

A scenic landscape featuring a large brown bear walking across a shallow lake. The background consists of rugged, green mountains with patches of snow under a cloudy sky. The water is calm, reflecting the bear and the surrounding environment. A large, semi-transparent blue 'IIV' logo is overlaid on the left side of the image.

Science & Education Report

MS Roald Amundsen 22 June – 04 July, 2024

Alaska and British Columbia - Wilderness,
Glaciers and Culture



Arts, Crafts & Creativity

We had a ship full of amazing artists, knitters, crafters, and dancers! In addition to the memories of our trip, we created tangible keepsakes of our journey.

In addition, our Cultural Interpreter Norma taught us two of her family's dances and shared with us the traditional tools and personal handicrafts she was creating over the course of our voyage.



History & Culture

We began our voyage in Seward and explored College Fjord, traversing the ancestral lands of the Sugpiaq. Our stops in Icy Bay and along the Inside Passage were among Tlingit land, where we witnessed the thriving Tlingit culture expressed through art, cultural artifacts, and the stories of our local guides. As we left Alaskan waters and sailed toward Vancouver, we entered the First Nation lands of the Haida and Kwakwaka'wakw, whose vibrant culture was shared with us by our hosts in Alert Bay. 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, and also through the stories, songs, dances, and art our Yup'ik cultural interpreter, Norma, shared with us.

In our onboard lectures, we also learned about the history the region's settlement by Europeans and its purchase by and later statehood in the United States. All of these histories exist intertwined, in a story that is still being written!





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 getting up close and personal with glacier 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.



Science Boat

We investigated the underwater world in
!!!!!! Science Boat sessions in:

Icy Fjord
William Henry Bay
Tracy Arm
Red Bluff
Misty Fjords

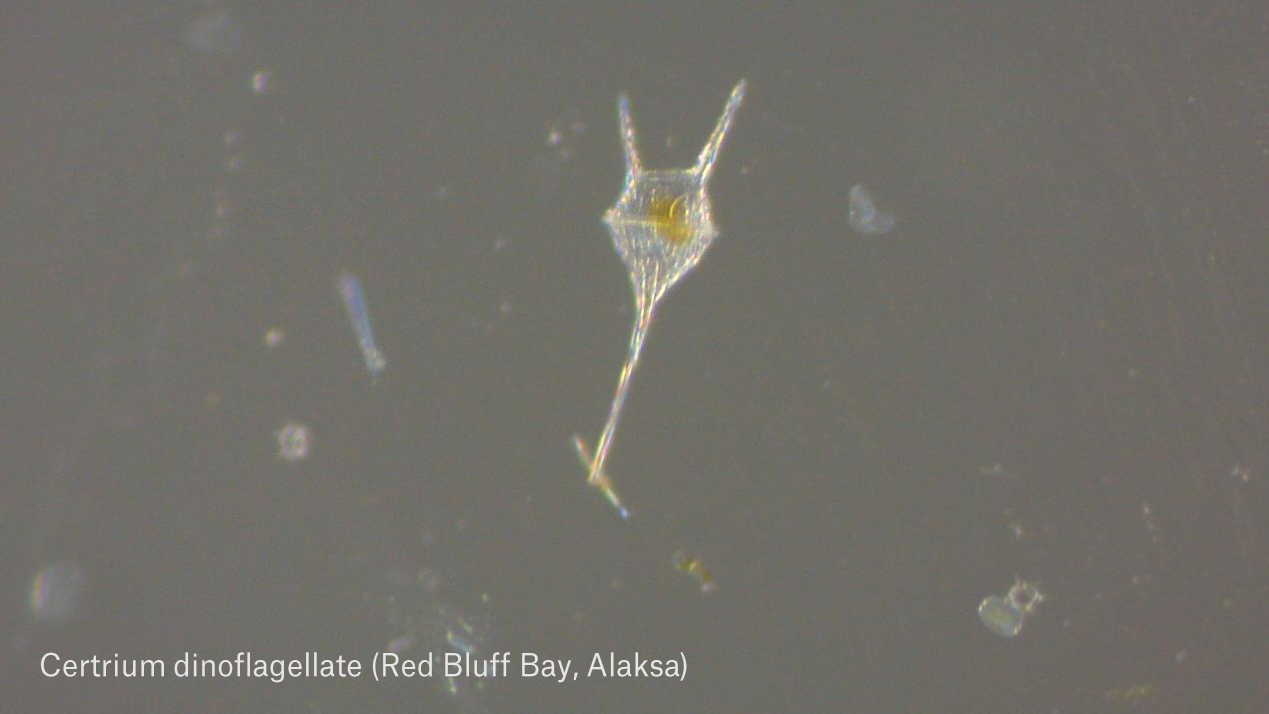
We observed and discussed the wildlife and geology in each location to better understand the area's ecology.

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.

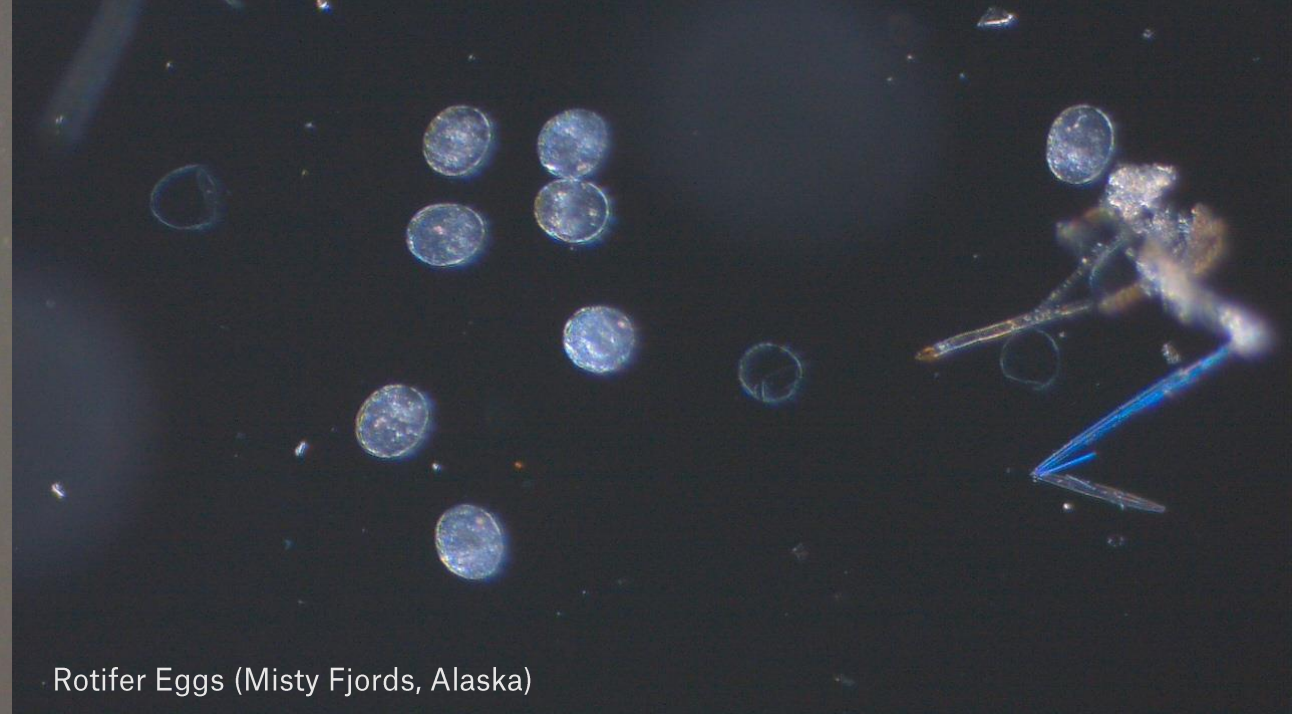


Plankton Samples

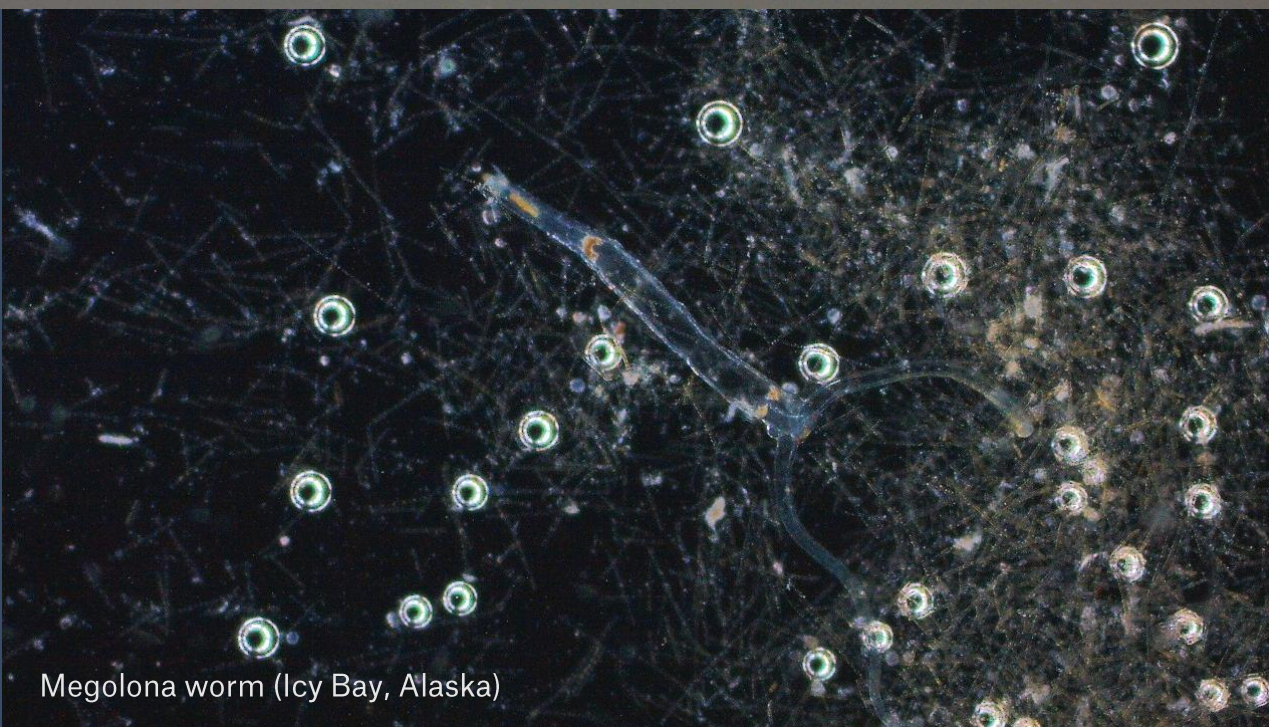
After we collected water samples on the Science Boat, we brought them back to the Science Center to look at them under the microscope. Here are some things we found!



Certrium dinoflagellate (Red Bluff Bay, Alaska)



Rotifer Eggs (Misty Fjords, Alaska)



Megolona worm (Icy Bay, Alaska)



Cosinodiscus diatom & Tripos dinoflagellate (Tracy Arm, Alaska)



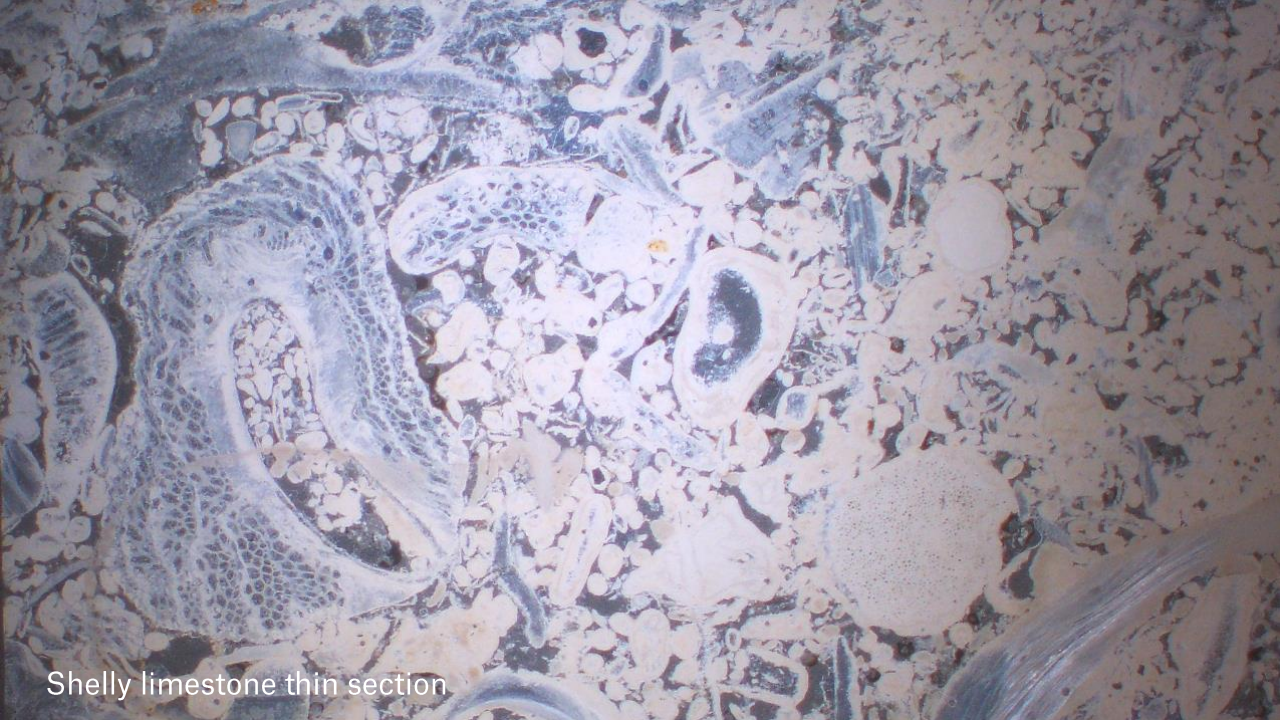
Geology

We studied the environment from all scales – after taking in the magnificent scenery, we examined rock samples by hand and then zoomed deeper into thin sections. We discussed the names and origins of different rocks, how they are formed and how geologists classify them.

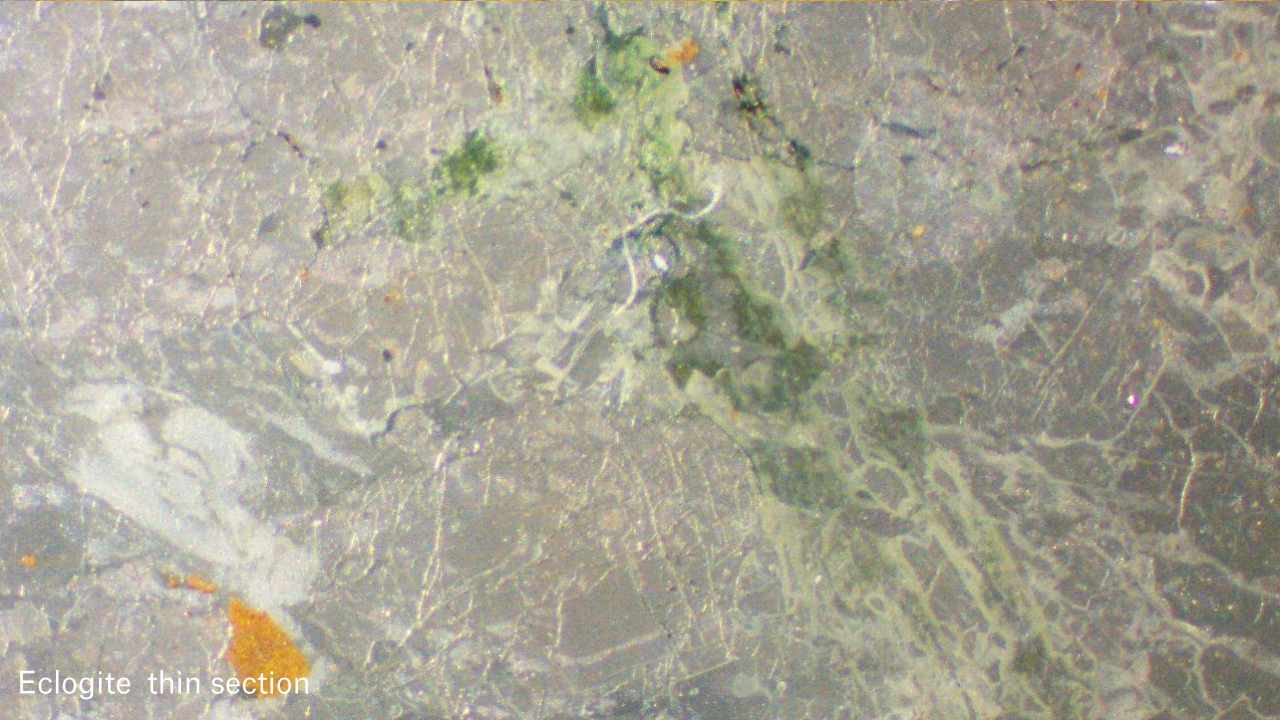
By understanding the geological history of Southeast Alaska on a large scale, from the succession of terranes to the last glaciations, we are able to understand the formation of the landscapes, the rocks that surround us, the gemstones, the precious metals, and the common minerals with uncommon stories.



William Henry Bay beach cobble; Basalt with iron oxides and veins



Shelly limestone thin section



Eclogite thin section



Wrangell Garnet

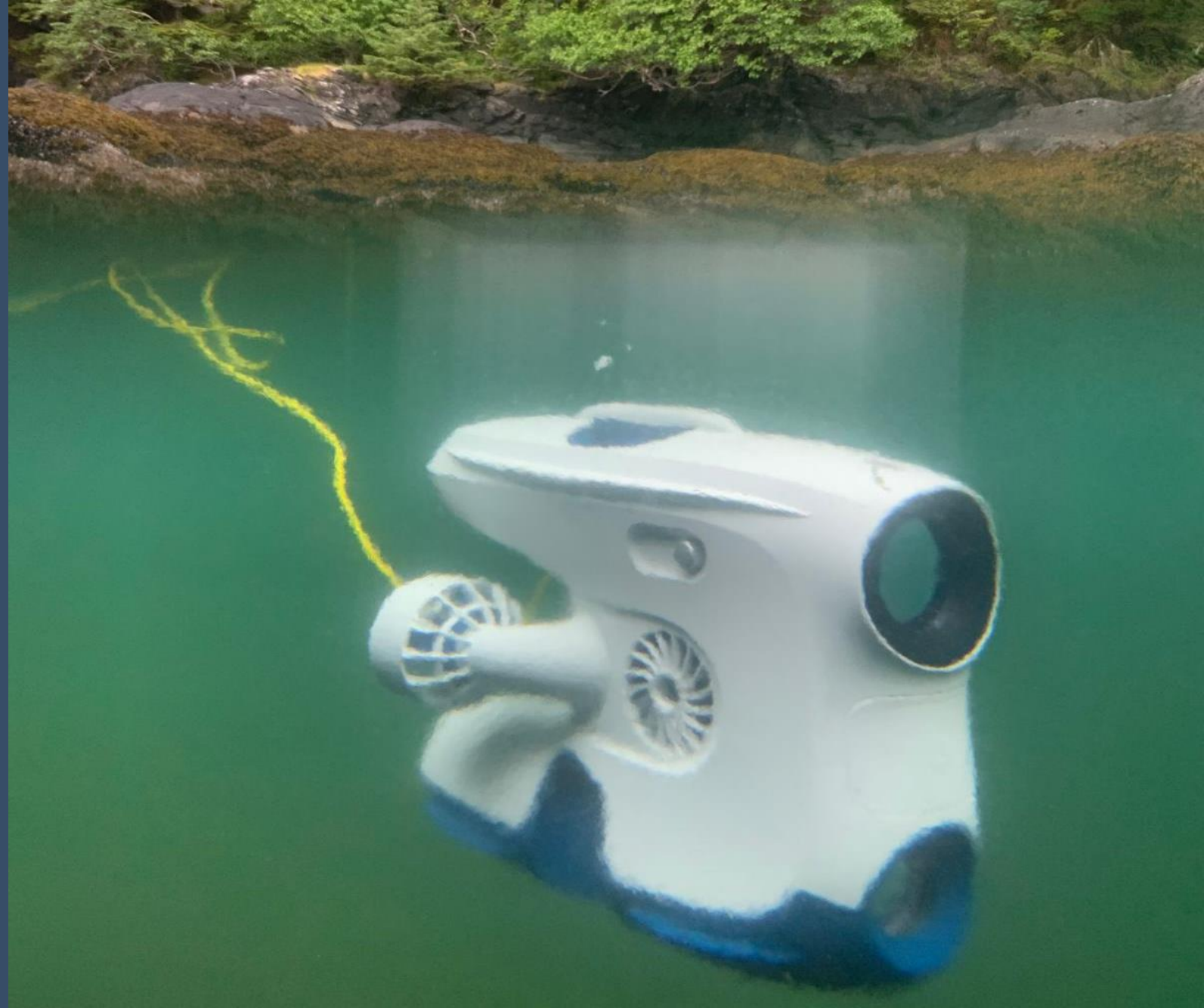
Underwater Drone

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

- Sitka
- Red Bluff Bay
- Misty Fjords

We saw a variety of the strange and beautiful creatures that inhabit the coastal waters of Southeast Alaska, including anemonies, sea cucumbers, fish, sunflower 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:

- 87 Species
- 159 Observations

View our data submitted on our iNaturalist project here:

[2024 June 22 - July 04: MS Roald Amundsen - Alaska & British Columbia · iNaturalist](#)





eBird

Our onboard ornithologists were constantly surveying the birdlife we encountered along our route. Including 7 formal Wildlife Watches, we recorded 60 species across 20 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/254460>

Happywhale

We encountered 5 species of whales and dolphins during our time along the Alaskan Coastline. We have submitted photos of 4 individuals to Happywhale to add to their catalogue of identified whales across the world, one of which has already returned with a match!

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

<https://happywhale.com/org/25;svy=107981>



Wildlife List - Birds



Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Anas platyrhynchos</i>	Mallard	Stockente	Canard colvert	Stokkand
<i>Histrionicus histrionicus</i>	Harlequin Duck	Kragenente	Arlequin plongeur	Harlekinand
<i>Melanitta perspicillata</i>	Surf Scoter	Brillenente	Macreuse à front blanc	Brilleand
<i>Melanitta deglandi</i>	White-winged Scoter	Höckersamtente	Macreuse à ailes blanches	Knoppsjørre
<i>Bucephala islandica</i>	Barrow's Goldeneye	Spatelente	Garrot d'Islande	Islandsand
<i>Mergus merganser</i>	Common Merganser	Gänsesäger	Grand Harle	Laksand
<i>Columba livia</i>	Rock Pigeon	Felsentaube	Pigeon biset	Klippedue (Bydue)
<i>Streptopelia decaocto</i>	Eurasian Collared Dove	Türkentaube	Tourterelle turque	Tyrkerdue
<i>Selasphorus rufus</i>	Rufous Hummingbird	Rotrücken-Zimtelfe	Colibri roux	Rødkolibri
<i>Haematopus bachmani</i>	Black Oystercatcher	Klippenausternfischer	Huîtrier de Bachman	Amerikasvarttjeld
<i>Actitis macularius</i>	Spotted Sandpiper	Drosseluferläufer	Chevalier grivelé	Flekksnipe
<i>Stercorarius pomarinus</i>	Pomarine Jaeger	Spatelraubmöwe	Labbe pomarin	Polarjo
<i>Cerorhinca monocerata</i>	Rhinoceros Auklet	Nashornalk	Macareux rhinocéros	Neshornlunde
<i>Fratercula cirrhata</i>	Tufted Puffin	Gelbschopflund	Macareux huppé	Topplunde
<i>Fratercula corniculata</i>	Horned Puffin	Hornlund	Macareux cornu	Hornlunde
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	Marmelalk	Guillemot marbré	Marmordvergteist
<i>Cephus columba</i>	Pigeon Guillemot	Taubenteiste	Guillemot colombin	Beringteist

Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Uria aalge</i>	Common Murre	Trottellumme	Guillemot marmette	Lomvi
<i>Synthliboramphus antiquus</i>	Ancient Murrelet	Silberalk	Guillemot à cou blanc	Nordstarik
<i>Rissa tridactyla</i>	Black-legged Kittiwake	Dreizehenmöwe	Mouette tridactyle	Krykkje
<i>Chroicocephalus philadelphia</i>	Bonaparte's Gull	Bonapartemöwe	Mouette de Bonaparte	Kanadahettemåke
<i>Larus delawarensis</i>	Ring-billed Gull	Ringschnabelmöwe	Goéland à bec cerclé	Ringnebbmåke
<i>Larus brachyrhynchus</i>	Short-billed Gull	Kurzschnabel-Sturmmöwe	Goéland à bec court	Kortnebbmåke
<i>Larus smithsonianus</i>	Herring Gull	Kanadamöwe	Goéland hudsonien	Amerikagråmåke
<i>Larus hyperboreus</i>	Glaucous Gull	Eismöwe	Goéland bourgmestre	Polarmåke
<i>Larus glaucescens</i>	Glaucous-winged Gull	Beringmöwe	Goéland à ailes grises	Gråvingemåke
<i>Hydroprogne caspia</i>	Caspian Tern	Raubseeschwalbe	Sterne caspienne	Rovterne
<i>Sterna paradisaea</i>	Arctic Tern	Küstenseeschwalbe	Sterne arctique	Rødnebbterne
<i>Gavia pacifica</i>	Pacific Loon	Pazifiktaucher	Plongeon du Pacifique	Amerikastorlom
<i>Gavia immer</i>	Common Loon	Eistaucher	Plongeon huard	Islom
<i>Oceanodroma furcata</i>	Fork-tailed Storm Petrel	Gabelschwanz-Wellenläufer	Océanite à queue fourchue	Gråstormsvale
<i>Fulmarus glacialis</i>	Northern Fulmar	Eissturmvogel	Fulmar boréal	Havhest
<i>Ardenna grisea</i>	Sooty Shearwater	Dunkler Sturmtaucher	Puffin fuligineux	Grålire
<i>Phalacrocorax urile</i>	Red-faced Cormorant	Rotgesichtscharbe	Cormoran à face rouge	Rødmaskeskarv

Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Phalacrocorax pelagicus</i>	Pelagic Cormorant	Meerscharbe	Cormoran pélagique	Beringskarv
<i>Ardea herodias</i>	Great Blue Heron	Kanadareihier	Grand Héron	Herodiashegre
<i>Pandion haliaetus</i>	Osprey	Fischadler	Balbusard pêcheur	Fiskeørn
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Weißkopf-Seeadler	Pygargue à tête blanche	Hvithodehavørn
<i>Buteo jamaicensis</i>	Red-tailed Hawk	Rotschwanzbussard	Buse à queue rousse	Rødhalevåk
<i>Megaceryle alcyon</i>	Belted Kingfisher	Gürtelfischer	Martin-pêcheur d'Amérique	Belteisfugl
<i>Sphyrapicus ruber</i>	Red-breasted Sapsucker	Feuerkopf-Saftlecker	Pic à poitrine rouge	Rødbrystsevjespett
<i>Empidonax difficilis</i>	Western Flycatcher	Feuchtwald-Schnäppertyrann	Moucherolle obscur	vestempid
<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>Poecile rufescens</i>	Chestnut-backed Chickadee	Rotrückenmeise	Mésange à dos marron	Kastanjemeis
<i>Tachycineta bicolor</i>	Tree Swallow	Sumpfschwalbe	Hirondelle bicolore	Tresvale
<i>Tachycineta thalassina</i>	Violet-green Swallow	Veilchenschwalbe	Hirondelle à face blanche	Talassinsvale
<i>Hirundo rustica</i>	Barn Swallow	Rauchschwalbe	Hirondelle rustique	Låvesvale
<i>Corthylio calendula</i>	Ruby-crowned Kinglet	Rubingoldhähnchen	Roitelet à couronne rubis	Rubinfuglekonge
<i>Regulus satrapa</i>	Golden-crowned Kinglet	Indianergoldhähnchen	Roitelet à couronne dorée	Ildkronefuglekonge


Wildlife List – Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Certhia americana</i>	Brown Creeper	Amerikabaumläufer	Grimpereau brun	Amerikatrekryper
<i>Cinclus mexicanus</i>	American Dipper	Grauwasseramsel	Cincla d'Amérique	Gråfossekall
<i>Sturnus vulgaris</i>	European Starling	Star	Étourneau sansonnet	Stær
<i>Ixoreus naevius</i>	Varied Thrush	Halsbanddrossel	Grive à collier	Båndtrost
<i>Spinus pinus</i>	Pine Siskin	Fichtenzeisig	Tarin des pins	Stripesisik
<i>Melospiza melodia</i>	Song Sparrow	Singammer	Bruant chanteur	Sangspurv
<i>Melospiza lincolni</i>	Lincoln's Sparrow	Lincolnammer	Bruant de Lincoln	Gråbrynspurv
<i>Leiothlypis celata</i>	Orange-crowned Warbler	Orangefleck-Waldsänger	Paruline verdâtre	Oransjekroneparula
<i>Setophaga petechia</i>	Yellow Warbler	Goldwaldsänger	Paruline jaune	Gulparula
<i>Setophaga coronata</i>	Yellow-rumped Warbler	Kronenwaldsänger	Paruline à croupion jaune	Myrteparula
<i>Setophaga townsendi</i>	Townsend's Warbler	Townsendwaldsänger	Paruline de Townsend	Granparula
<i>Cardellina pusilla</i>	Wilson's Warbler	Mönchswaldsänger	Paruline à calotte noire	Kalottparula
<i>Patagioenas fasciata</i>	Band-tailed Pigeon	Bandtaube	Pigeon à queue barrée	Bånddue
<i>Molothrus ater</i>	Brown-headed Cowbird	Braunkopf-Kuhstärling	Vacher à tête brune	Brunhodettrupial

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. The overall scene is dynamic and captures a natural moment in marine life.

Wildlife List - Marine Mammals

Wildlife List – Marine Mammals



SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Megaptera novaeangliae</i>	Humpback whale	Buckelwal	Baleine à bosse	Knølhval
<i>Orcinus orca</i>	Killer whale/Orca	Schwertwal, Orca	Orque	Spekkhogger
<i>Lagenorhynchus acutus</i>	Atlantic white-sided dolphin	Atlantischer Weißseitendelfin	Lagénorhynque à flancs blancs de l'Atlantique	Kvitskjeving
<i>Phocoenoides dalli</i>	Dall's porpoise	Weißflankenschweinswal	Marsouin de Dall	Dalls nise
<i>Phocoena phocoena</i>	Harbor porpoise	Schweinswal	Marsouin commun	Nise
<i>Phoca vitulina</i>	Harbor seal/Common seal	Seehund	Phoque veau-marin	Steinkobbe
<i>Eumetopias jubatus</i>	Steller sea lion/Northern sea lion	Stellerscher Seelöwe	Lion de mer de Steller	Stellers sjøløve
<i>Enhydra lutris</i>	Sea otter	Seeotter	Loutre de mer	Havoter

Wildlife List - Land Mammals



Wildlife List – Land Mammals

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	NORSK
<i>Ursus arctos</i>	Brown bear	Braunbär	Ours brun	Isbjon
<i>Odocoileus hemionus sitkensis</i>	Sitka black-tailed deer	Großohrhirsch	Cerf a queue noire	Svart-tailed Hjort
<i>Tamiasciurus hudsonicus</i>	Red squirrel	Rotes Eichhörnchen	Ecureuil rouge	Rød Ekorn

A humpback whale is captured in the middle of a breach, its dark, ribbed back and white, mottled head and neck rising from the deep blue ocean. The whale's head is tilted upwards, and its mouth is slightly open. The ocean surface is choppy with small waves. In the background, the horizon line is visible under a pale, overcast sky. Overlaid on the left side of the image are large, white, semi-transparent letters 'THY'. The 'T' is on the far left, the 'H' is in the middle-left, and the 'Y' is in the middle-right, partially overlapping the whale's head and neck.

THY

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Inner Scientist