

# IX

The background image is a serene landscape. In the foreground, a calm body of water reflects the sky and the surrounding environment. Several icebergs are floating in the water, their white and blue surfaces contrasting with the dark water. The middle ground features a dense forest of evergreen trees, some of which are covered in a light layer of snow. The background is a misty, hazy sky, suggesting a cold, early morning or late evening setting. The large, stylized number 'IX' is overlaid on the left side of the image, partially obscuring the landscape. The number is white with a blue outline and a subtle gradient, giving it a three-dimensional appearance.

## Science & Education Report



# MS Roald Amundsen 08 – 24 July, 2025

Alaska and British Columbia -  
Inside Passage, Bears and Aleutian  
Islands

When you arrived on the MS Roald you boarded a 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 while sailing along the wild and wonderful Alaskan coast.



# Arts, crafts & creativity

We witnessed the wild beauty of Alaska's landscapes and let it inspire us to create art reflecting our surroundings and our feelings. Through drawing sessions, painting sessions, sculpting sessions, and much more, we created tangible keepsakes of our journey.







# Science & Education Program

The MS Roald Amundsen is more than a ship— it is a platform of opportunity for us to explore the world around us, collect meaningful data, and learn more deeply about the places we visit.

Our onboard naturalists guided our guests using scientific tools to investigate the world around us. We observed, documented, and discussed many interesting fauna, flora, and phenomena. From learning about how whales feed to exploring the rock cycle, guests participated in sessions that gave a deeper understanding and appreciation for the world around us. Our historians put all of what we saw in the context of humans' relationships with this place— from the earliest inhabitants to modern society.

On the next pages you can find highlights of our onboard Science and Education Program and our Citizen Science Program.



# History

Nome: a name that evokes images of the modern 'last frontier.' But it is also a place that for thousands of years was a seasonal hunting settlement of the Inupiat until gold was discovered by American prospectors in 1898. After embarking in this town, still fueled by the idea of gold-rush riches, we headed south through the islands that have been home to the Unangax people since time immemorial. We experienced their culture and history while visiting St. Paul, Dutch Harbor, and traversing the Aleutian Islands. We then sailed past the ancestral lands of the Sugpiaq as we headed east, and as we sailed south to Icy Bay and the Inside Passage, we voyaged among Tlingit land. Here we witnessed the thriving Tlingit culture expressed through art, cultural artifacts, and the stories of our local guides.

In our onboard lectures, we learned about the Native history the region, as well as its settlement by Europeans and its purchase by and later statehood in the United States. We acknowledged that these histories hold pain, but also hope, and that they exist intertwined in a story that is still being written!







# Living Culture

We felt how the native histories and cultures of this region permeate all aspects of life. We were lucky to witness this in the communities we visited, where we experienced a living culture expressed in art, song, dance, stories, and oral histories of our hosts in communities across Alaska.

We were also incredibly privileged to be joined on our journey by our Cultural Interpreter, Norma. Her stories, songs, dances, and art gave us invaluable glimpses into her Yup'ik culture and what it means to live as part of the land in Alaska. Her pride in her Yup'ik traditions shone through everything she did, and her smile and enthusiasm were infectious to all who joined her photo slide shows, "coffee talks," and "show and tell" sessions. Through Norma, we could understand better the real spirit of Alaska, and we are all so much the richer for it.



# Guest Scientists

We were fortunate to be joined on this voyage by Dr. Wendy Gram, a Guest Scientist from the National Center for Atmospheric Research (NCAR). Wendy used the MS Roald Amundsen as a platform of opportunity to collect plankton from the ocean and the air to help scientists understand how these tiny organisms may influence cloud formation in Alaska's coastal regions. These samples will be brought back to NCAR's Colorado labs, where scientists will study the planktons' ability to function as ice-nucleating particles. Ultimately, their findings will help to improve weather forecasting models.

**Visit our Science & Education Hub** to find out more about our scientific collaborations.







# Science Boat

Learning in a lecture or workshop is one thing, but getting your hands 'dirty' in the pursuit of science is at another level. For the guests who chose to participate in the Science Boat, they joined a participative experience focused on collecting meaningful data by 'taking the lab outside' – and underwater!

We investigated the underwater world in 7 Science Boat sessions in Icy Bay, Uyak Bay, and Unga Village. 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.

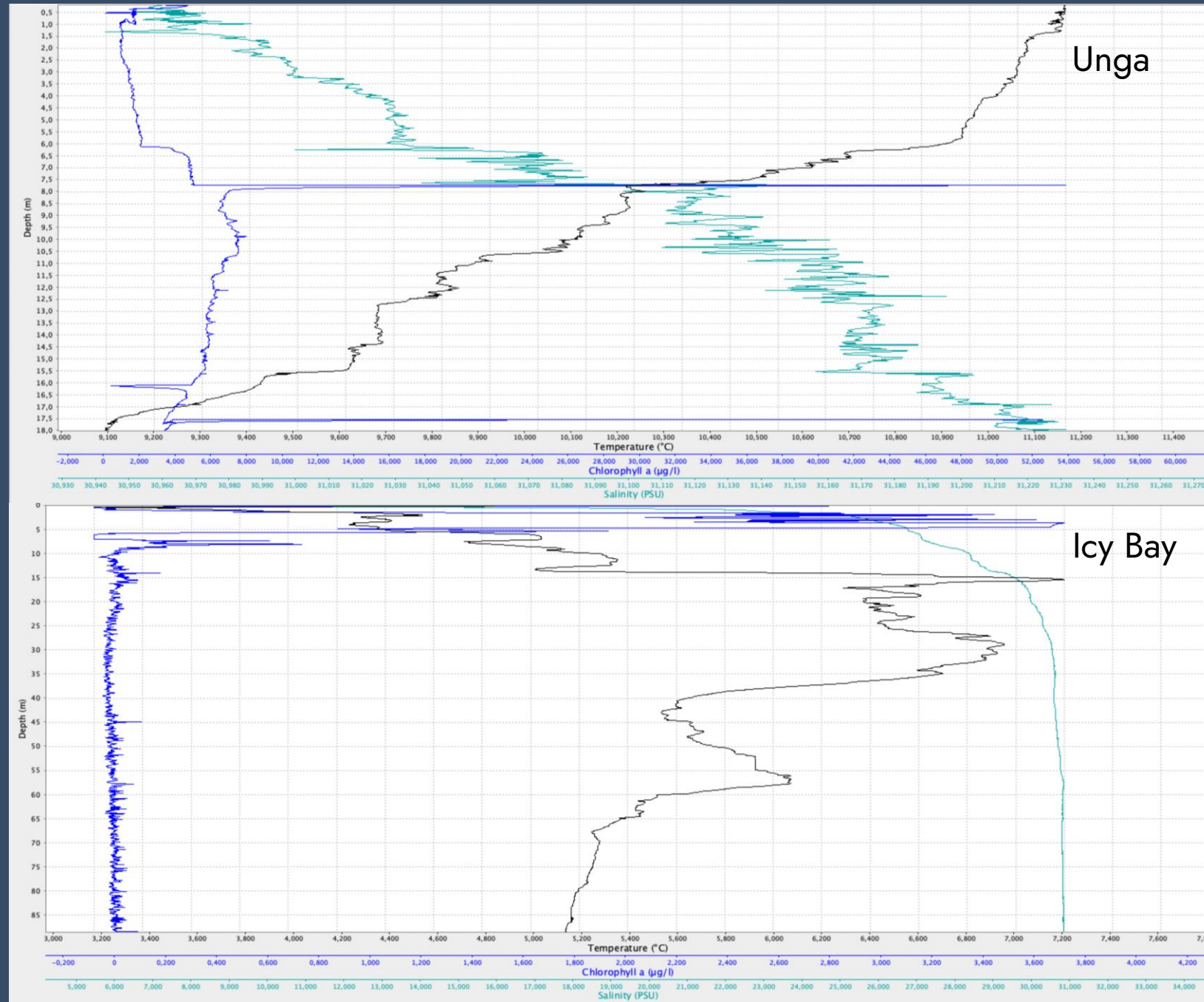


# CTD Profiles

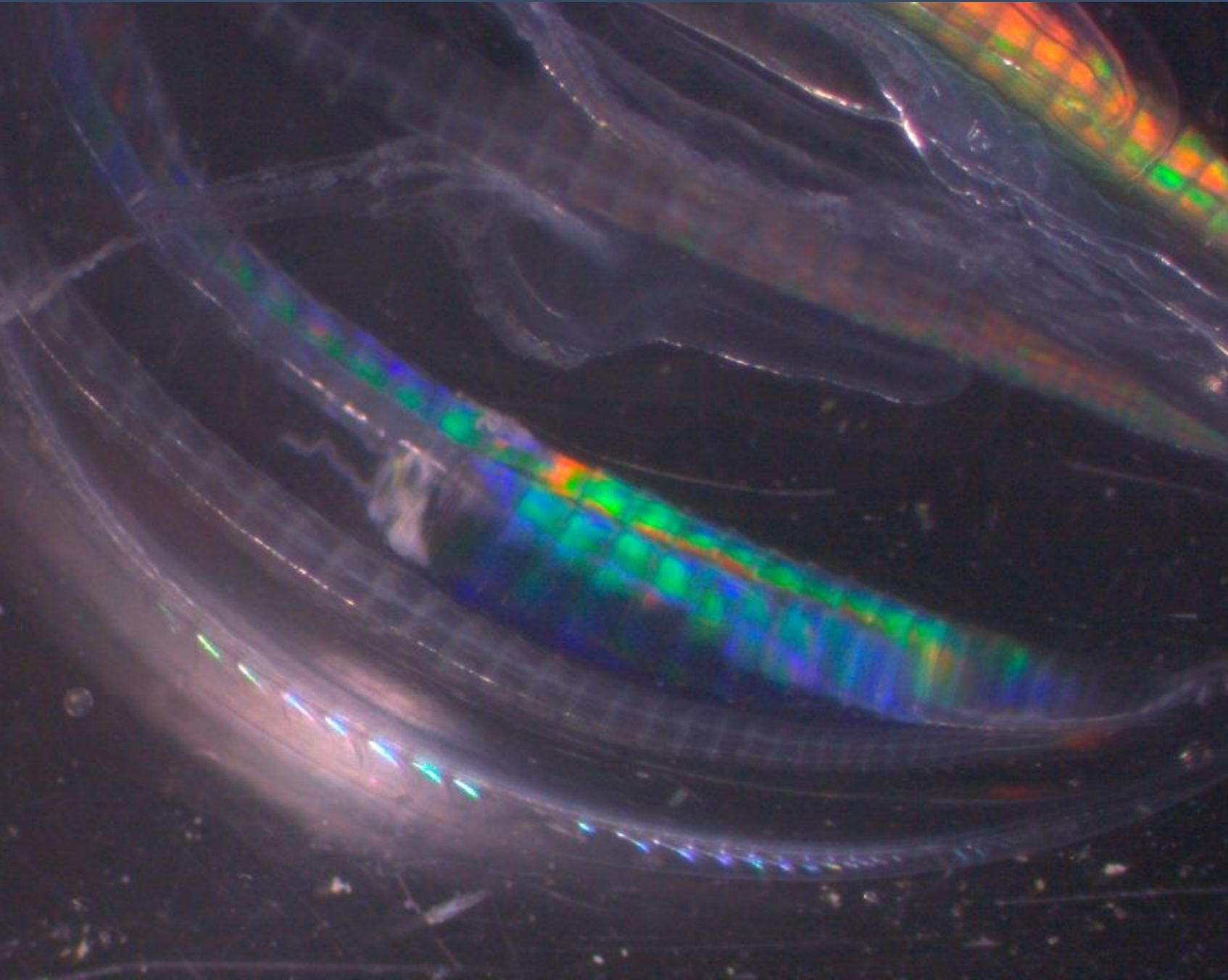
Our CTD casts gave us insight into the way salinity, temperature, and chlorophyll changed with depth. Each site had a unique profile!

Typically, salinity increases with depth while temperature decreases, since cold, salty water is more dense. This sinking of cold, salty water can cause stratification, or layering, to occur, giving different depths different characteristics. If there is no stratification, we call the water column “well mixed.” Stratification can provide insights into the availability for nutrient replenishment at the surface, which is crucial for phytoplankton. Measuring chlorophyll– the photosynthetic pigments in phytoplankton– gives us information on phytoplankton abundance and primary productivity.

Two of our CTD casts illustrate these concepts. At Unga, in a shallow bay facing the open ocean, we saw a classic well-mixed water column: the temperature gradually decreased with depth, and whole water column was of oceanic salinity with little freshwater influence. We also saw our chlorophyll maximum– indicative of the ‘best’ region for phytoplankton– at 8m, but with high levels below 8m as well. Conversely, in Icy Bay, we saw the influence of the icebergs and glaciers clearly: temperature and salinity were lowest at the surface. Both then jumped up in magnitude as a different, marine water mass intruded around 15m, after which temperature began to drop with increasing depth, as typically expected. Here the highest chlorophyll concentrations (at values a fraction of Unga’s) were in the first 5m of the water column; in the silty water of Icy Bay, that’s the most efficient depth for phytoplankton to absorb sunlight!







# 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. At times, it felt like we were looking into an alien universe. Luckily, our marine biologists know exactly what these strange creatures are! From phytoplankton, those tiny photosynthetic organisms at the base of the food web, to larvae of more familiar animals like crabs, we encountered many different creatures. Let's look at some of what we found!

We also analyzed all of our plankton samples for any species correlated to harmful algal blooms (HABs) and submitted this information to our partners at the Phytoplankton Monitoring Network (PMN). PMN is collecting observations of potentially dangerous species in order to help coastal communities better prepare for and manage these blooms. One sample from Aniakchak Bay had elevated levels of the HAB species *Chaetoceros*, *Dinophysis*, and *Alexandrium*. This sample was sent to PMN for further analysis.





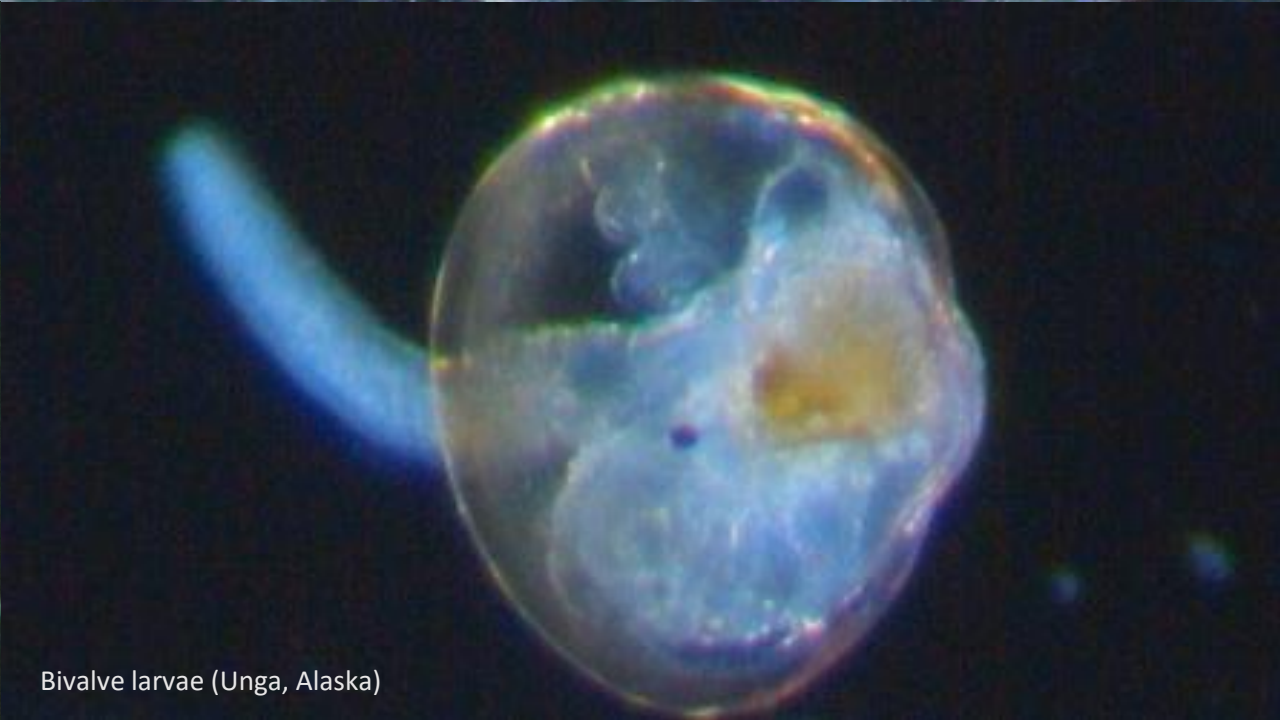
Decapod larvae (Uyak Bay, Kodiak Island, Alaska)



Copepod and Chaetoceros diatoms (St. Paul, Alaska)



Barnacle larvae (Icy Bay, Alaska)



Bivalve larvae (Unga, Alaska)



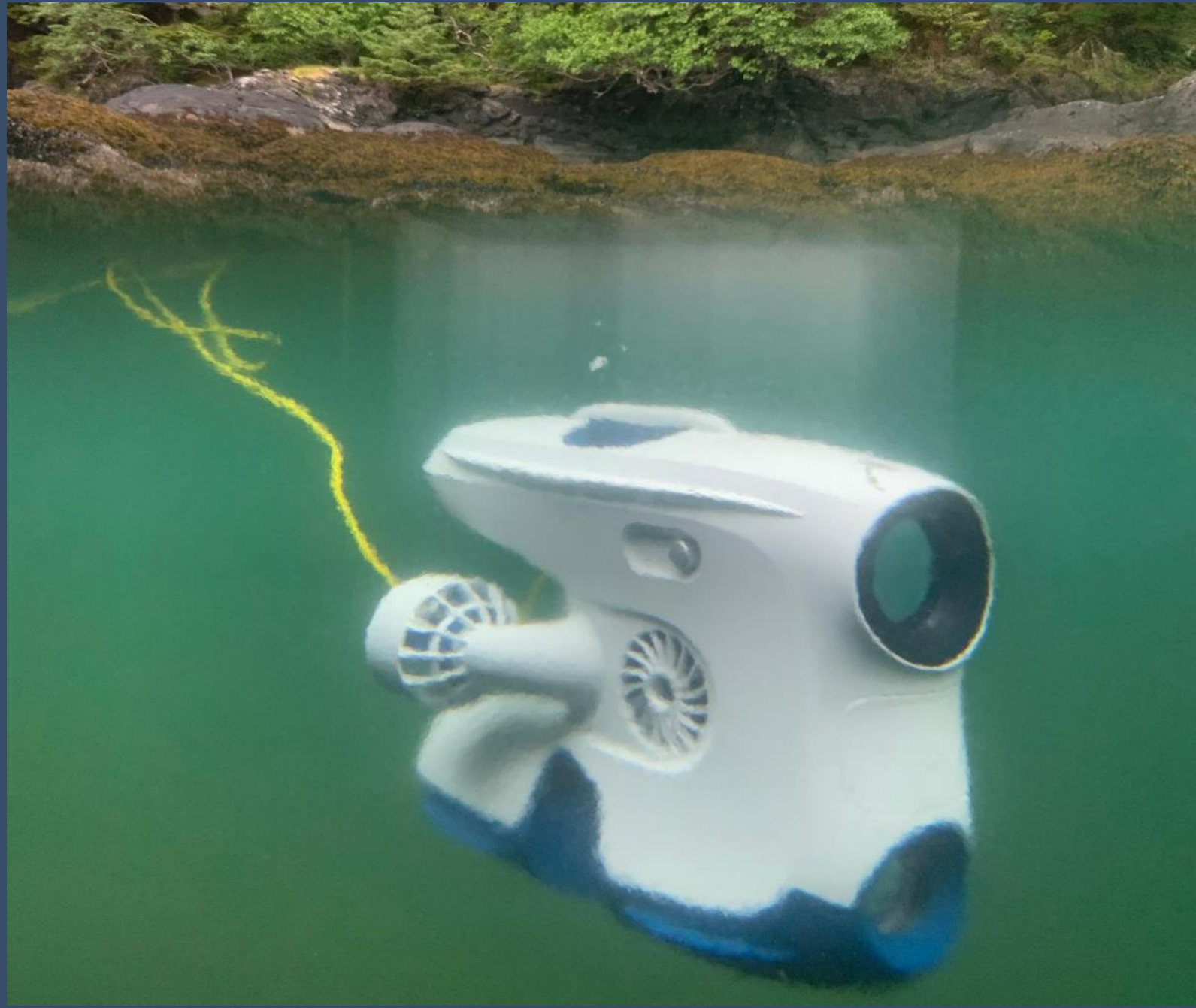
# Underwater drone

The underwater world is endlessly fascinating: it seems as if it holds an entire universe in its depths. Luckily, with our state of the art underwater drone, we are able to explore some of those places that we would otherwise only be able to imagine! We had the opportunity to deploy our drone at the following sites:

- **St. Paul**
- **Uyak Bay (Kodiak Island)**
- **Sitka**
- **Misty Fjords**

Through the lens of the drone, we saw a variety of strange and beautiful creatures in their natural habitats. Fish, invertebrate communities, kelp forests, and curious crabs— the citizens of coastal Alaska, as glimpsed with this tool of modern exploration.

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







# Citizen Science NASA Cloud Observer

Clouds aren't just fluffy shapes in the sky; they are incredibly important components to 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 this kind of data.

Our 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](#)



# Citizen Science iNaturalist

In our voyage through Alaska we traversed many ecosystems and biomes. From the temperate rainforests of Southeast Alaska to the tundra of Nome, each place presented new and unique species. The impressive amount of species and observations we documented reflects how biologically diverse Alaska is!

We used the citizen science app iNaturalist to identify and record the flora and fauna seen on our journey. Our observations are available to be used in global scientific research.

In total we recorded:

- **374** Species
- **1385** Observations

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

View our data submitted on our iNaturalist project [here](#):

[2025 July 8 - 24: MS Roald Amundsen - Alaska & British Columbia · iNaturalist](#)







# Citizen Science

## eBird

From seabirds to passerines, coastal Alaska has both an abundance and diversity of birdlife. Our onboard naturalists were constantly surveying the avifauna we encountered along our route.

Including during **10** onboard Wildlife Watch and eBird sessions, we recorded **134** bird species across **374** eBird checklists— a new record for the MS Roald Amundsen! Through the eBird platform, the data we collected is available for scientists around the world to help understand patterns of bird distribution, migration, and habitat use.

We were also delighted to host our Audubon Society guests, who made important contributions to our wildlife observations and embodied our shared mission of conservation and awareness.

View our data for this trip here:

[Alaska and British Columbia - Inside Passage, Bears and Aleutian Islands \(Southbound\) July 08 to 24, 2025 - eBird Trip Report](#)



# 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 over time, they can track individuals as they migrate across the world and through their lives! And when you submit a photo, you will be notified of any past and future matches of that individual!

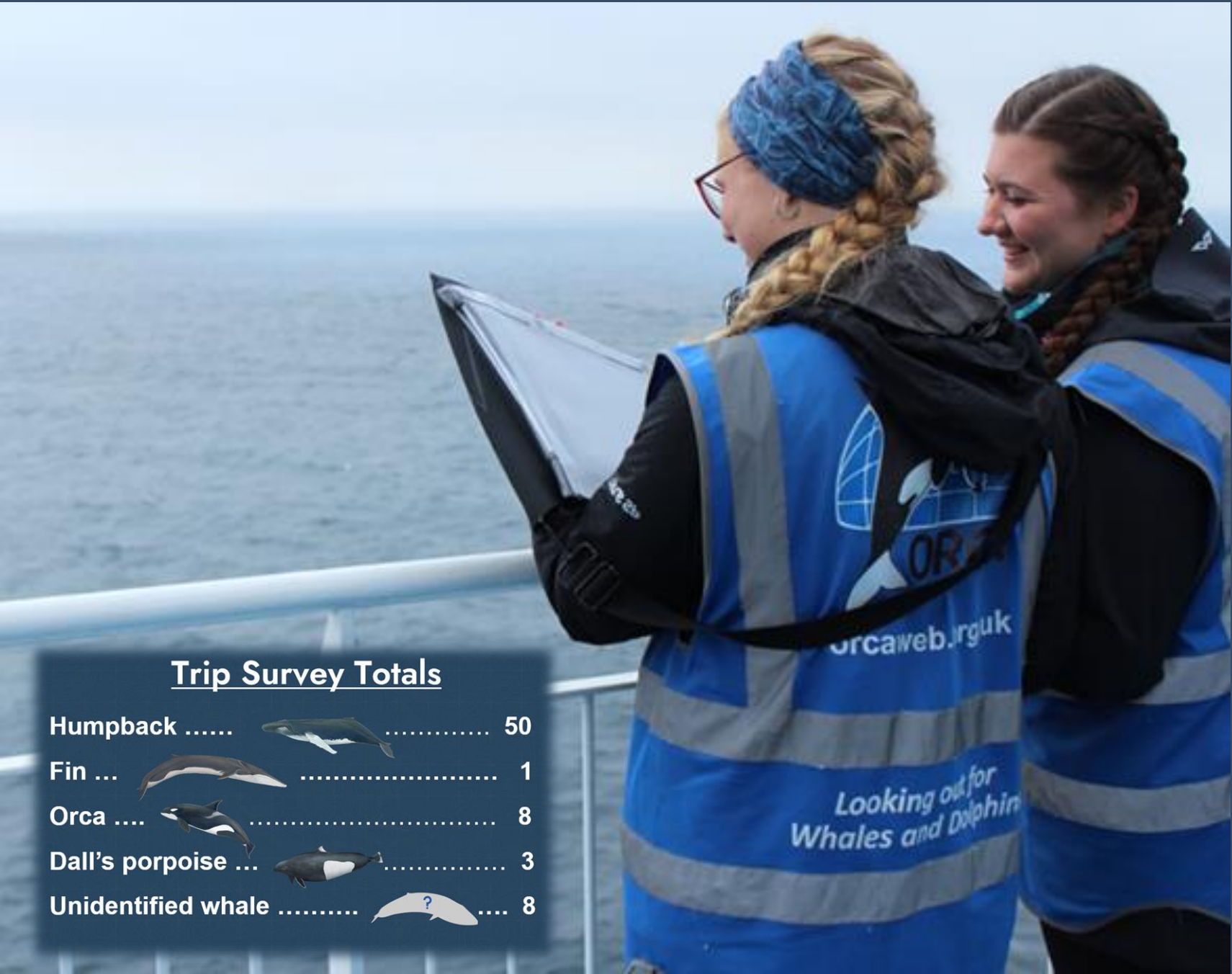
On this voyage we photographed **6 humpback whale** individuals and already received **1** match back! We also submitted photos of **4 orcas** to add to the catalogue of identified whales across the world.

View the MS Roald Amundsen's submissions to Happywhale during our voyage:  
[Happywhale: MS Roald Amundsen - July 08 to July 24](#)



Photo ©Lauren Cutler










# Partnership 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.

## Trip Survey Totals

Humpback .....		.....	50
Fin ...		.....	1
Orca ....		.....	8
Dall's porpoise ...		.....	3
Unidentified whale .....		.....	8

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



# Wildlife List - Birds





# Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Cygnus columbianus</i>	<b>Tundra Swan</b>	Zwergschwan	Cygne siffleur	Dvergsvane
<i>Somateria mollissima</i>	<b>Common Eider</b>	Eiderente	Eider à duvet	Ærfugl
<i>Histrionicus histrionicus</i>	<b>Harlequin Duck</b>	Kragenente	Arlequin plongeur	Harlekinand
<i>Melanitta americana</i>	<b>Black Scoter</b>	Pazifiktrauerente	Macreuse à bec jaune	Amerikasvartand
<i>Clangula hyemalis</i>	<b>Long-tailed Duck</b>	Eisente	Harelde kakawi	Havelle
<i>Haematopus bachmani</i>	<b>Black Oystercatcher</b>	Klippenausternfischer	Huîtreier de Bachman	Amerikasvarttjeld
<i>Charadrius semipalmatus</i>	<b>Semipalmated Plover</b>	Amerikanischer Sandregenpfeifer	Pluvier semipalmé	Amerikasandlo
<i>Arenaria interpres</i>	<b>Ruddy Turnstone</b>	Steinwälzer	Tournepierre à collier	Steinvender
<i>Calidris ptilocnemis</i>	<b>Rock Sandpiper</b>	Beringstrandläufer	Bécasseau des Aléoutiennes	Klippesnipe
<i>Cerorhinca monocerata</i>	<b>Rhinoceros Auklet</b>	Nashornalk	Macareux rhinocéros	Neshornlunde
<i>Fratercula cirrhata</i>	<b>Tufted Puffin</b>	Gelbschopflund	Macareux huppé	Topplunde
<i>Fratercula corniculata</i>	<b>Horned Puffin</b>	Hornlund	Macareux cornu	Hornlunde
<i>Aethia pusilla</i>	<b>Least Auklet</b>	Zwergalk	Starique minuscule	Flekkdvergalke
<i>Aethia pygmaea</i>	<b>Whiskered Auklet</b>	Bartalk	Starique pygmée	Praktdvergalke
<i>Aethia cristatella</i>	<b>Crested Auklet</b>	Schopfalk	Starique cristatelle	Toppdvergalke



# Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Aethia psittacula</i>	<b>Parakeet Auklet</b>	Rotschnabelalk	Starique perroquet	Papegøyealke
<i>Brachyramphus brevirostris</i>	<b>Kittlitz's Murrelet</b>	Kurzschnabelalk	Guillemot de Kittlitz	Kortnebbdvergteist
<i>Brachyramphus marmoratus</i>	<b>Marbled Murrelet</b>	Marmelalk	Guillemot marbré	Marmordvergteist
<i>Cepphus columba</i>	<b>Pigeon Guillemot</b>	Taubenteiste	Guillemot colombin	Beringteist
<i>Uria lomvia</i>	<b>Thick-billed Murre</b>	Dickschnabellumme	Guillemot de Brünnich	Polarlomvi
<i>Uria aalge</i>	<b>Common Murre</b>	Trottellumme	Guillemot marmette	Lomvi
<i>Synthliboramphus antiquus</i>	<b>Ancient Murrelet</b>	Silberalk	Guillemot à cou blanc	Nordstarik
<i>Rissa tridactyla</i>	<b>Black-legged Kittiwake</b>	Dreizehenmöwe	Mouette tridactyle	Krykkje
<i>Rissa brevirostris</i>	<b>Red-legged Kittiwake</b>	Klippenmöwe	Mouette des brumes	Rødfotkrykkje
<i>Larus brachyrhynchus</i>	<b>Short-billed Gull</b>	Kurzschnabel-Sturmmöwe	Goéland à bec court	kortnebbmåke
<i>Larus smithsonianus</i>	<b>Herring Gull</b>	Kanadamöwe	Goéland hudsonien	Amerikagråmåke
<i>Larus hyperboreus</i>	<b>Glaucous Gull</b>	Eismöwe	Goéland bourgmestre	Polarmåke
<i>Larus californicus</i>	<b>California Gull</b>	Kaliforniermöwe	Goéland de Californie	Præiegråmåke
<i>Larus glaucescens</i>	<b>Glaucous-winged Gull</b>	Beringmöwe	Goéland à ailes grises	Gråvingemåke
<i>Gavia adamsii</i>	<b>Yellow-billed Loon</b>	Gelbschnabeltaucher	Plongeon à bec blanc	Gulnebbblom



# Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Phoebastria immutabilis</i>	Laysan Albatross	Laysanalbatros	Albatros de Laysan	Laysanalbatross
<i>Phoebastria nigripes</i>	Black-footed Albatross	Schwarzfußalbatros	Albatros à pieds noirs	Svartfotalbatross
<i>Phoebastria albatrus</i>	Short-tailed Albatross	Kurzschwanzalbatros	Albatros à queue courte	Galapagosalbatross
<i>Oceanodroma furcata</i>	Fork-tailed Storm Petrel	Gabelschwanz-Wellenläufer	Océanite à queue fourchue	Gråstormsvale
<i>Oceanodroma leucorhoa</i>	Leach's Storm Petrel	Wellenläufer	Océanite cul-blanc	Stormsvale
<i>Fulmarus glacialis</i>	Northern Fulmar	Eissturmvogel	Fulmar boréal	Havhest
<i>Ardenna tenuirostris</i>	Short-tailed Shearwater	Kurzschwanz-Sturmtaucher	Puffin à bec grêle	Smalnebblire
<i>Phalacrocorax urile</i>	Red-faced Cormorant	Rotgesichtscharbe	Cormoran à face rouge	Rødmaskeskarv
<i>Phalacrocorax pelagicus</i>	Pelagic Cormorant	Meerscharbe	Cormoran pélagique	Beringskarv
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Weißkopf-Seeadler	Pygargue à tête blanche	Hvithodehavørn
<i>Megaceryle alcyon</i>	Belted Kingfisher	Gürtelfischer	Martin-pêcheur d'Amérique	Belteisfugl
<i>Pica hudsonia</i>	Black-billed Magpie	Hudsonelster	Pie d'Amérique	Svartnebbskjære
<i>Corvus brachyrhynchos</i>	American Crow	Amerikakrähé	Corneille d'Amérique	Amerikakråke
<i>Corvus corax</i>	Common Raven	Kolkrabe	Grand Corbeau	Ravn
<i>Hirundo rustica</i>	Barn Swallow	Rauchschwalbe	Hirondelle rustique	Låvesvale



# Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Regulus satrapa</i>	Golden-crowned Kinglet	Indianergoldhähnchen	Roitelet à couronne dorée	Ildkronefuglekonge
<i>Troglodytes pacificus</i>	Pacific Wren	Pazifikaunkönig	Troglodyte de Baird	Barsmett
<i>Catharus ustulatus</i>	Swainson's Thrush	Zwergmusendrossel	Grive à dos roussâtre	Brunkinnskogtrost
<i>Catharus guttatus</i>	Hermit Thrush	Einsiedler-Musendrossel	Grive solitaire	Eremittskogtrost
<i>Pinicola enucleator</i>	Pine Grosbeak	Hakengimpel	Durbec des sapins	Konglebit
<i>Leucosticte tephrocotis</i>	Grey-crowned Rosy Finch	Schwarzstirn-Schneegimpel	Roselin à tête grise	Grånakkefjellfink
<i>Acanthis flammea</i>	Common Redpoll	Birkenzeisig	Sizerin flammé	Gråsisik
<i>Calcarius lapponicus</i>	Lapland Longspur	Spornammer	Plectroplane lapon	Lappspurv
<i>Plectrophenax nivalis</i>	Snow Bunting	Schneeammer	Plectroplane des neiges	Snøspurv
<i>Plectrophenax hyperboreus</i>	McKay's Bunting	Beringschneeammer	Plectroplane blanc	Hvitspurv
<i>Zonotrichia atricapilla</i>	Golden-crowned Sparrow	Kronenammer	Bruant à couronne dorée	Gulkronespurv
<i>Passerculus sandwichensis</i>	Savannah Sparrow	Grasammer	Bruant des prés	Musespurv
<i>Melospiza melodia</i>	Song Sparrow	Singammer	Bruant chanteur	Sangspurv
<i>Cardellina pusilla</i>	Wilson's Warbler	Mönchswaldsänger	Paruline à calotte noire	Kalottparula
<i>Pterodroma sandwichensis</i>	Hawaiian Petrel	Hawaiisturmvogel	Pétrel des Hawaï	Hawaiipetrell



# Wildlife List - Marine Mammals





# Wildlife List – Marine Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Megaptera novaeangliae</i>	<b>Humpback whale</b>	Buckelwal	Baleine à bosse	Knølhval
<i>Balaenoptera physalus</i>	<b>Fin whale</b>	Finnwal	Rorqual commun	Finhval
<i>Phocoena phocoena</i>	<b>Harbor porpoise</b>	Schweinswal	Marsouin commun	Nise
<i>Phocoenoides dalli</i>	<b>Dall's porpoise, Dall porpoise</b>	Weißflankenschweinswal	Marsouin de Dall	Dalls nise
<i>Eumetopias jubatus</i>	<b>Steller Sea Lion</b>	Stellerscher Seelöwe	Lion de mer de Steller	Hvalross
<i>Phoca vitulina</i>	<b>Harbour Seal</b>	Seehund	Phoque commun	Steinkobbe
<i>Enhydra lutris</i>	<b>Sea Otter</b>	Meerotter	Loutre de mer	Havoter
<i>Orcinus orca</i>	<b>Orca</b>	Schwertwal	Orque	Spekkhogger
<i>Phoca largha</i>	<b>Spotted Seal</b>	Largha-Robbe	Phoque tacheté	Flekksel
<i>Callorhinus ursinus</i>	<b>Northern Fur Seal</b>	Nördliche Seebär	Otarie à fourrure du Nord	Nordlig pelssel



# Wildlife List - Land Mammals



# Wildlife List – Terrestrial Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Tamiasciurus hudsonicus</i>	<b>American Red Squirrel</b>	Gemeines Rothörnchen	Écureuil roux américain	Amerikansk ekorn
<i>Ursus arctos</i>	<b>Brown bear</b>	Braunbär	Ours brun	Isbjørn
<i>Alces alces gigas</i>	<b>Alaskan Moose</b>	Elch	Élan	Elk
<i>Oreamnos americanu</i>	<b>Mountain goat</b>	Schneeziege	Chèvre des montagnes Rocheuses	Snøgeit
<i>Vulpes vulpes</i>	<b>Red Fox</b>	Rotfuchs	Renard roux	Rødrev
<i>Alopex lagopus</i>	<b>Arctic Fox</b>	Polarfox	Renard arctique	Fjellrev





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