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Science & Education Report

MS Roald Amundsen 15 - 29 December, 2024

Antarctica and Falklands Expedition



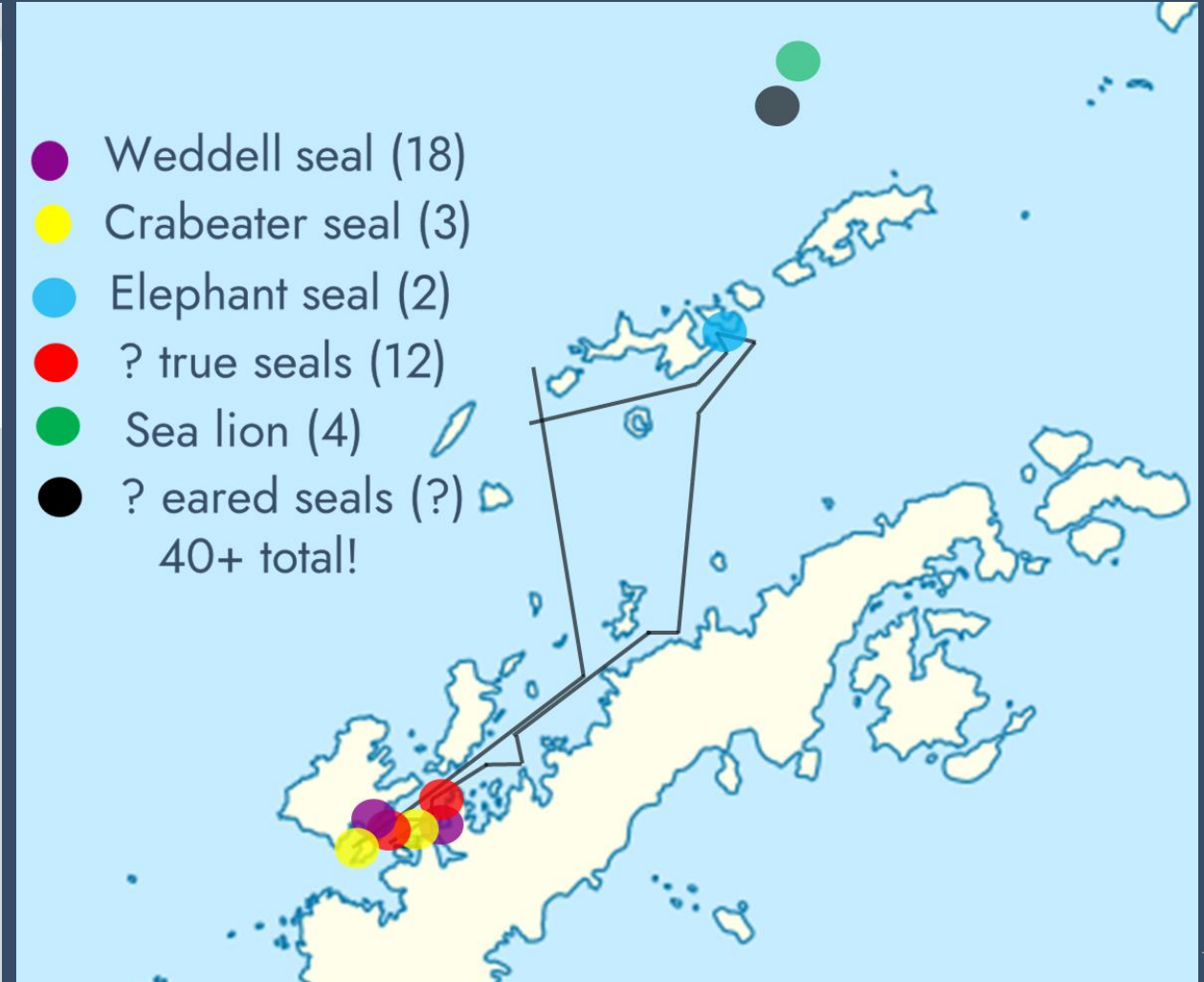
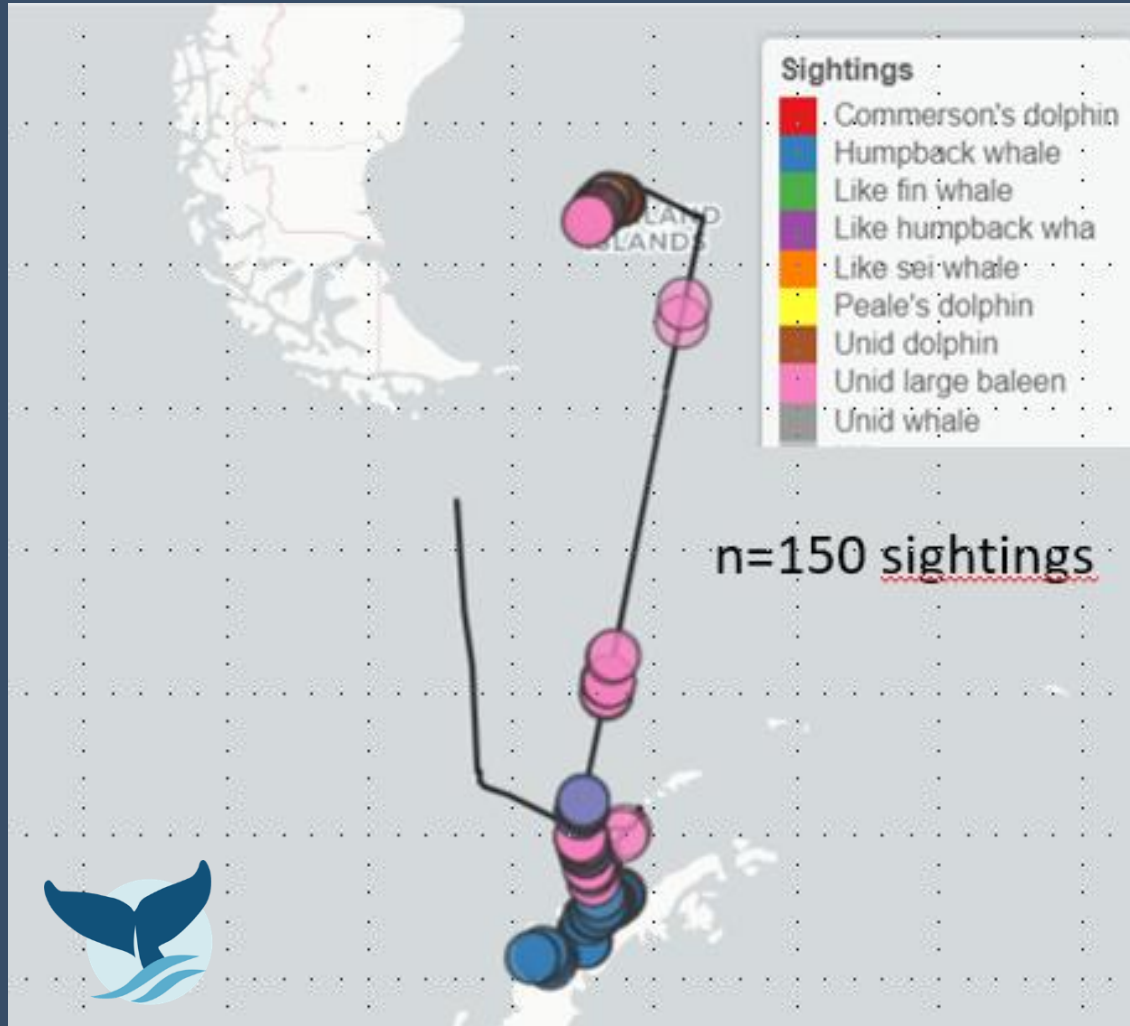
Guest Scientists

We were fortunate to be joined on our voyage by our Guest Scientists Carolina and Cecilia with **Polar Whale Watch** and Sarah from the **Sea Ice Seals Project**, based out of the University of Tasmania. Working from the ship's bridge and from zodiacs, Carolina, Cecilia, 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 – Data Collected on Our Voyage



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](#)





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 and Education Program as well as our Citizen Science Program.

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 contrast to Antarctica, we experienced a more familiar setting in the Falkland Islands. We received an overview of the history of the Falkland archipelago on board, which was complemented by our local guides in Stanley who spoke to us about their first-hand experience living on the islands. The fact that since 1840 the islanders have, and will always, identify as part of Great Britain is something you see and feel even in the air itself, but the recent memory of the 1982 conflict with Argentina remains tangible to all who live there and all who visit.



Arts, Crafts & Creativity

We had a ship full of amazing artists, crafters, and musicians! In addition to the memories of our trip, we created tangible keepsakes of our journey. We also decorated our HX Christmas tree and cabins with handmade ornaments from recycled items. Creativity abounded!



Underwater Drone

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

- Danco Island
- Brown Station

We caught a glimpse of the Antarctic seafloor and its unique inhabitants, as well as a surprise visit from some curious Gentoo penguins!

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





Science Boat

We investigated the underwater world through 7 Science Boat sessions exploring the following locations:

- Half Moon Island, Antarctica
- Danco Island, Antarctica
- Brown Station, Antarctica
- West Point Island, Falkland Islands

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

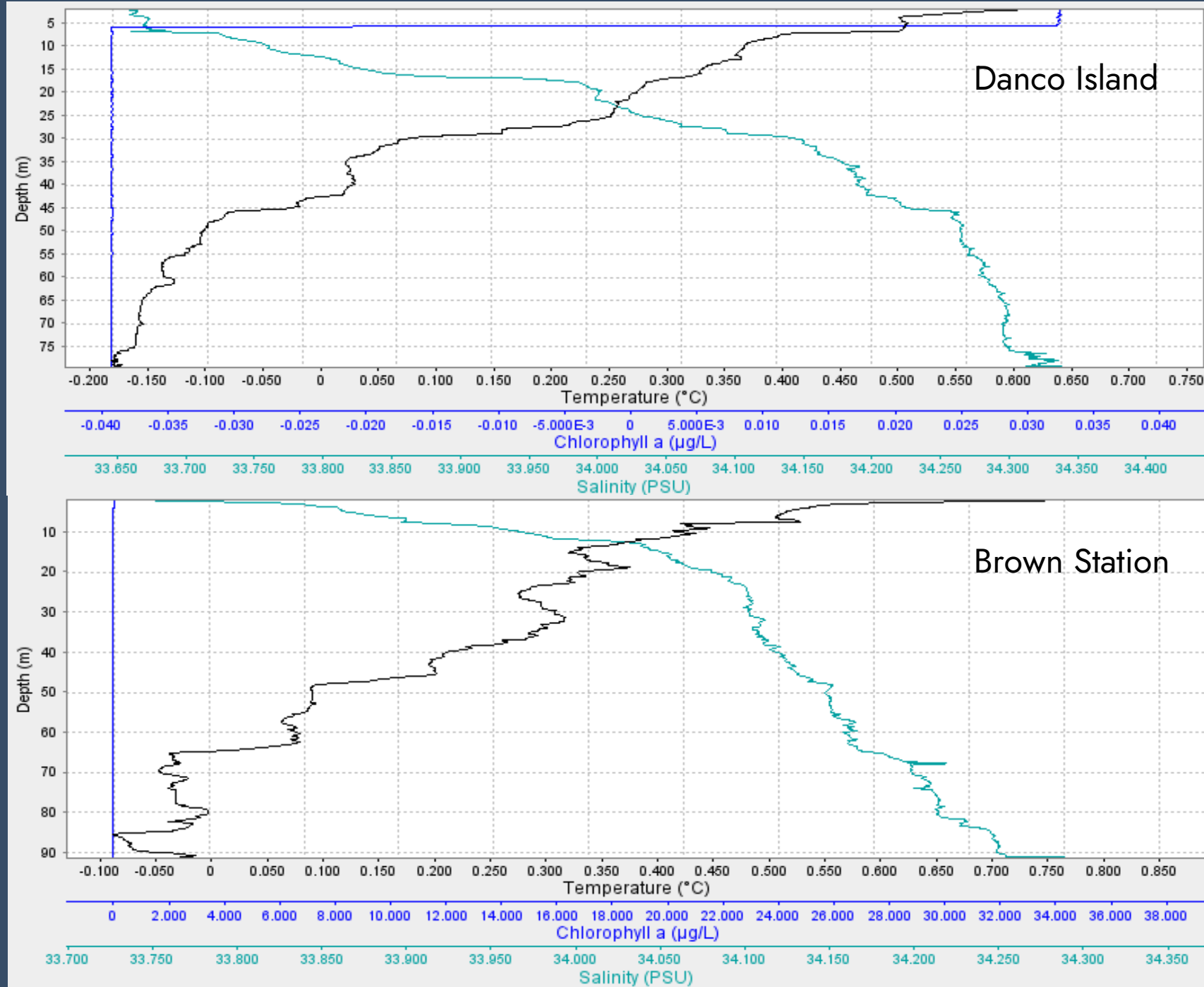
We deployed a plankton net to collect phytoplankton and zooplankton, used a CTD to create a physical profile of the water column, and took measurements of turbidity to submit to the Citizen Science project the Secchi Disk Project. In Antarctica, the samples and oceanographic data we collected will be sent to our partners at Fjordphyto to help them better understand how melting glaciers influence the type of phytoplankton we observe.

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!

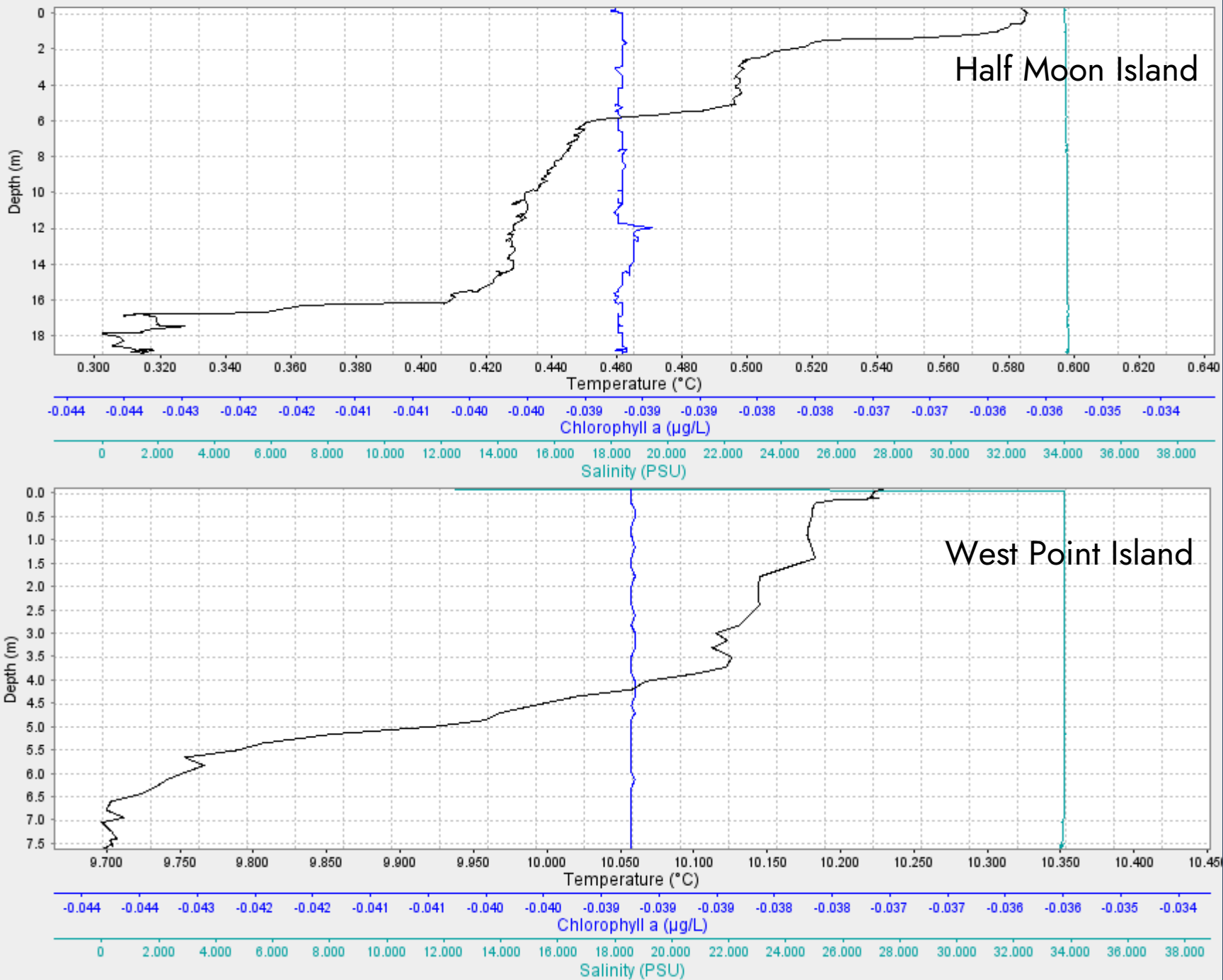
Stratification, or layering, can occur with salinity and temperature, causing different depths to have different characteristics. If there is no stratification, we call the water column “well mixed.” Typically, salinity increases with depth while temperature decreases, since cold, salty water is denser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

At Danco and Brown Station in Antarctica, our profiles were well mixed with regards to salinity— salinity was very similar at the surface and at depth. Temperature was always higher in the top meters of the water column.



CTD Profiles

At Half Moon Island (Antarctica) and West Point Island (Falklands) it was very shallow. Because of this, salinity was the same at the surface and the bottom. At Half Moon Island, temperature was very similar— just a 0.25 °C difference from the surface to bottom. At West Point Island, temperature at the surface and the bottom was also very similar (a 0.5 °C difference), but temperatures were much higher than in Antarctica!

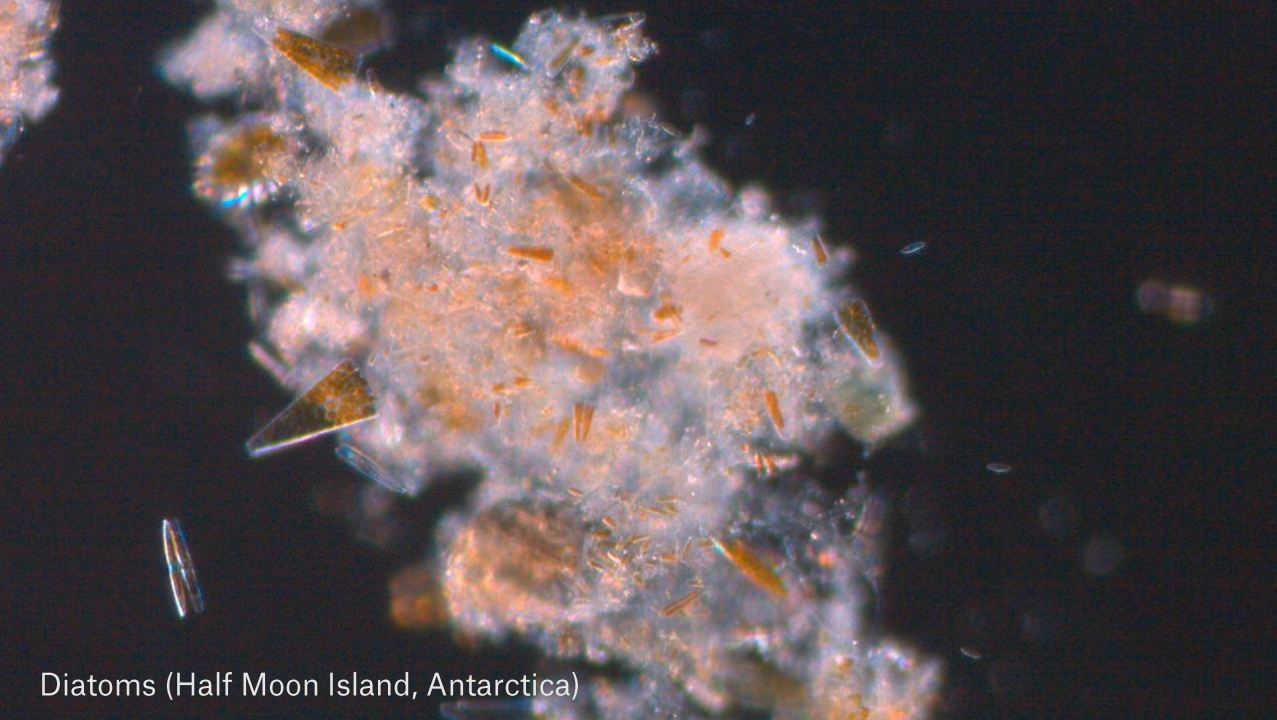




Plankton Samples

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 of the things we found!

Diatom assemblage (Curtiss Bay, Antarctica)



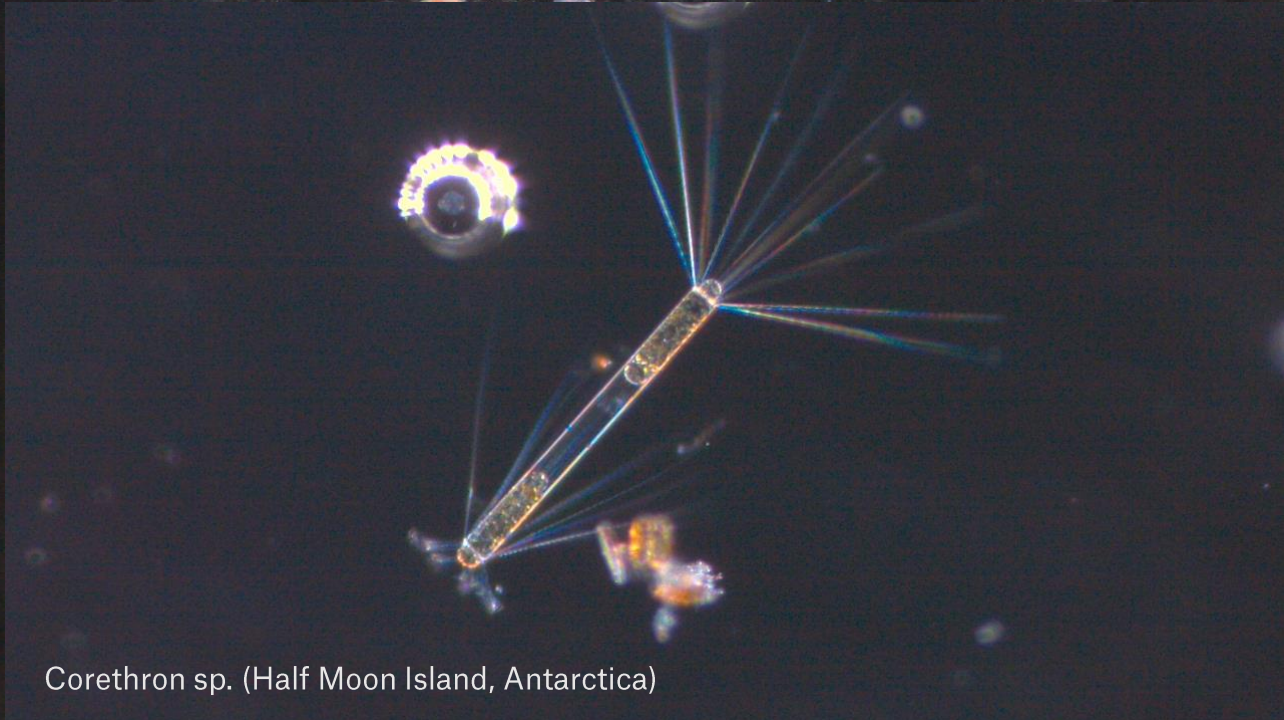
Diatoms (Half Moon Island, Antarctica)



Hydrozoa (West Point, Falkland Islands)



Oedicerotidae (Half Moon Island, Antarctica)



Corethron sp. (Half Moon Island, 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 **9** 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	Stratus (St): Low, featureless layer cloud
	Stratocumulus (Sc): Low layer typically irregular clumps
	Cumulus (Cu): Low, separated "cotton Wool"- clumps
	Cumulonimbus (Cb): Huge Storm Cloud, often anvil shaped
Mid level	Nimbostratus (Ns): Thick gray layer, with steady Precipitation
	Altostratus (As): Mid level featureless overcast layer
	Alto cumulus (Ac): Mid Level or patch of clumps and rolls
High level	Cirrostratus (Cs): Low, featureless layer cloud
	Cirrocumulus (Cc): Low, featureless layer cloud
	Cirrus (Ci): 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 crisp edges. From when seen
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:

- **88** Species
- **153** Observations

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

View our data submitted on our iNaturalist project here:

[2024 15 -29 Dec: MS Roald Amundsen - Antarctica & Falklands](#)





eBird & The Audubon Society

Our onboard ornithologists were constantly surveying the birdlife we encountered along our route. Including during **7** formal Wildlife Watches and **7** dedicated eBird sessions, we recorded **50** species across **21** eBird checklists over the course of the voyage. Through the eBird platform, the data we collected is available for scientists around the world.

We were pleased to host the Audubon Society as a partner in science and education on this voyage. The National Audubon Society's mission is to protect birds and the places they need using science, advocacy, education, and on-the-ground conservation.

View our eBird data for this trip here:
[Antarctica and the Falklands on the Amundsen, 15 Dec - 29 Dec 2024 - eBird Trip Report](#)

Happywhale

We have submitted photos of **13** individuals from this trip to Happywhale, adding to their catalogue of identified whales across the world. Happywhale uses the fingerprint-like patterns on humpback whales' flukes to identify them from user-submitted photographs, and for other whales, uses other unique markings or scars. We have received matches for **5** humpback whale individuals so far!

One of these whales was sighted for the first time on record on our voyage. This 'new to science' whale, whose fluke you can see to the right, was assigned the ID 'HW-MN1306852,' but two generous guests adopted the whale at our Hurtigruten Foundation Auction and, through Happywhale, renamed it Louise!

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

[Happywhale - MS Roald Amundsen
15 - 29 December](#)





Wildlife List - Birds

Wildlife List — Birds

Scientific Name	English	Deutsch	Francais	Chinese
<i>Chloephaga picta</i>	Upland Goose	Magellangans	Ouette de Magellan	斑胁草雁
<i>Chloephaga hybrida</i>	Kelp Goose	Kelpgans	Ouette marine	白草雁
<i>Chloephaga rubidiceps</i>	Ruddy-headed Goose	Rotkopfgans	Ouette à tête rousse	棕头草雁
<i>Tachyeres brachypterus</i>	Falkland Steamer Duck	Falkland-Dampfschiffente	Brassemer des Malouines	短翅船鸭
<i>Chionis albus</i>	Snowy Sheathbill	Weißgesicht-Scheidenschnabel	Chionis blanc	白鞘嘴鸥
<i>Haematopus leucopodus</i>	Magellanic Oystercatcher	Magellanausternfischer	Huîtrier de Garnot	智利蛎鹬
<i>Haematopus ater</i>	Blackish Oystercatcher	Südamerikanischer Austernfischer	Huîtrier noir	南美蛎鹬
<i>Stercorarius antarcticus</i>	Brown Skua	Subantarktiskua	Labbe antarctique	棕贼鸥
<i>Leucophaeus scoresbii</i>	Dolphin Gull	Blutschnabelmöwe	Goéland de Scoresby	豚鸥
<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>Sterna hirundinacea</i>	South American Tern	Falklandseeschwalbe	Sterne hirundinacée	南美燕鸥
<i>Aptenodytes patagonicus</i>	King Penguin	Königspinguin	Manchot royal	王企鹅
<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>Spheniscus magellanicus</i>	Magellanic Penguin	Magellanpinguin	Manchot de Magellan	南美企鹅
<i>Eudyptes chrysocome</i>	Southern Rockhopper Penguin	Südfelsenpinguin	Gorfou sauteur	凤头黄眉企鹅

Wildlife List — Birds

Scientific Name	English	Deutsch	Francais	Chinese
<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>Macronectes halli</i>	Northern Giant Petrel	Hallsturmvogel	Pétrel de Hall	霍氏巨鹱
<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
<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 gravis</i>	Great Shearwater	Großer Sturmtaucher	Puffin majeur	大鹱
<i>Ardenna grisea</i>	Sooty Shearwater	Dunkler Sturmtaucher	Puffin fuligineux	灰鹱
<i>Pelecanoides urinatrix</i>	Common Diving Petrel	Subantarktis-Lummensturmvogel	Puffinure plongeur	鹈燕
<i>Phalacrocorax magellanicus</i>	Magellanic Cormorant	Felsenscharbe	Cormoran de Magellan	岩鸕鹚

Wildlife List — Birds

Scientific Name	English	Deutsch	Francais	Chinese
<i>Leucocarbo atriceps</i>	Imperial Shag	Kaiserscharbe	Cormoran impérial	蓝眼鸬鹚
<i>Leucocarbo bransfieldensis</i>	Antarctic Shag	Antarktikscharbe	Cormoran antarctique	南极鸬鹚
<i>Cathartes aura</i>	Turkey Vulture	Truthahngeier	Urubu à tête rouge	红头美洲鹫
<i>Geranoaetus polyosoma</i>	Variable Hawk	Rotrückenbussard	Buse tricolore	红背鵟
<i>Phalcoboenus australis</i>	Striated Caracara	Falklandkarakara	Caracara austral	红腿巨隼
<i>Cinclodes antarcticus</i>	Blackish Cinclodes	Falkland-Uferwipper	Cinclide fuligineux	淡黑抖尾地雀
<i>Muscisaxicola maclovianus</i>	Dark-faced Ground Tyrant	Maskengrundtyrann	Dormilon bistré	暗脸地霸鹟
<i>Turdus falcklandii</i>	Austral Thrush	Magellandrossel	Merle austral	南美鸚
<i>Passer domesticus</i>	House Sparrow	Haussperling	Moineau domestique	家麻雀
<i>Spinus barbatus</i>	Black-chinned Siskin	Bartzeisig	Tarin à menton noir	黑颏金翅雀
<i>Leistes loyca</i>	Long-tailed Meadowlark	Langschwanzstärling	Sturnelle australe	长尾草地鹨
<i>Melanodera melanodera</i>	White-bridled Finch	Weißbart-Ammertangare	Mélanodère à sourcils blancs	黑喉雀鹀



Wildlife List - Marine Mammals

Wildlife List — Marine Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	Chinese
<i>Balaenoptera bonaerensis</i>	Antarctic minke whale	Südlicher Zwergwal	Rorqual à museau pointu de l'Antarctique	南极小须鲸
<i>Balaenoptera physalus</i>	Fin whale	Finnwal	Rorqual commun	长须鲸
<i>Megaptera novaeangliae</i>	Humpback whale	Buckelwal	Baleine à bosse	大翅鲸
<i>Balaenoptera borealis</i>	Sei whale	Seiwal	Rorqual de Rudolphi	塞鲸
<i>Orcinus orca</i>	Killer whale, orca	Schwertwal, Orca	Orque	虎鲸
<i>Cephalorhynchus commersonii</i>	Commerson's dolphin	Commerson-Delfin	Céphalorhynque de Commerson	黑白海豚
<i>Lagenorhynchus australis</i>	Peale's dolphin	Peale-Delfin	Lagénorhynque de Peale	皮氏斑纹海豚
<i>Arctocephalus australis</i>	South American fur seal	Südamerikanischer Seebär	Otarie à fourrure australe	南美毛皮海狮
<i>Otaria byronia</i>	South American sea lion	Mähnenrobbe	Lion de mer d'Amérique du Sud	南海狮
<i>Leptonychotes weddellii</i>	Weddell seal	Weddelrobbe	Phoque de Weddell	韦德尔氏海豹
<i>Mirounga leonina</i>	Southern elephant seal	Südlicher See-Elefant	Eléphant de mer austral	南象海豹
<i>Lobodon carcinophaga</i>	Crabeater seal	Krabbenfresser	Phoque crabier	食蟹海豹



IX

**Connect With Your
Inner Scientist**