Science & Education Report

MS Roald Amundsen
3 – 19 Feb 2026

Antarctic Circle Expedition

When you arrived on the MS Roald Amundsen you boarded an education and research-focused expedition ship fully equipped as a floating laboratory and designed to be a center of learning and discovery. In your time on board, you contributed to scientific studies and expanded your knowledge of the world around you. Let's take a look back on our journey and what we accomplished throughout our voyage.

Science & Education Programme

Our onboard Naturalists and Guest Scientists guided you using scientific tools to investigate the world around us. Through lectures, discovery sessions, expedition boat cruises, science boat sessions, and visits ashore, we aimed to make every expedition day a memorable and unique learning experience.

History & Culture: Deception Island

Whalers Bay is a site of stark, natural beauty characterized by its volcanic black sand beaches and a uniquely sheltered harbour. The site serves as a poignant intersection of various historical eras:

Hektor whaling station: (1912–1931) Originally a Norwegian operation, this land-based factory employed approximately 150 workers during peak summer seasons. The skeletal remains of oil containers and processing facilities offer a haunting glimpse into the whaling industry and the arduous lives of its crews.

Operation Tabarin & Station B: Established by the Britain in 1944 during World War II, Station B served a strategic dual purpose. While its primary mission was to deny Nazi Germany the use of regional resources, it also functioned to assert British sovereignty against competing Chilean and Argentine interests. The site's history in aerial operations is still visible today, with the remaining hangar serving as a silent witness to that era.

Volcanic legacy: Following a series of violent eruptions between 1967 and 1969, the base was permanently abandoned on February 23, 1969.

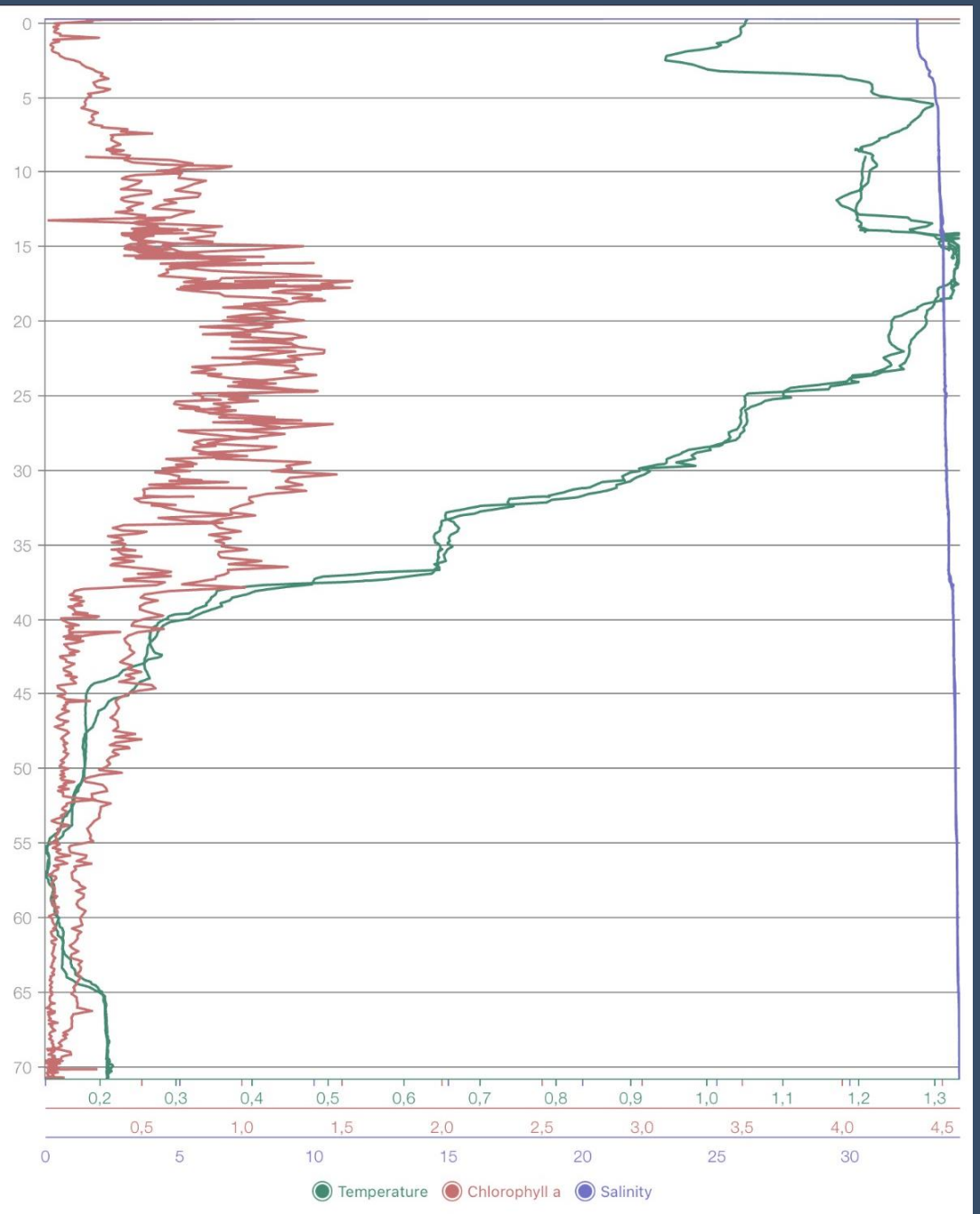
History & Culture: Antarctic Bases

Today, these bases stand as living museums and vital scientific research stations, serving a dual purpose that bridges the past and present. As historical witnesses, they preserve the material culture of early Antarctic occupation: original buildings, equipment, and artefacts that tell the story of human perseverance in Earth's harshest environment. The data collected at these stations contributes to our understanding of global environmental systems, from ozone depletion to ice sheet dynamics.

The image on the right shows the Stonington Island base where the first women, Jackie Ronne and Jenny Darlington overwintered in Antarctica in 1947.

Science Boat

During our voyage we conducted plankton sampling techniques focusing on the abundance and type of plankton in the waters we sailed through. The samples and data which you recorded provided invaluable data for the FjordPhyto and Secchi Disk projects, monitoring plankton abundance and species in the Antarctic Peninsula. During the science boat sessions we used a CTD to create a physical profile of the water column, took measurements of turbidity to estimate phytoplankton abundance, and then deployed a plankton net to collect samples.



Science Boat: Hovgaard Island CTD Data

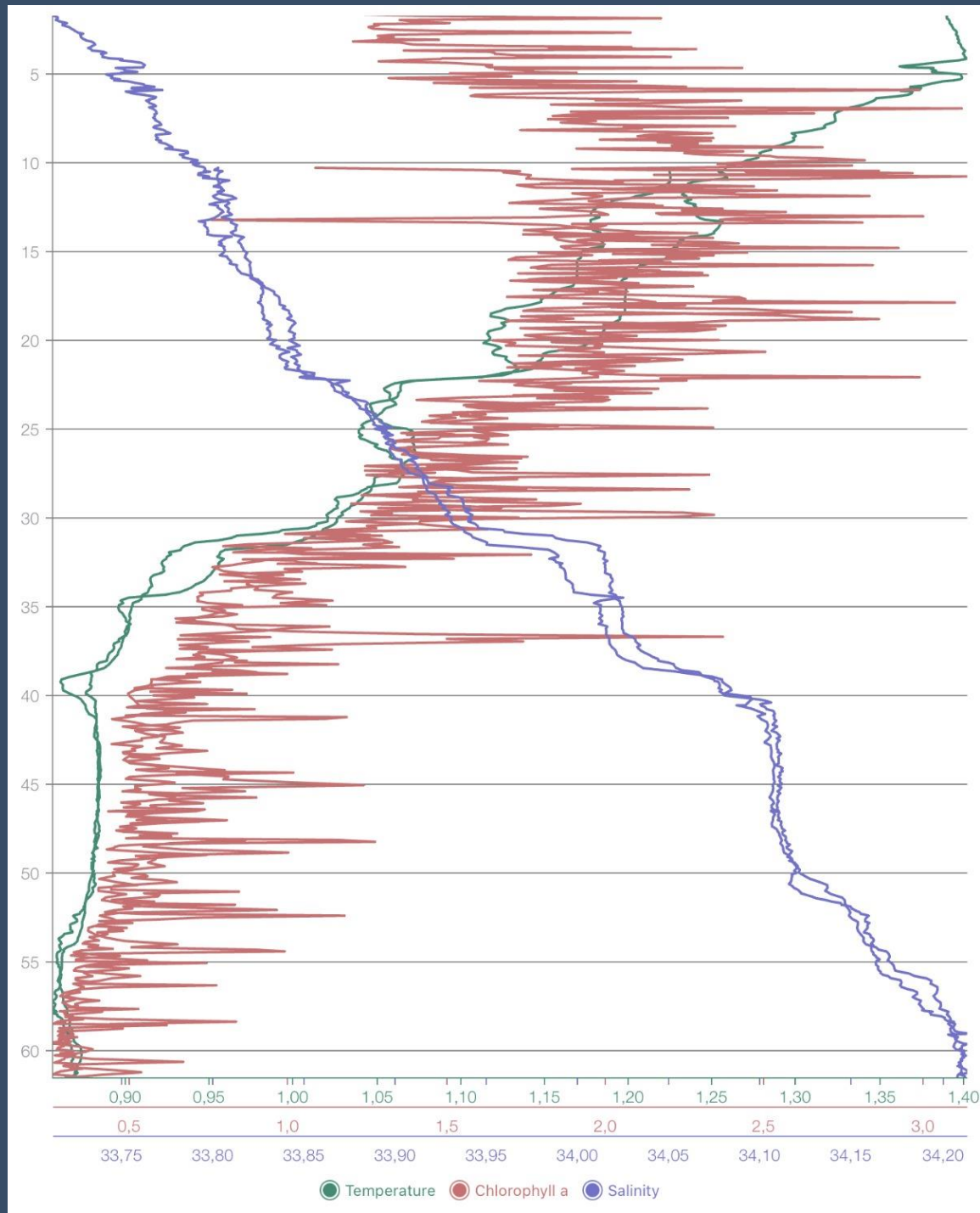
Our CTD casts gave us insight into how salinity, temperature, and chlorophyll changes with depth. Here we deployed the CTD to just over 70m. As we would expect, salinity increases with depth (from 32 PSU at the surface to approximately 33.5 PSU at 70m. Temperature, however, was at ~1°C at the surface, then increased to 1.3°C at 15m, before decreasing to 0.2°C at 40m and remaining constant until 70m. Chlorophyll – the photosynthetic pigments in phytoplankton – measurements give us information on phytoplankton abundance. Usually, more chlorophyll is detected in the first 30m of depth, where sunlight is able to penetrate. At Hovgaard Island we detected a peak between 15–30m depth of approx. 1.5ug/l.

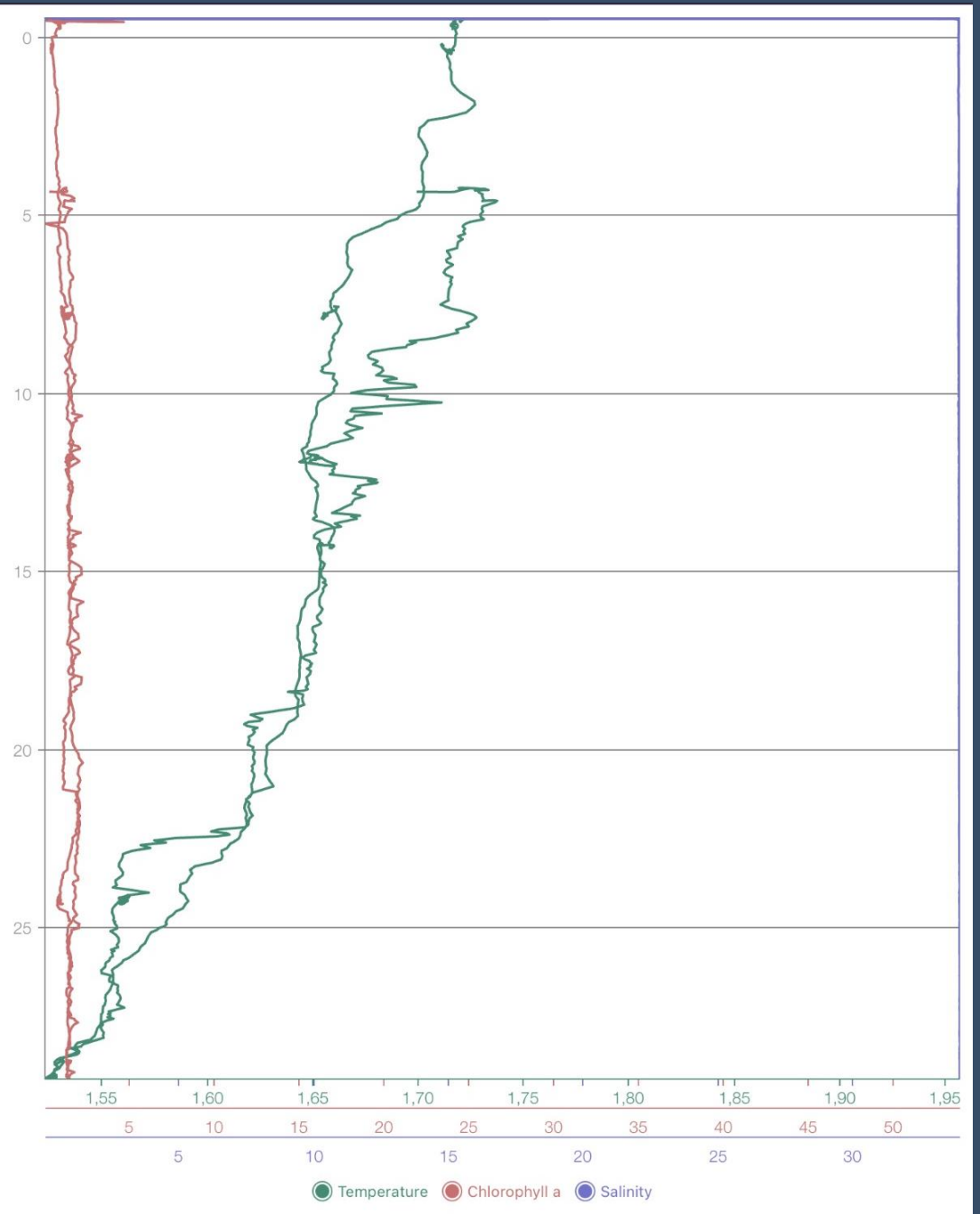
Overall, this CTD cast shows a typical Antarctic summer profile. Glacial melt creates a stable freshwater lens at the surface and just below, nutrients are richer, creating a deep chlorophyll maximum with most phytoplankton around 20m in depth, before we reach the cold, darker deeper waters.

Science Boat: Port Lockroy CTD Data

Here our CTD cast showed:

- **Temperature (green)** a steady decrease from ~1.4°C at the surface to 0.9°C at 40m, after which, temperature remains constant until 65m. **Salinity (blue)** increases from ~33.75 PSU at the surface to 34.2 PSU at 65m. This pattern suggests fresher water at the surface (likely from ice melt or runoff) and saltier, denser water at depth.
- **Chlorophyll (red)** is at its highest concentration between 0–25m of 3ug/l, suggesting a late summer phytoplankton bloom. Below 30m, values drop off. In contrast to Hovgaard Island, this surface chlorophyll maximum often happened close to glaciers, where meltwater stabilises the surface, and nutrients are resupplied continuously by melting ice.





Science Boat: Telefon Bay CTD Data

Here our CTD cast showed:

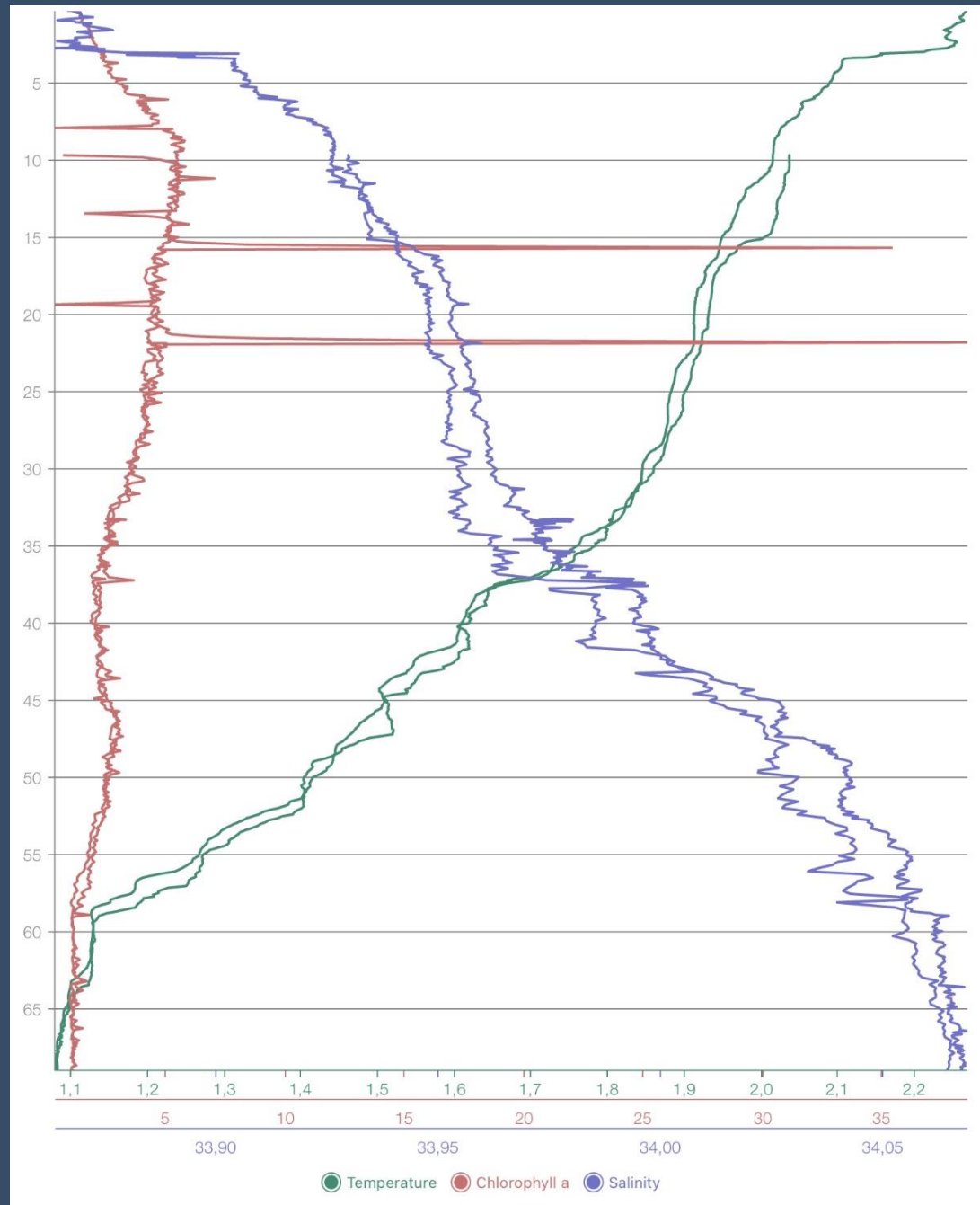
- **Temperature (green)** a fairly constant 'warm' temperature from 0–30m of around 1.7°C.
- **Salinity (blue)** is also constant at 34 PSU.
- **Chlorophyll (red)** is also constant between 5–30m with around 1.5–2ug/l.

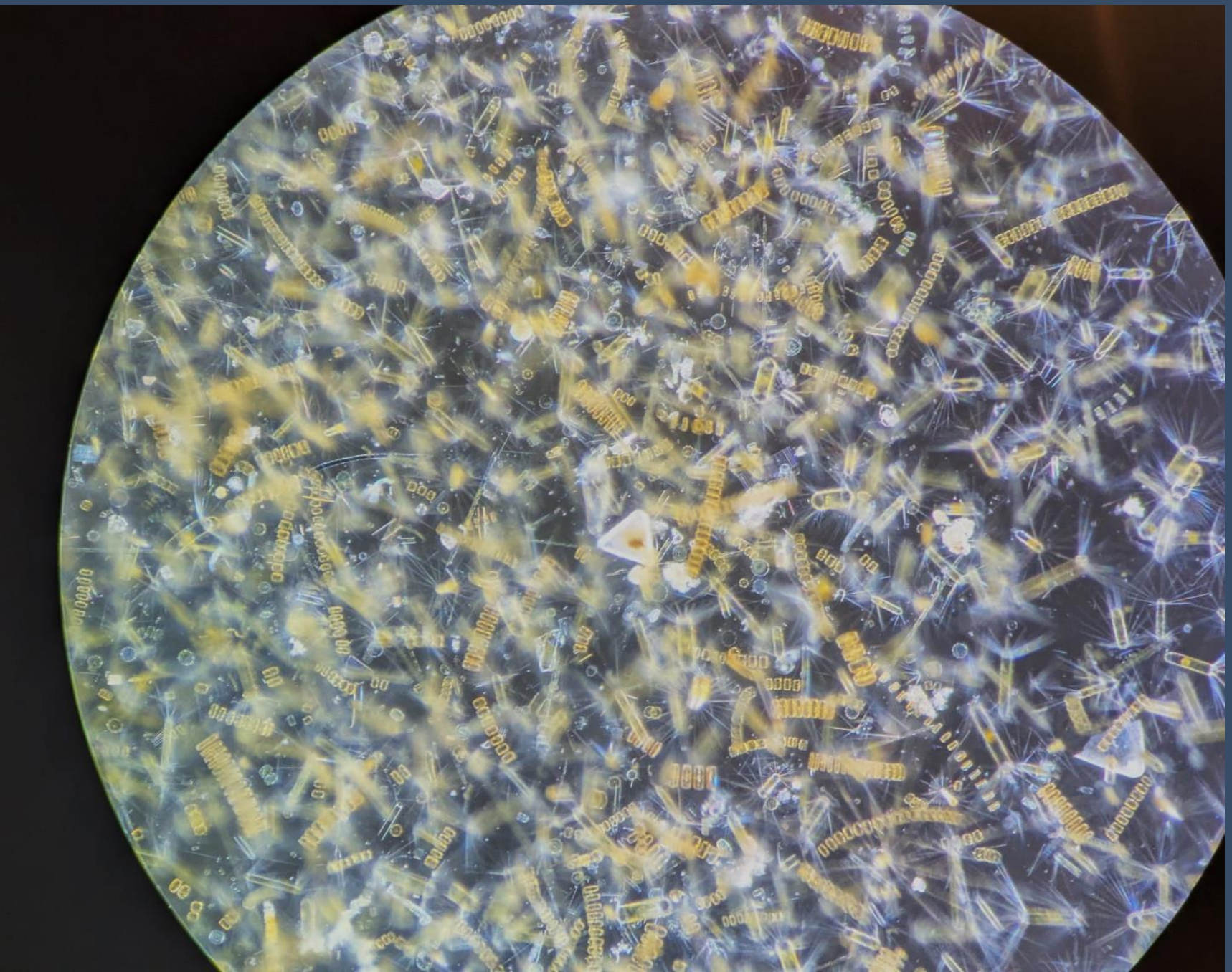
Telefon Bay in Deception Island shows the warmest cast so far, which could be explained by the water being in a sheltered, enclosed caldera, solar heating, or possible geothermal input. The high salinity and lack of stratification may also be due to limited glacial melt input and less freshwater influence. Finally, the chlorophyll profile shows no distinct chlorophyll peak and suggests a lack of phytoplankton bloom at this time.

Science Boat: Whalers Bay CTD Data

Here our CTD cast showed:

- **Temperature (green)** a warm surface temperature of 2.3°C which steadily decreased to 1.1°C at 70m.
- **Salinity (blue)** increased from ~33.8 PSU at the surface to 34.1 PSU at 70m. The distinct temperature and salinity profiles show that as Whalers Bay sits near Neptune's Bellows, there is more dynamic mixing near the caldera opening to the Bransfield Strait and therefore greater exchange with external waters.
- **Chlorophyll (red)** Similar to Telefon Bay, chlorophyll is not particularly high (around 1.5-2 ug/l) suggesting some nutrient exchange and phytoplankton, but not as much as glacial meltwater-driven blooms in the western Antarctic peninsula.





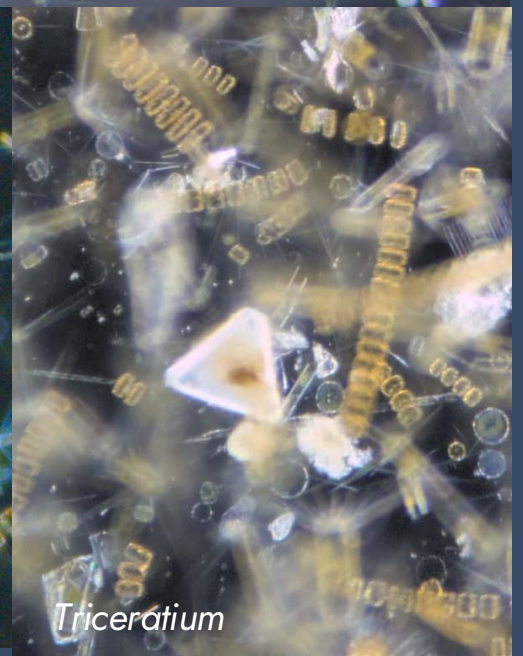
Plankton Samples

Plankton are ocean drifters transported by currents and tides, and lack the ability to navigate against these natural forces. Animals (zooplankton) and plant-like algae (phytoplankton) play a key role in supporting the marine food web and health of our oceans.

The image on the left shows a plankton sample from Port Lockroy, showing a large amount of phytoplankton!

Mixed diatoms: *Fragilaria*, *Skeletonema*, and *Coscinodiscus*

Corethon and *Thalassiosira*



Triceratium

Phytoplankton

Phytoplankton underpin the Antarctic marine food web as they, like plants on land, contain photosynthetic pigments (chlorophyll and fucoxanthin) that convert sunlight into energy and oxygen, and also sequesters carbon dioxide.

We collected phytoplankton samples at The Gullet, Bongrain Point, Pleneau Island, Hovgaard Island, Port Lockroy, Neko Harbour, and both Telefon and Whalers Bay in Deception Island. In some of our samples (top photo), red snow algae (watermelon snow) could also be seen. However, the prominent species we found was *Corethron pennatum*, a favourite food of krill and arguably the most important (and beautiful) Antarctic species.

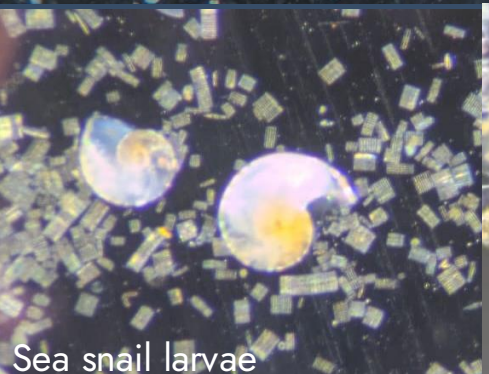
We collected data on the abundance and type of phytoplankton present for our partner project, FjordPhyto.

Zooplankton

We also found a selection of zooplankton species including sea star larvae in The Gullet, copepods in Bongrain Point, George VI Sound, and Port Lockroy, an unidentified crustacean larvae (possibly krill, tintinnids in Deception Island, sea snail larvae in Pleneau, and even rare bryzoans in George VI Sound, whose identities are still being debated by experts! The photos taken on our microscopes have also been added to our iNaturalist projec to help monitor plankton biodiversity.

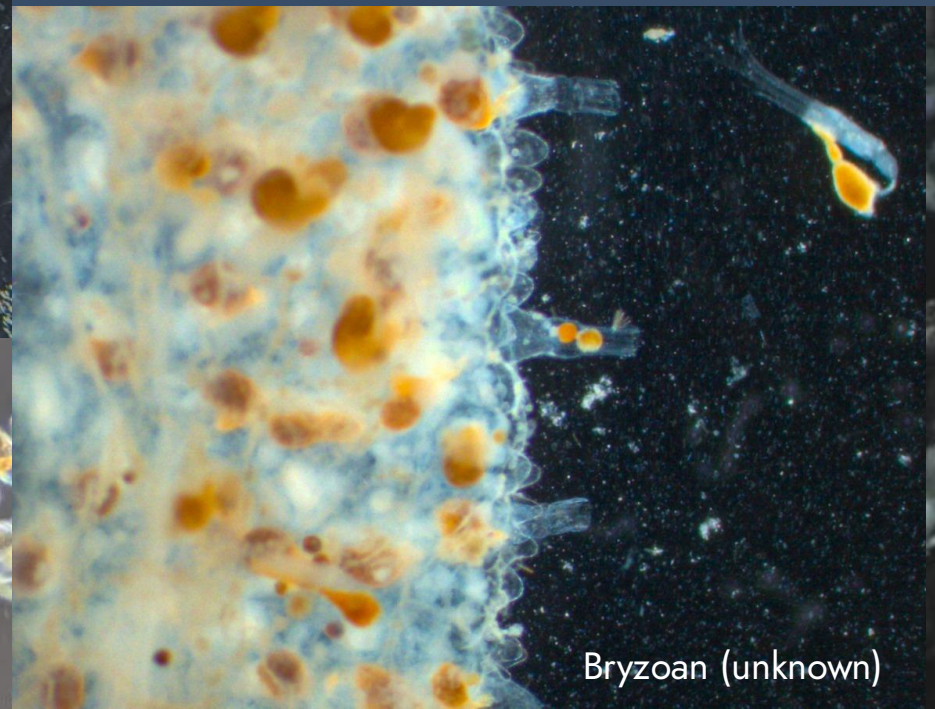
Possible krill larvae

Calanoid Copepod



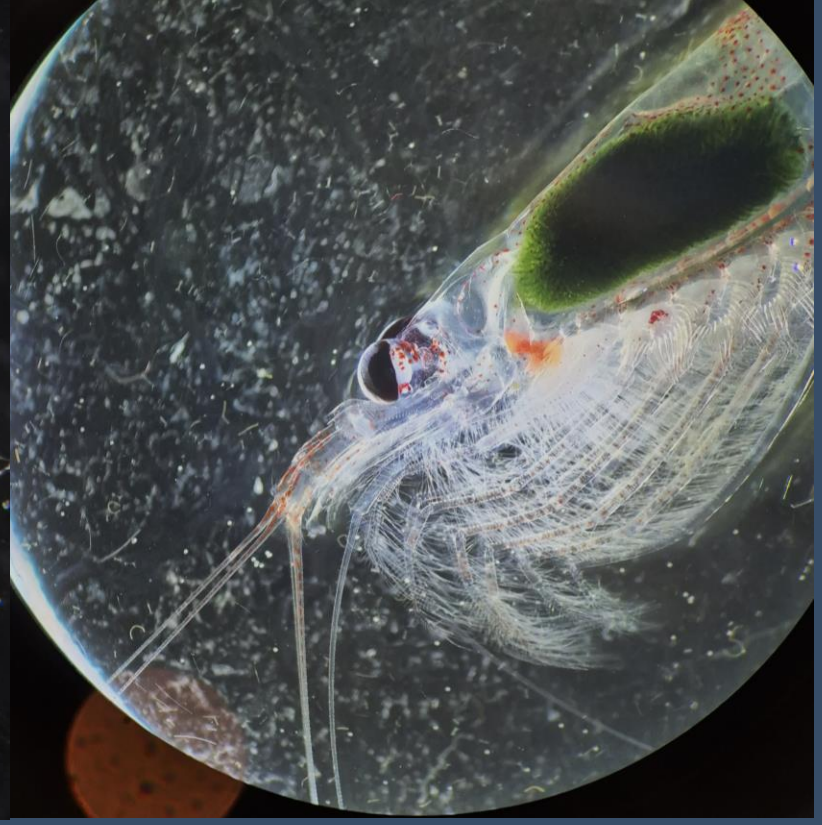
Sea snail larvae

Tintinnid



Bryzoan (unknown)

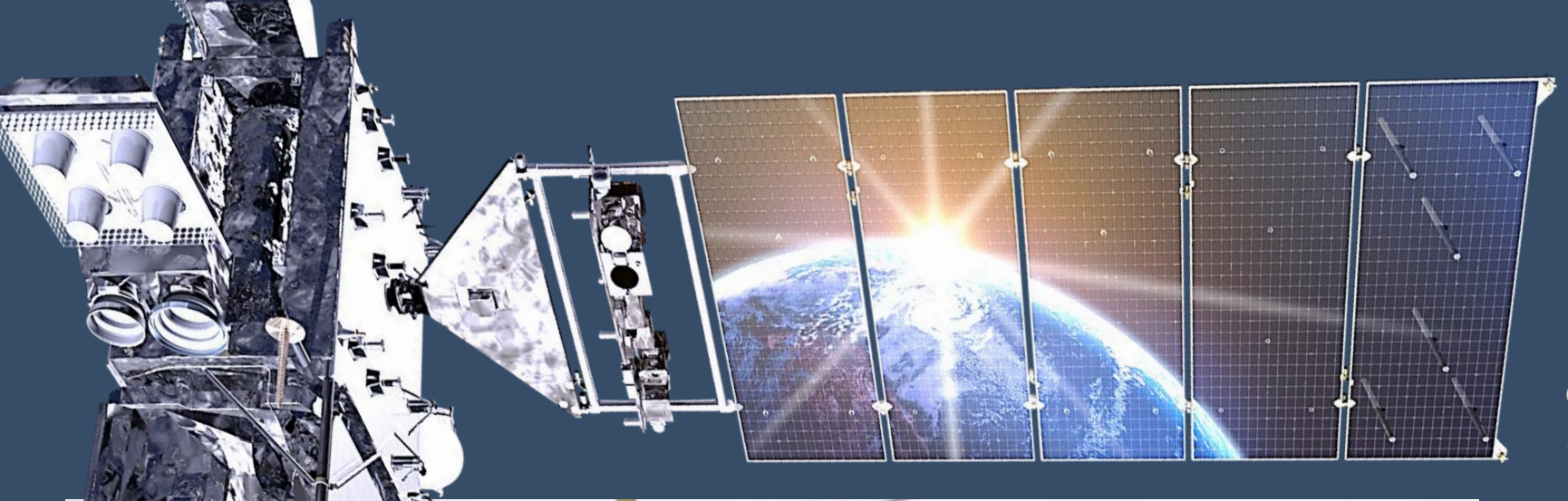
Sea star larvae



Zooplankton: Krill

Antarctic krill are small, free-swimming crustacean found around the Southern Ocean and are a vital food source for penguins, whales (including humpback and minke), seals, and seabirds. Current estimates put krill biomass at almost 380 million tonnes, 70% of which lives around the Antarctic Peninsula. In 2025, half a million tonnes of krill was collected for human use, mainly by Norway, China, South Korea, and Chile.

The red pigment, which we noticed in the krill found in plankton net trawls in Neko Harbour and Pleneau Island, is caused by astaxanthin, a type of carotenoid which also gives salmon and flamingos their pink/red coloration. This pigment also helps protect cells from oxidative stress in cold Antarctic waters and provides photoprotection from UV rays.



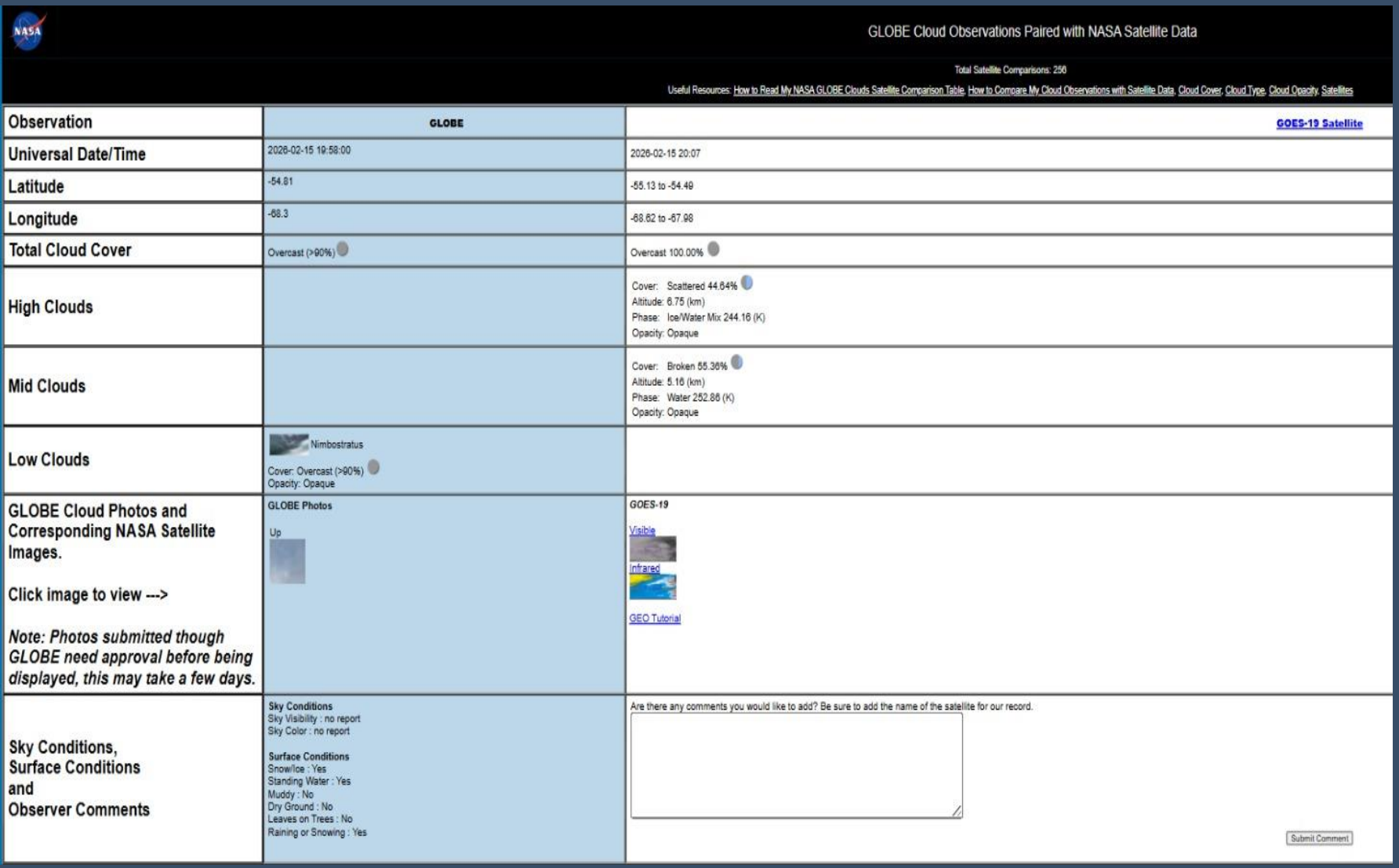
Citizen Science

NASA Cloud Observer

Clouds aren't just shapes in the sky; they are important components of Earth's heat budget and balance. Information about when, where, and what types of clouds are forming helps scientists understand more about Earth's climate and climate change. Through NASA's GLOBE Cloud Observer program, we help contribute such data.

Our Citizen Scientists **submitted *5* observations** to the global database run by NASA. Our observations might be matched to data from weather satellites orbiting above and will be used to better understand global weather phenomena.

NASA Cloud Observer: 15 February, Port Lockroy



GLOBE Cloud Observations Paired with NASA Satellite Data

Total Satellite Comparisons: 256

Useful Resources: How to Read My NASA GLOBE Clouds Satellite Comparison Table, How to Compare My Cloud Observations with Satellite Data, Cloud Cover, Cloud Type, Cloud Opacity, Satellites

Observation	GLOBE	GOES-19 Satellite
Universal Date/Time	2026-02-15 19:58:00	2026-02-15 20:07
Latitude	-54.81	-55.13 to -54.49
Longitude	-68.3	-68.82 to -67.98
Total Cloud Cover	Overcast (>90%)	Overcast 100.00%
High Clouds		Cover: Scattered 44.64% Altitude: 6.75 (km) Phase: Ice/Water Mix 244.16 (K) Opacity: Opaque
Mid Clouds		Cover: Broken 55.36% Altitude: 5.16 (km) Phase: Water 252.86 (K) Opacity: Opaque
Low Clouds	Nimbostratus Cover: Overcast (>90%) Opacity: Opaque	
GLOBE Cloud Photos and Corresponding NASA Satellite Images. Click image to view --> *Note: Photos submitted though GLOBE need approval before being displayed, this may take a few days.*	GLOBE Photos Up	GOES-19 Visible Infrared GEO Tutorial
Sky Conditions, Surface Conditions and Observer Comments	**Sky Conditions** Sky Visibility : no report Sky Color : no report **Surface Conditions** Snow/Ice : Yes Standing Water : Yes Muddy : No Dry Ground : No Leaves on Trees : No Raining or Snowing : Yes	Are there any comments you would like to add? Be sure to add the name of the satellite for our record. Submit Comment

Our satellite observation received a reply from NASA matching our observation with satellite data.

The chart to the left compares our data (blue) and the GEO-19 satellite (white). This nicely illustrates how we can provide different perspectives to satellites as we can observe low level clouds, whereas satellites can more accurately detect high and mid level clouds.

The Malachite Veins of Horseshoe Island

We know malachite as a beautiful, stark green mineral, often used as gemstone. So how come it looks like toothpaste smeared onto the rocks here?

The bedrock of Horseshoe Island is dominated by gabbro, which is a dark intrusive rock that cooled slowly from magma deep within the Earth. The contraction during the cooling developed fractures which were subsequently filled by hot mineral-rich fluids from the deep-down magma body. These fluids brought copper with it, which reacted with oxygen and carbon dioxide to the malachite, but due to rapid precipitation there was no time to form visible crystals, so the copper-carbonate-hydroxide (=malachite) remained gelatinous. Horseshoe Island is among the finest sites to find it that way.

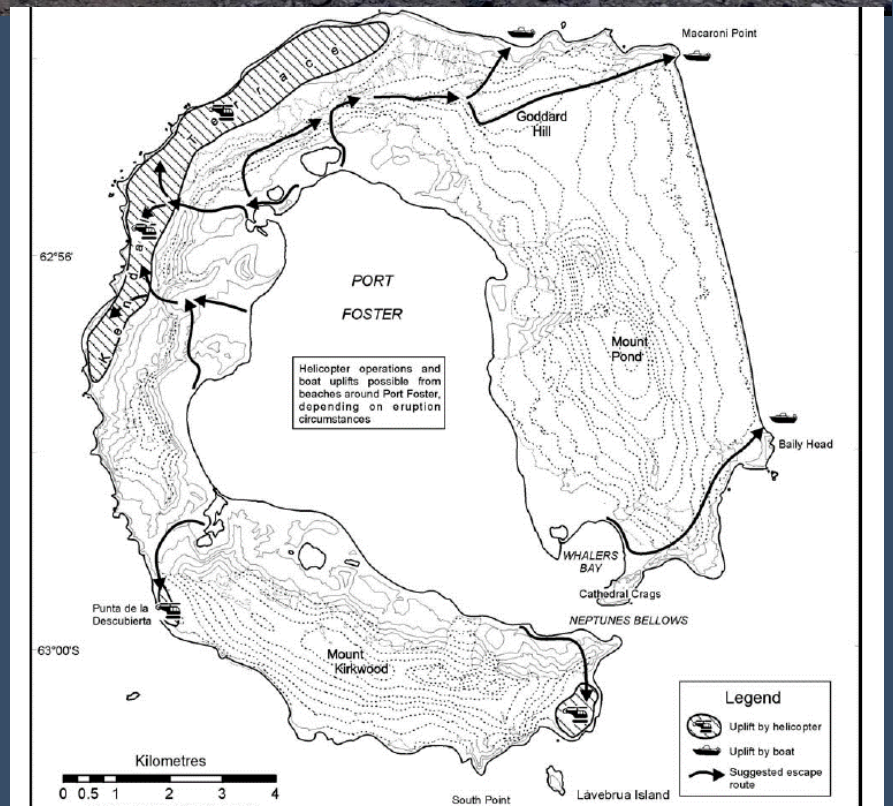
Geological Highlight: Deception Island

In the middle of the southwest part of the Bransfield Strait we had the chance to see what is probably the most unusual volcano in the world: Deception Island is (a) an active volcano, proving it constantly, (b) navigable: When the 3000m-high volcano collapsed about 10.000 years ago it left a large rocky ring behind, a caldera. The ocean entered it through the infamous Neptune's Bellow, thus creating Port Foster, a 9.5 x 7 km wide lake, allowing ships to sail in and out. (c) One of the two active volcanoes in Antarctica. Simple rule of thumb: Everything that *looks* like a crater on Deception Island, *is* in fact a crater.

Here, in Telefon Bay, we even had the chance to hike on the crater's rim.

The geology of the island is so dynamic that there even is an evacuation plan for the island, just in case…

When do we expect that to happen? That's the million-dollar question!



Citizen Science
ORCA

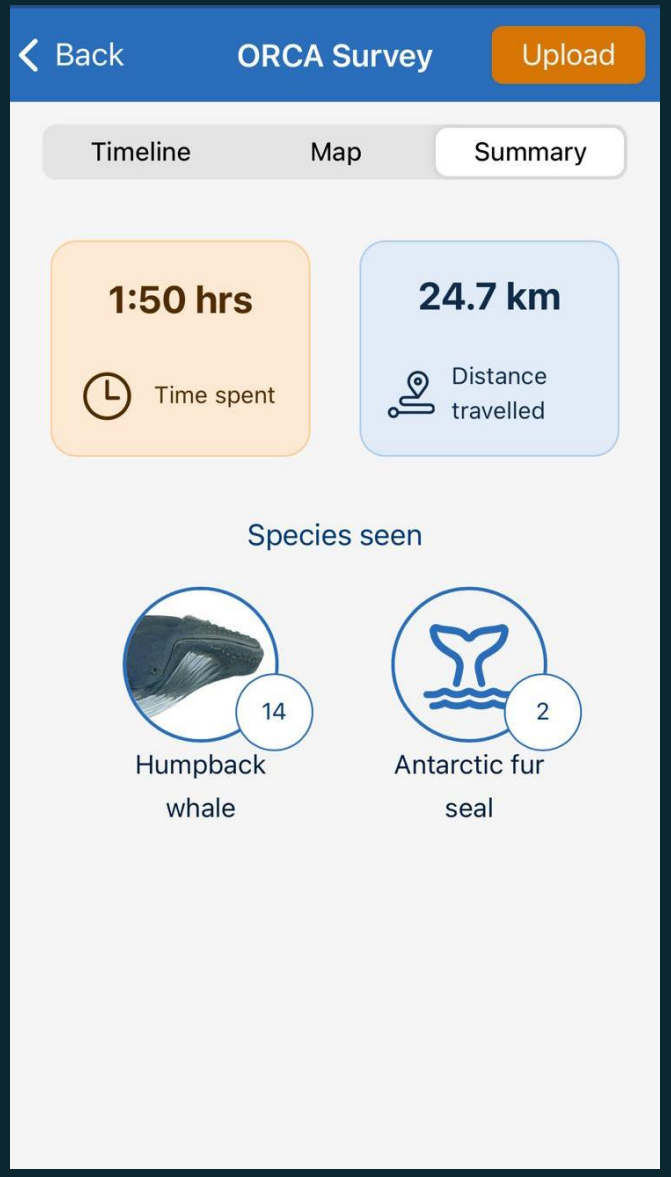
While on your journey to Antarctica and back you were joined by ORCA Ocean Conservationist, Saffron, who was collecting data during wildlife watches on whales, dolphins and porpoises. This data was sent back to ORCA and made available for many organisations interested in cetacean conservation. It will also be made available on the ORCA website interactive map for anyone who wishes to get an overview of what species you might find where.

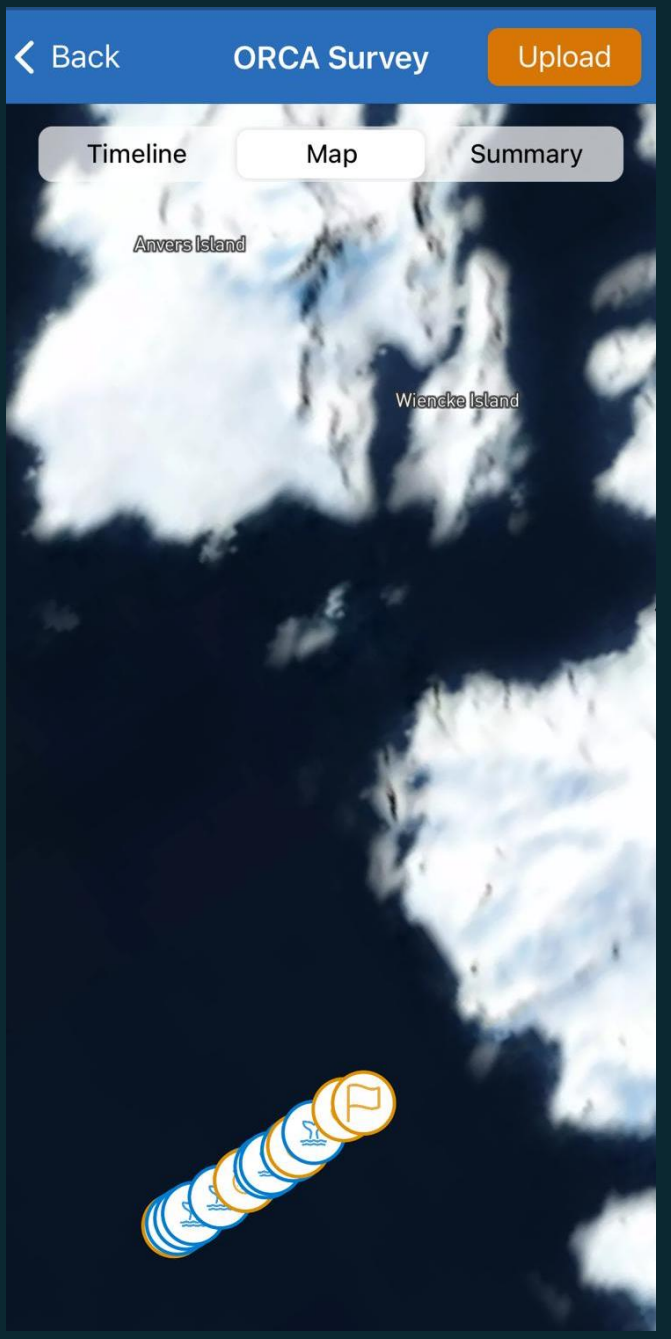
ORCA: OceanWatcher Survey

On this journey, a total of 26 hours and 22 minutes of data was collected, spanning over 501.2 km.

A huge thank you to everyone that came out and joined the Naturalists for the wildlife watches in the sun and snow. There might not have always been sightings, but it was fun making pictures out of the icebergs with you when there were no cetaceans!

Throughout the journey, 5 species of cetaceans were observed, but only 3 species were recorded while surveying. (Unfortunately, Saffron was not surveying when the Antarctic minke whales and orcas were seen!) A total of 117 cetaceans (plus another 14 cetaceans that were not identified to species level).





What Species Did We See?

Species Name	Number of Individuals Seen
Humpback whales	112
Fin whales	4
Unidentified whales	14
Hourglass dolphin	1

eBird

AMANT2518 - Antarctic Circle

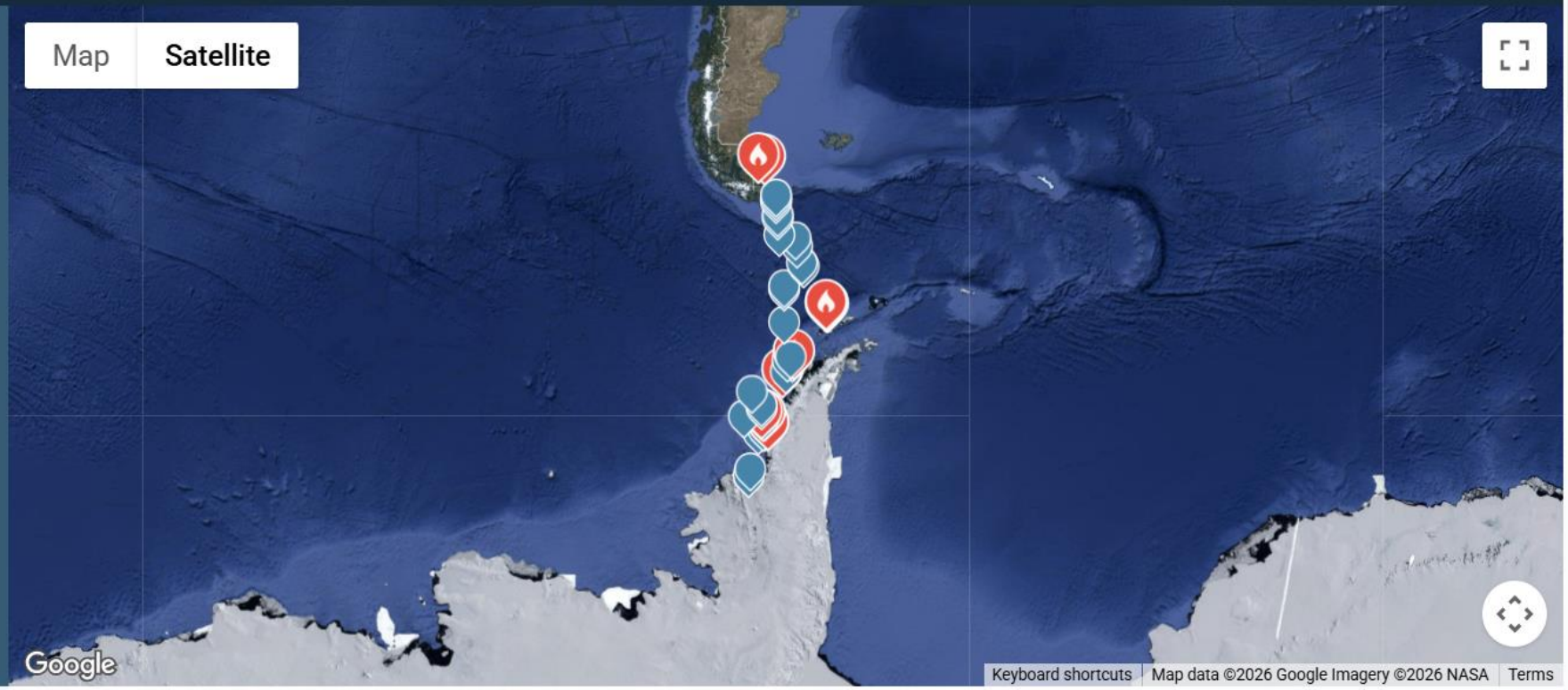
3 – 18 Feb 2026 (16 days) Link-only

Antarctica | Argentina | Chile | High Seas

Subregions

M/S Roald Amundsen Science Center, Christopher Jones, Bernardo Alps

Share Edit



Narrative

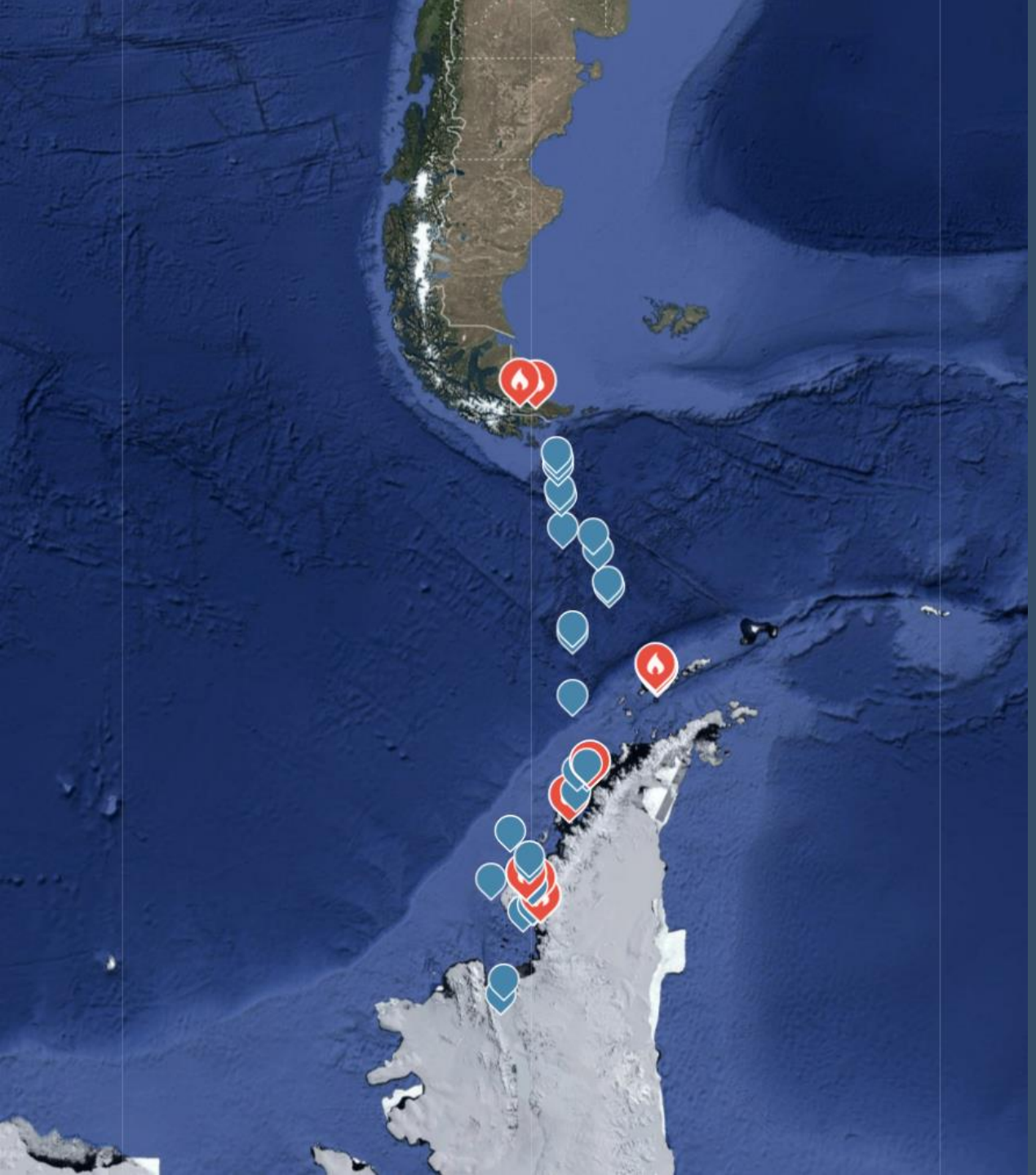
Owners and editors of a Trip Report may write a narrative.

Add narrative

DATA FOR: Group (all people)

34
Species Observed
+7 other taxa

54
Checklists

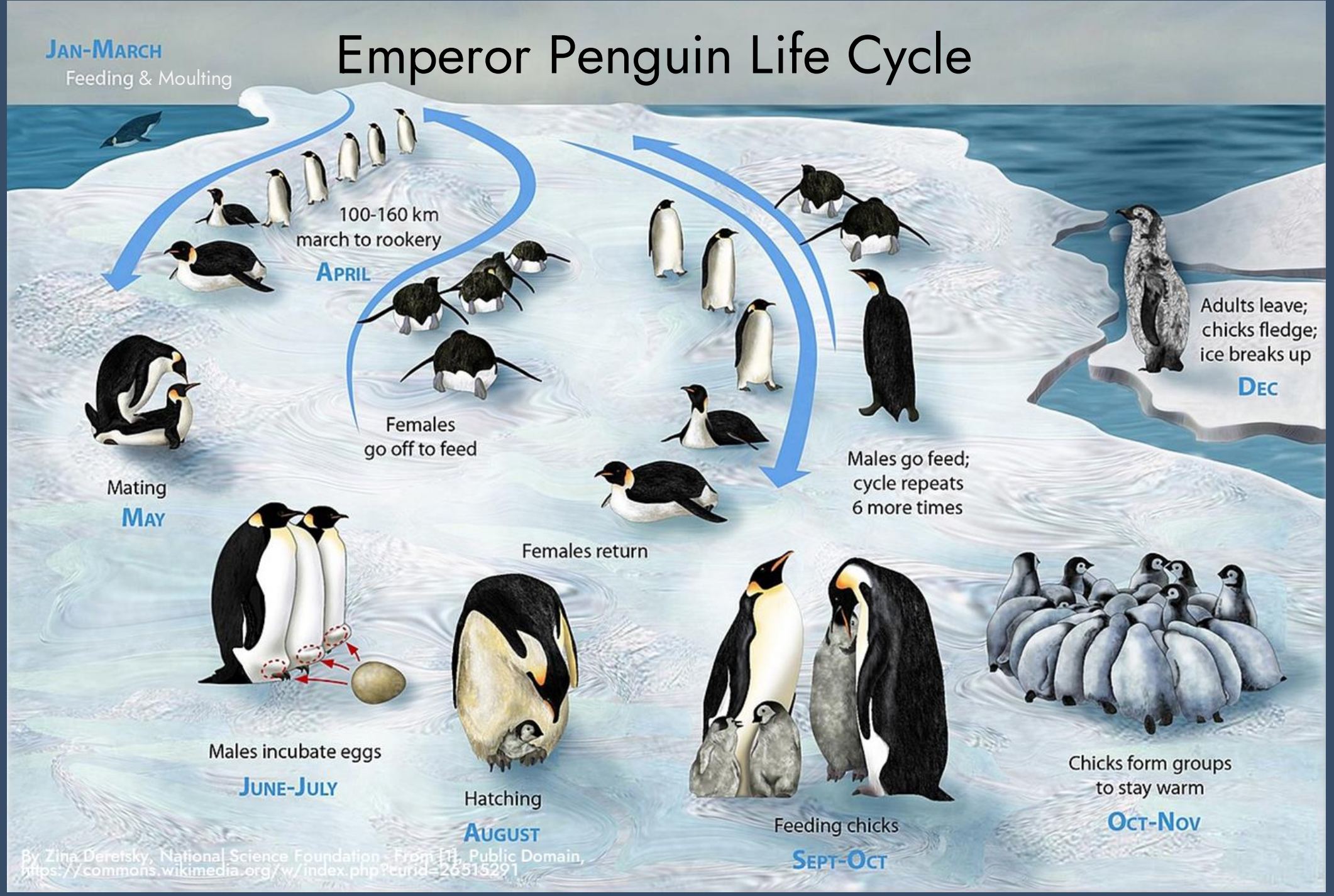


- All together, we saw **34** bird species on the voyage
- **3** of these are found only in Antarctica –

  Snow petrels, Adélie and emperor penguins
- We logged **54** eBird sessions
- These records are now available for scientists around the world studying bird distribution, migration, and habitat use

Emperor Penguin

Emperor Penguin Life Cycle



Citizen Science
iNaturalist

During our voyage we had the chance to explore many different ecosystems: from the lush Tierra del Fuego and Beagle Channel, to the windy Drake Passage and the icy paradise of Antarctica, we observed a huge variety of phytoplankton, marine invertebrates, birds, and mammals.

In total we recorded:

- **126** Species
- **846** Observations

… and counting; as you upload more photos from home our datatset grows!

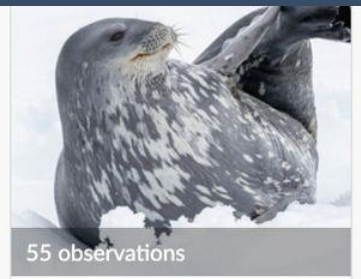
Through iNaturalist, these observations can now be used as data in global scientific research.

Thank you for joining the project and contributing to this amazing Citizen Science platform.

View our data submitted on our iNaturalist project here:
2026 03 - 19 Feb: MS Roald Amundsen Antarctic Circle Voyage · iNaturalist

Where Have We Observed?

What Have We Observed?



Weddell Seal
Leptonychotes weddellii

Humpback Whale
Megaptera novaeangliae

Adelie Penguin
Pygoscelis adeliae

Crabeater Seal
Lobodon carcinophaga

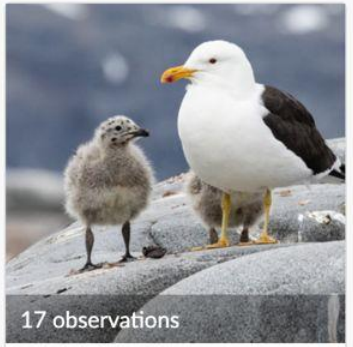
Imperial Shag
Leucocarbo atriceps

Antarctic Tern
Sterna vittata

South Polar Skua
Stercorarius maccormicki

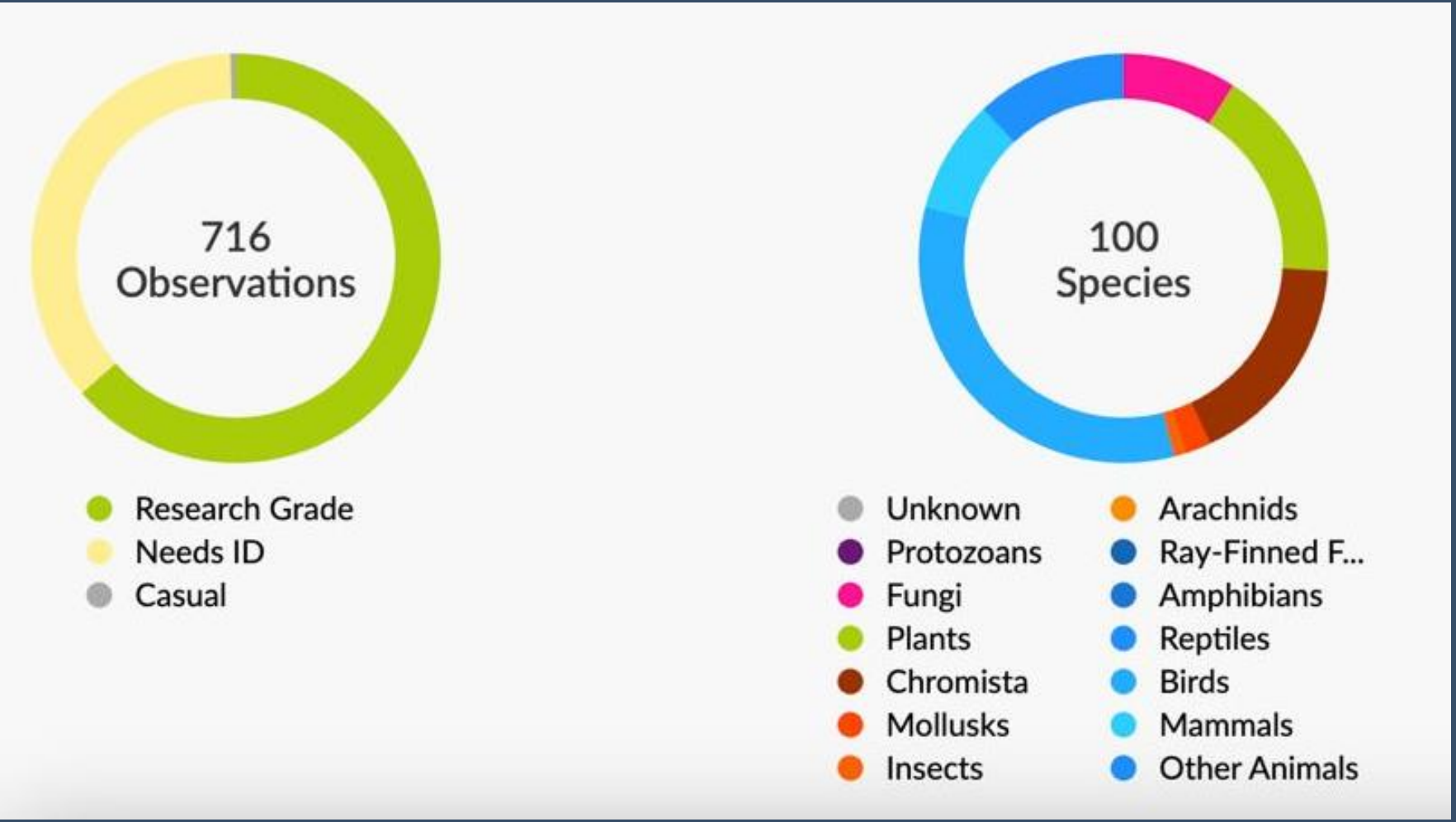
Gentoo Penguin
Pygoscelis papua

Southern Fulmar
Fulmarus glacialoides



Kelp Gull
Larus dominicanus

What Have We Observed?



Species

- 33 birds
- 9 mammals (seals, whales)
- 9 fungi

- 63.5% are already research grade

Citizen Science
Happywhale

Cetaceans — whales, dolphins, and porpoises — capture our imaginations and our hearts whenever we witness them. And, doing something as simple as taking a photo of them can help scientists learn more about these animals. That's where Happywhale comes in: by using AI to match images of whales submitted by users, they can track individuals as they migrate across the world and through their lives. When you submit a photo of a whale, you will be notified of any past and future matches of that individual!

Our team and guests uploaded photo observations of 13 humpback whales, 6 Weddell seals, and 5 crabeater seals. Seven humpbacks were matched to past sightings of known individuals, and one was a new calf! Others we are still awaiting confirmation of any known or new IDs. Weddell seals with their unique spots and crabeater seals with their notable scars were also submitted for individual ID.

View the MS Roald Amundsen's submissions to Happywhale during our voyage

Humpback whale HW-MN1392996, seen 06.02.26, is now known as Humpback Hilly26 after a successful naming auction, raising €1,500 for Happywhale!

It's not too late to upload your own photos to Happywhale.com, from this trip or any other whale or seal sightings from decades ago! Historic submissions can help us to know how old some of the recently sighted animals may be.

[Unnamed]
ID : HW-MN1300464
SEX : Female
Humpback Whale

Sightings 2

First  2017-01-30 Antarctica

Last  2026-02-12 Antarctica

Followers 2 Follow

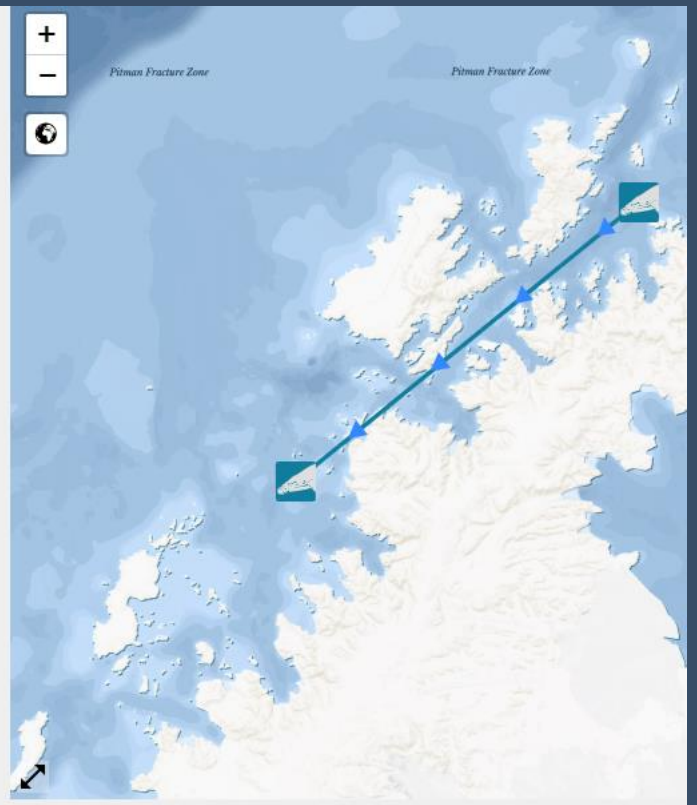
Seen this individual?

Share Your Experience

Show My Encounters Only

Bio

This whale is known as a female from observation with a calf on Feb 12th, 2026 in Antarctica according to Mark Shelton. Mother of **2025 calf of HW-MN1300464**.



One of our guests on board submitted their fluke photos for a mother and calf pair. The mother is now confirmed as female and was last seen only once back in 2017!

2025 calf of HW-MN1300464
ID : HW-MN1308752
SEX : Unknown
Humpback Whale

Sightings 1

First  2026-02-12 Antarctica

Last  2026-02-12 Antarctica

Followers 0 Follow

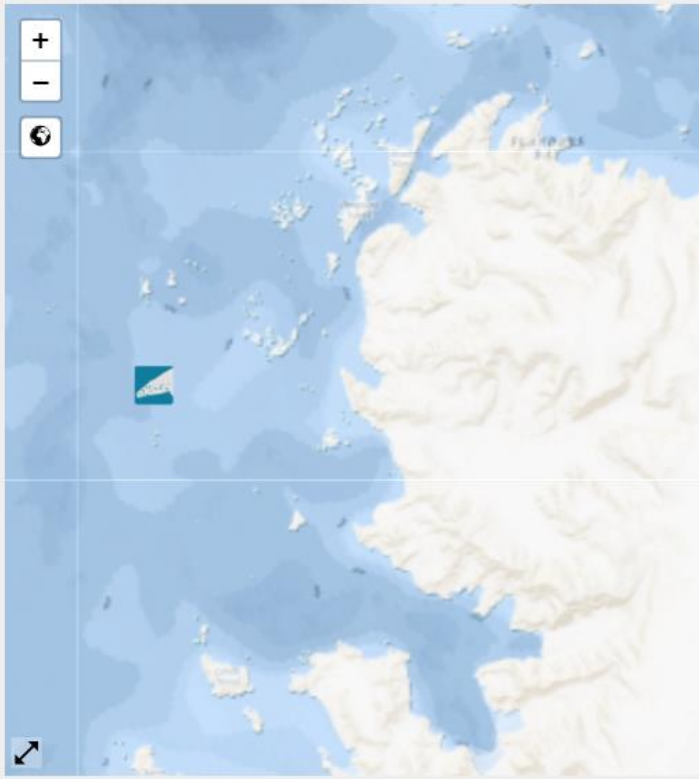
Seen this individual?

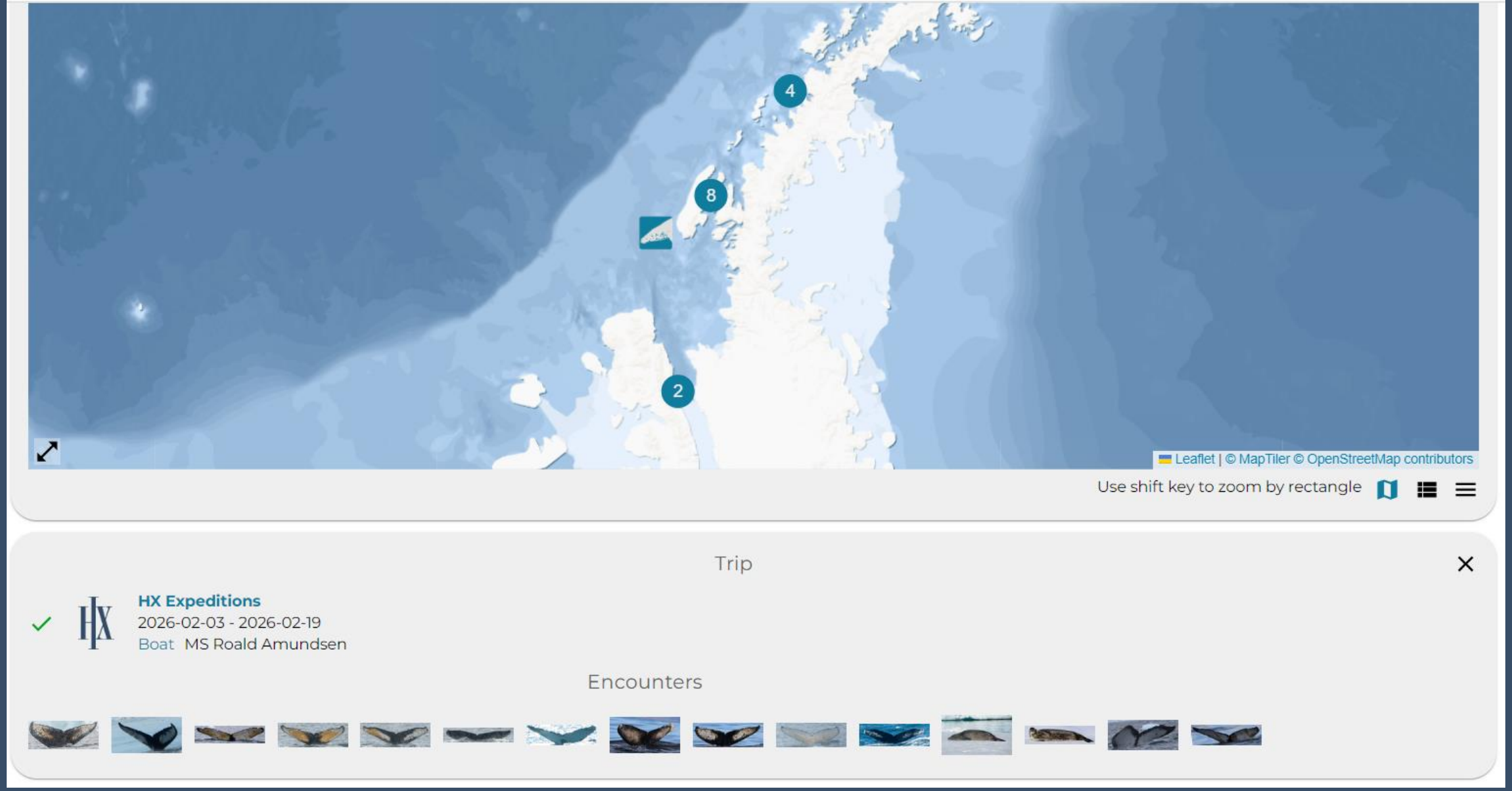
Share Your Experience

Show My Encounters Only

Bio

This is the 2025 calf of **HW-MN1300464** known from observation of mother and calf pair on Feb 12th, 2026 in Antarctica according to Mark Shelton.





You can also ‘follow’ the whales from our voyage to receive an email if they’re ever sighted again by signing into !

Guest Scientists and Lecturers:

Alex Stone – Filmmaker

California Ocean Alliance:

Natalia & Emily

FRIEDLAENDER LAB

Bio-Telemetry and Behavioral Ecology

- 22 unique humpback whales
- 15 (7) adults & juveniles
- 0 calves

- 5 unique minke whales
- 5 adults
- 0 calves

- 15 blubber & skin samples

Permits NMFS 27911 / ACA 2025-019


IX
Connect with your inner scientist!