



Science & Education Report

THE

MS Roald Amundsen 20 March – 03 April, 2024

In-Depth Patagonia and Chilean
Fjords Expedition



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.



History & Culture

We began our voyage in Tierra del Fuego, a region that has been home to various indigenous groups for thousands of years. In Puerto Williams we learned about the Yahgana (Yamana) people, and in Puerto Eden and Tortel had an opportunity to visit the descendents of another group of seafaring nomads called the Kawasquar. In the following days we sailed north, entering the historical region of Araucania, home of the Mapuche. The Mapuche are the largest indigenous group in Chile today and are famous for never being conquered. Today, Mapuche are organized in various movements looking for political recognition and aiming for more sovereignty over their historical lands.

We were also able to experience the modern history and culture of Chile in our visits to Puerto Natales, Castro, and Valdivia, as well learn about the history of the early Western expeditions to this region in our lectures on board.





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 learning about how feathers work to dissecting fish, 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.



Science Boat

We investigated the underwater world in 3 Science Boat sessions at Pia Glacier.

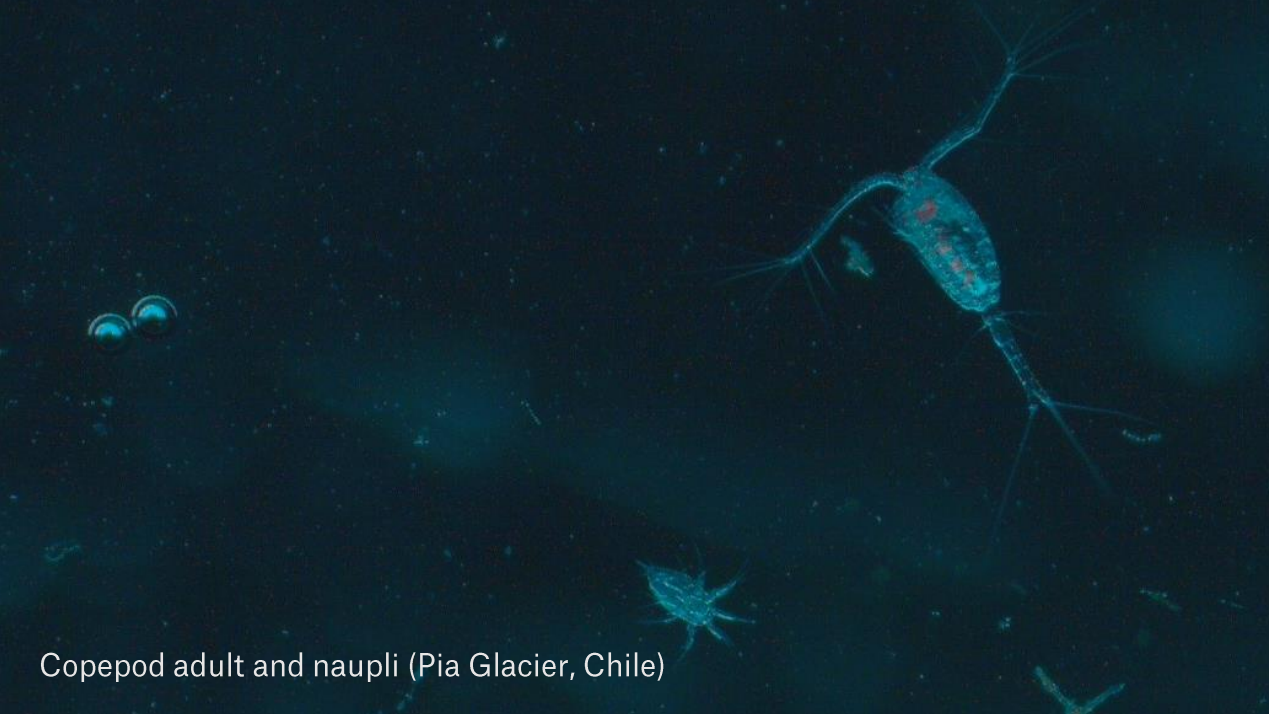
We observed and discussed the wildlife and geology in each location to better understand the area's ecology.

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.

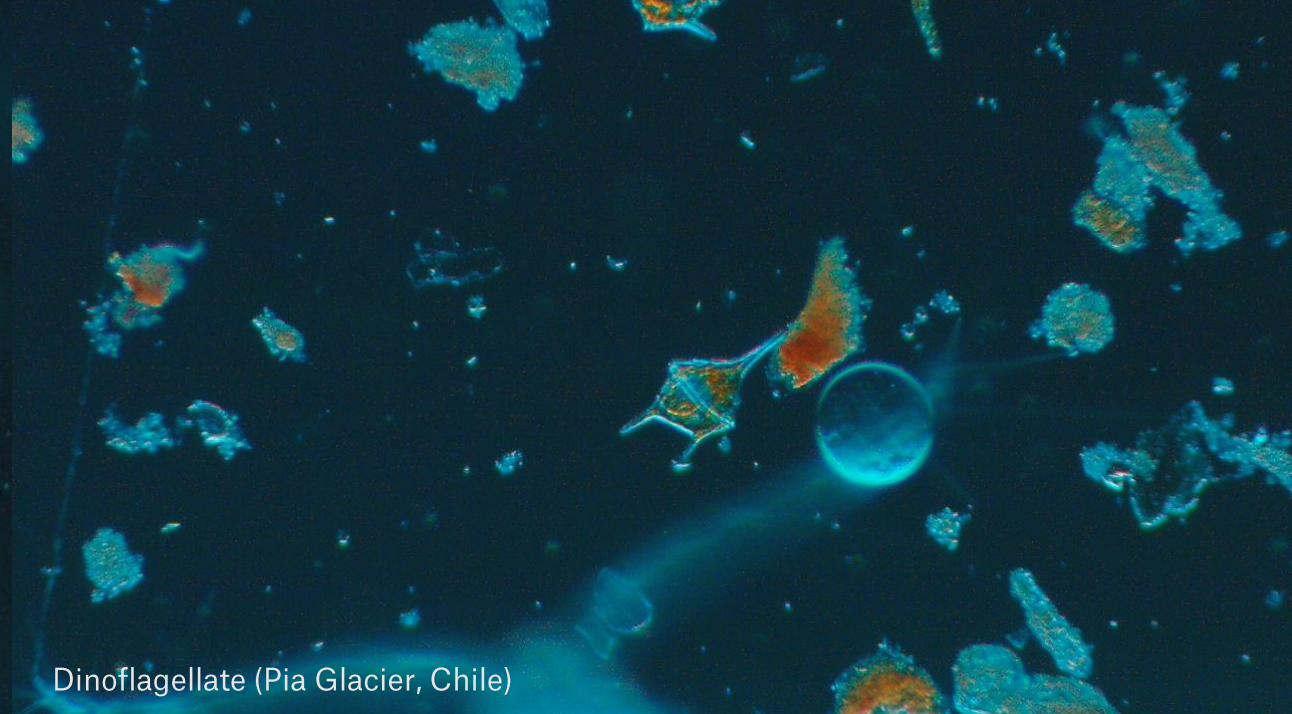


Plankton samples

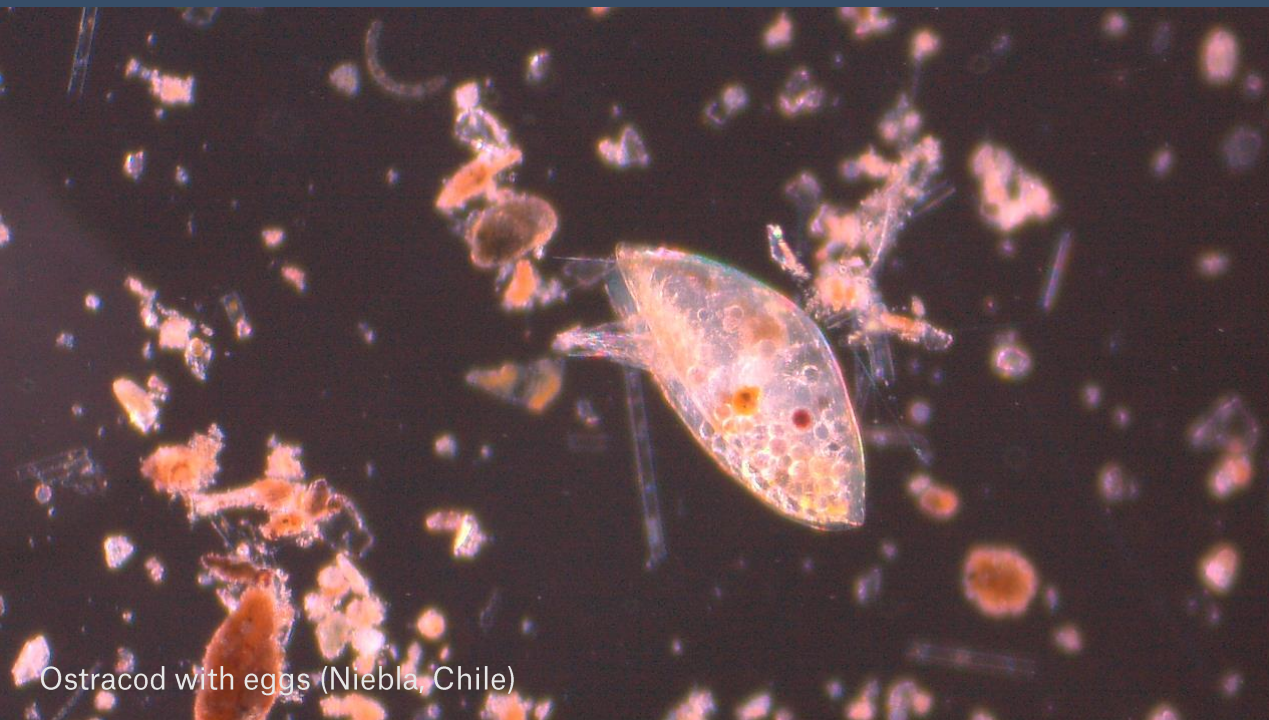
After we collected water samples on the Science Boat, we brought them back to the Science Center to look at them under the microscope. Here are some things we found!



Copepod adult and naupli (Pia Glacier, Chile)



Dinoflagellate (Pia Glacier, Chile)



Ostracod with eggs (Niebla, Chile)



Diatom (Niebla, Chile)

Underwater drone

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

- Puerto Williams
- Puerto Eden

We saw a variety of the strange and beautiful creatures that inhabit the Chilean Fjords, including squat lobsters, crinoid stars, and forests of giant kelp.

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





CLOUD ID GUIDE

Cloud level	Cloud type	Altitude (m)	What to look for?
Low level	Stratus (St): Low, featureless layer cloud	500	Can shroud tops of buildings, trees, fog when at ground level
	Stratocumulus (Sc): Low layer typically irregular clumps	300-1,400	Well defined clumpy base, or varied white gray tones
	Cumulus (Cu): Low, separated "cotton Wool"- clumps	300-1,500	Cauliflower tops, flattish base, crisp edges. From when sun is high
	Cumulonimbus (Cb): Huge Storm Cloud, often anvil shaped	600-13,000	Showers from dark base, top, if visible, has soft base
Mid level	Nimbostratus (Ns): Thick gray layer, with steady Precipitation	0-3,000	Dark featureless overcast, Possible with darker shades
	Altostratus (As): Mid level featureless overcast layer	2,000-5,000	Dull gray covers the sun looks as if through a veil
	Alto cumulus (Ac): Mid Level or patch of clumps and rolls	2,000-6,000	Cloud-lets are 1-3 shaded on side and top
High level	Cirrostratus (Cs): Low, featureless layer cloud	5,000-9,000	Subtle milky white, sunlight casts halos
	Cirrocumulus (Cc): Low, featureless layer cloud	7,500-10,500	Cloud elements no larger than 1 degree
	Cirrus (Ci): High feathery streaks of ice crystals	6,000-12,000	Wavy hair-like clumps or streaks

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 above 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

iNaturalist

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

In total we recorded:

- 196 Species
- 465 Observations

View our data submitted on our iNaturalist project here:

[2024 Mar 20 - April 03: MS Roald Amundsen - Patagonia & Chilean Fjords · iNaturalist](#)





eBird

Our onboard ornithologists were constantly surveying the birdlife we encountered along our route. Including 9 formal Wildlife Watches, we recorded 95 species across 93 eBird checklists. Through the eBird platform, the data we collected is available for scientists around the world.

View our data for this trip here:
<https://ebird.org/tripreport/213835>

Happywhale

We encountered seven species of whales and dolphins during our time transiting the Chilean Fjords. We have submitted photos of 9 individuals to Happywhale to add to their catalogue of identified whales across the world. We recorded three blue whales and at least one new-to-science humpback whale!

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

<https://happywhale.com/org/25;svy=90906>



Wildlife List - Birds



Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Cygnus melancoryphus</i>	Black-necked swan	Schwarzhalsschwan	Cygne à cou noir	Svarthalssvane
<i>Coscoroba coscoroba</i>	Coscoroba swan	Coscorobaschwan	Coscoroba blanc	Coscorobasvane
<i>Chloephaga picta</i>	Upland goose	Magellangans	Ouette de magellan	Sebragås
<i>Chloephaga hybrida</i>	Kelp goose	Kelpgans	Ouette marine	Taregås
<i>Chloephaga poliocephala</i>	Ashy-headed goose	Graukopfgans	Ouette à tête grise	Gråhodegås
<i>Tachyeres patachonicus</i>	Flying steamer duck	Langflügel-dampfschiffente	Brassemer de patagonie	Patagoniaskovleand
<i>Tachyeres pteneres</i>	Flightless steamer duck	Magellan-dampfschiffente	Brassemer cendré	Chileskovleand
<i>Lophonetta specularioides</i>	Crested duck	Schopfente	Canard huppé	Duskand
<i>Spatula cyanoptera</i>	Cinnamon teal	Zimtente	Sarcelle cannelle	Kaneland
<i>Spatula platalea</i>	Red shoveler	Fuchslöffelente	Canard spatule	Prikkskjeand
<i>Mareca sibilatrix</i>	Chiloe wigeon	Chilepfeifente	Canard de chiloé	Sørblesand
<i>Anas georgica</i>	Yellow-billed pintail	Spitzschwanzente	Canard à queue pointue	Spisshaleand
<i>Anas flavirostris</i>	Yellow-billed teal	Südandenente	Sarcelle tachetée	Gulnebbkrikkand
<i>Phoenicopterus chilensis</i>	Chilean flamingo	Chileflamingo	Flamant du chili	Chileflamingo
<i>Rollandia rolland</i>	White-tufted grebe	Rollandtaucher	Grèbe de rolland	Hvitøredykker
<i>Podiceps major</i>	Great grebe	Magellantaucher	Grand grèbe	Spydnebbdykker
<i>Podiceps occipitalis</i>	Silvery grebe	Silbertaucher	Grèbe aux belles joues	Sølvdykker

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<i>Columba livia</i>	Rock pigeon	Felsentaube	Pigeon biset	Klippedue
<i>Patagioenas araucana</i>	Chilean pigeon	Araukanientaube	Pigeon du chili	Skjellgrandue
<i>Sephanoides sephaniodes</i>	Green-backed firecrown	Chilekolibri	Colibri du chili	Ildkronekolibri
<i>Himantopus mexicanus</i>	Black-necked stilt	Schwarznacken-stelzenläufer	Échasse d'amérique	Svartkronestylteløper
<i>Haematopus ater</i>	Blackish oystercatcher	Südamerikanischer austernfischer	Chileausternfischer	Tykknebbsvarttjeld
<i>Haematopus leucopodus</i>	Magellanic oystercatcher	Magellanausternfischer	Huîtrier de garnot	Magellantjeld
<i>Vanellus chilensis</i>	Southern lapwing	Bronzekiebitz	Vanneau téro	Bronsevipe
<i>Numenius phaeopus</i>	Whimbrel	Regenbrachvogel	Courlis corlieu	Småspove
<i>Limosa haemastica</i>	Hudsonian godwit	Amerikanische uferschnepfe	Hudsonschnepfe	Svartvingespove
<i>Tringa melanoleuca</i>	Greater yellowlegs	Tüpfelgelbschenkel	Grand chevalier	Plystresnipe
<i>Calidris fuscicollis</i>	White-rumped sandpiper	Weißbürzel-strandläufer	Bécasseau à croupion blanc	Bonapartesnipe
<i>Stercorarius longicaudus</i>	Long-tailed jaeger	Falkenraubmöwe	Labbe à longue queue	Fjelljo
<i>Stercorarius parasiticus</i>	Parasitic jaeger	Schmarotzerraubmöwe	Labbe parasite	Tyvjo
<i>Stercorarius chilensis</i>	Chilean skua	Chileskua	Labbe du chili	Kaneljo
<i>Chroicocephalus maculipennis</i>	Brown-hooded gull	Patagonienmöwe	Mouette de patagonie	Sørhettemåke
<i>Leucophaeus scoresbii</i>	Dolphin gull	Blutschnabelmöwe	Goéland de scoresby	Magellanmåke
<i>Leucophaeus pipixcan</i>	Franklin's gull	Präriemöwe	Mouette de franklin	Franklinmåke

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<i>Larus dominicanus</i>	Kelp gull	Dominikanermöwe	Goéland dominicain	Taremåke
<i>Sterna trudeaui</i>	Snowy-crowned tern	Weißscheitel-seeschwalbe	Sterne de trudeau	Svartøreterne
<i>Sterna hirundinacea</i>	South american tern	Falklandseeschwalbe	Sterne hirundinacée	Svaleterne
<i>Spheniscus magellanicus</i>	Magellanic penguin	Magellanpinguin	Manchot de magellan	Magellanpingvin
<i>Diomedea sanfordi</i>	Northern royal albatross	Nordkönigsalbatros	Albatros de sanford	Svartvingealbatross
<i>Thalassarche salvini</i>	Salvin's albatross	Salvinalbatros	Albatros de salvin	Sølvhodealbatross
<i>Thalassarche melanophris</i>	Black-browed albatross	Schwarzbrauenalbatros	Albatros à sourcils noirs	Svartbrynalbatross
<i>Oceanites oceanicus</i>	Wilson's storm petrel	Buntfoot-sturmschwalbe	Océanite de wilson	Wilsonstormsvale
<i>Macronectes giganteus</i>	Southern giant petrel	Riesensturmvoegel	Pétrel géant	Sørkjempepetrell
<i>Macronectes halli</i>	Northern giant petrel	Hallsturmvoegel	Pétrel de hall	Nordkjempepetrell
<i>Fulmarus glacialoides</i>	Southern fulmar	Silbersturmvoegel	Fulmar argenté	Sørhavhest
<i>Pterodroma externa</i>	Juan fernandez petrel	Robinsonsturmvoegel	Pétrel de juan fernandez	Juanfernandezpetrell
<i>Pterodroma defilippiana</i>	Masatierra petrel	Juan-fernandez-sturmvoegel	Pétrel de filippi	Masatierrapetrell
<i>Pterodroma longirostris</i>	Stejneger's petrel	Stejnegersturmvoegel	Pétrel de stejneger	Sotnakkepetrell
<i>Procellaria aequinoctialis</i>	White-chinned petrel	Weißkinn-sturmvoegel	Puffin à menton blanc	Hvithakepetrell
<i>Ardenna creatopus</i>	Pink-footed shearwater	Rosafuß-sturmtaucher	Puffin à pieds roses	Chilelire
<i>Ardenna grisea</i>	Sooty shearwater	Dunkler sturmtaucher	Puffin fuligineux	Grålire

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<i>Puffinus puffinus</i>	Manx shearwater	Atlantiksturmtaucher	Puffin des anglais	Havlire
<i>Sula variegata</i>	Peruvian booby	Guanotölpel	Fou varié	Humboldtsule
<i>Pikilocarbo gaimardi</i>	Red-legged cormorant	Buntscharbe	Cormoran de gaimard	Rødfotskarv
<i>Phalacrocorax olivaceus</i>	Neotropic cormorant	Biguascharbe	Cormoran vigua	Flodskarv
<i>Phalacrocorax magellanicus</i>	Magellanic cormorant	Felsenscharbe	Felsenscharbe	Magellanskarv
<i>Leucocarbo atriceps</i>	Imperial shag	Kaiserscharbe	Kaiserscharbe	Knoppskarv
<i>Pelecanus thagus</i>	Peruvian pelican	Chilepelikan	Chilepelikan	Humboldtpelikan
<i>Nycticorax nycticorax</i>	Black-crowned night heron	Nachtreiher	Bihoreau gris	Natthegre
<i>Egretta thula</i>	Snowy egret	Schmuckreiher	Aigrette neigieuse	Snøhegre
<i>Ardea alba</i>	Great egret	Silberreiher	Grande aigrette	Egretthegre
<i>Ardea cocoi</i>	Cocoi heron	Cocoiereiher	Héron cocoi	Cocoihegre
<i>Theristicus melanopis</i>	Black-faced ibis	Schwarzzügelibis	Ibis à face noire	Patagoniaibis
<i>Vultur gryphus</i>	Andean condor	Andenkondor	Condor des andes	Andeskondor
<i>Coragyps atratus</i>	Black vulture	Rabengeier	Urubu noir	Svartkondor
<i>Cathartes aura</i>	Turkey vulture	Truthahngeier	Urubu à tête rouge	Kalkunkondor
<i>Megaceryle torquata</i>	Ringed kingfisher	Rotbrustfischer	Martin-pêcheur à ventre roux	Ringisfugl
<i>Caracara plancus</i>	Crested caracara	Schopfkarakara	Caracara huppé	Gribbkarakara

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SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Milvago chimango</i>	Chimango caracara	Chimangokarakara	Caracara chimango	Brunkarakara
<i>Phalcoboenus australis</i>	Striated caracara	Falklandkarakara	Caracara austral	Brungumpkarakara
<i>Falco sparverius</i>	American kestrel	Bunfalke	Crécerelle d'amérique	Spurvefalk
<i>Enicognathus ferrugineus</i>	Austral parakeet	Smaragdsittich	Conure magellanique	Sørparakitt
<i>Enicognathus leptorhynchus</i>	Slender-billed parakeet	Langschnabelsittich	Conure à long bec	Langnebbparakitt
<i>Scytalpus magellanicus</i>	Magellanic tapaculo	Magellantapaculo	Mérulaxe des andes	Magellantapakulo
<i>Cinclodes fuscus</i>	Buff-winged cinclodes	Kurzschnabel-uferwipper	Cinclide brun	Kortnebbbergkall
<i>Cinclodes oustaleti</i>	Gray-flanked cinclodes	Graufanken-uferwipper	Cinclide d'oustalet	Gråflankebergkall
<i>Cinclodes patagonicus</i>	Dark-bellied cinclodes	Streifenbrust-uferwipper	Cinclide à ventre sombre	Stripebergkall
<i>Aphrastura spinicauda</i>	Thorn-tailed rayadito	Stachelschwanzschlüpfer	Synallaxe rayadito	Gulbryntornstjert
<i>Anairetes parulus</i>	Tufted tit-tyrant	Meisentachurityrann	Taurillon mésange	Guløyemeisetyrann
<i>Muscisaxicola maclovianus</i>	Dark-faced ground tyrant	Maskengrundtyrann	Dormilon bistré	Magellanmarktyrann
<i>Pyrpe pyrope</i>	Fire-eyed diucon	Feueraugen-nonnentyrann	Pépoaza oeil-de-feu	Rødøyetyrann
<i>Elaenia albiceps</i>	White-crested elaenia	Weißkronen-olivtyrann	Élénie à cimier blanc	Hvitisseelenia
<i>Pygochelidon cyanoleuca</i>	Blue-and-white swallow	Schwarzsteiðschwalbe	Hirondelle bleu et blanc	Cyansvale
<i>Troglodytes aedon</i>	House wren	Hauszaunkönig	Troglodyte familier	Hussmett
<i>Turdus falcklandii</i>	Austral thrush	Magellandrossel	Merle austral	Umbratrost

Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Passer domesticus</i>	House sparrow	Haussperling	Moineau domestique	Gråspurv
<i>Curaeus curaeus</i>	Austral blackbird	Strichelkopfstärling	Carouge austral	Patagoniatrupial
<i>Phrygilus patagonicus</i>	Patagonian sierra-finch	Graukopf-ammertangare	Phrygile de patagonie	Chileandesspurv
<i>Mimus thenca</i>	Chilean mockingbird	Chilespottdrossel	Moqueur du chili	Chilespottefugl

An aerial photograph of two whales breaching the surface of the ocean. The water is a deep, clear blue-green. Two distinct plumes of white spray rise from the whales' blowholes, indicating they are exhaling. The whales' dark, sleek bodies are partially visible above the water's surface, with some splashing around their heads. The overall scene is dynamic and captures a moment of natural behavior in the wild.

Wildlife List - Marine Mammals

Wildlife List – Marine Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Balaenoptera borealis</i>	Sei whale	Seiwal	Rorqual de Rudolphi	Seihval
<i>Balaenoptera physalus</i>	Fin whale	Finnwal	Rorqual commun	Finhval
<i>Megaptera novaeangliae</i>	Humpback whale	Buckelwal	Baleine à bosse	Knølhval
<i>Balaenoptera musculus</i>	Blue whale	Blauwal	Rorqual bleu, baleine bleue	Blåhval
<i>Cephalorhynchus eutropia</i>	Chilean dolphin	Weißbauchdelfin	Céphalorhynque noir	Chiledelfin
<i>Lagenorhynchus australis</i>	Peale's dolphin	Peale-Delfin	Lagénorhynque de Peale	Peales delfin
<i>Lagenorhynchus obscurus</i>	Dusky dolphin	Schwarzdelfin	Lagénorhynque obscur	Mørkdelfin
<i>Orcinus orca</i>	Killer whale, orca	Schwertwal, Orca	Orque	Spekkhogger
<i>Arctocephalus australis</i>	South American fur seal	Südamerikanischer Seebär	Otarie à fourrure australe	Søramerikansk pelssel
<i>Otaria byronia</i>	South American sea lion	Mähnenrobbe	Lion de mer d'Amérique du Sud	Søramerikansk sjøløve



Wildlife List - Land Mammals

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