



Two Bays Whale Project Summary 2022

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Two Bays Whale Project Report 2022

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2022 Two Bays Whale Project Summary

The Dolphin Research Institute and Wildlife Coast Cruises acknowledge the Bunurong People, the Traditional Owners of where we reside. We acknowledge Aboriginal and Torres Strait Islander peoples as Australia's First Peoples, and we acknowledge the Traditional Owners of the customary lands, seas, skies and waterways in which we work, travel and meet.

Two Bays Whale Project Report 2022

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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 to 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 but also other cetacean species), which may then be shared with researchers and key stakeholders.
- Provide accurate information on large cetacean movements within the observation area.
- Contribute these data to support current and future cetacean management plans, environmental planning 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).

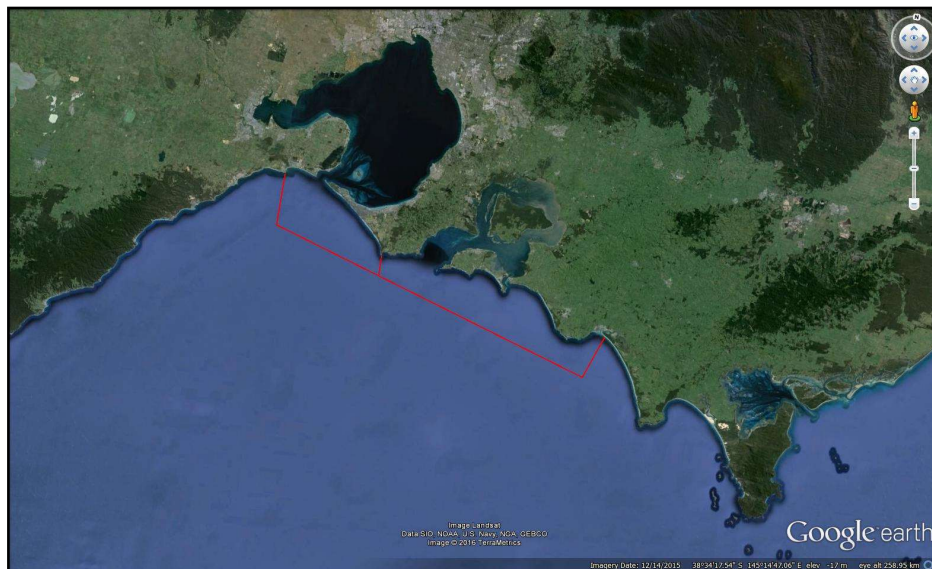


Figure 1 Observation area of the Two Bays Whale Project encompassing Port Phillip, Western Port and adjacent waters (Barwon Heads to Inverloch).

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

Sightings were gathered from land and vessels, with some opportunistic sightings contributed by scientists transiting the area while doing aerial surveys. 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, 2020 and 2021 was repeated in 2022 with 270 contributions, 106 of which were sightings of large whales and killer whales (Figure 2).

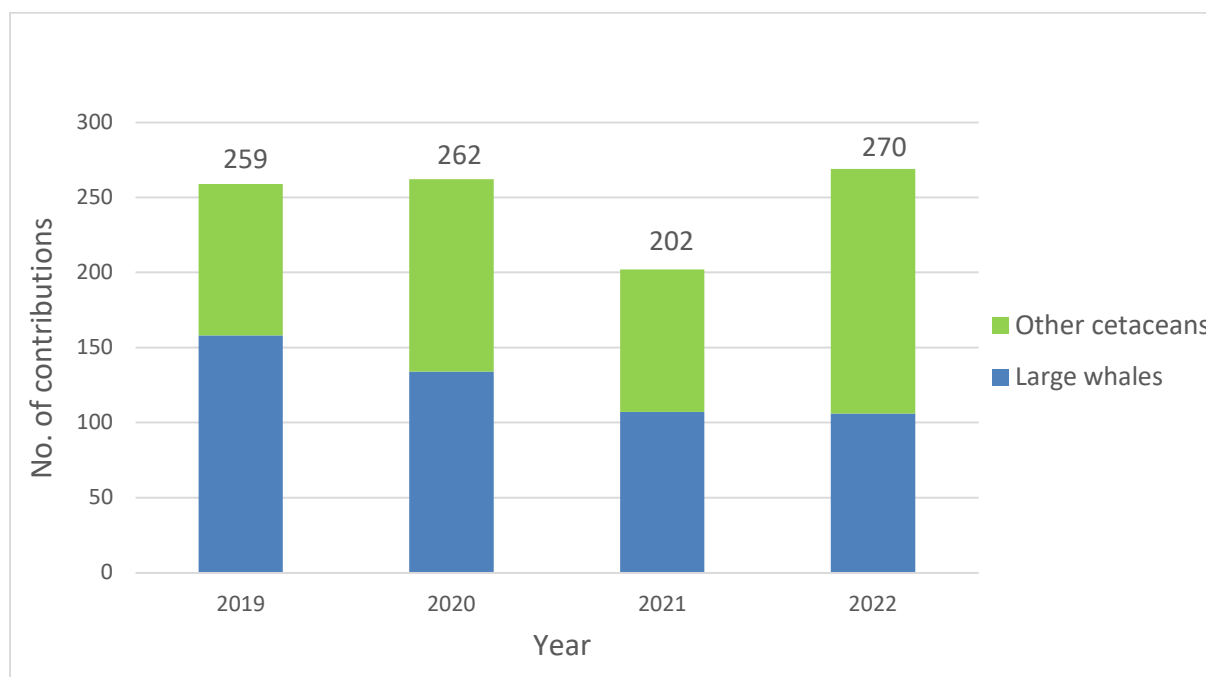


Figure 2 Sighting contributions per year via PodWatch.

The use of PodWatch continues to grow as awareness around the importance of reporting sightings spreads through communities. The value of PodWatch as a reporting platform will

enable coastal communities to readily log sightings as we move into a phase of baseline data collection which may be used to inform environmental plans of developers involved in the construction of wind farms off Victoria's coastline.

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. Citizen science contributions are received via four data streams:

- PodWatch
- social media reporting (Messenger)
- mobile phone text and calls
- word of mouth

Before being added to the Two Bays Whale Project dataset, all contributions must first pass through a validation process at the Dolphin Research Institute. This process includes:

- Scanning each sighting contribution to ensure all required information is present.
- Reviewing date, time and location information to ensure these all align.
- If supplied, review coordinates through plotting on Google Earth to visualise location of sighting. If the plotted sighting location does not align with sighting details the observer will be contacted to seek clarification.
- If supplied, review images to validate species identification. If the species identification is found to be incorrect, this will be corrected.
- Any species which is not immediately recognisable from images will be assigned a placeholder name before the images are reviewed by a secondary taxonomic expert.
- Once feedback is received from the taxonomic expert, a species or morphospecies name will be assigned.
- Compare the record against all other records from the same day to search for possible re-sights. If a re-sight is confirmed or thought to be likely, the most comprehensive sighting record from that series of events is entered into the dataset with all other re-sights archived.
- All work to this point is then reviewed by a second researcher.
- Any corrections made by the second researcher are discussed and applied if all agree.
- Data is now entered into the Two Bays Whale Project dataset.

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, supported with imagery. Only sightings with a score of 4 or 5 were included in analysis.

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

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Overall sighting figures for 2022:

- 178 separate validated sighting events
- Estimated 315 individual animals recorded
- Number of humpback whales per sighting ranged from 1 to 6 individuals, with an average of 1.46 whales per sighting. This average is lower than all previous seasons' averages of 1.8 – 2.
- Three confirmed species (southern right, humpback and killer whale)

Note the figure of 315 individuals is a best estimate after omitting probable and known re-sightings of the same animal. The actual number of individuals is likely to be higher.

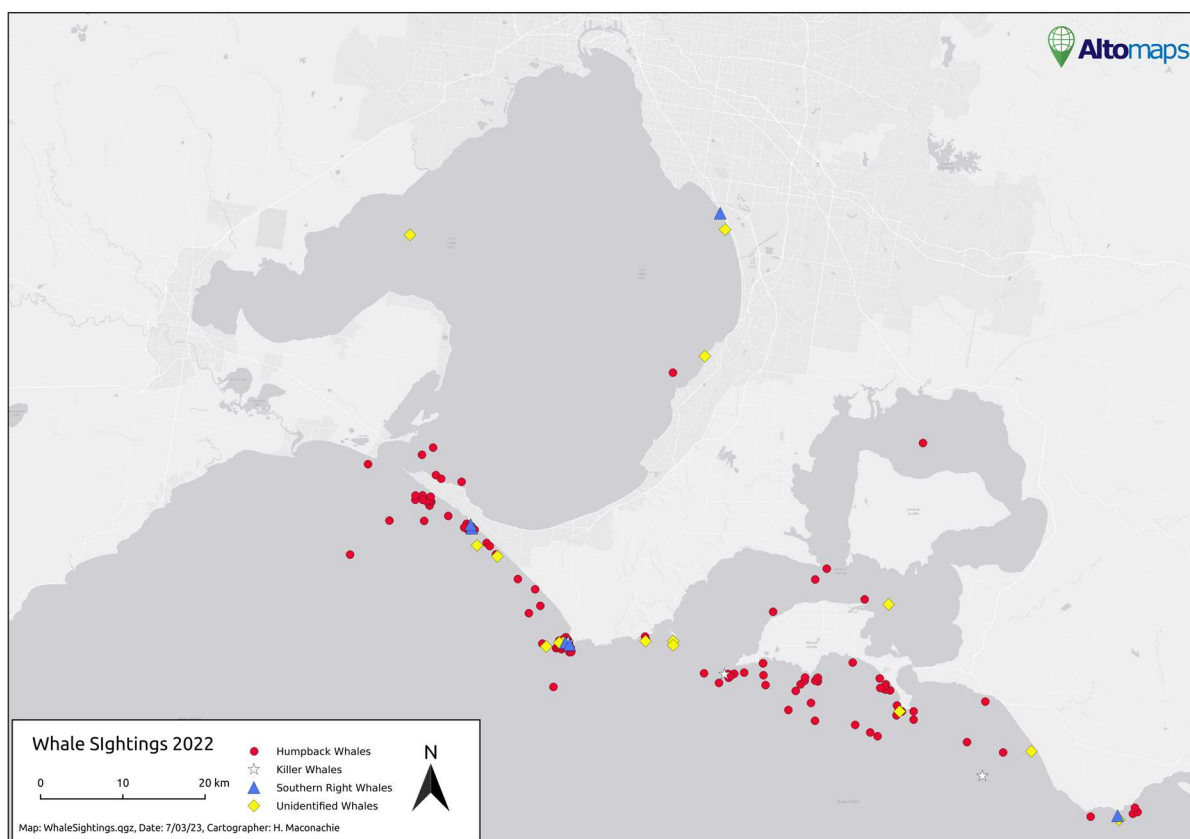


Figure 3 Distribution of large cetacean sightings for the 2022 whale season.

2.5. Yearly comparisons

The number of validated sighting events increased only slightly in 2022 (Figure 4). This was a lower-than-expected increase given the lifting of COVID 19 restrictions. Observer effort appeared to be similar to pre-COVID restrictions, though this is a difficult variable to accurately measure. Weather patterns through the peak humpback whale migratory season were similar to previous years, which suggests that sightability would likely have also been similar.

Further work is required to properly evaluate these results and reach an understanding as to how what has been presented here relates to the movement of large whales through our waters.

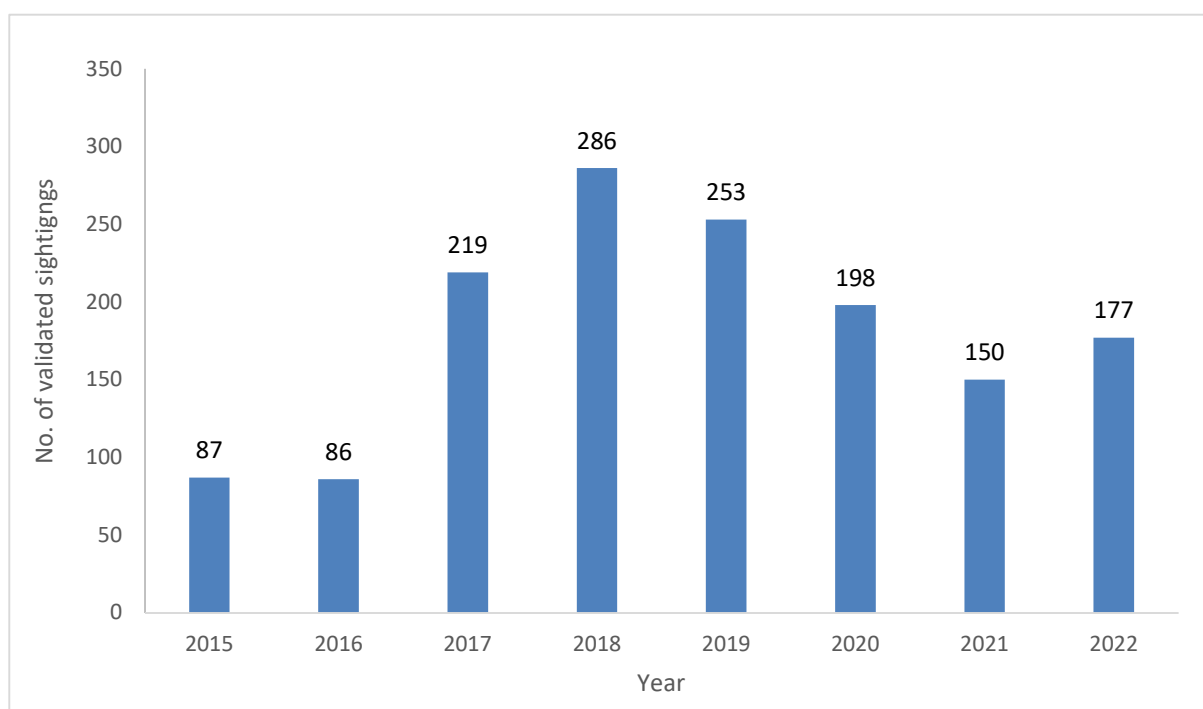


Figure 4 Number of validated sighting events for all recorded species for each year.

2.6. Recorded species

Three targeted cetacean species were validated through the use of diagnostic imagery in season 2022, these being: humpback, southern right and killer whale.

Unlike seasons 2020 (13 sightings) and 2021 (12 sightings) there was a significantly lower number of sightings of southern right whales in the region in 2022 (5 sightings). It is unknown why there was such a dramatic drop in sighting records but it is possible that this decrease may be linked to the calving cycles of this species, which influences the number of individuals which may use the northern Bass Strait coastline.

Of interest was the incredibly rare sighting of a group of >30 Antarctic type C killer whales which were sighted by multiple observers over a two-day period (Figure 5). Antarctic type C killer whales are characterised by their narrow-angled eye patch, prominent dorsal cape and overall smaller size than all other killer whale eco-types (Pitman & Ensor, 2003). Previous to this sighting just five other sighting events of this eco-type had been validated from Australian coastal waters (Donnelly et al 2021).

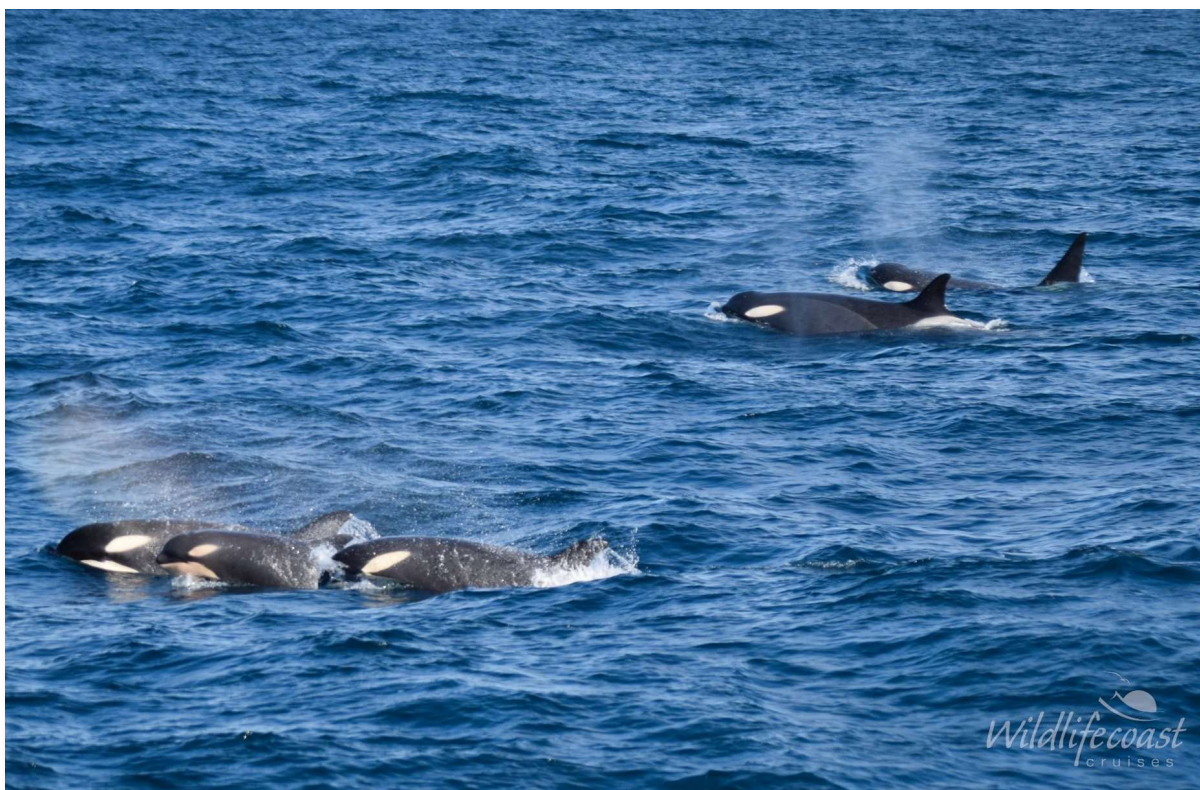


Figure 5 Antarctic type C killer whales (*Orcinus orca*), Wildlife Coast Cruises.

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



Figure 6 Southern right whale (*Eubalaena australis*) off Cape Schanck. Image courtesy of Ben Eriksson.



Figure 7 Humpback whale (*Megaptera novaeangliae*) off Cape Schanck. Image courtesy of Ben Eriksson.



Figure 8 Killer whale (*Orcinus orca*) Cape Schanck. Image courtesy of Lisa Rose

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 fingerprint). These fluke images are therefore useful in tracking individual whale movements over time and across vast distances as well as locally, within and across seasons. 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 holds 246 individual whales, an increase of 41 individuals since 2021. The Victorian catalogue is small in comparison to other east Australian catalogues. Nonetheless, it is a very useful reference and a great achievement, particularly 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 citizen scientists via the Two Bays Whale Project have been matched to sightings in Queensland, New South Wales, Tasmania and Victoria.

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Figure 9 The fluke of whale VIC_0219. Image by Barb Wallace.

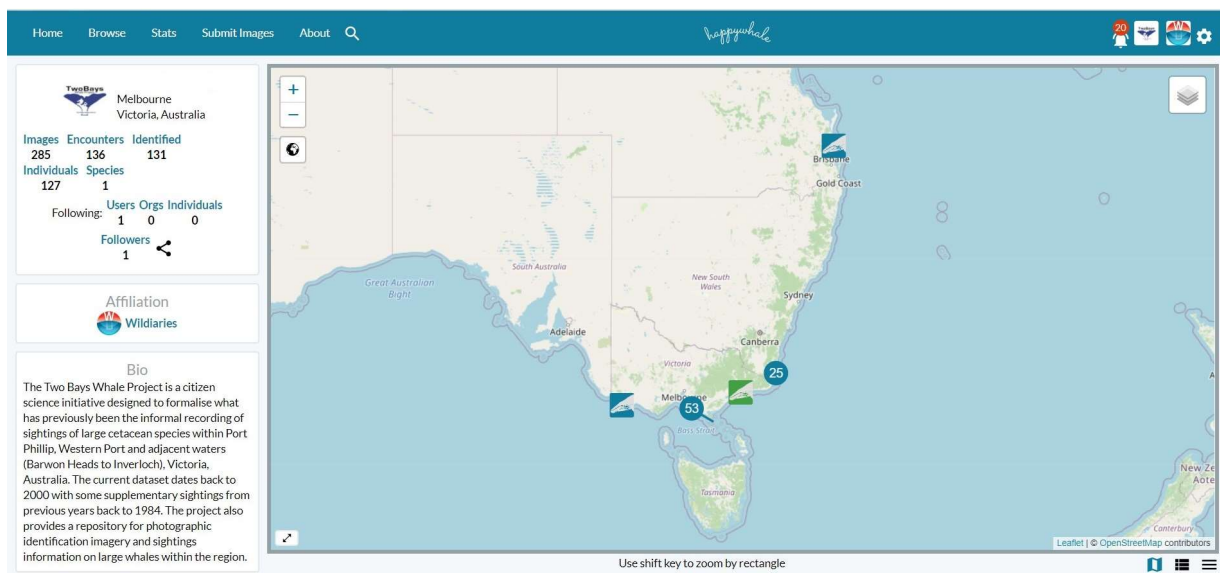


Figure 10 Example of Happywhale citizen science web page.

2.8. Two Bays Tracker

The 'Two Bays Tracker' dedicated observer program was again operational in 2022. This program involved nine reliable and experienced observers who dedicated time to observing for whales from eight designated sites, four in the Western Port region and four in the Port Phillip region:

Western Port region

- Pyramid Rock
- The Nobbies
- Cape Woolamai Surf Club
- Anzacs

Port Phillip region

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

The Two Bays Tracker app was used by observers who recorded:

- 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.

The 2022 season saw a total of 315.5 observer hours recorded. This was an increase of 171.25 hours on the 2021 total observer hours and a very pleasing result. During the observation period, 104 sightings of three species were made. The Two Bays Tracker observer team are an incredibly dedicated group of individuals who fill an important role in building our understanding of large whales in the Two Bays region. We are very grateful for the efforts of these people.

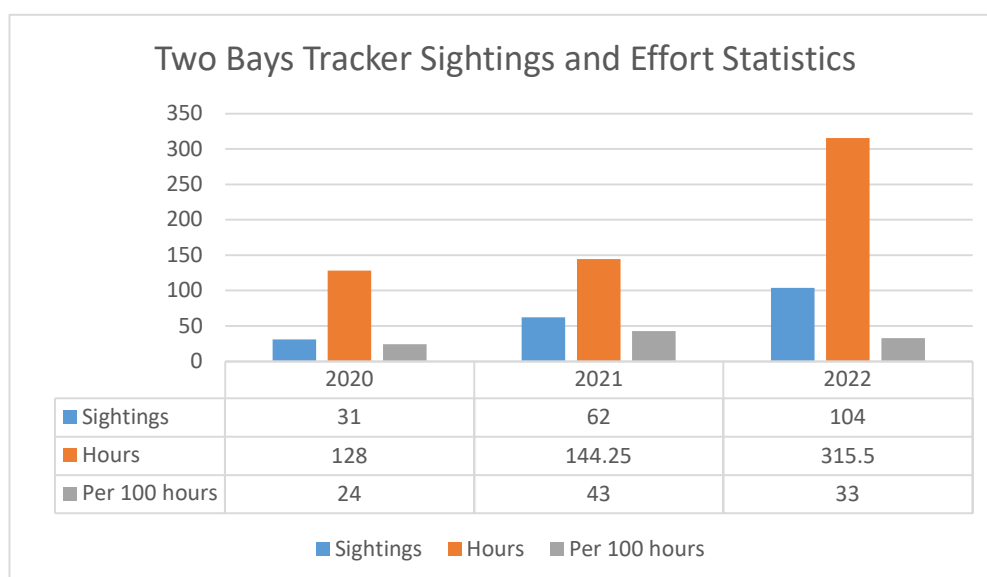


Figure 11 Two Bays Tracker sightings and effort statistics.

3. Cetacean emergencies

One cetacean-related emergency (excluding dolphins) was reported in the Two Bays region during the 2022 season.

6 July 2022

A single humpback whale was observed by a Two Bays Tracker observer to become briefly entangled in the surface line of a commercial southern rock lobster pot. The animal dragged the pot for a short period before “thrashing” at the surface and dislodging the line. The incident was reported to wildlife managers.



Figure 12 Entanglement near miss with buoy circled. Image courtesy of Mark Clough.

The Department of Energy, Environment and Climate Action (DEECA) 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 six years has been the Island Whale Festival. This three-day event is held annually on Phillip Island and was again, a key outreach function for the Two Bays Whale Project. A total of 7100 attendees were recorded by organisers in 2022 which was an increase of 2029 visitors to the event.

The Two Bays Whale Project team ran six presentations (four Spot-A-Whale and two Cetaceans of Victoria) over the weekend, which were all well-attended.

At the time of publishing this report, plans were underway for the 2023 Island Whale Festival.

Continuing with communication and outreach, the Two Bays Whale Project Facebook page again proved to be a useful communication tool. This platform, combined with the DRI outreach workshops, formed the basis of the 2022 community outreach program. Project partner, Wildlife Coast Cruises continued with the operation of their App Wildlife Whales which enabled the user to both report sightings and receive sighting information.

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 8,600 (up from 7,412 in 2021) and 9,605 followers.
- It is still evident that many of the Facebook followers live in, near or regularly visit the observation area.
- 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.
- This year the previously successful Whale Hotline was ceased in favour of the 'Wildlife Whales' app.
- 'Wildlife Whales' operated in 2022 with growing success through the season. The app had approximately 10,000 subscribers with varying levels of use. At last count, there were 11,537 subscribers in 2023.
- 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. Collaborations

During season 2022, the Two Bays Whale Project maintained its collaboration with the Tasmanian Fluke Project. We continue to share information and imagery of humpback whale flukes between the two groups and maintain a good level of communication through the humpback whale season. We are excited about the potential this collaboration has to grow and assist in informing on the movements of humpback whales through south-east Australian waters.



In addition to the Tasmanian Fluke Project, the Two Bays Whale Project via the Dolphin Research Institute formalised a new collaboration with environmental consulting firm, Fathom Pacific. This new collaboration enables the Two Bays Whale Project to directly impact the environmental decision-making processes associated with offshore developments, through the provision of robust data acquired through our program. This is an exciting opportunity which will provide important information to decision makers that would otherwise be unavailable.



6. Project expansion

Over the journey, the Two Bays Whale Project has received numerous enquiries and requests for expansion into neighbouring regions. However, due to funding restrictions, a complete rollout of this program has been beyond the capability of the project. We are pleased to report that due to a funding grant, the Two Bays Whale Project will be expanding into neighbouring waters which will, in the first phase, include the Surf and Bass Coast regions with further extension into south-east Gippsland to follow.

7. Summary

The Two Bays Whale Project again proved that a citizen science approach to data collection that includes the use of social media communication, a sightings hotline and scientific expertise is a useful and reliable means of monitoring whale presence and movements. Without the citizen science component, the project would not have functioned in any meaningful way.

The success of the 2022 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 and dedicated citizen scientists. 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 and expansion of the project into 2023.

The plan for season 2023 is 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 improve the quality of fluke identification imagery. Effort will be put into growing the citizen science component of the project 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 build in-house capacity through maintaining a dedicated Research Fellow, who will be tasked with the rolling out of the expansion areas and ensuring the smooth running of the Project across the season.

8. Acknowledgments

The authors of this summary would like to acknowledge the contributions made by our Citizen Scientist community, particularly our Two Bays Tracker team of dedicated observers; Tory Guy, Ben Eriksson, Beck Holder, Barb Wallace, Serra Clisby, Alyn Spencer and Sharon Christopher. Without these people a large percentage of sightings would not have been available for this report. We would also like to acknowledge:

- Parks Victoria
- Phillip Island Nature Parks
- Destination Phillip Island
- Killer Whales Australia
- Port Phillip Sea Pilots
- Polperro Dolphin Swims
- Moonraker Dolphin Swims
- Sea-All Dolphin Swims
- RedBoats Diving
- WaterMaarq
- Cassar Fishing Charters
- Searoad Ferries
- Heath Maconachie from Alto Maps for GIS assistance
- Victorian Volunteer Coast Guard
- Fathom Pacific Pty Ltd
- Barwon Coast Committee of Management
- Victoria Police Search and Rescue

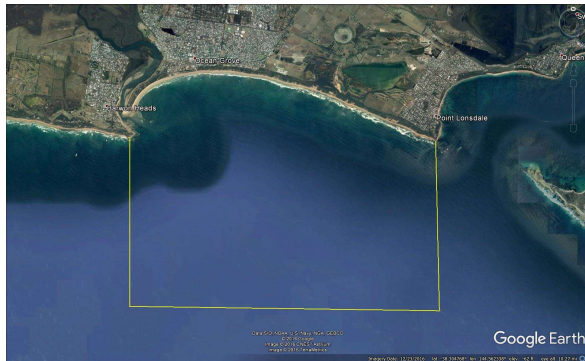
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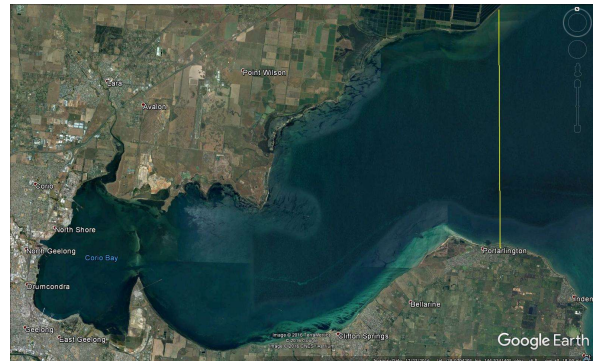
Pitman, R. L., & Ensor, P. (2003). Three forms of killer in the coastal waters off the western Antarctic Peninsula. Killer whales (*Orcinus orca*) in Antarctic waters. *Journal of Polar Biology*, 42(8), 1477-1488. <https://doi.org/10.1007/Cetacean Research and Management>, 5(2), 131-140.

Appendix

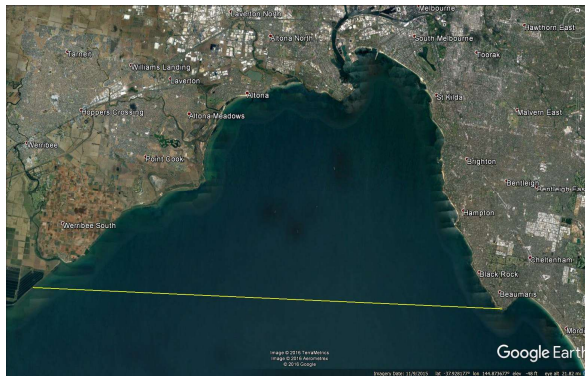
Observation Regions



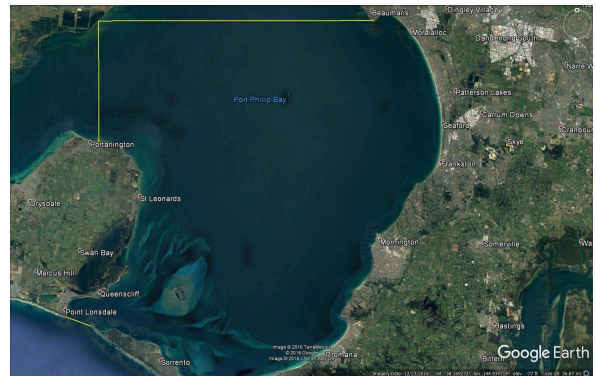
Barwon Coast



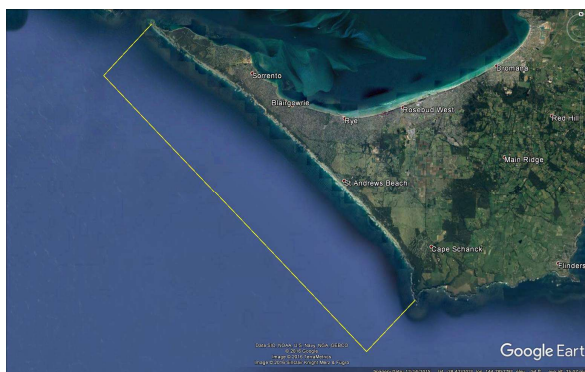
Corio



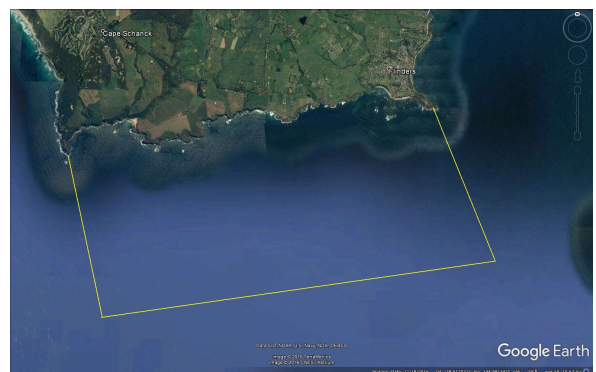
Port Phillip North



Port Phillip South



Peninsula West



Peninsula East

A satellite map from Google Earth showing the Klamath River estuary area in California. The map highlights French Island, French Landing, and surrounding towns including Oriskany, Placerville, Colusa, and Suisun. A yellow line indicates the proposed Klamath River Dam and Reservoir. The map also shows the Klamath River, Suisun Bay, and the Delta. The Google Earth logo is visible in the bottom right corner.

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