PACIFIC WHALE WATCH ASSOCIATION

2024 SIGHTINGS & SENTINEL ACTIONS

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PUBLISHED:
April 2025

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Suggested Citation:
Gless, E.J., Krieger, J. (2025). *Pacific Whale Watch Association 2024 Sightings and Sentinel Actions.* Pacific Whale Watch Association, pp. 1-38.

Bigg's killer whale spyhopping. *April Ryan, Maya's Legacy*

INTRODUCTION

Bigg's killer whale T137A "Jack". *Alli Montgomery, FRS Clipper*

The Pacific Whale Watch Association

Established in 1994, the Pacific Whale Watch Association (PWWA) is a community of ecotourism professionals with a shared commitment to education, conservation, and responsible wildlife viewing in Washington state and British Columbia.

PWWA members agree to adhere to all marine mammal regulations in Washington and British Columbia, as well as to additional PWWA guidelines. PWWA captains participate in annual training to ensure awareness of evolving whale watching regulations on both sides of the border.

As members of the PWWA, operators are part of a highly collaborative community. PWWA members share wildlife sightings internally through a variety of exclusive tools including, but not limited to, an encrypted UHF radio channel and the private PWWA App. Other benefits of PWWA membership include media representation, policy advocacy, and access to educational resources through PWWA social media groups, bi-weekly membership newsletters, and an online literature library of relevant peer-reviewed scientific articles.

During the 2024 whale watch season, there were **30** PWWA member companies departing from **24** different locations throughout Washington and BC. **14** PWWA member companies were based in BC, and **16** member companies were based in Washington. The PWWA fleet comprises a variety of vessel types including rigid hull inflatable boats (RHIBs), monohull vessels, catamarans, kayaks, and a sailboat. Tours vary in length from a few hours to full-day specialty excursions or even overnight expeditions. While whales can be seen year-round in local waters, due to weather, peak season is considered to be March through October. Some PWWA operators, however, offer wildlife tours in winter as conditions permit.

PWWA member companies welcome approximately **400,000** guests each year. Roughly **75%** of those guests are out-of-town visitors, and of those out-of-town visitors, approximately **1/3** state that their primary purpose for visiting the region is to partake in a professional whale watch tour (Sarbaugh & Martin 2024).

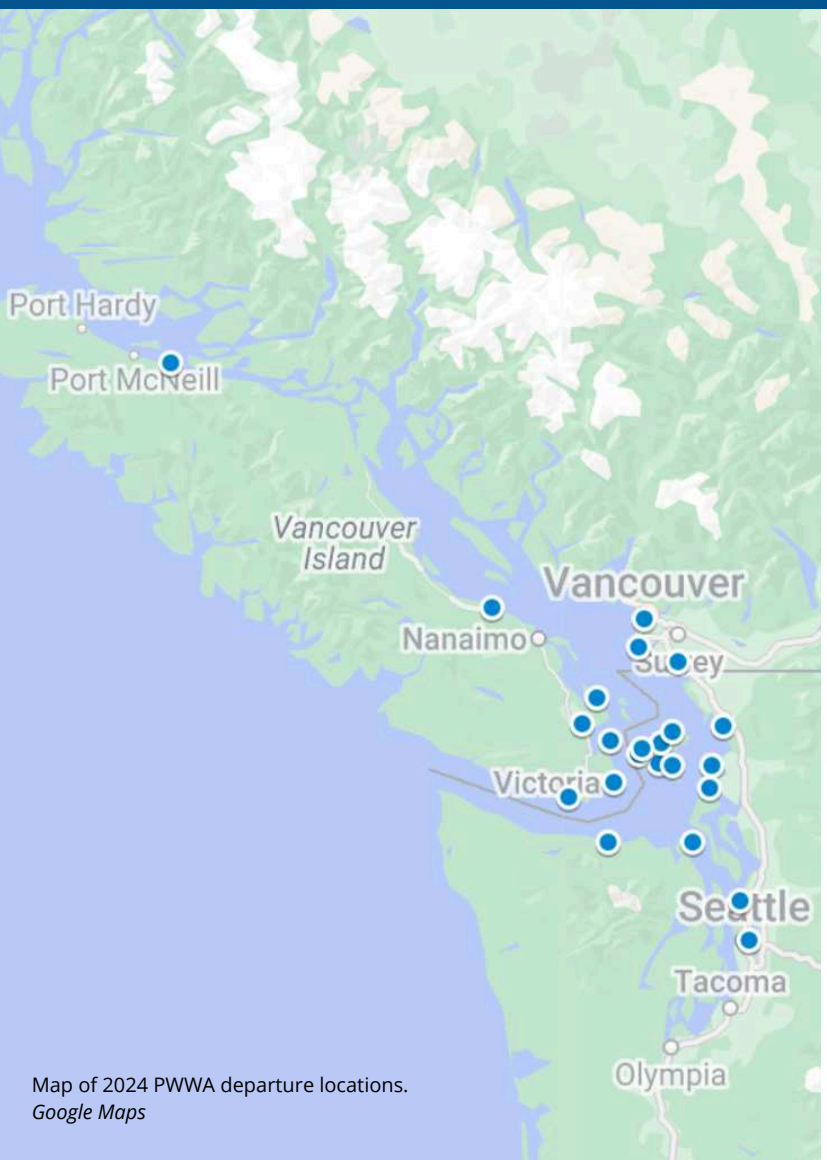
2024 PWWA Members

Washington

- All Aboard Sailing
- Anacortes Whale Watching Tours
- Blue Kingdom Tours
- Deception Pass Tours
- Deer Harbor Charters
- FRS Clipper
- Island Adventures Whale Watching
- Maya's Legacy Whale Watching
- Outer Island Excursions
- Puget Sound Express
- San Juan Cruises
- San Juan Excursions
- San Juan Outfitters
- San Juan Safaris
- Spirit of Orca Whale & Wildlife Tours
- Western Prince Whale & Wildlife Tours

British Columbia

- BC Whale Tours
- Eagle Wing Whale & Wildlife Tours
- Five Star Whale Watching
- Ocean EcoVentures
- Orca Spirit Adventures
- Prince of Whales Whale Watching
- Salt Spring Adventures
- Seabreeze Adventures
- Sidney Whale Watching
- Sooke Coastal Explorations
- SpringTide Whale Watching & Eco Tours
- Vancouver Whale Watch
- White Rock Sea Tours
- Wild Whales Vancouver



Map of 2024 PWWA departure locations.
Google Maps

THE PWWA APP

An adult male Bigg's killer whale. *Barbara Howitt, All Aboard Sailing*

The PWWA App

One of the most important tools utilized by PWWA operators is the PWWA App. This private app, developed in 2018 by Johannes Krieger, co-owner of PWWA member company San Juan Excursions, has revolutionized professional whale watching within the Salish Sea. Designed to more efficiently share wildlife information among members, and to best coordinate the PWWA fleet's viewing efforts, the PWWA App allows users to receive and report real-time wildlife sightings, sentinel actions, and important navigational alerts on their Apple or Android devices.

In an effort to better understand and monitor movements of local whales through regional collaboration, the PWWA also grants PWWA App access to professional whale watch operators within the North Island Marine Mammal Stewardship Association (NIMMSA) and Campbell River Association of Tour Operators (CRATO).

Additionally, the PWWA provides complimentary PWWA App access to qualified professionals whose knowledge of real-time whale sightings might meaningfully benefit local whales. These authorized users include researchers, commercial vessel pilots, ferry captains, marine mammal observers, emergency response teams, the Canadian Coast Guard's Marine Mammal Desk in BC, and the United States Coast Guard's Cetacean Desk in Washington state.

PWWA App Reporting Procedures

All users of the PWWA App are expected to contribute real-time wildlife sightings. In addition to sightings, PWWA App users also report relevant navigational warnings and sentinel actions (detailed later in this report).

PWWA operators are advised, at minimum, to log in the PWWA App when they first arrive on scene with whales and when they depart. Creating additional update logs throughout each encounter is encouraged. Operators are asked to log all whale sightings, even if another vessel has already reported a whale or group of whales. This keeps the PWWA fleet updated on whale locations, IDs, and interesting behavioral notes. Providing frequent updates of the same whale or group of whales also helps PWWA operators to voluntarily regulate the number of professional vessels in the vicinity of whales at any given time.

Wildlife entries in the PWWA App are ***not*** unique sightings. The same animal or group of animals may be reported multiple times in one day. The

primary goal of the PWWA App is to provide real-time sightings of cetaceans and other notable wildlife, not to estimate wildlife abundance.

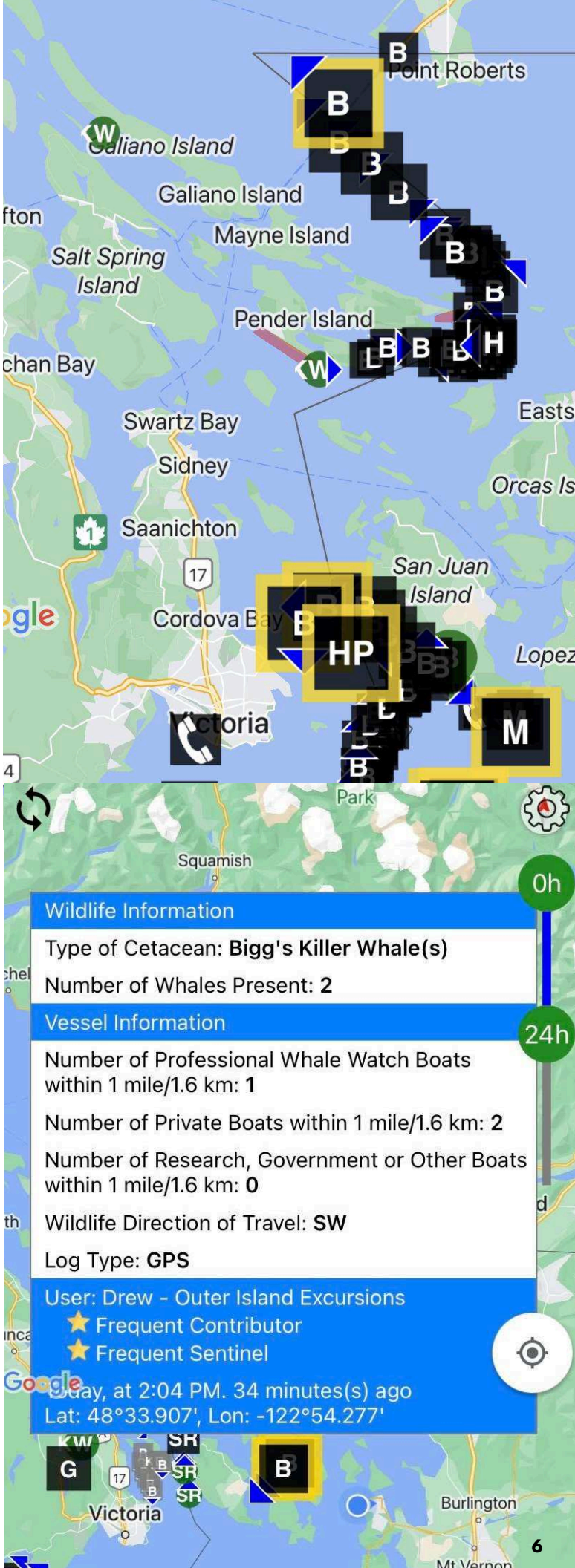
There are two types of entries in the PWWA App — ***GPS*** entries and ***manual*** entries. GPS entries are typically made from aboard vessels and include the time, date, and GPS coordinates of the reporter at the time of the sighting. If a user is in an area with poor cellular reception, the details of the sighting are saved when the report is made and uploaded once reception is restored. Manual entries are used to share secondhand or shore-based sightings. Manual entries allow PWWA App users to select an approximate location for a sighting on the map. Users are encouraged to make manual entries only if the information is obtained from a reliable source, or if they are viewing animals from shore themselves. Manual reports are distinguished in the PWWA App from GPS reports by the shape of icon on the screen (square for GPS, circle for manual).

Reporting Wildlife Sightings

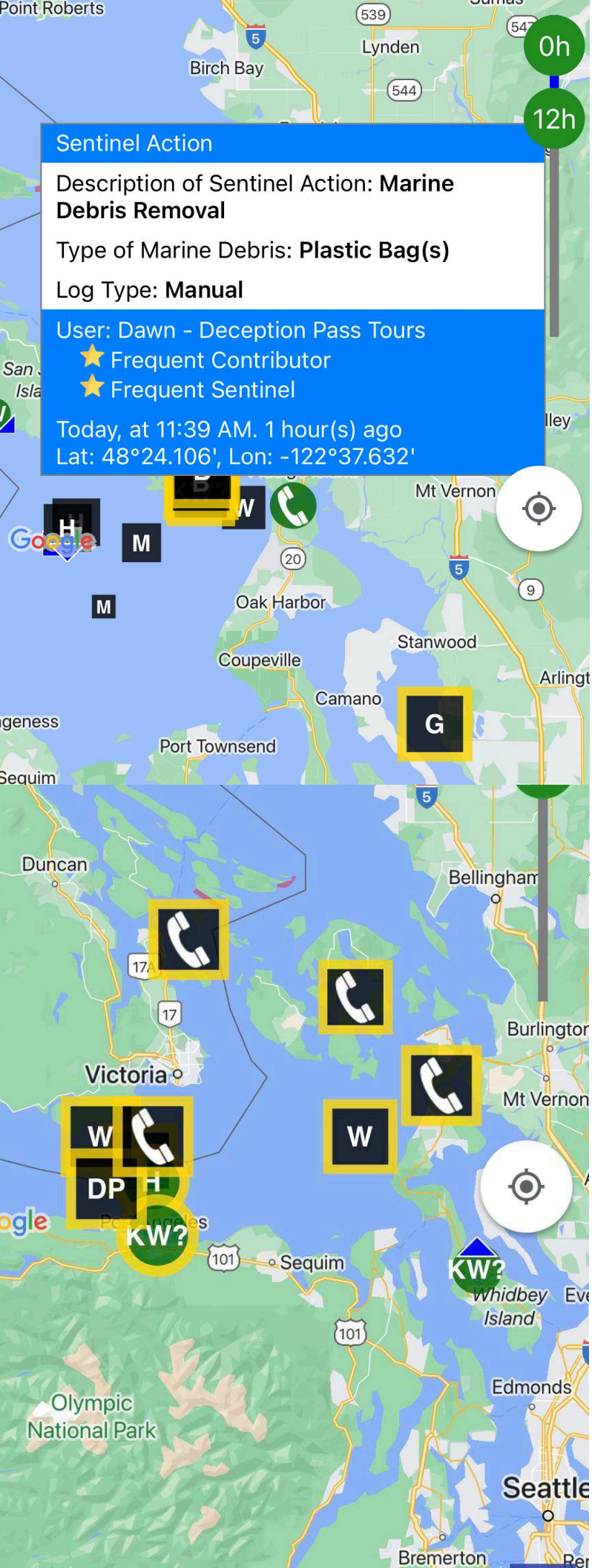
Most reports to the PWWA App are wildlife sightings. While larger cetaceans (killer whales, minke whales, humpback whales, and gray whales) are the predominant species reported, smaller cetaceans, such as Dall's porpoise, harbor porpoise, and Pacific white-sided dolphins, or other noteworthy marine mammals, such as sea otters and elephant seals, are also reported when appropriate. Reports of rare birds are also encouraged in the PWWA App.

Wildlife sighting reports to the PWWA App include:

- Type of wildlife
- Approximate number of animals present
- Individual IDs of animal(s) if known
- Travel direction of animal(s)
- Interesting behavioral notes
- Number of vessels within 1 mile
- If law enforcement is present



Screenshots of the PWWA App showing wildlife sightings.
PWWA App



Reporting Sentinel Actions

Sentinel actions are defined by the PWWA as protective actions taken by professional whale watchers during the course of a tour. Below are some examples of sentinel actions:

- Stopping other vessels from speeding in the vicinity of whales
- Proactively warning vessels of whales nearby so they can adjust speed and/or alter course
- Reporting sick, injured, or entangled animals to proper authorities
- Removing harmful debris from the water

Sentinel action reports to the PWWA App include:

- Description of the sentinel action
- Wildlife species nearby (if vessel-related)
- Means of contact used
- Whether a positive change in behavior was observed as a result of the intervention
- Description of the vessel(s) contacted (if vessel-related)

Reporting "Important" Alerts

The final type of report in the PWWA App is an "important" alert. This is a notification of urgent interest to the fleet. Examples of "important" alerts include:

- Logs or other hazards in the water
- Swimmers or divers in the vicinity
- Fishing gear set in high-traffic areas
- Advisories of scheduled military exercises
- Notifications of research or rescue activities
- Locations of entangled or injured animals

Reporting Accuracy

Due to the volume of reports received by the PWWA App, it is not possible to verify all sightings, especially those received by non-PWWA users. A high rate of accuracy should be assumed, but not 100%. Sightings shared in this report are presented in good faith.

Screenshots of the PWWA App showing sample sentinel actions.
PWWA App

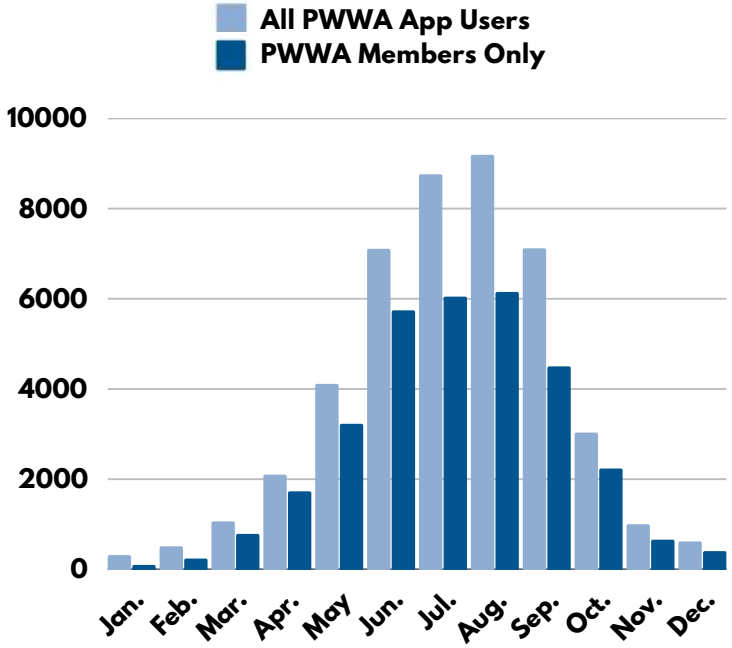
WILDLIFE SIGHTINGS

A PWWA vessel views Bigg's killer whales from a distance. *Trevor Derie, Outer Island Excursions*

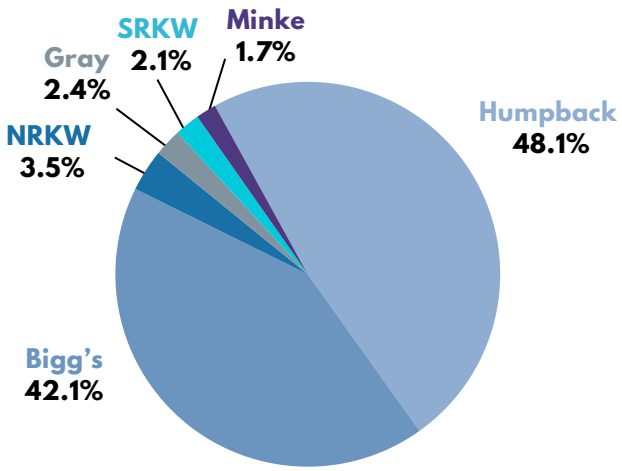
2024 PWWA App Usage

In 2024, PWWA App users entered a total of **44,933** logs into the PWWA App. This was an increase of **8.6%** over 2023's total of **41,393** PWWA App logs. Of all logs entered into the PWWA App in 2024, **31,842** (**70.9%**) were created by PWWA captains, naturalists, crew members, and support staff, and **13,091** entries (**29.1%**) were made by non-PWWA authorized users of the PWWA App. These authorized users included members of NIMMSA and CRATO as well as qualified members of the research, education, commercial shipping, marine transportation, and emergency response sectors of Washington and British Columbia. The majority of reports to the PWWA App were made during the spring, summer, and fall months. Relatively few reports were made during winter months due primarily to inclement weather and reduced operating schedules.

2024 PWWA App Reports by Month



2024 PWWA App Reports by Species



PWWA App Reports by Species

43,258 (**96.3%**) of PWWA App entries in 2024 were reports of whales or other wildlife. The remaining **1,675** reports (**3.7%**) were of sentinel actions or important safety notifications for the fleet. **37,026** reports were of the region's six primary whale species/subspecies. Of these reports, **17,820** (**48.1%**) were of humpback whales, **15,605** (**42.1%**) were of Bigg's killer whales, **1,306** (**3.5%**) were of Northern Resident killer whales (NRKW), **880** (**2.4%**) were of gray whales, **781** (**2.1%**) were of Southern Resident killer whales (SRKW), and **634** (**1.7%**) were of minke whales.

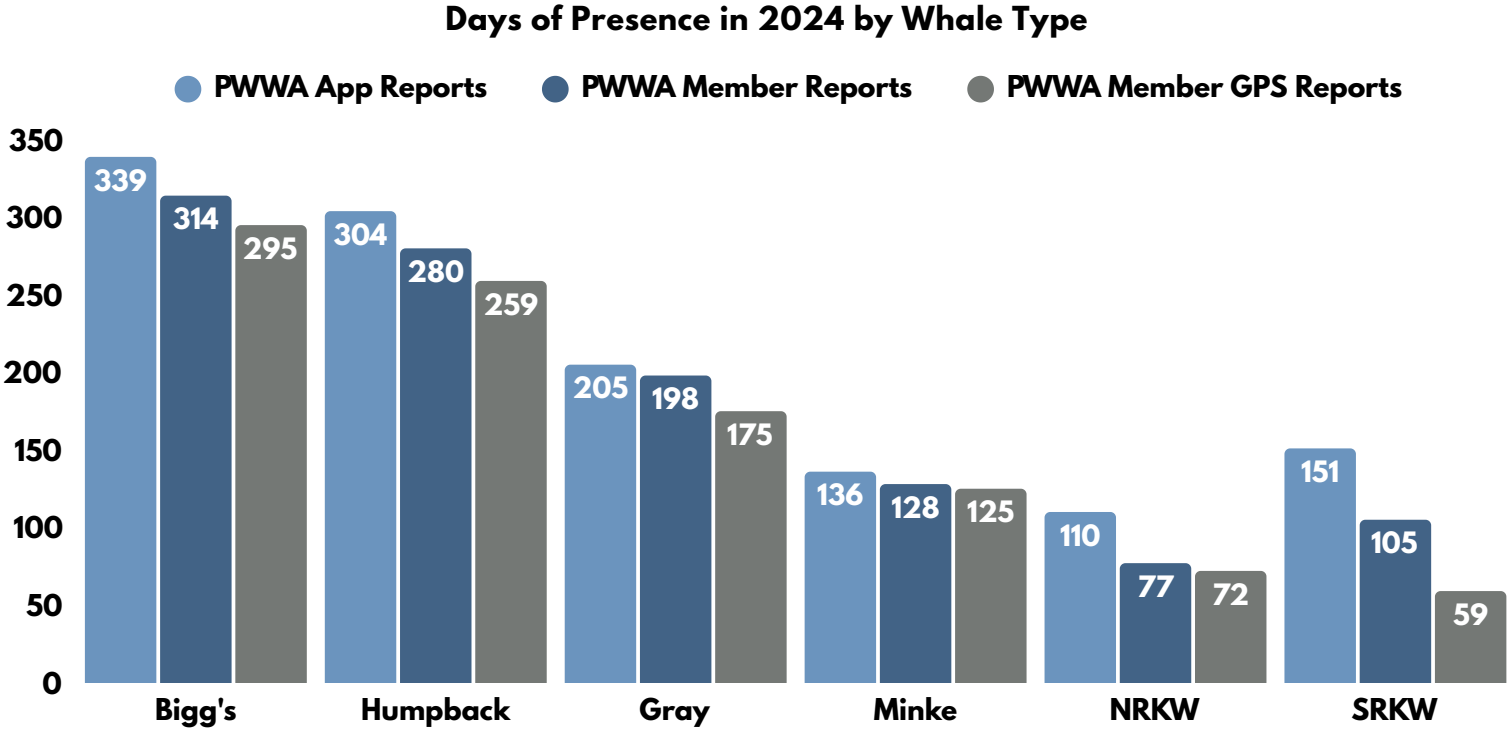
2024 Whale Presence

Bigg's killer whales were reported to the PWWA App on more days of 2024 than any other whale type, reported present on **339** days. Humpback whales were reported on **304** days, followed by gray whales on **205** days and Southern Resident killer whales (SRKW) on **151** days. Minke whales were reported on **136** days, and Northern Residents (NRKW) were reported on **110** days. It is important to emphasize that whales may have been present within the PWWA operating range on more days of the year than were reported to the PWWA App.

When examining only PWWA App entries made by PWWA captains, naturalists, and crew members, Bigg's killer whales were reported on **314** days, humpback whales on **280** days, gray whales on **198** days, minke whales on **128** days, SRKW on **105** days, and NRKW on **77** days.

If including only GPS-based PWWA App entries made from aboard PWWA vessels during professional whale watch tours, Bigg's killer whales were reported on **295** days, humpback whales on **259** days, gray whales on **175** days, minke whales on **125** days, NRKW on **72** days, and SRKW on **59** days.

Breaching Bigg's killer whale. *Lauren Rasmussen, Island Adventures*



BIGG'S KILLER WHALES

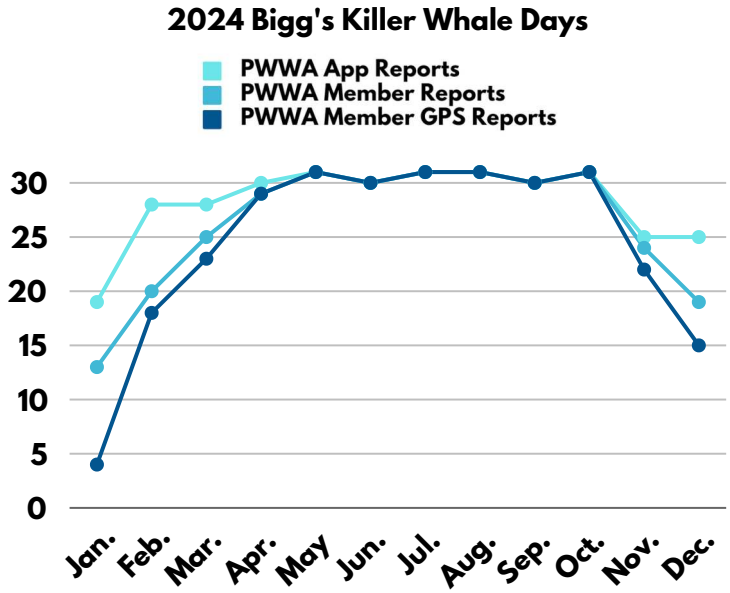
A pair of Bigg's killer whales. *Jane Wilson, Ocean EcoVentures*

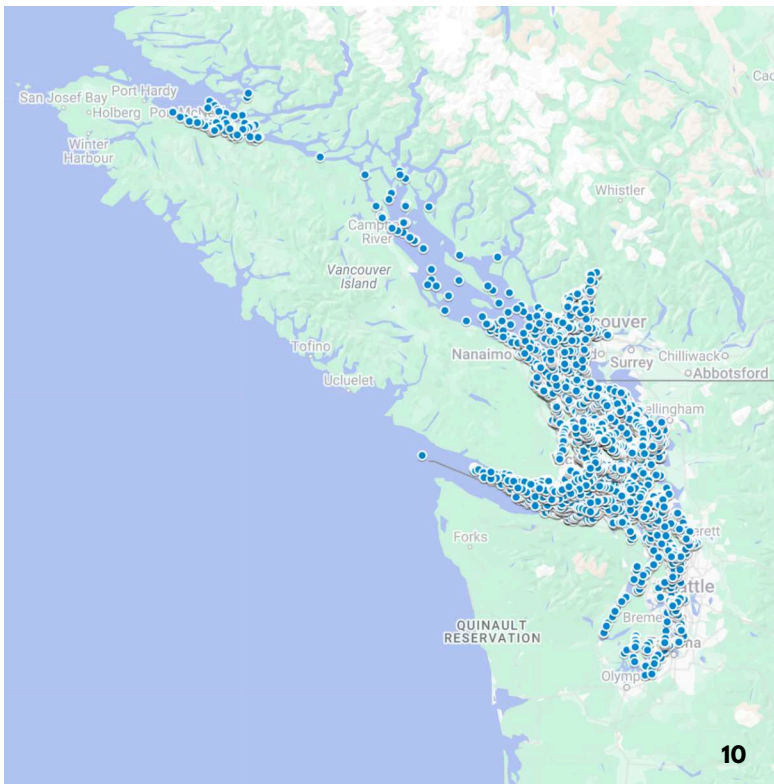
Bigg's Killer Whales

Bigg's killer whales (*Orcinus orca rectipinnus*) are the region's mammal-hunting subspecies of killer whale. In 2024, the PWWA App received **15,605** logs of Bigg's killer whales. **13,702** (**87.8%**) logs were made by PWWA members, and **13,136** (**84.2%**) were firsthand GPS reports made aboard PWWA vessels during whale watch tours. Bigg's killer whales were reported to the PWWA App on **339** days in total, were reported by PWWA members on **314** days, and were encountered during PWWA whale watch tours on **295** days of the year.

Bigg's killer whales were present during all 12 months of 2024, were reported daily April through October, and were reported almost daily during the rest of the year. The decline in PWWA App reports of Bigg's killer whales in winter is likely due to reduced whale watching activity rather than reduced whale presence. Orca Behavior Institute, an independent research organization that compiles whale sightings from professional whale watchers, regional sightings groups, and community scientists, confirmed that Bigg's killer whales were present in the Salish Sea on **353** days of 2024 (**96.4%** of days).

According to research group Bay Cetology, the coastal Bigg's killer whale population continues to grow, adding **23** calves in 2024 — **16** surviving calves born in 2024 and **seven** born previously but not confirmed until 2024.





2024 PWWA GPS entries for Bigg's killer whales. *PWWA App and Google Maps*

HUMPBACK WHALES

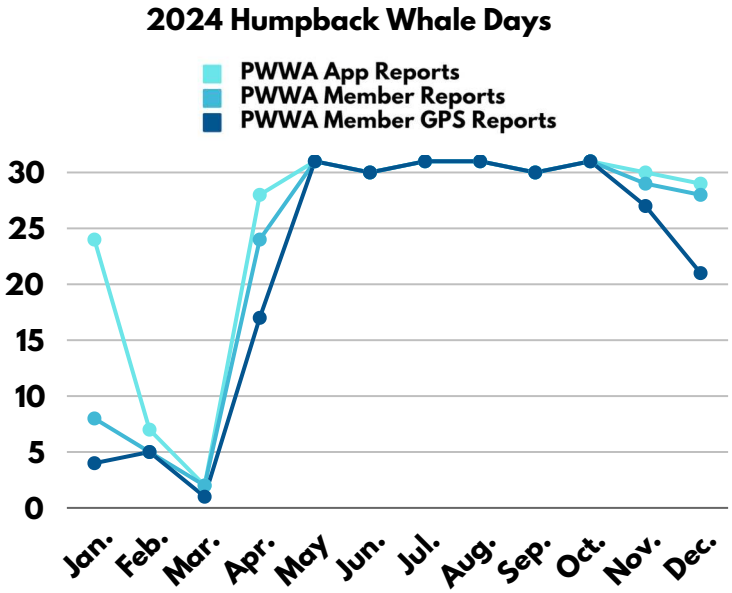
A breaching humpback whale. *Grace Burtnick, Seabreeze Adventures*

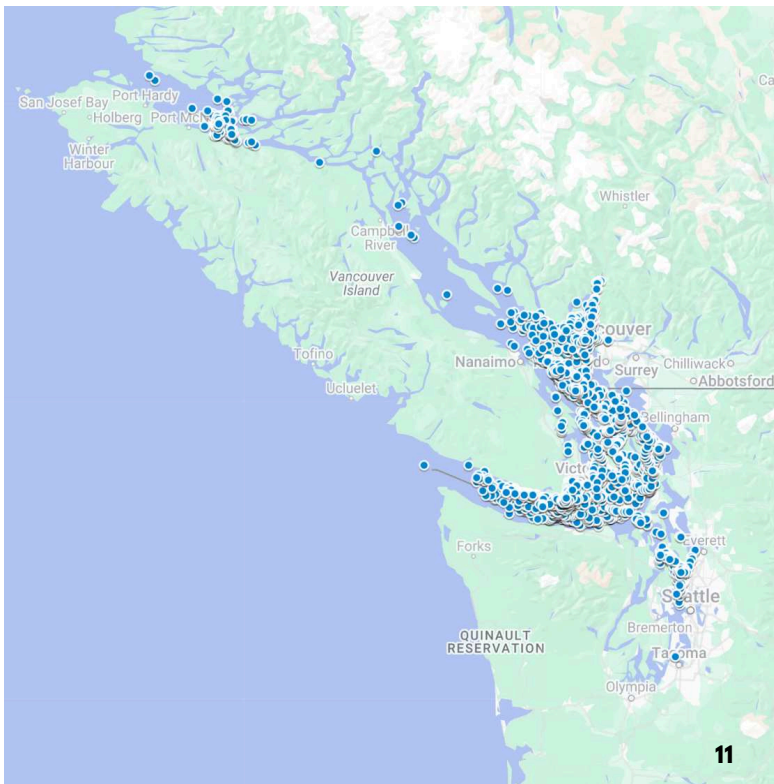
Humpback Whales

The PWWA App received **17,820** logs of humpback whales (*Megaptera novaeangliae*) in 2024. **11,425** (**64.1%**) entries were made by PWWA members, and **10,037** (**56.3%**) were GPS reports made aboard PWWA vessels during whale watch tours. Humpback whales were reported to the PWWA App on **304** total days of 2024 in total, on **280** days by PWWA members, and on **259** days during PWWA whale watching tours. Humpbacks were reported to the PWWA App at least once during every month of the year, and were observed daily during the months of May through November.

Salish Sea humpbacks are migratory, traveling to breeding grounds in the Hawaiian Islands, Mexico, and Central America in winter. It is in those warmer waters that they mate and give birth to calves. The sharp reduction in days of observed Salish Sea presence reported to the PWWA App in February and March is consistent with the months that most Salish Sea humpback whales are on the southern breeding grounds.

During the 2024 season, the Marine Education and Research Society reported **22** first-year calves observed in their study area, which includes north Vancouver Island and northern Strait of Georgia. While a similar figure for the southern Salish Sea has not been published, PWWA operators reported at least **16** humpback whales returning to the region with calves.





2024 PWWA GPS entries for humpback whales. *PWWA App and Google Maps*

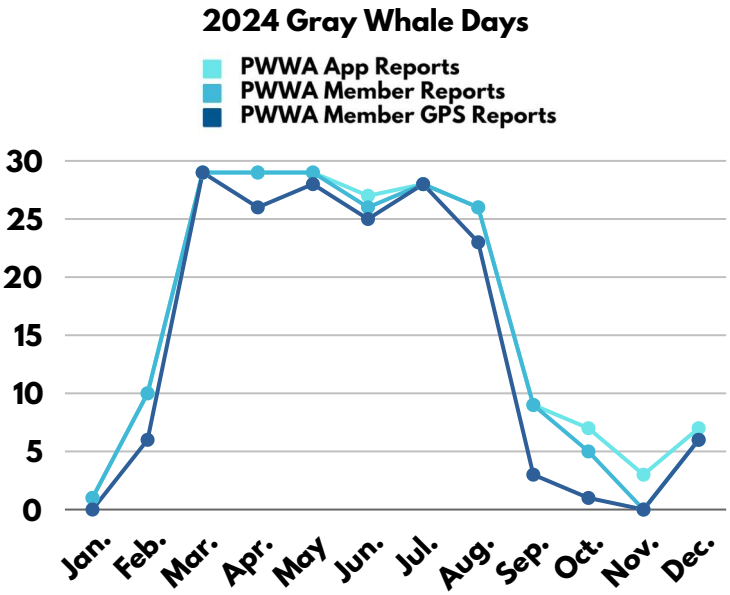
GRAY WHALES

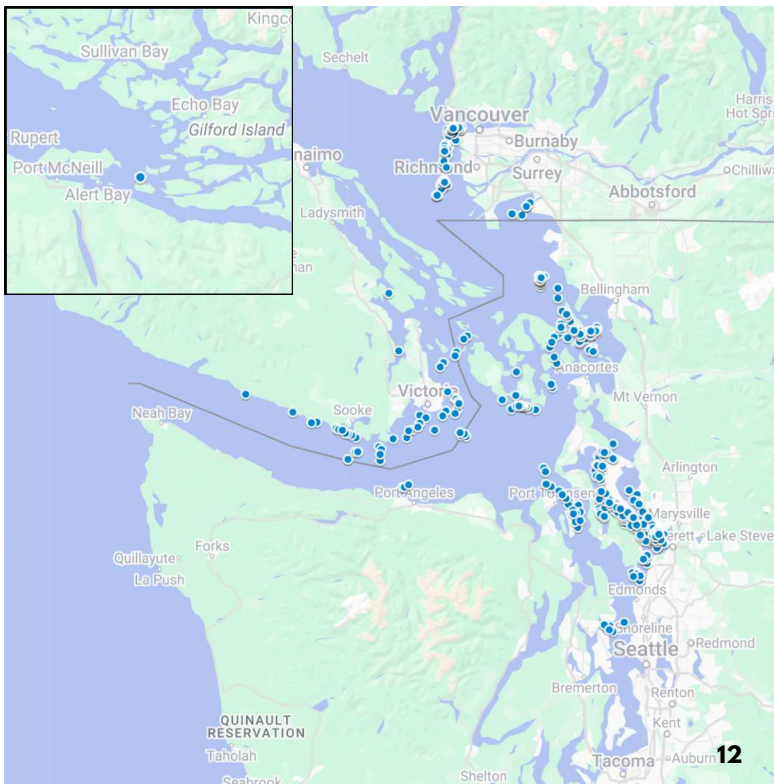
A feeding gray whale. *Kyla Bivens, Puget Sound Express*

Gray Whales

The PWWA App received **880** logs of gray whales (*Eschrichtius robustus*) in 2024. **850** (**96.6%**) entries were made by PWWA members, and **712** (**80.9%**) entries were firsthand GPS reports made from PWWA vessels during whale watch tours. Gray whales were reported to the PWWA App on **205** days of 2024 in total, were reported by PWWA members on **198** days, and were encountered during PWWA whale watch tours on **175** days. This was a significant increase over the previous year during which gray whales were reported to the PWWA App on **131** days in total, were reported by PWWA members on **125** days, and were encountered during PWWA whale watch tours on **98** days of 2023.

Between December 17, 2018 and November 9, 2023, Eastern North Pacific (ENP) gray whales experienced an Unusual Mortality Event (UME) throughout their range of Alaska to Mexico. The National Oceanic and Atmospheric Administration (NOAA) determined the UME was associated with localized ecosystem changes in the whales' Subarctic and Arctic feeding areas which led to malnutrition, decreased birth rates, and increased mortality. While NOAA declared the UME to be over in 2023, the early arrival and extended Salish Sea presence of gray whales in 2024 indicate there may still be lingering challenges for the ENP gray whale population, resulting in an increased reliance on alternative feeding locations beyond the Arctic.





2024 PWWA GPS entries for gray whales. *PWWA App and Google Maps*

MINKE WHALES

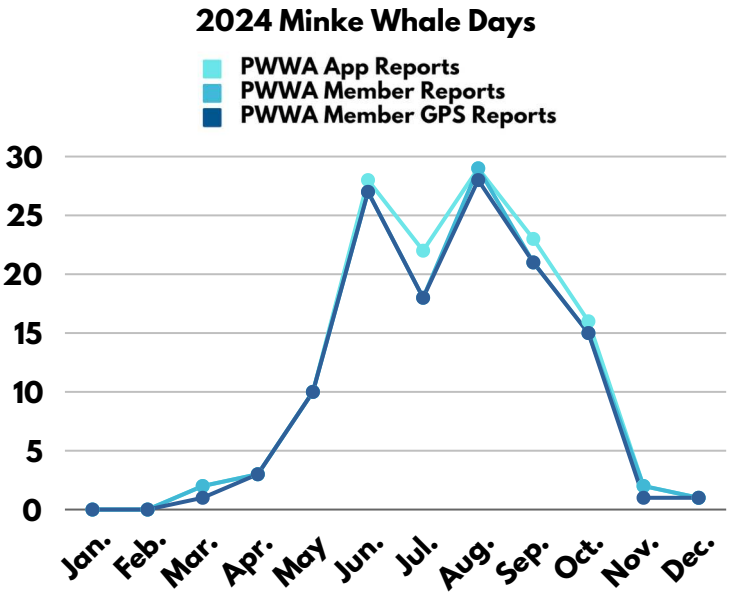
Surfacing minke whale. *Rachel Rodell, Puget Sound Express*

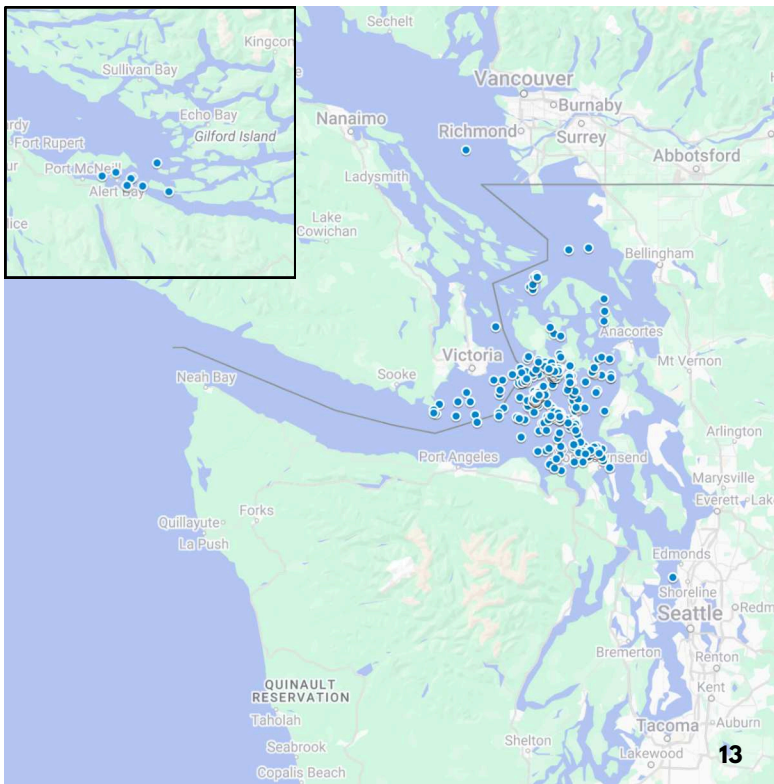
Minke Whales

The PWWA App received **634** logs of minke whale (*Balaenoptera acutorostrata*) in 2024. **592** (**93.4%**) entries were made by PWWA members, and **557** (**87.9%**) were firsthand GPS reports from aboard PWWA vessels during whale watch tours. Minke whales were reported to the PWWA App on **136** days in total, were reported by PWWA members on **128** days, and were encountered during PWWA whale watch tours on **125** days. The PWWA App received reports of minke whales during each month from March through December, but sightings were most frequent during summer and early fall.

While minke whales are not endangered, they are considered rare within the Salish Sea. Photo identification studies suggest that the local population is driven by a group of approximately 30-40 individuals that forage seasonally in the area (Olsen et al. 2024). Little is known about where local minke whales go when not in the Salish Sea.

Sadly, there was one confirmed Salish Sea minke whale fatality in 2024. The body of a juvenile female minke whale was first seen on November 21, 2024 floating in Commencement Bay near Tacoma, WA. A necropsy revealed that the animal was in good nutritional condition and had been recently feeding. Evidence suggested the animal had likely been killed in a vessel collision, a stark reminder of the growing risk of ship strike to large whale species.





2024 PWWA GPS entries for minke whales. *PWWA App and Google Maps*

NORTHERN RESIDENTS

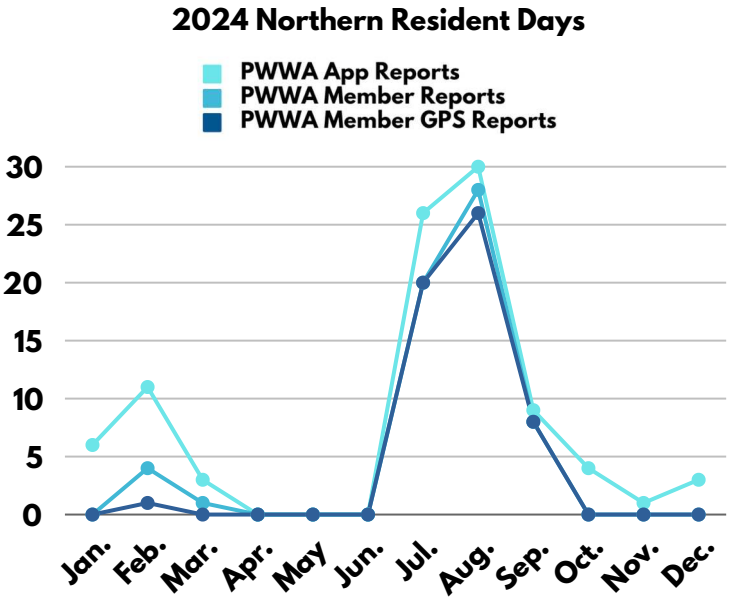
Northern Resident killer whales. *Sara Shimazu, Maya's Legacy*

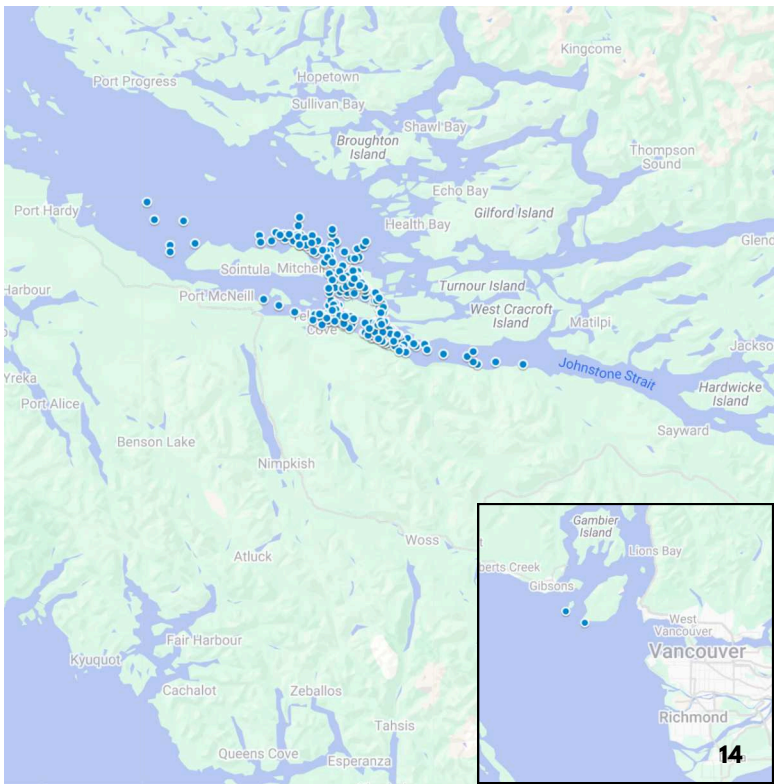
Northern Resident Killer Whales

The PWWA App received **1,306** entries for fish-eating Northern Resident killer whales (*Orcinus orca ater*) in 2024. **312** (**23.9%**) entries were made by PWWA members, and **281** (**21.5%**) were firsthand GPS reports made from aboard PWWA vessels. Northern Resident killer whales (NRKW) were reported to the PWWA App on **110** days in total, were reported by PWWA members on **77** days, and encountered during PWWA whale watch tours on **72** days.

NRKW sightings typically occur beyond the PWWA's core Salish Sea operating range. The majority (**76.1%**) of NRKW reports to the PWWA App in 2024 came from members of the North Island Marine Mammal Stewardship Association (NIMMSA) and Campbell River Association of Tour Operators (CRATO), two organizations who operate in Campbell River and north Vancouver Island that have been authorized to use the PWWA App. All but three PWWA member reports of NRKW in 2024 came from a single PWWA company based in Telegraph Cove, BC.

The number of days NRKW were reported to the PWWA App in 2024 was higher than the previous year (**110** days in 2024 vs. **77** days in 2023), and the number of days NRKW were encountered by PWWA vessels was significantly higher (**72** days in 2024 vs. **27** days in 2023). In 2024, NRKW seemed to spend considerably more time within range of Telegraph Cove than they did in 2023.





2024 PWWA GPS entries for NRKW.
PWWA App and Google Maps

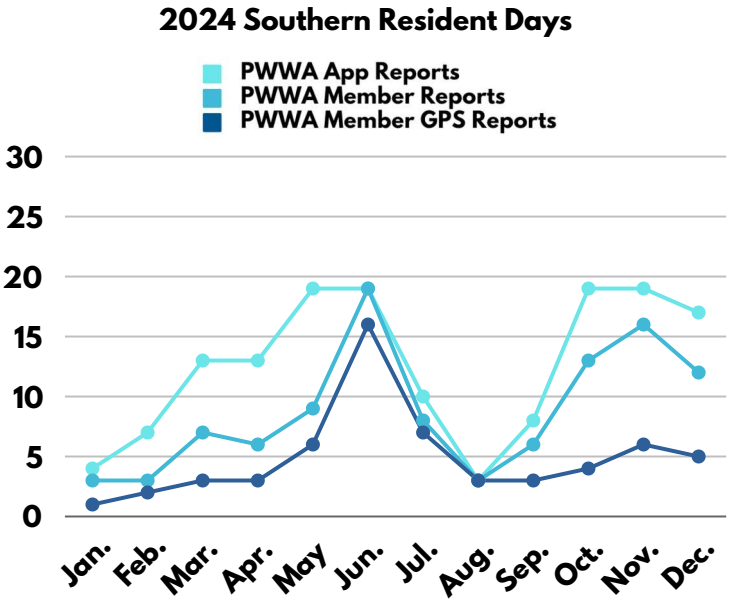
SOUTHERN RESIDENTS

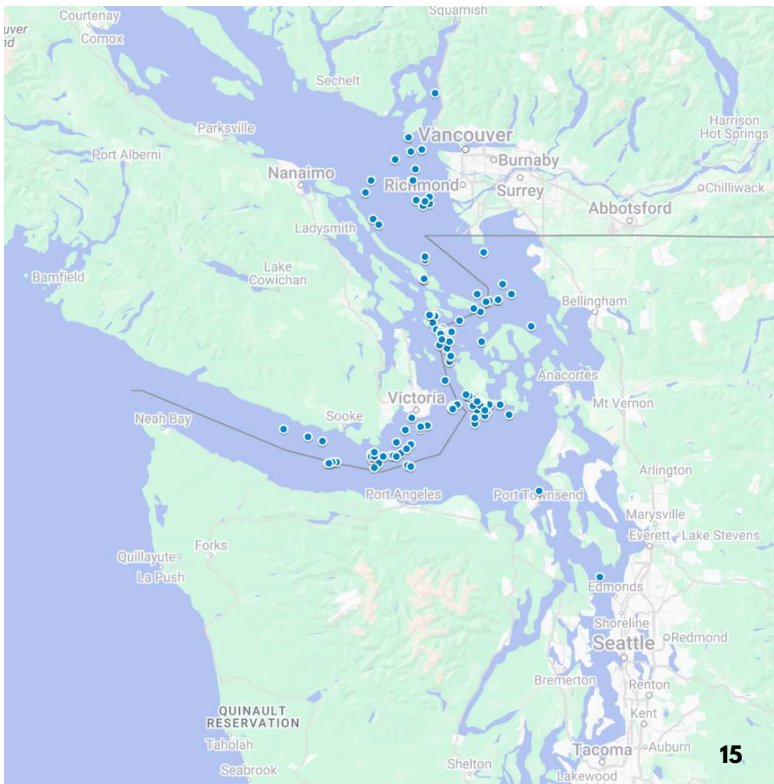
J31 "Tsuchi". *Melisa Pinnow, San Juan Excursions (taken from shore)*

Southern Resident Killer Whales

The PWWA App received **781** logs of fish-eating Southern Resident killer whales (*Orcinus orca ater*) in 2024. **648** (**83.0%**) Southern Resident killer whale (SRKW) logs were secondhand or shore-based reports from PWWA members, or GPS reports from researchers, boater education groups, or other authorized users of the PWWA App outside of the PWWA. **322** (**41.2%**) SRKW logs were made by PWWA members, and only **133** (**17.0%**) were firsthand GPS reports made aboard PWWA vessels during whale watch tours. SRKW were reported to the PWWA App on **151** days in total, were reported by PWWA members on **105** days, and were encountered during PWWA whale watch tours on **59** days of the year. Most PWWA member GPS entries were made during unintentional encounters with SRKW, or were made from a distance of greater than 1/2 nautical mile (1,013 yards) in Washington waters.

Per Center for Whale Research's summer census, there were **73** SRKW as of July 2024. In September 2024, calf L128 was born to first-time mother L90, but was declared missing in October. Another calf, J61, was born in late December to mother J35, but sadly did not survive. On December 30, 2024, a third calf, J62, was born to mother J41, and is still alive at time of publication. Southern Resident killer whales are an endangered population, nutritionally stressed due to a decline of Chinook salmon within their core habitat (Couture et al. 2022).





2024 PWWA GPS entries for SRKW.
PWWA App and Google Maps

Sustainable Whale Watchers Authorization

Since 2019, as part of a recurring interim order intended to protect SRKW, the viewing distance for ***all*** killer whales was increased from 200 meters to 400 meters in BC waters between Campbell River and Ucluelet. Transport Canada's Sustainable Whale Watchers Authorization (SWWA) allows professional whale watch operators to continue viewing non-Southern Resident killer whales from the previous distance of 200 meters if they agree to not intentionally view Southern Resident killer whales in BC waters from any distance. Vessels with authorization are required to immediately report incidental SRKW encounters, to safely depart from SRKW as soon as possible, to utilize an onboard Automatic Identification System (AIS), and to display a purple authorized vessel flag at all times.

Authorized vessel flag. *Erin Gless, PWWA*

Commercial Whale Watching Licenses

In 2021, Washington Department of Fish and Wildlife (WDFW) implemented the Commercial Whale Watching License Program (CWWLP) requiring any tour operator that views marine mammals in inland Washington waters to obtain a commercial whale watching license. The program requires that licensed vessels utilize AIS, that captains complete annual driver training, and that crew members report all encounters with SRKW from closer than 1/2 nautical mile (1,013 yards).

During the 2024 season, the CWWLP prohibited commercial viewing of SRKW from closer than 1/2 nautical mile except during the months of July, August, and September between the hours of 10:00 AM to 12:00 PM or 3:00 PM to 5:00 PM. The program also prohibited viewing SRKW's deemed "vulnerable" by WDFW.

In June 2024, WDFW released their 2024 list of "vulnerable" individuals based on criteria developed by WDFW and Sealife Response, Rehabilitation, and Research (SR3). The 2024 list included one pregnant individual and 15 individuals deemed by SR3 to be "vulnerable" due to body condition. WDFW's licensing program not only prohibits viewing "vulnerable" individuals within the SRKW population, but also prohibits viewing any individual within one mile of those "vulnerable" individuals. As a result, WDFW's licensing rules essentially precluded all professional viewing of Southern Resident killer whales in Washington waters from a distance of closer than 1/2 nautical mile (1,013 yards).

In spring 2023, the Washington State Legislature passed a law to increase the SRKW approach distance from 300 yards to 1,000 yards in Washington waters effective January 1, 2025 (Protection of Southern Resident orca whales 2023). Since licensed whale watch operators, with very few exceptions, have been required to maintain this distance from SRKW since 2021, this legislation will not impact PWWA operations. The significance of the new law is that recreational vessels are now ***also*** subject to the 1,000 yard distance requirement. The new legislation remedies a disparity that for several years allowed unlicensed private vessels to approach Southern Residents more than three times closer than trained, licensed professional whale watch vessels. As a result of the new legislation, the CWWLP's approved viewing windows and annual "vulnerable" whale list will also be eliminated.

SEA OTTERS

Ollie the sea otter and companion. *Mollie Cameron, Sooke Coastal Explorations*

Sea Otters

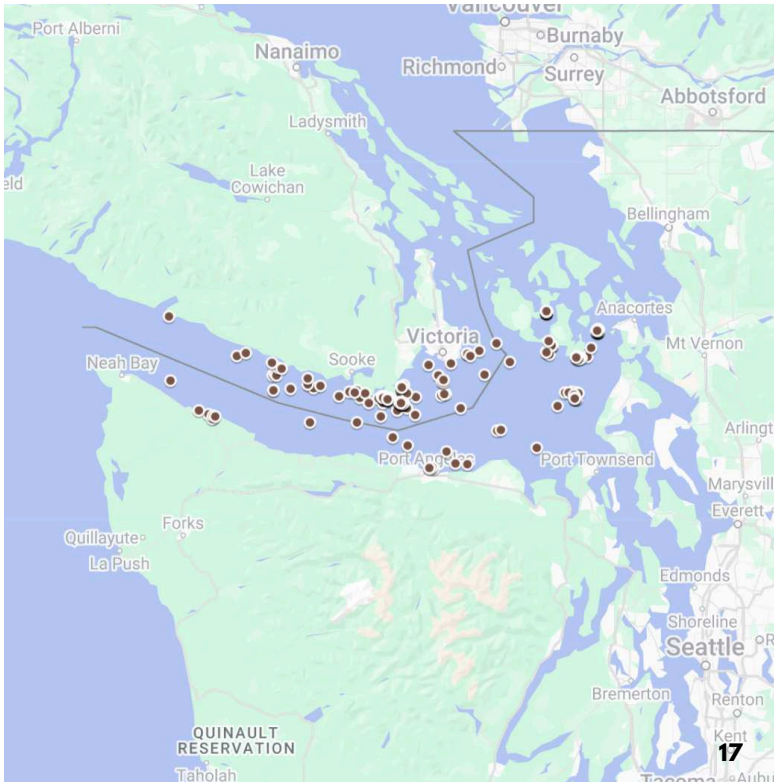
Sea otters (*Enhydra lutris),* were once commercially hunted to the brink of extinction due to demand for their dense fur coats. Following decades of conservation efforts, sea otters are now seen regularly on the outer coast of Washington and British Columbia, and near north Vancouver Island. It is only in the last several years, however, that sea otter sightings have become more frequent in the waters of the Salish Sea.

In 2024, PWWA members documented **568** sightings of sea otters in the PWWA App. Of those, **558** (**98.2%**) reports were within the Salish Sea. Sea otter sightings are common near north Vancouver Island, therefore PWWA App users in that region typically only report very large rafts of sea otters. The remainder of this section will focus exclusively on Salish Sea sea otter reports.

For years, a lone male sea otter nicknamed “Ollie”, who has resided near Race Rocks Ecological Reserve since 2015, was the only sea otter known to PWWA members. Recently, however, additional individuals have established some level of residency, including “Waldo”, an otter first seen in Juan de Fuca Strait in 2021, and “Dexter/Otis”, an otter first seen in Rosario Strait in 2022. Based on physical characteristics and/or location of each sighting, at least **265** (**47.5%**) Salish Sea sea otter reports were assumed or confirmed to be Ollie, at least **33** (**5.9%**) were assumed or confirmed to be Waldo, and at least **69** (**12.4%**) were assumed or confirmed to be Dexter/Otis. It’s possible more PWWA App reports were of these three known individuals, but the reporting party did not provide an ID. For the remaining **191** (**34.2%**) reports within the Salish Sea, the otter was either unknown or no ID was provided. A few otters not observed in previous years were sighted for several days or weeks in 2024. Perhaps they, too, will become Salish Sea residents.

PWWA members venturing farther west in Juan de Fuca Strait reported several unknown sea otters including multiple lone individuals near south Vancouver Island, BC, and a large raft of 15-20 individuals near Clallam Bay, WA.

Map of 2024 PWWA sea otter reports within Salish Sea (manual & GPS). *PWWA App and Google Maps*



NOTEWORTHY WILDLIFE

Pacific white-sided dolphins. *Melisa Pinnow, San Juan Excursions*

Pacific White-Sided Dolphins

Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) are a species frequently observed near north Vancouver Island, Campbell River, and off the outer coast of Washington and British Columbia. In 2024, however, there were several Pacific white-sided dolphin sightings within the PWWA's core operating range in the southern Salish Sea.

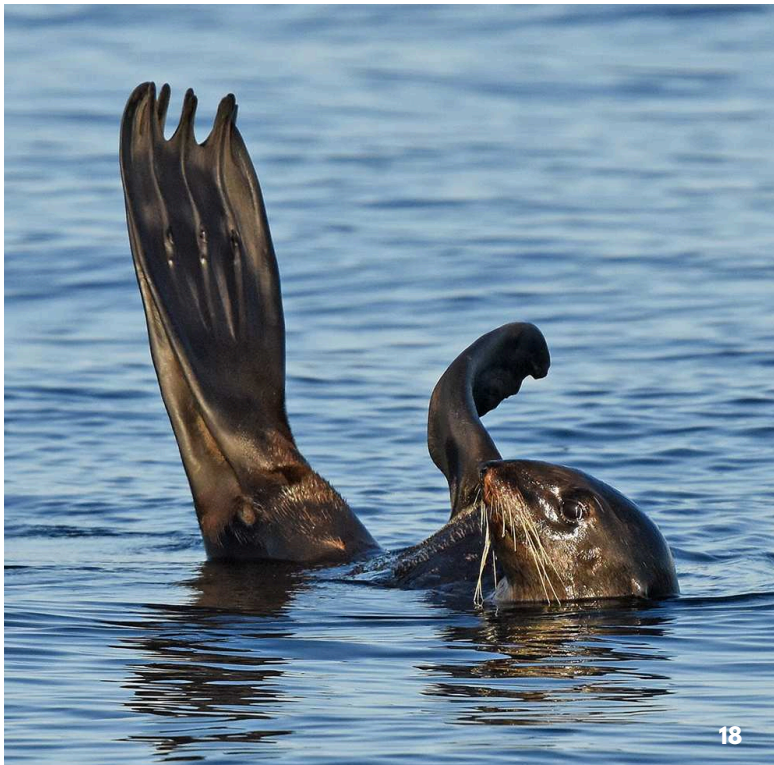
In 2024, the PWWA App received a total of **559** Pacific white-sided dolphin entries from all users across **190** days. Most reports were near north Vancouver Island and Campbell River, but **37** (**6.6%**) logs were made by PWWA members in the southern Salish Sea across **18** different days. These sightings occurred near BC's Howe Sound and Southern Gulf Islands, and Washington's San Juan Islands and Puget Sound. In contrast, there were only **seven** reports of Pacific white-sided dolphins in the southern Salish Sea on **six** different days in 2023.

Fur Seals

Fur seals are another marine mammal more typically found along the outer coast, but during the 2024 season, there were several sightings within the Salish Sea. On February 6, 2024, the PWWA App received a report of a small fur seal pup in eastern Juan de Fuca Strait. On February 7, an adult fur seal was reported farther west between Lyre River and Clallam Bay, WA. A lone fur seal was also reported southwest of Victoria, BC on September 13 and October 12. It's assumed that all of the animals reported were Northern fur seals (*Callorhinus ursinus*), although Guadalupe fur seals (*Arctocephalus townsendi),* typically found off Mexico and California, can travel as far north as British Columbia.

Like sea otters, fur seals were once commercially hunted for their thick coats. While they are now a protected species, they remain vulnerable to threats such as entanglement, environmental contaminants, and climate change.

A northern fur seal in Juan de Fuca Strait. *Joe Zelwietro, Eagle Wing Tours*



A pair of horned puffins. *Ken Rea, Spirit of Orca*

Horned Puffins

Sightings of tufted puffins (*Fratercula cirrhata)* are not uncommon in the central Salish Sea, but sightings of horned puffins (*Fratercula corniculata)* are quite rare. Horned puffins typically have a more northern distribution than tufted puffins, nesting on rocky shorelines in Alaska and Russia in summer.

On September 8, 2017, a single horned puffin was reported by All Aboard Sailing near Smith Island, WA. Since then, PWWA members have reported seeing at least one horned puffin amongst tufted puffins in the vicinity of Smith Island each summer.

On July 30, 2022, a captain for Maya's Legacy Whale Watching reported seeing two separate horned puffins near Smith Island, but was unable to obtain a photograph. The coveted photo of two horned puffins side-by-side was finally taken by Ken Rea of Spirit of Orca in August 2024, also near Smith Island. It's unknown if they are a mated pair.

A rare red-footed booby.
Rachel Rodell, Puget Sound Express

Red-Footed Booby

On July 31, 2024, a red-footed booby (*Sula sula)* was spotted sitting on a channel marker near Dungeness Spit, WA by naturalist Colleen Farrell of Puget Sound Express. Per the Washington Bird Records Committee, this was only the fourth record of a red-footed booby in Washington, and only the second sighting of a live bird. Normally found in the tropics, the booby made a home near Port Townsend, WA for several months, much to the delight of local birdwatchers. The bird was last seen in early November 2024.

SENTINEL ACTIONS

A Bigg's killer whale with a tanker in the background. *Mollie Cameron, Sooke Coastal Explorations*

PWWA Sentinel Actions

"Sentinel actions" are defined by the PWWA as protective actions taken by professional whale watchers during the course of a tour to benefit whales and other wildlife. Some examples of sentinel actions include stopping other vessels from speeding near whales, proactively warning vessels of whales nearby, retrieving harmful marine debris from the water, and alerting authorities when they encounter injured or entangled wildlife.

Since 2020, PWWA members have used the PWWA App to document the sentinel actions they perform. Similar to wildlife sightings, sentinel action reports collected by the PWWA App include the timestamp and GPS coordinates of each protective action along with other important details of the intervention.

Passive Sentinel Actions

In addition to the documented sentinel actions detailed in this report, professional whale watch vessels have the ability to positively influence the behavior of other vessels in the vicinity of whales by merely being present. PWWA operators help to mark the location of whales and model appropriate speeds and distances. Since 2018, PWWA vessels have also been encouraged to display the brightly colored Whale Warning Flag within 1 kilometer (0.62 miles) of whales. Outreach campaigns in both British Columbia and Washington ask boaters to slow to a speed of 7 knots or less and be vigilant of whales if they see a vessel flying the Whale Warning Flag.

An independent, peer-reviewed study found that the number of dangerous recreational boating incidents in the vicinity of Salish Sea killer whales is decreased from **6.60** incidents per hour to **2.65** incidents per hour when a professional whale watch vessel was present (Shields 2022). The following analysis of sentinel activity does not account for any potential dangerous boating incidents that may have been prevented by the visible presence of PWWA vessels alone.

The PWWA App is also utilized by an increasing number of authorized third-party users such as marine mammal observers, commercial vessel pilots, ferry and water taxi captains, cetacean researchers, and more. It's likely precautions are taken by these user groups in the vicinity of whales as a result of their direct access to real-time sightings through the PWWA App without the need for direct communication with PWWA operators. Unfortunately, the PWWA is unable to quantify such behavior modifications at this time.

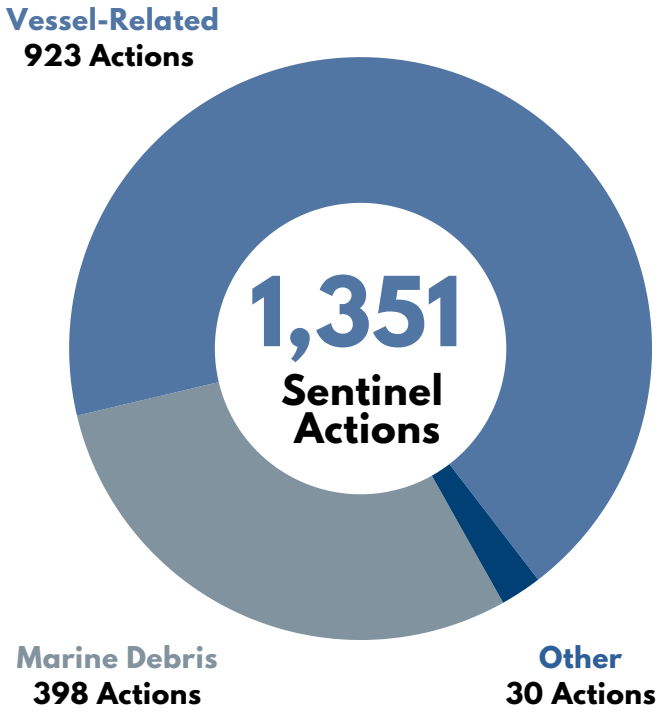
2024 Sentinel Action Summary

In 2024, PWWA captains, naturalists, and crew members documented a total of **1,351** sentinel actions during their professional whale watching tours.

Vessel-related sentinel actions were the most common type of intervention documented, with **923** actions (**68.3%** of total sentinel actions reported). These included **477** ***reactive*** sentinel actions and **446** ***proactive*** sentinel actions.

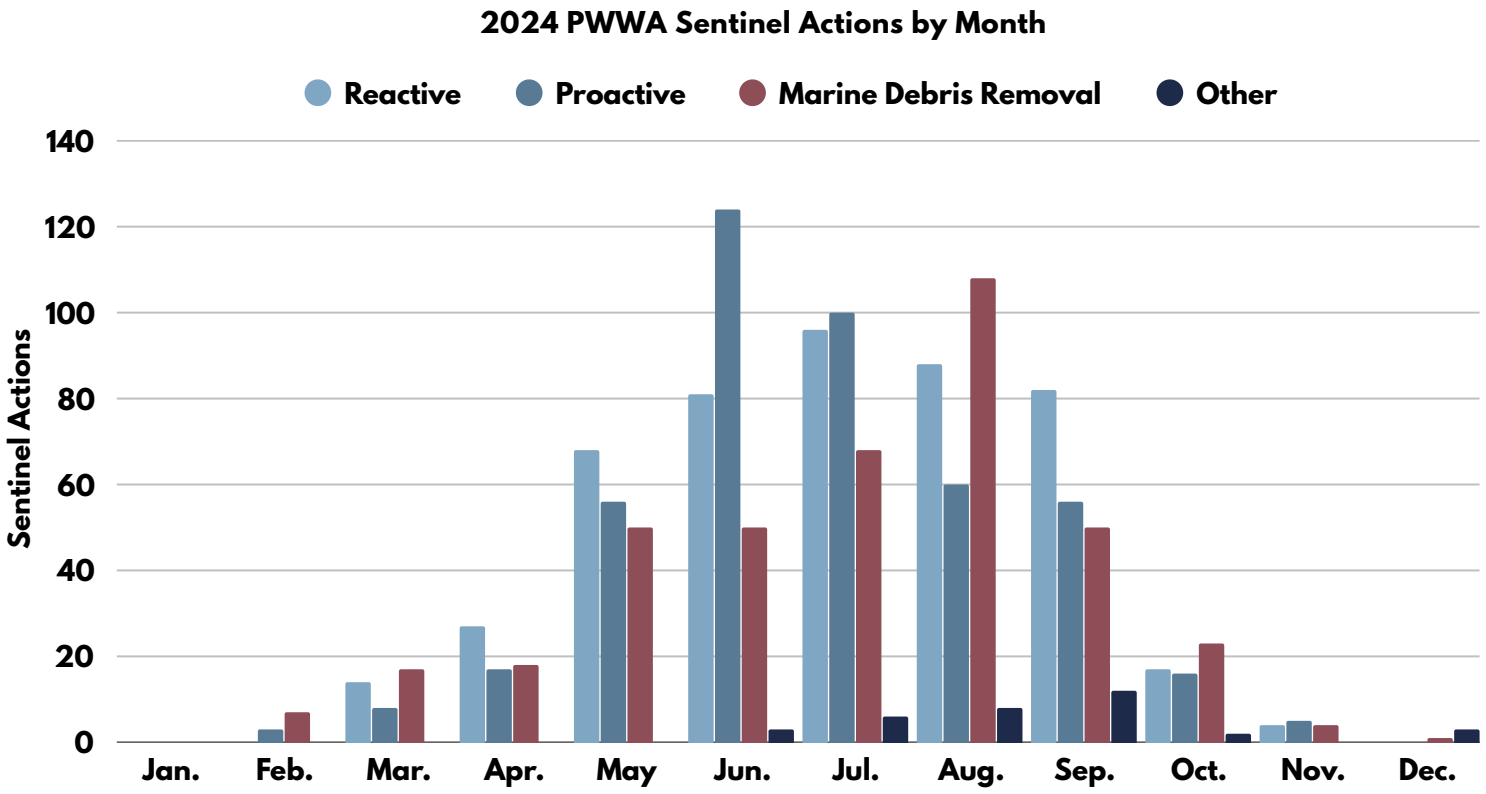
Reactive sentinel actions involve direct contact with vessels traveling too close and/or too fast in the immediate vicinity of whales. Communication during reactive sentinel actions often occurs via VHF radio, a quick blast of the ship's horn, or by the waving of arms or the Whale Warning Flag. *Proactive* sentinel actions involve contacting vessels in advance, before they enter the immediate vicinity of whales. Proactive contacts tend to occur primarily over VHF radio, or by waving arms or the Whale Warning Flag.

398 sentinel actions (**29.5%**) involved ***marine debris removal***. Examples of harmful marine debris include balloons, polystyrene foam, derelict fishing gear, plastic bags, bottles, rubber tires, and other miscellaneous garbage.



There were **30** sentinel actions (**2.2%**) categorized as ***"other"*** during the 2024 season. Examples of other sentinel actions included reporting injured or entangled wildlife to authorities, assisting boaters in distress, and reporting incidents of illegal fishing and drone usage within prohibited areas.

Bigg's killer whales and a Washington State Ferry. *Johannes Krieger, San Juan Excursions*



2024 Sentinel Actions by Month

When examining sentinel actions performed by month, most PWWA actions were documented between May and September. This corresponds directly with the peak of PWWA whale watching activity. These are also the months with the longest daylight hours, most favorable weather conditions, increased ferry and recreational boating traffic, and the highest density of whales.

It stands to reason that more sentinel actions are logged when more PWWA vessels are on the water, and when there is an increased likelihood for encounters between whales and other types of vessels.

In 2024, July was the month with the most total documented sentinel actions. **271** actions were documented throughout the month, including **96** reactive interventions, **100** proactive warnings, **69** marine debris removals, and **six** sentinel actions categorized as "other". July was also the month with the most reactive sentinel actions overall.

June was the month with the most proactive actions (**124** actions), August was the month with the most marine debris removals (**108** actions), and September was the month with the most sentinel actions categorized as "other" (**12** actions).

The only month of 2024 during which no sentinel actions were reported was January. Fewer PWWA vessels operate during January than in any other month of the year.

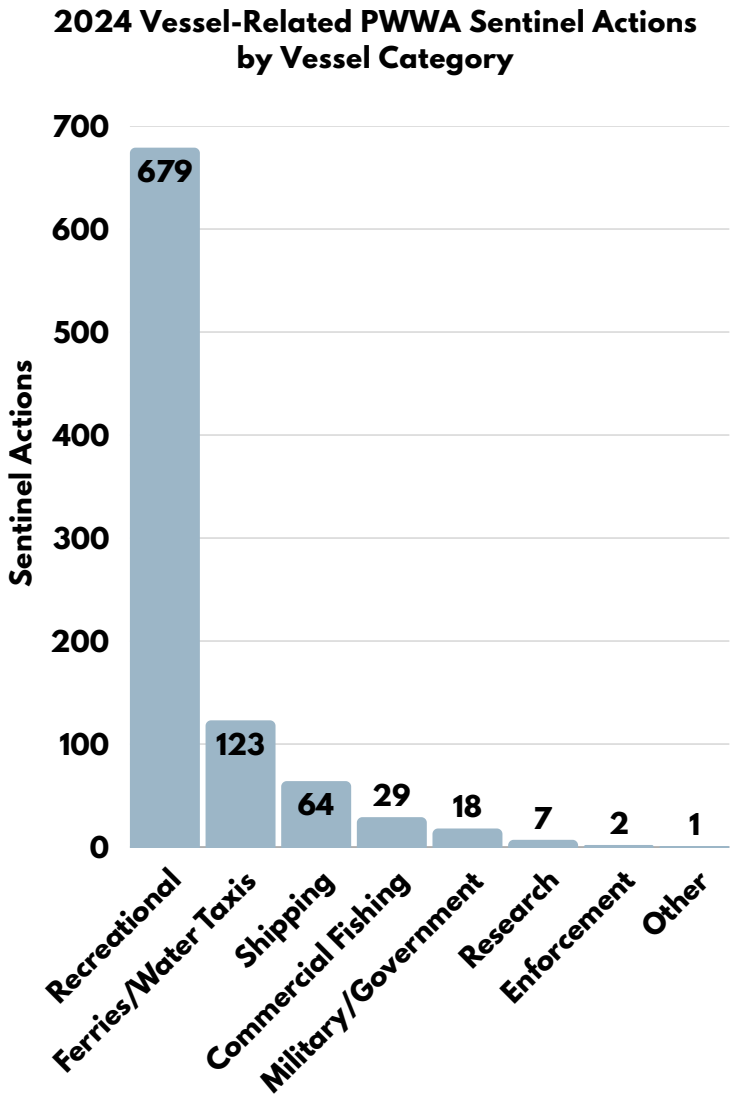
A Bigg's killer whale crosses in front of a container ship.
Sara Shimazu, Maya's Legacy

A humpback whale swims with a ferry in the background. *Ian Roberts, SpringTide*

Vessel-Related Sentinel Actions

Of the **1,351** sentinel actions reported to the PWWA App in 2024, **923** (**68.3%**) involved interactions with other vessels. PWWA members observed a positive change in behavior following **697** (**75.5%**) vessel-related interventions, detailed further on page 27 of this report. Contact with other vessels was typically made through VHF radio, a ship's horn, or waving of a flag or arms. **477** (**51.7%**) vessel-related actions were ***reactive*** sentinel actions involving vessels in the immediate vicinity of whales. **446** (**48.3%**) actions were ***proactive*** interventions warning vessels of whales in their eventual path.

Recreational vessels were the category contacted most frequently, accounting for **679** vessel-related sentinel actions (**73.6%**). Ferries and water taxis were the second most frequently contacted category with **123** sentinel actions (**13.3%**). Large commercial vessels, such as container ships and tankers, were contacted during **64** sentinel actions (**6.9%**), and commercial fishing vessels were contacted **29** times (**3.1%**). Military and other government vessels were contacted **18** times (**2.0%**) each, research vessels were contacted **seven** times (**0.8%**), and enforcement vessels were contacted **two** times (**0.2%**). **One** (**0.1%**) vessel categorized as "other" was also contacted.

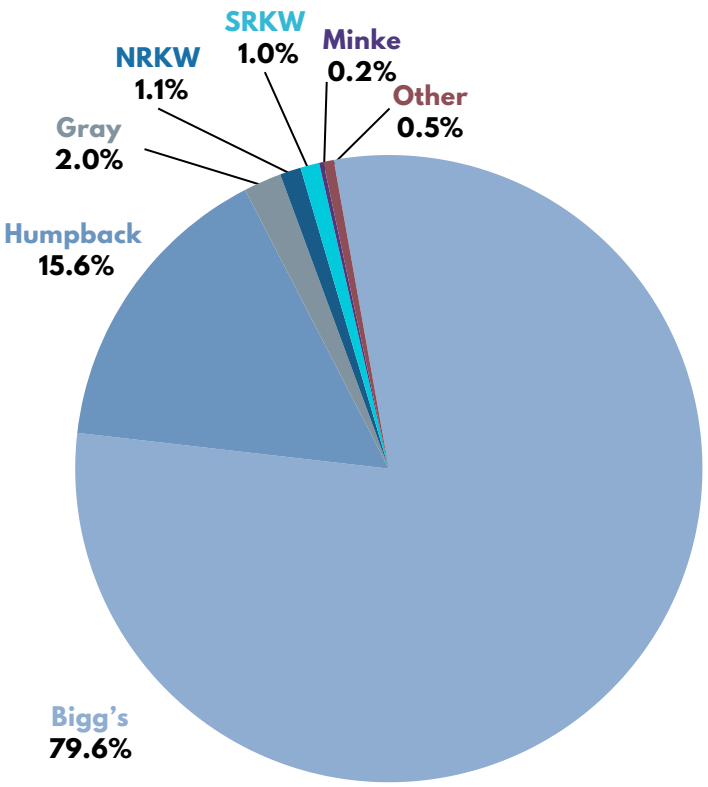


Vessel-Related Actions by Wildlife Type

The majority of the **923** vessel-related PWWA sentinel actions in 2024 involved Bigg's killer whales, with **735** sentinel actions (**79.6%**). Humpback whales were present during **144** (**15.6%**) vessel-related sentinel actions. **18** (**2.0%**) vessel-related sentinel actions involved gray whales, **10** (**1.1**%) involved Northern Resident killer whales, **nine** (**1.0%**) involved Southern Resident killer whales, and **two** (**0.2%**) involved minke whales. There were also **five** (**0.5%**) vessel-related sentinel actions involving other species, such as pinnipeds, or during which the reporter did not record the species involved.

It is important to note that these percentages are heavily influenced by the relative amount of time the PWWA whale watching fleet spends viewing each species/subspecies, and not necessarily the vulnerability of each species/subspecies to vessel-related threats. For example, regulations against the professional viewing of endangered Southern Resident killer whales limit the PWWA's ability to perform sentinel actions in their vicinity. The small number of sentinel actions involving Southern Resident killer whales should not be interpreted as a lack of dangerous boating incidents in their vicinity, simply as a reflection of the fact that the PWWA is often not present to perform sentinel actions around them.

2024 Vessel-Related Sentinel Actions by Wildlife Type



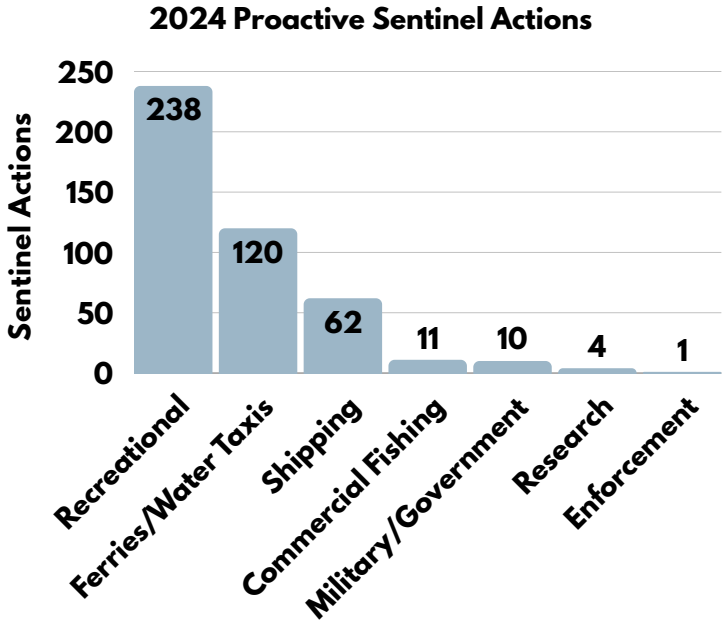
A humpback whale with a ferry in the background. *Ellie Sawyer, Maya's Legacy*

A gray whale surfaces with tug in the background. *Ashley Keegan, Wild Whales Vancouver*

Proactive Sentinel Actions

Of the **446** proactive sentinel actions documented in 2024, recreational vessels were the vessel type contacted most frequently. Recreational vessels were contacted during **238** proactive sentinel actions (**53.3%**). Ferries and water taxis were contacted during **120** sentinel actions (**26.9%**), and large commercial vessels such as tankers, cargo ships, and tugboats were contacted during **62** proactive sentinel actions (**13.9%**). Other vessels contacted proactively included **11** commercial fishing vessels (**2.5%**), **10** military/government vessels (**2.2%**), **four** research vessels (**0.9%**), and **one** law enforcement vessel (**0.2%**).

Vessel speed has been shown to be the most important predictor of noise levels received by whales (Houghton et al. 2015), therefore it's assumed that a reduction in vessel speed near whales results in less received underwater sound. Additionally, reduced speeds decrease the chance of fatal ship strike. One study found that the probability of a ship strike being lethal to a whale is approximately 80% at a speed of 15 knots, but only 20% if speed is reduced to 8.6 knots (Vanderlaan & Taggert 2007). The more advance notice a vessel has of whales in the area, the more time they have to reduce speed and/or alter course.



In 2024, the most common method of communicating with other vessels during proactive sentinel actions was via public VHF radio channels, accounting for **265** (**59.4%**) proactive interventions. This was followed by waving of arms or the Whale Warning Flag during **174** (**39.0%**) actions, and, if necessary, using a short blast of the ship's horn during **66** (**14.8%**) sentinel actions. More than one method of communication was used during **81** (**18.2%**) proactive interventions.

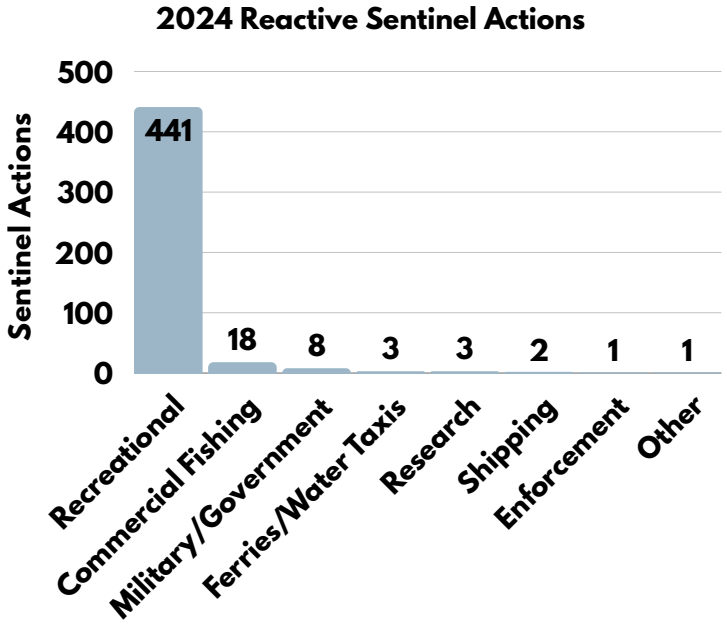
A PWWA member waves the Whale Warning Flag to alert an oncoming vessel of whales. *Ellie Sawyer, Maya's Legacy*

Reactive Sentinel Actions

In 2024, the overwhelming majority of the **477** reactive sentinel actions documented by PWWA members involved recreational vessels, accounting for **441** (**92.5%**) interventions. Commercial fishing vessels were involved in **18** (**3.8%**) interventions, military/government vessels were involved in **eight** (**1.7%**) interventions, ferries and water taxis were involved in **three** (**0.6%**) interventions, research vessels were contacted during **three** (**0.6%**) interventions, and shipping vessels were contacted during **two** (**0.4%**) interventions. **One** (**0.1%**) sentinel action involved an enforcement vessel, and **one** (**0.1%**) involved a vessel categorized as "other".

417 (**87.4%**) reactive interventions involved contacting vessels traveling at high speed near whales, and **60** (**12.6%**) involved contacting vessels traveling too close to whales but not speeding.

While recreational vessels were contacted in **73.6%** of *total* vessel-related sentinel actions in 2024, **92.5%** of *reactive* sentinel actions involved recreational vessels compared to only **53.3%** of *proactive* sentinel actions. Recreational vessels are typically smaller and travel at higher speeds than commercial vessels, making it more difficult to warn them before they enter the vicinity of whales.

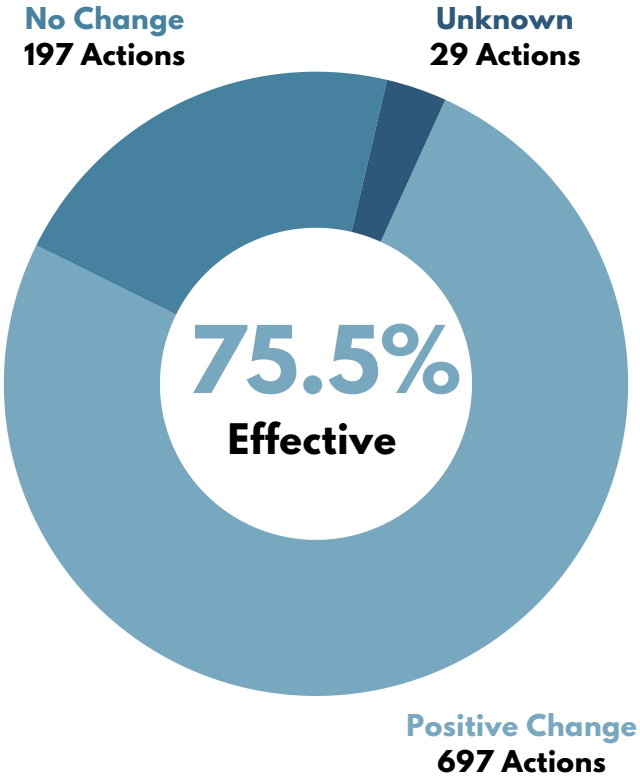


In 2024, the most common means of intervention during reactive sentinel actions was waving of arms or the Whale Warning Flag. This method was used during **385** (**80.7%**) interventions. Brief horn blasts were used during **246** (**51.6%**) interventions, and VHF radio warnings occurred during **91** (**19.1%**) actions. In an effort to gain attention from vessels exhibiting potentially dangerous behavior near whales, multiple means of communication were used during **242** (**50.7%**) of reactive sentinel actions.

Change in Vessel Behavior After Contact

Of the **923** vessel-related sentinel actions by the PWWA documented in 2024, PWWA crew members observed a positive change in vessel behavior following **697** (**75.5%**) interventions. A positive change in behavior was characterized by the contacted vessel stopping, slowing, and/or diverting following communication with a PWWA operator. There was no noticeable change in behavior after **197** (**21.3%**) incidents. It was unknown whether there was a positive change in behavior after **29** (**3.2%**) sentinel actions. PWWA members are sometimes not able to remain in the area long enough to confirm whether behavior was modified or not, accounting for an unknown result.

Of the **446** *proactive* sentinel actions, PWWA members observed a positive change in vessel behavior following **376** (**84.3%**) of contacts. Of the **477** *reactive* sentinel actions, PWWA members observed a positive change in vessel behavior following **321** (**67.3%**) interventions. A higher rate of effectiveness during proactive sentinel actions compared to reactive sentinel actions is not unexpected given that proactive sentinel actions are more likely to involve slow-moving vessels in the distance who have more time to receive warnings and alter their speed and/or course accordingly.



While not all vessel-related sentinel actions are successful in positively modifying the behavior of the vessel contacted, PWWA members are able to document egregious violations of existing marine mammal regulations and report them to authorities as necessary.

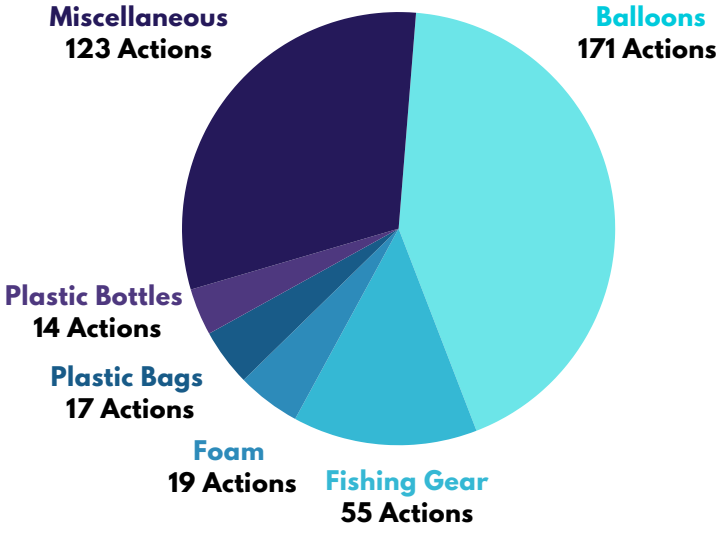
Bigg's killer whales surface with a tanker in the background. *Ellie Sawyer, Maya's Legacy*

A PWWA captain holds balloons retrieved during a tour. *Selena Donker, Eagle Wing Tours*

Marine Debris Removal

The PWWA documented **398** marine debris removals in 2024. Crew members were asked to record the specific type of debris collected when possible.

Balloons were the most common items retrieved by the PWWA in 2024, removed during **171** debris-related sentinel actions (**43.0%**). In many instances, multiple balloons were retrieved during a single sentinel action, so the total number of balloons removed was greater than 171. Derelict or discarded fishing gear was collected during **55** sentinel actions (**13.8%**) and polystyrene foam products were collected during **19** (**4.8%**) sentinel actions. Plastic bags were collected during **17** (**4.3%**) sentinel actions and plastic bottles were retrieved during **14** (**3.5%**) sentinel actions. **123** (**31.0%**) sentinel actions either did not include the specific type of debris removed, or involved miscellaneous items such as car tires, paint cans, clothing, coolers, plastic toys, boat fenders, and even a fire extinguisher.



A PWWA crew member retrieves a balloon. *San Juan Safaris*

A Steller sea lion with flasher in its mouth. *Ellie Sawyer, Maya's Legacy*

Other Sentinel Actions

Sentinel actions not involving vessel contacts or marine debris removal are categorized in the PWWA App as "other". The PWWA documented **30** "other" sentinel actions accounting for **2.2%** of all sentinel actions documented in 2024. **17** "other" sentinel actions (**56.7%**) involved reporting injured, or entangled animals to proper authorities. Additional sentinel actions categorized as "other" included contacting drone operators flying over marine mammals in Canada, notifying and reporting vessels fishing illegally in protected areas, and rescuing multiple capsized boaters in distress. There were also two different incidents involving PWWA vessels assisting turkey vultures in distress to get out of the water.

Preliminary data shared by the National Oceanic and Atmospheric Association indicate that **34** large whales — the highest number since 2018 — were entangled in fishing gear off the coast of Washington, Oregon, and California in 2024. While an equivalent statistic is not publicly available for British Columbia, Fisheries and Oceans Canada responded to several entangled humpback whales throughout the 2024, both within and outside of the Salish Sea. Most entangled whales are never documented or reported, and many that are reported are never relocated.

Disentangling marine mammals can be dangerous, even deadly, for both responders and the animals themselves. PWWA members are not trained or equipped to disentangle marine mammals, but instead work closely with rescue teams on both sides of the border to report, document, and monitor entangled animals from a safe distance.

This entangled sea lion was reported to authorities.
Carol Limido, Eagle Wing Tours

RESEARCH COLLABORATION

A pair of Bigg's killer whales. *Brooke Casanova, Blue Kingdom Tours*

Research Collaboration

Funding and resource constraints on both sides of border often limit the amount of time marine scientists in Washington and BC spend in the field, The PWWA, however, has a year-round presence on the water. To capitalize on this, the PWWA consistently collaborates with researchers whose work benefits from access to PWWA sightings, behavioral observations, and/or visual assets.

Each year, PWWA members contribute a significant volume of photographs and timely sightings data to organizations such as Orca Behavior Institute, Bay Cetology, Humpback Whales of the Salish Sea, Happywhale, Cascadia Research Collective, Pacific Mammal Research, Sea View Marine Sciences, and the Northeast Pacific Minke Whale Project.

In addition to these ongoing relationships, the PWWA also supports specific research projects by providing sightings data and/or funding. This section details a few of the noteworthy research efforts the PWWA contributed toward in 2024.

Yearly Shifts in Killer Whale Presence

Due to their two-year life cycle, pink salmon (*Oncorhynchus gorbuscha)* are virtually absent from the Salish Sea during even-numbered years, but are abundant during odd-numbered years. Using killer whale sightings data from 2016-2023 provided by PWWA, researchers, and community scientists, Taryn Scarff and Andrew Trites of University of British Columbia and Jared Towers of Bay Cetology investigated whether there was a detectable effect of pink salmon on monthly presence of Bigg's (mammal-eating) killer whales and Southern Resident (fish-eating) killer whales.

The data show significant decreases in Southern Resident killer whale presence and increases in Bigg's killer whale presence during odd-numbered years. During even-numbered years, the reverse was true, with an increase in Southern Resident killer whale presence and decrease in Bigg's killer whale presence. Researchers involved in the study suspect that the presence of pink salmon in odd years could negatively impact foraging efficiency of Southern Residents, who instead prefer Chinook salmon (*Oncorhynchus tshawytscha).* The presence of pink salmon, however, might improve Bigg's killer whale foraging efficiency, as it could bring about an increase in Bigg's killer whale prey items such as seals and sea lions.

This study was presented at the biennial Society for Marine Mammalogy Conference in Perth, Australia and at the annual BC Marine Mammal Symposium in Vancouver, BC.

ECHO Program Whale Presence Report

Since 2014, Vancouver Fraser Port Authority's Enhancing Cetacean Habitat and Observation (ECHO) Program has worked to reduce the cumulative effects of commercial shipping on whales in southern British Columbia, with a particular focus on endangered Southern Resident killer whales. One of the ECHO Program's initiatives to help achieve this goal is a voluntary ship slowdown in Haro Strait and Boundary Pass. From June 1 through November 30, container ships, cruise ships, and vehicle carriers are asked to travel at a speed of 14.5 knots or less in the slowdown zone. Bulkers, tankers, and government vessels are asked to slow to a speed of 11 knots or less.

In summer 2024, the ECHO Program commissioned a report detailing the last seven years of whale presence in the slowdown area of Haro Strait and Boundary Pass in an effort to inform the timing and efficacy of the existing voluntary measures. Orca Behavior Institute, in collaboration with PWWA and the PWWA App, assessed killer whale data from 2017-2023 and baleen whale data from 2019-2023. Data was provided primarily by the PWWA/PWWA App, Orca Network, and regional sightings pages. These data were supplemented by reports from the Ocean Wise Sightings Network, JASCO Applied Sciences, and SMRU Consulting.

The final report, which was submitted in November 2024, found that the current ECHO slowdown period captured between **51-82%** of Southern Resident killer whale visits to Haro Strait and Boundary Pass between 2017-2023, depending on the year. The average visit length for Southern Residents was **1.9** days, with a maximum visit length of **15** consecutive days. Southern Residents were most likely to be present in the slowdown area during the months of March, July, and September. Presence was higher overall in Haro Strait than Boundary Pass, reflecting that Haro Strait is a foraging zone (thus they spend more time there) compared to Boundary Pass, which is primarily a transit zone.

Bigg's killer whales were found to be present in the slowdown area on **989** (**38.5%**) days of 2017-2023. For baleen whales, for the years of 2019-2023, humpback whales were present in the area of interest on **813** (**44.5%**) days, minke whales were present on **172 (9.4%**) days, and gray whales were present on **158** (**8.7%**) days.

A humpback whale with a cargo ship in the background. *Jasper Hamilton, SpringTide*

Foraging humpback whales. *Orca Spirit Adventures*

Átl'ka7tsem (Howe Sound) Marine Stewardship Initiative

The Átl'ka7tsem (Howe Sound) Marine Stewardship Initiative (MSI) conducts research and community engagement supporting marine spatial planning, education, and relationship building in Atl'ka7tsem (Howe Sound). One tool created by the MSI is the Marine Reference Guide, a free, interactive map containing hundreds of data layers detailing Howe Sound's biophysical properties, ecology, human uses, administrative boundaries, and more. In October 2024, PWWA received a request from the MSI for PWWA whale sightings records within Howe Sound in order to bolster the the Marine Reference Guide's cetacean presence layers. The PWWA provided PWWA App sightings data for all cetacean species from 2019-2024. The online Marine Reference Guide has since been updated to include these PWWA datasets.

Humpback Whale Prey Mapping

Humpback whales are known to feed in southern British Columbian waters, but the type and quantity of prey consumed in many areas is unknown. To investigate this further, a recent study conducted acoustic prey mapping in two different regions off Vancouver Island. Surveys took place in eastern Queen Charlotte Strait off north Vancouver Island between 2018-2019, and in Juan de Fuca Strait off south Vancouver Island between 2018-2020.

Acoustic surveys of the entire water column suggest that, on average, humpback whale foraging in both locations was associated more with increased zooplankton, like euphausiids (krill), than increased fish biomass. When humpback whales were present during surveys, the relative prey abundance varied widely within the water column, but there was a positive correlation between whale abundance and prey abundance. When whales were absent, almost no prey was detected during several of the surveys. In simple terms, humpback whales were present more often when prey density was high and less often when it was low, suggesting they require a minimum prey density for successful foraging (Reidy et al. 2024).

This study was funded in part by donations from PWWA member companies, and PWWA humpback whale sightings data were used to inform the selection of survey sites.

ENFORCEMENT & EDUCATION

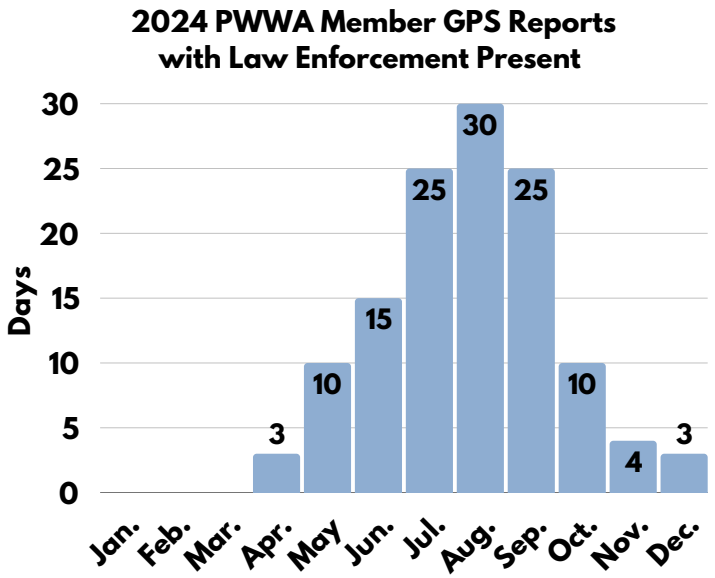
A WDFW law enforcement vessel interacts with a recreational boat. *Ken Rea, Spirit of Orca*

Law Enforcement

Numerous agencies have been tasked with enforcing whale-related vessel regulations in and around the Salish Sea. These agencies include the National Oceanic and Atmospheric Administration (NOAA) and Washington Department of Fish and Wildlife (WDFW) in Washington, and Transport Canada, Fisheries and Oceans Canada (DFO), Royal Canadian Mounted Police (RCMP), and Parks Canada in British Columbia.

The Salish Sea and neighboring waters are expansive. It's not uncommon to have multiple whales or groups of whales distributed throughout the region on any given day. Law enforcement officers are not able to be present with all whales at all times with their current resources.

In order to document law enforcement trends, PWWA App users are asked to note whether or not law enforcement is visibly present during their GPS-based wildlife encounters. For this section, we have included ***all*** GPS-entries logged by PWWA members, not just those logged during whale watching tours. For example, if a PWWA member reported seeing law enforcement near whales from aboard a ferry, research vessel, or private vessel, those encounters have also been included.

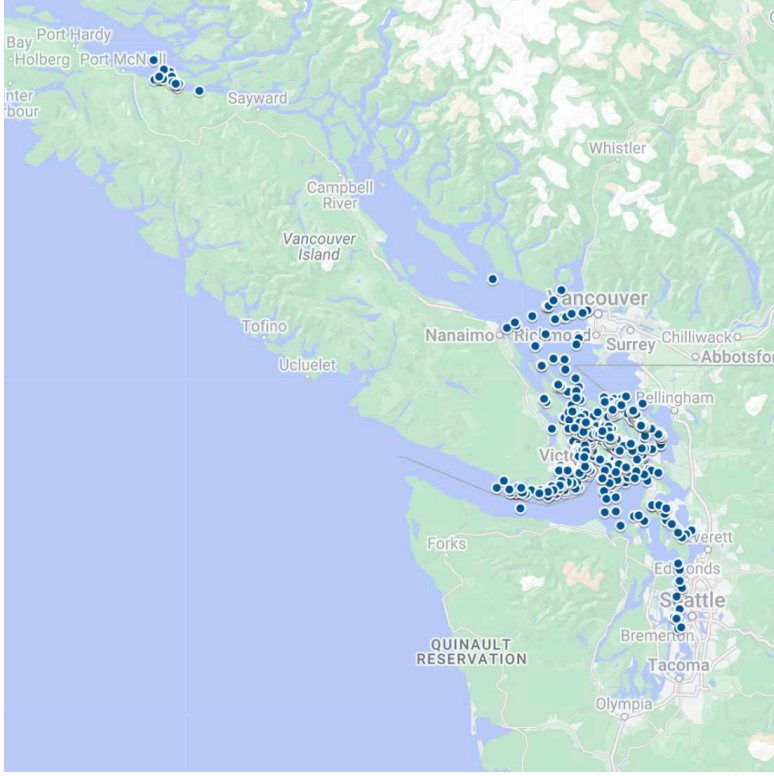


Days of Law Enforcement Presence

While on scene with whales, PWWA operators documented the presence of law enforcement on **125** days of 2024. This was an increase of **18%** over the **106** days of presence reported in 2023. Law enforcement was most likely to be reported as present with whales during the summer months, reported on **15** days in June, **25** days in July, **30** days in August, and **25** days in September.

Law enforcement was least likely to be reported as present during winter whale encounters, and there were no reports of law enforcement during the months of January, February, or March on either side of the border.

Whale watching effort should be taken into account. Few PWWA companies operate during winter, therefore a lack of law enforcement reports in winter does not necessarily mean that law enforcement was absent from the water, simply that they were not observed by PWWA operators. Likewise, most PWWA activity occurs during the late spring, summer, and early fall, therefore the chance of law enforcement vessels or aircraft being observed by PWWA members during those months is increased.



Locations where law enforcement was reported with whales in 2024. *PWWA App and Google Maps*

Overall Enforcement Presence

Of the **26,513** GPS-based cetacean entries logged by PWWA members in 2024, either during whale watch tours or from aboard other types of vessels, law enforcement was noted as being present in **538** entries (**2.0%**). At this time, PWWA App entries do not capture which specific law enforcement agency was present, but a map of 2024 law enforcement reports indicates a fairly even law enforcement presence on both sides of the US/Canadian border.

It's important to emphasize that this percentage is based ***solely*** on the observations of PWWA members using the PWWA App, and does not necessarily include all law enforcement presence in the vicinity of whales. It also does not capture the presence of any law enforcement officers that may be operating undercover and therefore aren't easily recognizable as law enforcement.

A WDFW law enforcement vessel intercepts a recreational boat speeding toward whales. *Erin Gless, PWWA*

2024 PWWA Member GPS Reports with Enforcement Present

Whale Type	Total PWWA GPS Entries	Law Enforcement Present	% Presence
Southern Resident Killer Whales	196	14	7.1%
Northern Resident Killer Whales	301	19	6.3%
Bigg's Killer Whales	13,140	421	3.2%
Minke Whales	574	5	0.9%
Humpback Whales	10,616	65	0.6%
Gray Whales	768	1	0.1%

Law Enforcement Presence by Species

Based on GPS-based PWWA App entries, law enforcement was reported most frequently during encounters with Southern Resident killer whales, present during **7.1%** of entries. Law enforcement was reported as present in **6.3%** of Northern Resident killer whale entries and **3.2%** of Bigg's killer whale entries. Law enforcement was least likely to be present with the region's baleen whale species — minke whales (**0.9%**), humpback whales (**0.6%**), and gray whales (**0.1%**).

Caveats

There are caveats regarding 2024's law enforcement data that must be considered. One is the small sample size of encounters involving Southern Resident killer whales. Restrictions on professional viewing of Southern Residents in both Washington and BC limit the number of PWWA encounters with their population. Given the public pressure on law enforcement to prioritize protection of endangered Southern Residents, it's important to emphasize that law enforcement may have been present with Southern Resident killer whales more frequently in 2024 than reported here, but there were no PWWA vessels present to observe them.

Additionally, while analyzing 2024's PWWA App data, we discovered potential inconsistencies regarding who does and does not qualify as "law enforcement". PWWA members are asked to document the presence of law enforcement during an encounter by checking either "Yes" or "No" in the PWWA App. Members can also enter additional notes about each encounter, but it is not mandatory. In reviewing these optional notes, it appeared that for some PWWA App entries, members may have erroneously considered the boater education groups Straitwatch and Soundwatch (detailed on the following page), as well as the Robson Bight Warden Program, to be "law enforcement". These groups monitor vessel behavior in the vicinity of whales, interact with boaters in an educational manner, and can document and report infractions to law enforcement agencies if necessary, but they do not have the authority to enforce regulations themselves. PWWA App entries indicating that law enforcement was present that specifically mentioned Straitwatch, Soundwatch, or the Robson Bight Warden Program in the notes ***were not excluded*** from our analysis, as we could not rule out the possibility that these organizations were present ***in addition to*** official law enforcement agencies. The result of not excluding these data is that the number of entries characterized as having law enforcement present may be somewhat higher than what actually occurred, but this was determined to be favorable to potentially omitting an encounter during which law enforcement ***was*** actually present. Moving forward, PWWA members will receive additional training on which vessels qualify as law enforcement vessels, and possible modifications to the PWWA App are being considered that would allow users to more easily identify specific law enforcement agencies present during a whale watching encounter.

Soundwatch and a recreational boat view whales from a distance. *Bethany Shimasaki, Western Prince*

Boater Monitoring & Education

There are two on-the-water boater education organizations operating within the Salish Sea — Soundwatch (WA) and Straitwatch (BC). These teams seasonally monitor vessel activity in the vicinity of whales and educate boaters of proper boating behavior. Soundwatch and Straitwatch are not law enforcement, but they ***are*** able to educate boaters about existing regulations and report vessel infractions to appropriate law enforcement agencies if necessary.

Soundwatch and Straitwatch monitor vessel behavior around all whales, but priority is given to endangered Southern Resident killer whales. Since 2022, the PWWA has provided Straitwatch's southern Salish Sea program and Soundwatch's San Juan Islands program with access to the PWWA App's Southern Resident killer whale sightings. These real-time sightings are reported by PWWA operators, local researchers, and reliable shore-based observers authorized to use the PWWA App.

In addition to receiving sightings of Southern Residents, Soundwatch and Straitwatch crew are asked to log their own Southern Resident killer whale sightings in the PWWA App. These reports allow PWWA vessels to avoid accidental encounters with Southern Residents given the strict conditions of Canada's Sustainable Whale Watchers Authorization and the rules of Washington's Commercial Whale Watching License Program.

Between May 27 and October 1, 2024, Soundwatch and Straitwatch logged a combined total of **129** Southern Resident killer whale entries to the PWWA App across **28** different days.

A Soundwatch vessel on patrol. *Bethany Shimasaki, Western Prince*

SUMMARY

Bigg's killer whale tail. *Andrew Lees, Five Star Whale Watching*

2024 Summary

When combining entries from all PWWA App users, Bigg's killer whales were reported to the PWWA App on more days than any other whale type, documented on **339** days of 2024. Humpback whales were reported on **304** days, gray whales on **205** days, and minke whales on **136** days. Southern Resident killer whales were reported on on **151** days, and Northern Resident killer whales on **110** days. When including only GPS-based entries made from aboard PWWA vessels during whale watch tours, Bigg's killer whales were reported on **295** days, humpbacks on **259** days, gray whales on **175** days, minke whales on **128** days, Northern Resident killer whales on **72** days, and Southern Resident killer whales on **60** days.

During 2024, PWWA captains, naturalists, and crew documented a total of **1,351** sentinel actions. The most common sentinel actions documented were vessel-related sentinel actions, with **923** interventions reported (**68.3%** of total sentinel actions). This included **477** *reactive* interactions involving vessels in the immediate vicinity of whales and **466** *proactive* interventions with other vessels nearby. Marine debris removals accounted for **398** sentinel actions (**29.5%**), and incidents classified as "other", such as reporting entangled or injured marine life, made up the remaining **30** sentinel actions (**2.2%**).

For the **923** vessel-related sentinel actions, PWWA members observed a positive change in vessel behavior following **697** (**75.5%**) interventions. Recreational vessels were the most frequently contacted category of vessel, involved in **679** (**73.6%**) sentinel actions. Most sentinel actions involving other vessels occurred in the vicinity of Bigg's killer whales, with Bigg's killer whales present during **735** (**79.6%**) interventions. July was the busiest month for sentinel actions in 2024, with **271** sentinel actions documented overall.

Law enforcement was recorded as being present during at least one PWWA whale encounter on **125** days of 2024. Of **26,513** GPS entries made by PWWA members, law enforcement was reported as being present in **538** (**2.0%**) entries. Law enforcement was most likely to be present with Southern Resident killer whales, present during **7.1%** of entries, followed by Northern Resident killer whales (**6.3%**), and Bigg's killer whales (**3.2%**). Law enforcement was least likely to be present during encounters with baleen whale species such as minkes whales (**0.9%**), humpback whales (**0.6%**), and gray whales (**0.1%**) Law enforcement was most likely to be observed during late spring, summer, and early fall and least likely to be observed during winter.

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Bigg's killer whale surfacing. *Tobin Sparling, Prince of Whales*