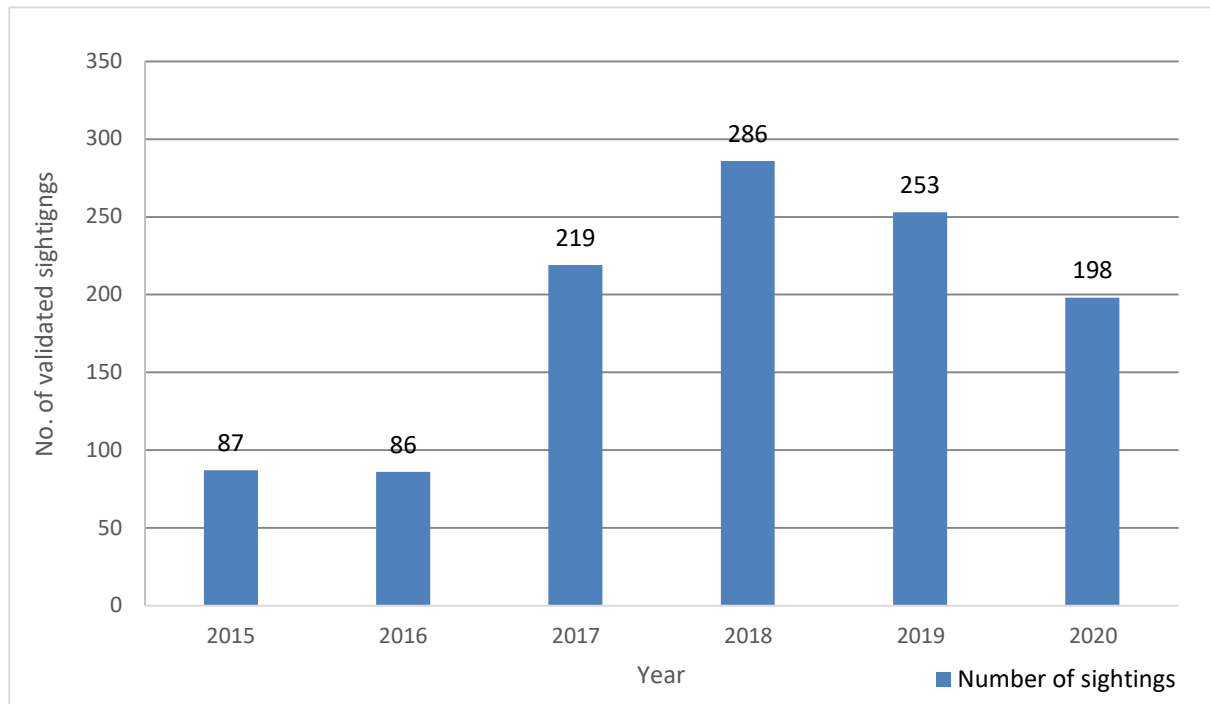


Figure 4 The number of confirmed sighting events for all recorded species each year.

2.6. Recorded species

A total of three targeted cetacean species were validated using diagnostic imagery in season 2020, these being: humpback, southern right and killer whale. A fourth species was sighted and based on observer description is thought to have likely been a dwarf minke whale.

As in season 2019, 2020 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 individual identification images were gained to make this determination.

Of interest was multiple sightings of humpback whales feeding off the southern side of Phillip Island (Figure 5). One individual humpback whale was sighted 3 times over four days in the feeding area (generally south of Pyramid Rock) and was noted to be feeding on each occasion. The individual was positively identified using photographs of the animal's fluke. (Figure 6).

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



Figure 5 Humpback whale displaying vertical and lateral lunge feeding. Image by Dolphin Research Institute.



Figure 6 Fluke identification images confirming the presence of VIC_0125 over a four-day period.



Figure 7 Southern right whale (*Eubalaena australis*) off Phillip Island. Image courtesy of Wildlife Coast Cruises.



Figure 8 Humpback whale (*Megaptera novaeangliae*) with common dolphins (*Delphinus delphis*) off Pyramid Rock, Phillip Island. Image by Dolphin Research Institute



Figure 9 Killer whale (*Orcinus orca*) near Pyramid Rock, Phillip Island. Image courtesy of 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. 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 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 150 individual whales. 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 11). 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 10 The fluke of whale VIC_0123. Image by Dolphin Research Institute under permit.

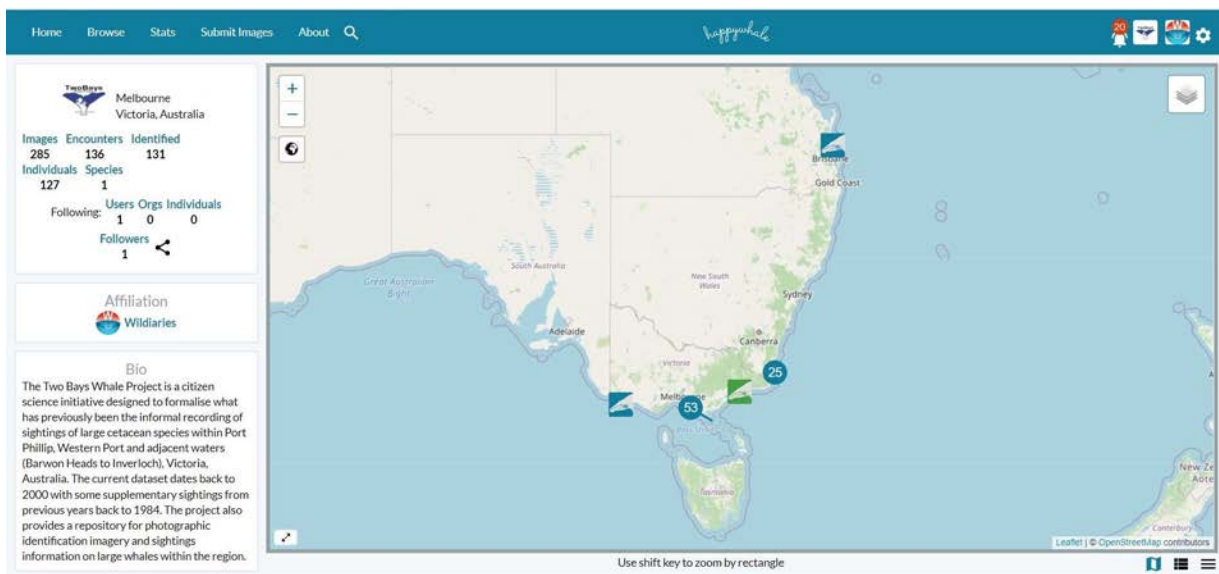


Figure 11 Example of Happywhale citizen science web page.

2.8. Two Bays Tracker

A new dedicated observation strategy was developed for season 2020. 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 (Start survey - end survey)
- Sighting conditions
- Sightings within the survey time and
- 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. This strategy allows for the quantification of effort which in turn gives a stronger basis for comparing year to year sighting data.



Figure 12 Two Bays Tracker logo.

3. Cetacean emergencies

No cetacean related emergencies (excluding dolphins) were reported from the Two Bays region during the 2020 season.

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

In the past, the Two Bays Whale Project's primary outreach event has been the Island Whale Festival, held on Phillip Island. Unfortunately, due to the COVID-19 global pandemic, the festival had to be cancelled in 2020. An online version of the festival was scheduled, however due to increased restrictions, this was also cancelled.

In lieu of these events, the Dolphin Research Institute hosted five online presentations, each with a different theme relating to whales and/or dolphins. Additionally, the Two Bays Whale Project was a presenter at the "Winter by The Sea", Speakers Tent series run by Parks Victoria and Coastcare.

At the time of publishing this report, plans were in motion for the 2021 Island Whale Festival. The Festival is planned as a month-long event with a focus on 2 – 4 July when a festival hub will be operating at various sites on Phillip Island.

Continuing with communication and outreach, the Two Bays Whale Project Facebook page (<https://www.facebook.com/twobayswhales>) 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 2020 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 6,388 (up from 4,988 in 2019) and followers now 7,017.
- 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 2020. 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 2,991.
- In 2020, Wildlife Coast Cruises added an App called 'Wildlife Whales' which was created to replace the expensive mobile phone text service and share more information on the whales. The App will be again used in 2021 and adds a further option for receiving alerts, giving and following whale sightings for the Bass Coast / Phillip Island region, together with the Bunurong and Wilsons Promontory coastal Marine Park areas.
- 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 2020, the Two Bays Whale Project was invited by Griffith University to join a Southern Hemisphere-wide humpback whale research project. The project, titled 'The Whales and Climate Project' aims to establish a fundamental understanding of how changing ocean conditions are influencing the recovery of humpback whale populations and develop adaptation scenarios for advancing whale conservation, policies and programs. The Two Bays Whale Project contributed over 1,300 humpback whale records from across Victoria to help bring context to the distribution, habitat use and seasonal numbers of humpback whales in Victorian waters.

To find out more about this multi-disciplinary, multi-stakeholder collaborative project, visit <https://whalesandclimate.org>



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 COVID 19 restrictions period which was effectively the entire season. Without the citizen science component, the project would not have functioned in any meaningful way.

The relative success of the 2020 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 2021.

The plan for season 2021 will be dependent on the level of restrictions applied in relation to the COVID-19 pandemic. Regardless of restrictions, the project will continue to expand networks and improve methods - this will increase the contribution of the project to the overall aim of improving the understanding and management of whales in the Two Bays region and Victorian coastal waters.

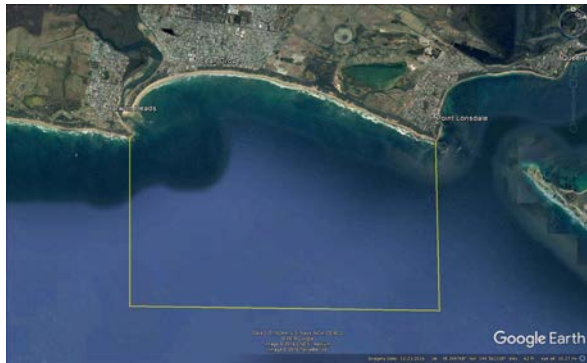
7. Acknowledgments

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:

- Department of Environment, Land, Water and Planning (DELWP),
- Parks Victoria,
- Victorian Fisheries Authority,
- 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 1

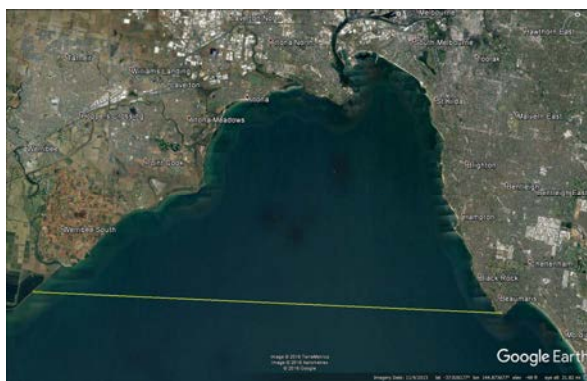
Observation Regions



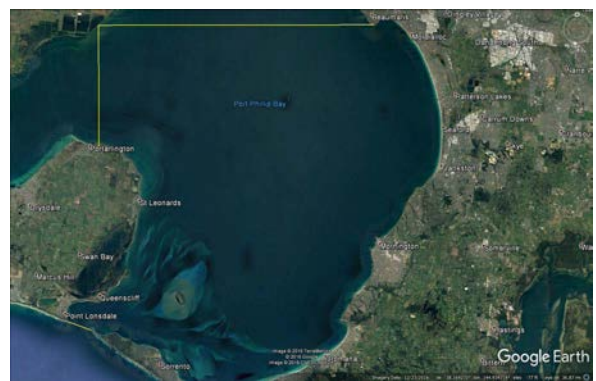
Barwon Coast



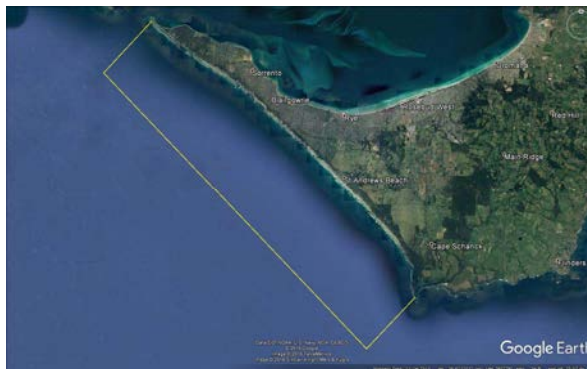
Corio



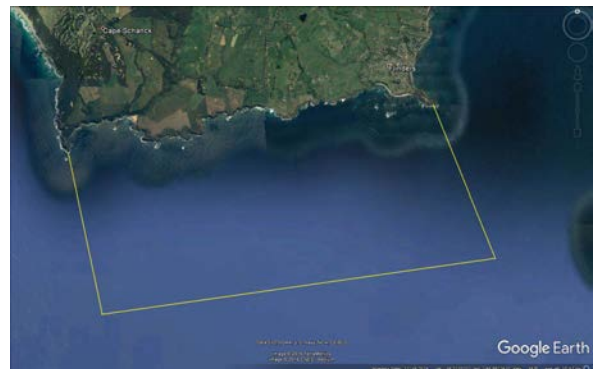
Port Phillip North



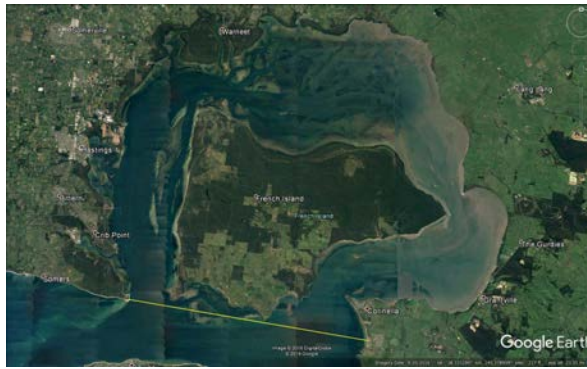
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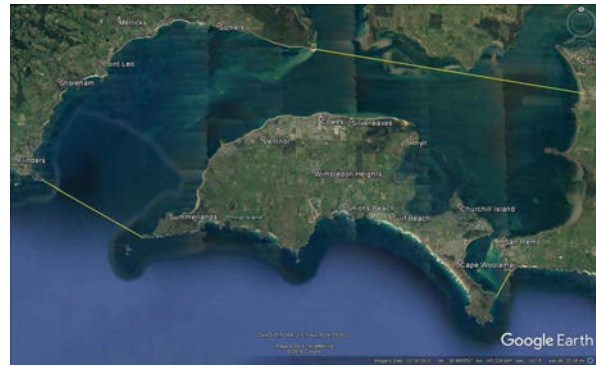
Peninsula West



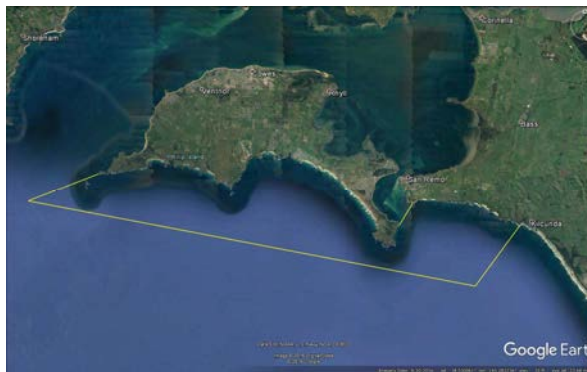
Peninsula East



Western Port North



Western Port South



Phillip Island South



Bass Coast

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