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# Science & Education Report



# MS Roald Amundsen 05 – 15 December, 2024

Highlights of Antarctica Expedition





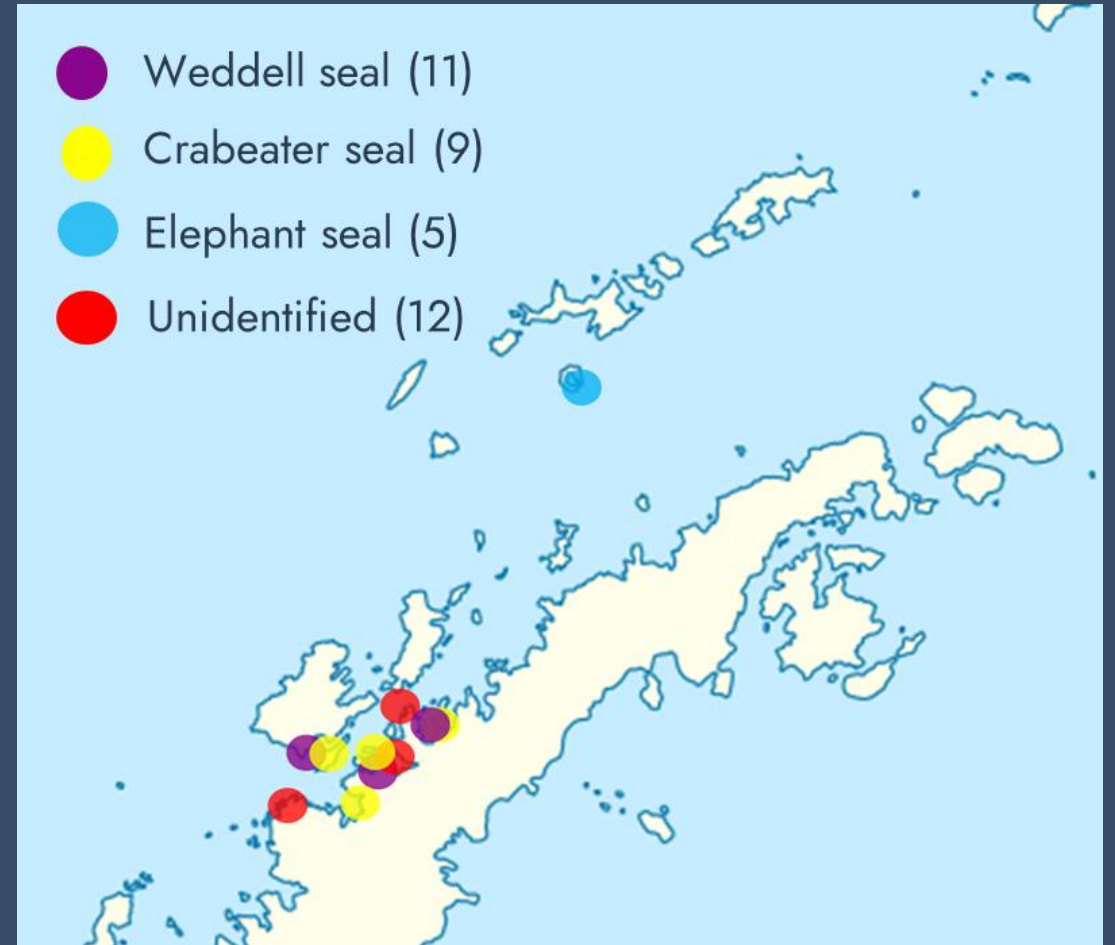
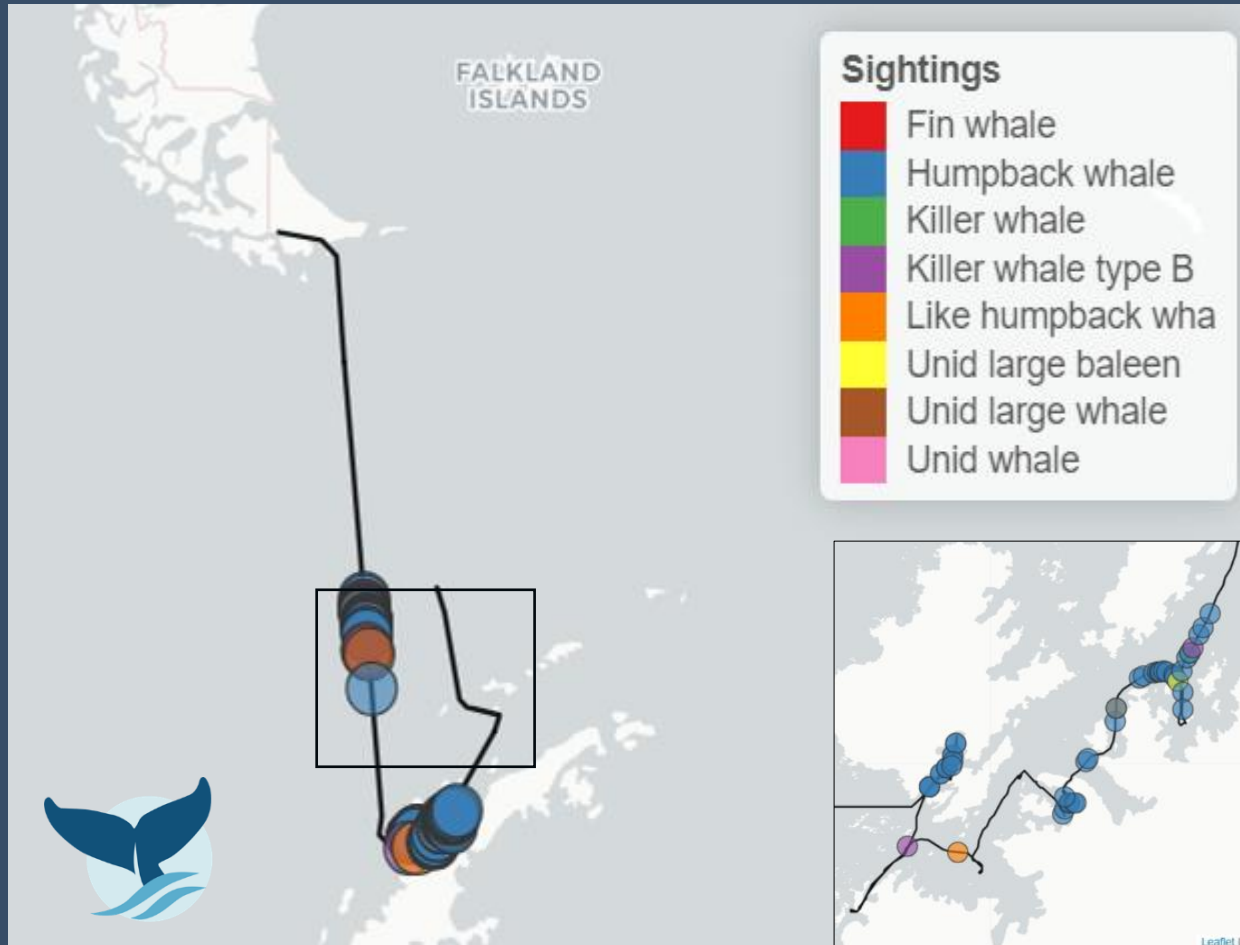
# Guest Scientists

We were fortunate to be joined on our voyage by our Guest Scientists Laura and Emilia with **Polar Whale Watch** and Sarah from the **Sea Ice Seals Project**, based out of the University of Tasmania. Working from the ship, Laura, Emilia, and Sarah collected data about the abundance of whales and seals during our time in the Southern Ocean. Whale observation data is used to ensure the continued recovery of Antarctic baleen whales by developing and delivering abundance estimates of krill to fishery managers. Seal sightings are recorded to further knowledge of seal behaviour and distribution in the Antarctic Peninsula.

[Visit our Science & Education Hub online](#) to find out more about our scientific collaborations with the University of Tasmania.



# Polar Whale Watch & Sea Ice Seals Project Results







# ORCA

Our partners at the whale and dolphin conservation charity ORCA are committed to conducting research that helps to identify important whale and dolphin habitats by using “platforms of opportunity” including expedition ships like the Roald Amundsen! Our onboard ORCA Conservationist, with the help of our guests, recorded vital sightings data across the course of our cruise that will help inform conservation decisions and policy in the future.

View more information about our partnership with ORCA here  
[ORCA | HX Hurtigruten Expeditions](#)

# History

A history of the 'Heroic Age' of Antarctic exploration was brought to life by our Historians, who also gave us insight into the Antarctic Treaty and its implications for the future of the continent.

In addition to our onboard education, we were able to witness the tangible evidence of human history in Antarctica, including the British hut at Damoy Point and the remains of the whaling station in Whalers Bay.







# Science & Education Program

Our onboard naturalists guided our guests through our expedition. We used scientific tools to investigate the world around us and saw many interesting fauna, flora, and phenomena!

We used science to observe and explore the places we visited both off and on the ship. From isolating DNA from fruit to getting up close to different types of ice, guests participated in a activities and workshops that gave us a deeper understanding and appreciation for the natural world around us.

On the next pages you can find some highlights of our onboard Science Program as well as our Citizen Science Program.



# Underwater Drone

We had the opportunity to deploy our underwater drone during our journey at the following sites:

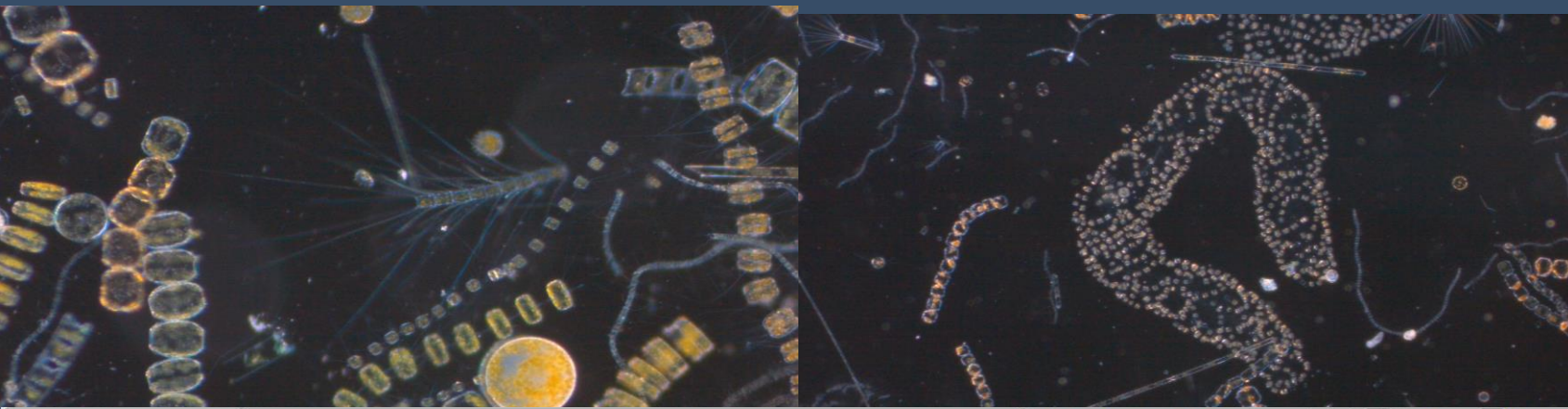
- Damoy Point
- Brown Station
- Wilhelmina Bay (sea ice)

We caught a glimpse of the Antarctic seafloor and its inhabitants, as well as a fascinating view of the marine world under the sea ice!

View the highlights from our underwater drone footage on HX Underwater Drone Footage [YouTube Channel](#)

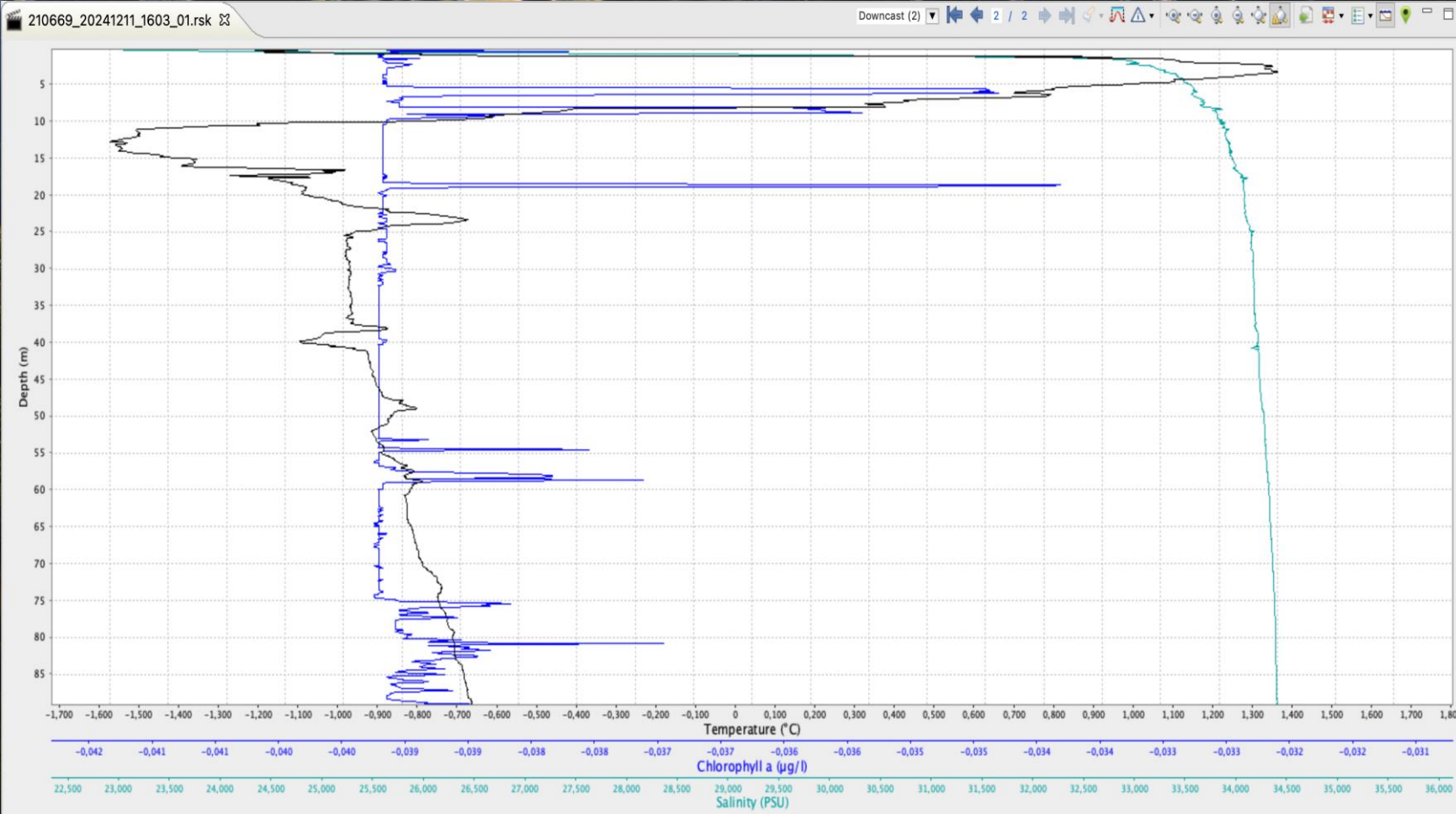






# Sampling the Sea Ice

This voyage provided a once in a lifetime opportunity for our science team on the MS Roald Amundsen to collect oceanographic samples from under Antarctic sea ice in Wilhelmina Bay! We were able to deploy a CTD to create a profile of the water column from the surface to 90m and a plankton net to collect a sample of the organisms living under the ice, as seen to the left. We also deployed our underwater drone to capture footage.







# Science Boat

We investigated the underwater world during 6 Science Boat sessions exploring the following locations:

- Damoy Point, Antarctica
- Flandres Bay, Antarctica
- Paradise Bay, Antarctica

We observed and discussed the wildlife and geology in each location to better understand the area's ecology.

We deployed a plankton net to collect phytoplankton and zooplankton, used a CTD to create a physical profile of the water column, and took measurements of turbidity to submit to two Citizen Science projects: the Secchi Disk Project and FjordPhyto.

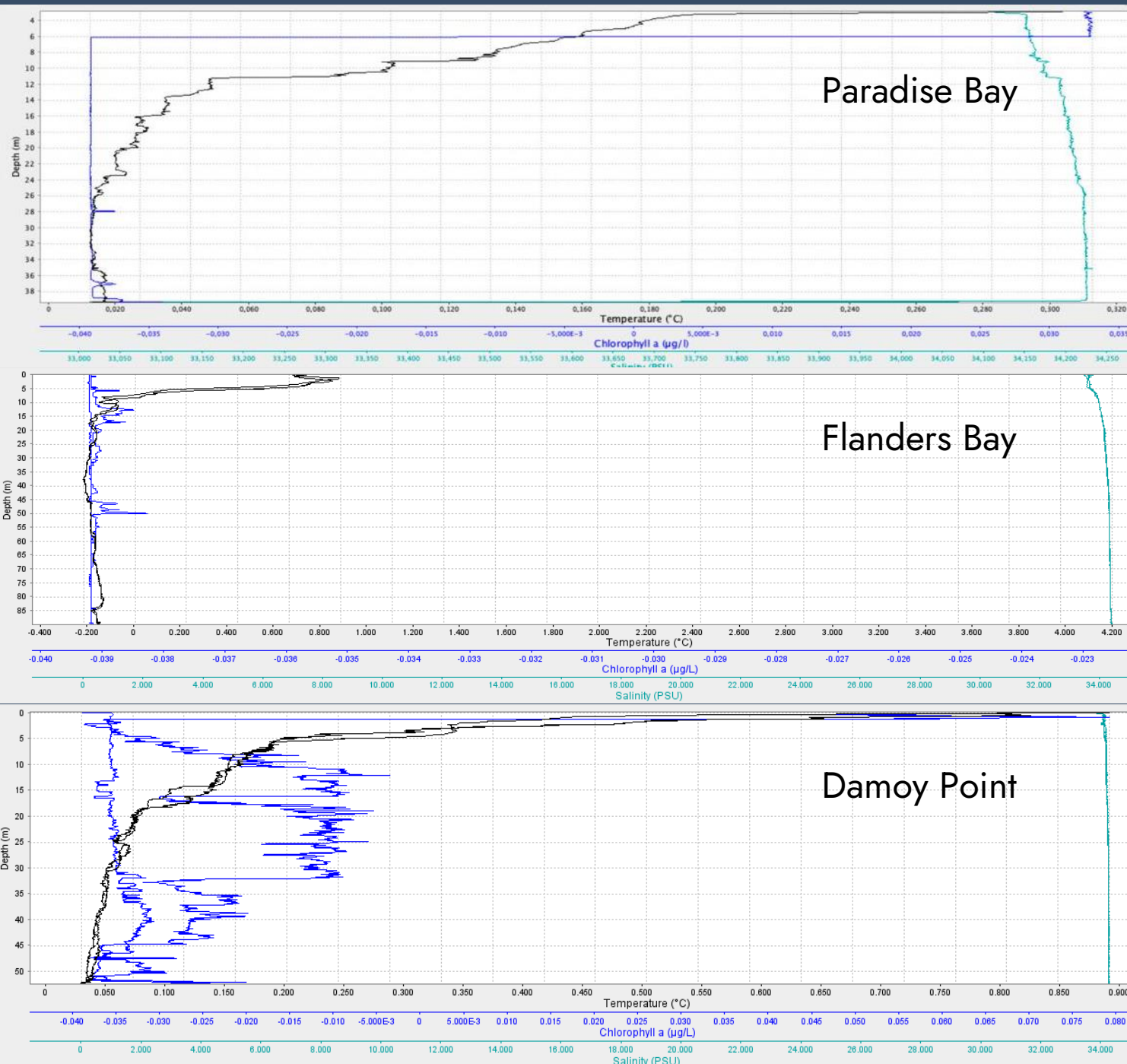


# CTD Profiles

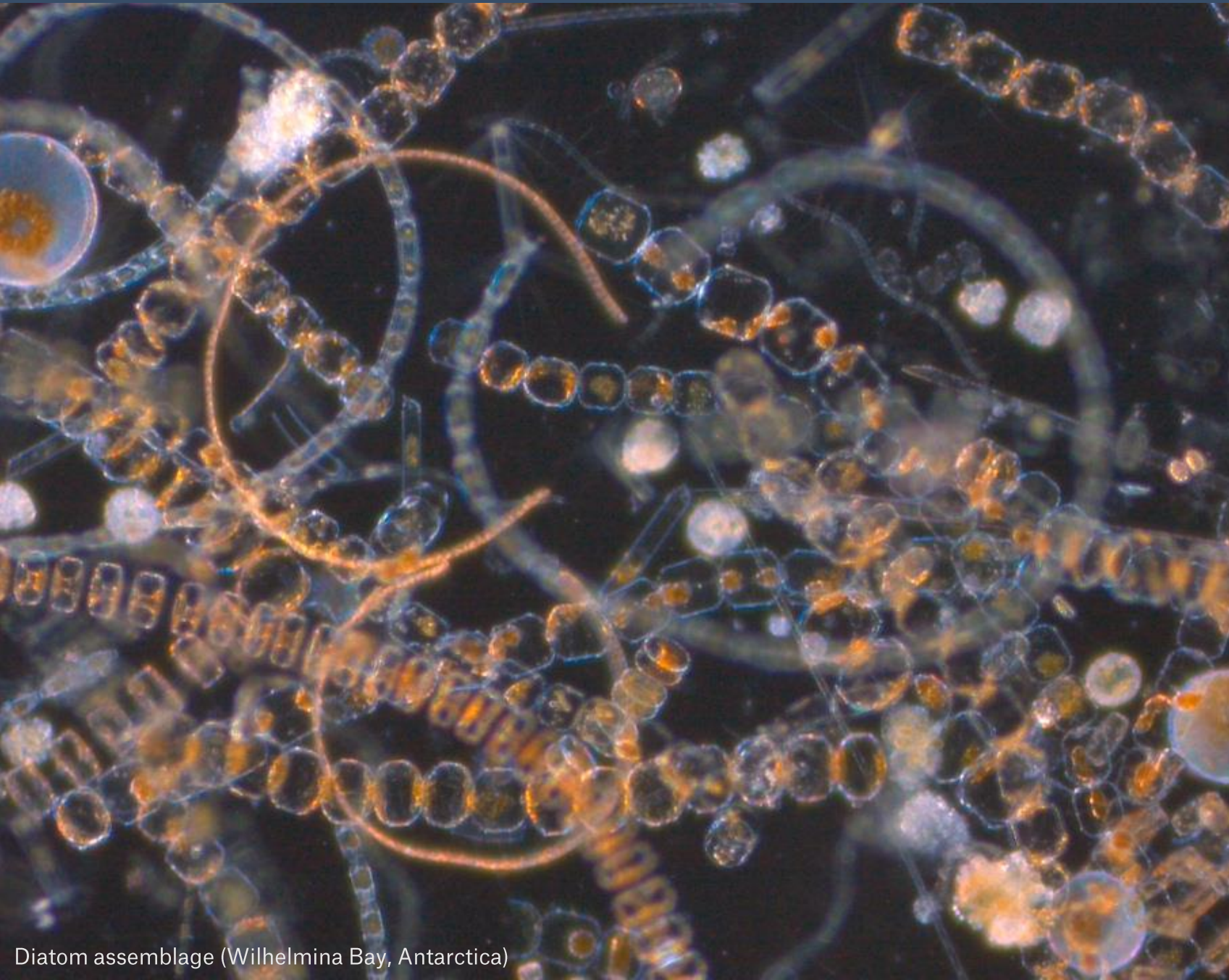
Our CTD casts gave us insight into the way salinity, temperature, and chlorophyll changed with depth. Every sampling site had a unique profile!

Stratification, or layering, can occur with salinity and temperature, causing different depths to have different characteristics. If there is no stratification, we call the water column “well mixed.” Typically, salinity increases with depth while temperature decreases, since cold, salty water is denser than warm, less salty water. Stratification can provide insights into nutrient replenishment at the surface, which is crucial for photosynthesis in phytoplankton.

Most of our profiles were well mixed with regards to salinity. Temperature was always higher in the first few meters of the water column, and chlorophyll density varied widely between depths and sites.





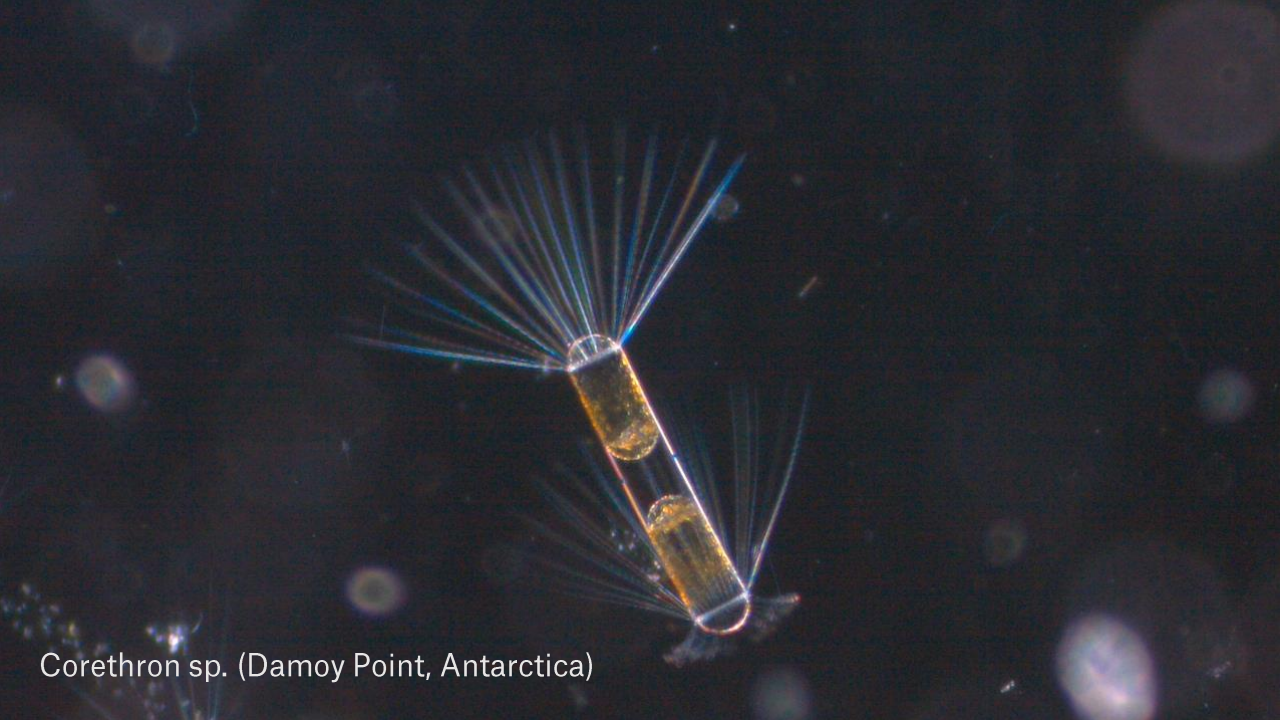


# Plankton samples

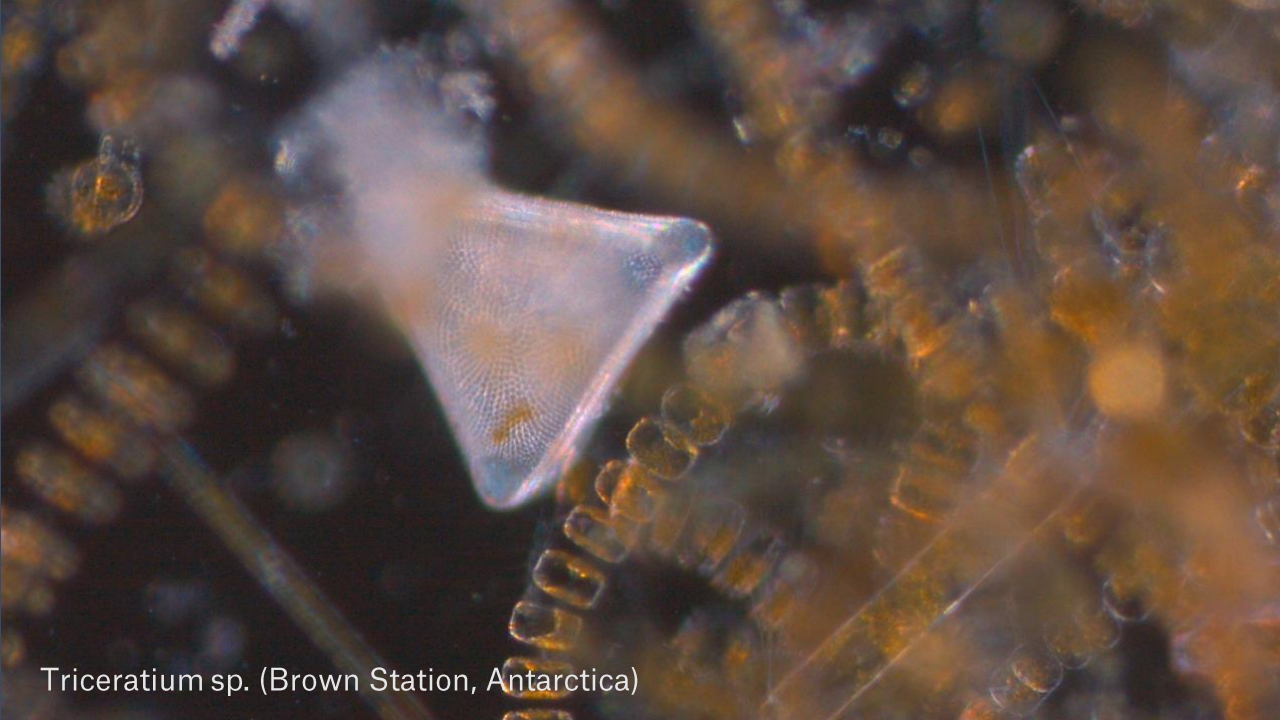
After we collected water samples on the Science Boat, we brought them back to the Science Center to look at their contents under the microscope. Here are some things we found!

Diatom assemblage (Wilhelmina Bay, Antarctica)





Corethron sp. (Damoy Point, Antarctica)



Triceratium sp. (Brown Station, Antarctica)



Copepod (Whalers Bay, Antarctica)



Tintinid (Wilhelmina Bay, Antarctica)



# FjordPhyto & the Secchi Disk Project

FjordPhyto is a citizen science project that investigates the influence of melting Antarctic glaciers on plankton communities in the Southern Ocean. For this project we took seawater samples that will be analyzed for the presence of glacial meltwater, different species of phytoplankton, and the DNA of phytoplankton to understand their genetic response to climate change.

The data we collected supports research on long-term changes in the phytoplankton communities of the Antarctic Peninsula.

The Secchi Disk Project also investigates the presence of phytoplankton, not only in Antarctica, but throughout the world's ocean. You can make your own Secchi disk and continue this project at home!

Learn more about these projects at the [FjordPhyto website](#) and [Secchi Disk Project Website](#).





# NASA Cloud Observer

Our NASA citizen scientists submitted 6 observations to the global database run by NASA. Our observations were matched to data from weather satellites orbiting earth and will be used to better understand global weather phenomena.

If you would like to continue cloud observations at home, you can download the app 'GLOBE Observer.'

[View our data](#) on the global map

## CLOUD ID GUIDE

Cloud level	Cloud type
Low level	<b>Stratus (St):</b> Low, featureless layer cloud
	<b>Stratocumulus (Sc):</b> Low layer typically irregular clumps
	<b>Cumulus (Cu):</b> Low, separated "cotton Wool"- clumps
	<b>Cumulonimbus (Cb):</b> Huge Storm Cloud, often anvil shaped
Mid level	<b>Nimbostratus (Ns):</b> Thick gray layer, with steady Precipitation
	<b>Altostratus (As):</b> Mid level featureless overcast layer
	<b>Alto cumulus (Ac):</b> Mid Level or patch of clumps and rolls
High level	<b>Cirrostratus (Cs):</b> Low, featureless layer cloud
	<b>Cirrocumulus (Cc):</b> Low, featureless layer cloud
	<b>Cirrus (Ci):</b> High feathery streaks of ice crystals

### Altitude (m)

500
300-1,400
300-1,500
600-13,00
0-3,000
2,000-5,000
2,000-6,000
5,000-9,000
7,500-10,500
6,000-12,000

### What to look for?

Can shroud tops of buildings/trees, fog when at ground level

Well defined clumpy base, or varied white gray tones

Cauliflower tops, flattish base or varied edges. From when seen from dark base

Showers from dark base top, if visible, has soft base

Dark featureless overcast

Possible with darker shades

Dull gray covers the sun looks as if through

Cloud-lets are 1-3 shaded on side

Subtle milky white sunlight casts

Cloud elements no larger than

Wavy hair-like clumps or



# iNaturalist

Our Onboard Naturalists and our guests used the citizen science app iNaturalist to record the flora and fauna seen throughout our journey. Our observations are available to be used in scientific research around the world.

In total we recorded:

- 21 Species
- 86 Observations

... and counting, as you upload more photos from home our dataset grows!

View our data submitted on our iNaturalist project here:

[2024 05 Dec - 15 Dec: MS Roald Amundsen - Highlights of Antarctica \(AMANT2418\)](#)







# eBird

Our onboard ornithologists were constantly surveying the birdlife we encountered along our route. Including 7 formal Wildlife Watches, we recorded 20 species across 10 eBird checklists over the course of the voyage. Through the eBird platform, the data we collected is available for scientists around the world.

View our data for this trip here:  
[Antarctica Highlights on the Amundsen,](#)  
[05 Dec to 15 Dec 2024](#)



# Happywhale

We encountered minke whales, orca, and humpback whales during our time in the Southern Ocean. We have submitted photos of 11 individuals from this trip to Happywhale, adding to their catalogue of identified whales across the world. We have received matches for 2 humpback whale individuals so far!

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

<https://happywhale.com/user/11890;svy=120592>







# Wildlife List - Birds



# Wildlife List — Birds

Scientific Name	English	Deutsch	Francais	Chinese
<i>Stercorarius antarcticus</i>	Brown Skua	Subantarktiskua	Labbe antarctique	棕贼鸥
<i>Stercorarius maccormicki</i>	South Polar Skua	Antarktiskua	Labbe de McCormick	麦氏贼鸥
<i>Larus dominicanus</i>	Kelp Gull	Dominikanermöwe	Goéland dominicain	黑背鸥
<i>Sterna vittata</i>	Antarctic Tern	Antarktikseeschwalbe	Sterne couronnée	南极燕鸥
<i>Pygoscelis adeliae</i>	Adelie Penguin	Adeliepinguin	Manchot d'Adélie	阿德利企鹅
<i>Pygoscelis papua</i>	Gentoo Penguin	Eselspinguin	Manchot papou	白眉企鹅
<i>Pygoscelis antarcticus</i>	Chinstrap Penguin	Kehlstreifpinguin	Manchot à jugulaire	纹颊企鹅
<i>Diomedea exulans</i>	Snowy Albatross	Wanderalbatros	Albatros hurleur	漂泊信天翁
<i>Phoebetria palpebrata</i>	Light-mantled Albatross	Graumantelalbatros	Albatros fuligineux	灰背信天翁
<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	Graukopfalbatros	Albatros à tête grise	灰头信天翁
<i>Thalassarche melanophris</i>	Black-browed Albatross	Schwarzbrauenalbatros	Albatros à sourcils noirs	黑眉信天翁
<i>Oceanites oceanicus</i>	Wilson's Storm Petrel	Buntfuß-Sturmschwalbe	Océanite de Wilson	烟黑叉尾海燕
<i>Fregetta tropica</i>	Black-bellied Storm Petrel	Schwarzbauch-Sturmschwalbe	Océanite à ventre noir	黑腹舰海燕
<i>Macronectes giganteus</i>	Southern Giant Petrel	Riesensturmvogel	Pétrel géant	巨鹱
<i>Fulmarus glacialoides</i>	Southern Fulmar	Silbersturmvogel	Fulmar argenté	银灰暴风鹱
<i>Daption capense</i>	Cape Petrel	Kapsturmvogel	Damier du Cap	花斑鹱
<i>Pagodroma nivea</i>	Snow Petrel	Schneesturmvogel	Pétrel des neiges	雪鹱
<i>Halobaena caerulea</i>	Blue Petrel	Blausturmvogel	Prion bleu	蓝鹱



# Wildlife List — Birds

Scientific Name	English	Deutsch	Francais	Chinese
<i>Pachyptila desolata</i>	Antarctic Prion	Taubensturmvogel	Prion de la Désolation	鸽锯鹱
<i>Procellaria aequinoctialis</i>	White-chinned Petrel	Weißkinn-Sturmvogel	Puffin à menton blanc	白颈风鹱
<i>Ardenna grisea</i>	Sooty Shearwater	Dunkler Sturmtaucher	Puffin fuligineux	灰鹱
<i>Leucocarbo bransfieldensis</i>	Antarctic Shag	Antarktikscharbe	Cormoran antarctique	南极鸬鹚
<i>Chionis albus</i>	Snowy Sheathbill	Weißgesicht-Scheidenschnabel	Chionis blanc	白鞘嘴鸥





# Wildlife List - Marine Mammals



# Wildlife List — Marine Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	Chinese
Balaenoptera bonaerensis	Antarctic minke whale	Südlicher Zwergwal	Rorqual à museau pointu de l'Antarctique	南极小须鲸
Megaptera novaeangliae	Humpback whale	Buckelwal	Baleine à bosse	大翅鲸
Orcinus orca	Killer whale, orca	Schwertwal, Orca	Orque	虎鲸
Leptonychotes weddellii	Weddell seal	Weddelrobbe	Phoque de Weddell	韦德尔氏海豹
Lobodon carcinophaga	Crabeater seal	Krabbenfresser	Phoque crabier	食蟹海豹
Mirounga leonina	Southern elephant seal	Südlicher See-Elefant	Eléphant de mer austral	南象海豹



A large, translucent watermark consisting of the letters 'I' and 'X' is positioned on the left side of the image. The 'I' is a simple vertical bar with horizontal caps, and the 'X' is a stylized, serifed letter. The watermark is light blue and semi-transparent, allowing the background image to be seen through it.

# IX

**Connect With Your  
Inner Scientist**

