

The background of the slide features two whales swimming in deep blue water. One whale is in the foreground, swimming towards the right, while another is slightly behind and to the left. The lighting is soft and blue, creating a serene underwater atmosphere. A large, semi-transparent 'IHW' logo is visible on the left side of the image.

Science & Education Report

MS Spitsbergen 2024

MS Spitsbergen

Northern Lights Expedition Cruise

16.03.2024 – 28.03.2024





Science & Education Program

The Science and Education Team onboard accompanied you in an expedition cruise along the Norwegian coast from Amsterdam.

Through lectures, discovery sessions, nature walks and cultural visits ashore, they aimed at making every expedition day a unique learning experience.



Lectures

Lectures covering traditions, music, and wildlife (cetaceans, fish, plankton, birds, seals) aimed at understanding the culture and biodiversity of Norway.



Workshops

Hands-on, interactive sessions and short talks were held in the science center to introduce you to plankton, marine plastic pollution, bird's eggs, cetacean acoustics, seaweeds, nautical knots, and to the use of microscopes and citizen science applications like iNaturalist.

History & Culture

During your voyage, you had the privilege of delving into Norway's rich history under the guidance of our onboard historian, Andrea. This encompassed a wide array of topics, ranging from ancient Viking sagas and mythology to the intricacies of Norwegian folklore, fairytales, and the enduring legacy of the Sámi people. Additionally, you were introduced to the remarkable feats of Norwegian polar explorers.

Furthermore, you were invited to participate in captivating storytelling evenings, where age-old legends came to life, including the mischievous presence of trolls, of course!



History & Culture

During the time in Svolvær, you strolled towards the renowned fish racks, immersing ourselves in the realm of iconic stockfish alongside the activity team.

Due to its exposed location, arid atmosphere, and persistent breezes, this region serves as an optimal site for air-drying the cod suspended on the racks. The fish remains there for a duration ranging from two weeks to four months, contingent upon the prevailing season and desired texture.

For numerous years, this practice has been the cornerstone of Norway's economy, playing a pivotal role in the nation's progress and advancement.

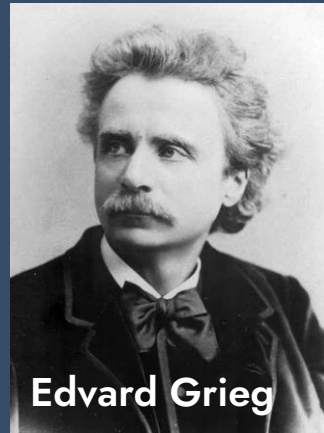


History & culture

During a listening session, you were offered the chance to delve deeper into music and compositions influenced by Norse mythology.

Norse mythology has long been a rich source of inspiration for musicians across various genres, from Edvard Grieg's and Jean Sibelius' classical compositions to the darkest realms of metal. Contemporary artists and "Viking metal bands" such as Wardruna draw their inspiration from Norse sagas and even use authentic instruments and non-traditional instruments like tress or torches in their records.

These instances illustrate how Nordic mythology remains versatile and captivating in contemporary music, highlighting the ability of ancient narratives to resonate anew in today's world. Through the works of these artists, the gods, heroes, and myths of the North continue to enthrall and inspire audiences globally.



LISTENING SESSION: Music for the Gods

1. Edvard Grieg – Peer Gynt Suite
2. Jean Sibelius – Tapiola, Op.112
3. Richard Wagner – Götterdämmerung: Siegfried's Funeral
4. Jan Garbarek – Gula Gula
5. Amon Amarth – The Pursuit of Vikings
6. Wardruna – UruR
7. Alessandra Mele – Queen of The Kings



Arts & Crafts

A variety of inspiring art workshops were offered to you onboard.

These workshops were on bottle painting, Viking runes, Sami symbols, clay-troll making, and nature-inspired drawing. In Fjærland you also discovered traditional weaving patterns.







NASA cloud observer

MS Spitsbergen 2024
16th March – 28th March 2024

4 Globe Cloud observations were collected on:

March 19th (Kalvåg)
March 20th (at-sea day)
March 23rd (Honningsvåg)
March 26th (at-sea day)

Your observations will help NASA improve the understanding of Earth's atmosphere and climate by providing valuable data for scientific research and climate modeling.

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



iNaturalist

MS Spitsbergen 2024
16th March – 28th March 2024

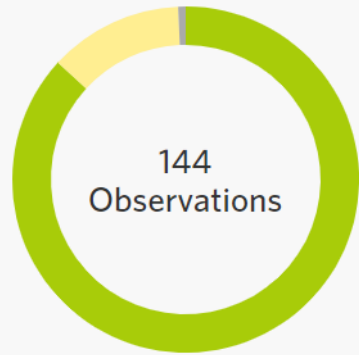
Biodiversity data collected & people
involved in it included:

144 Observations
63 Species
39 Identifiers
2 Observers

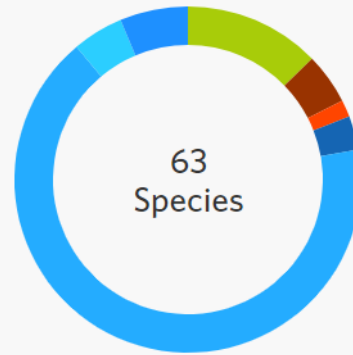
[View our data](#) submitted on our
iNaturalist project



MANOR2406 / MANOR2324WI - MS Spitsbergen 16.03-28.03.2024



- Research Grade
- Needs ID
- Casual

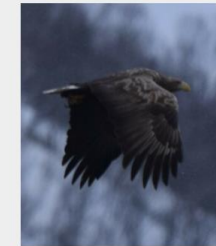


- Unknown
- Protozoans
- Fungi
- Plants
- Chromista
- Mollusks
- Insects
- Arachnids
- Ray-Finned F...
- Amphibians
- Reptiles
- Birds
- Mammals
- Other Animals



Sea Vase

(*Ciona intestinalis*)



White-tailed Eagle

(*Haliaeetus albicilla*)

Research Grade



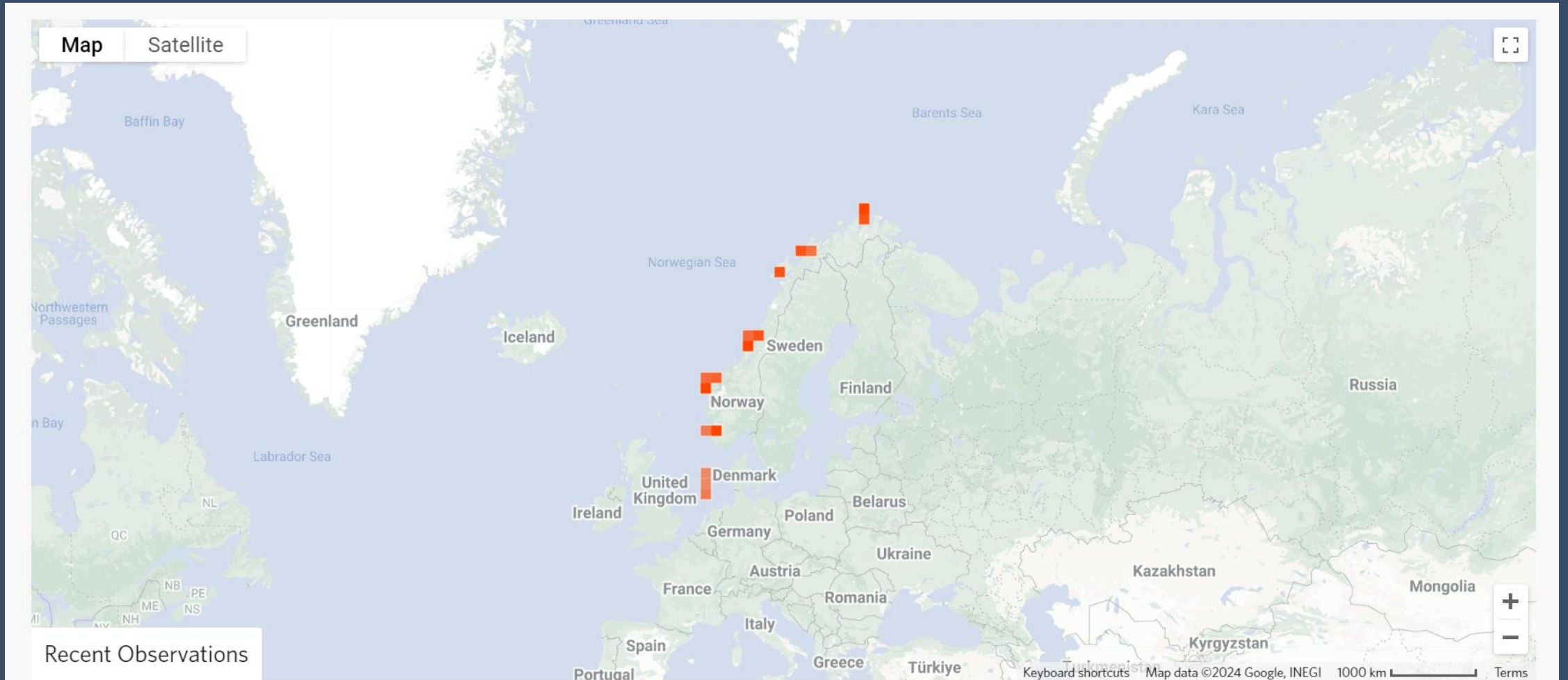
Humpback Whale

(*Megaptera novaeangliae*)

Research Grade



MANOR2406 / MANOR2324WI - MS Spitsbergen 16-28.03.2024





Aurorasaurus

Whilst in Northern Norway, images of Northern Lights, *Aurora borealis*, were submitted to Aurorasaurus, a citizen science project and website that gathers observations of auroras from users around the world.

The predominant hue of the aurora appeared as green, a result of charged particles from the Sun colliding with oxygen molecules in the Earth's atmosphere, typically occurring at altitudes ranging between 100 and 200 kilometers.

The observations and the photographs you helped submitting to Aurorasaurus will contribute to enhancing scientists' comprehension of auroras and refining prediction models.

[View our data](#) submitted on the Aurorasaurus website



Science Boat

Over the course of three scientific boat sessions, two in Skorpa and one in Fjærland, the onboard science and education coordinator, Chiara, and marine scientist Dougie, led you in conducting water sampling and measurements to explore the diversity and density of plankton and measure the physical properties of water at different depths in the ocean.

The following three instruments were used:

- 1) Plankton net, to collect samples of plankton from the water for study;
- 2) CTD (Conductivity, Temperature, and Depth device), to measure properties of seawater such as salinity, temperature, and depth;
- 3) Secchi disk, to determine water clarity by measuring the depth at which the disk becomes invisible, indicating the abundance of phytoplankton.

Secchi Disk

In Skorpa, Secchi depths were of 13.3 m and 13.8 m during the two science boat sessions. These measurements were submitted via the Secchi app and contributed to a worldwide database in order to support the study of marine phytoplankton and to investigate the changes in abundance of plant-like organisms over time.

In Fjaerland, the Secchi depth was 12.1 m.





CTD

The CTD was deployed in Skorpa to determine changes in conductivity (C), salinity, and temperature (T) with increasing water depth (D).

Water Sampling

Five water samples were collected from different locations including Stavanger, Svolvær and Tromsø as well as from Skorpa and Fjærland when the net was towed during science boat.

The nets used had a mesh size of $20\mu\text{m}$ (for phytoplankton) and $100\mu\text{m}$ (for zooplankton).





Plankton samples

Plankton are ancient drifters transported by currents and tides which lack the ability to navigate against these natural forces.

Animals (zooplankton) and plants-like (phytoplankton), millimetres to centimetres sized-creatures, with a central role in supporting the marine food-web and the health of our oceans.

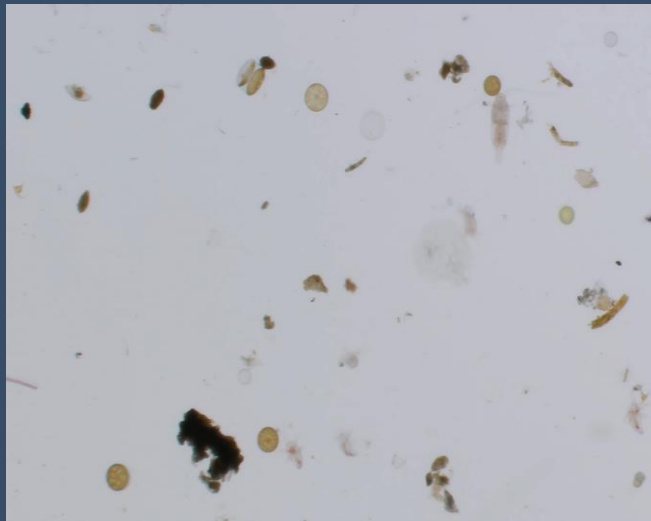
Samples collected in:
Svolvær (March 21st, 2024)
Tromsø (March 22nd, 2024)
Skorpa (March 25th, 2024)
Fjaerland (March 27th, 2024)

A mixture of phyto- and zoo-plankton species including diatoms, copepods, marine worms, and barnacles





Polychaete larvae (marine worm)



Diatoms (photosynthetic algae)



Feeding appendages (cirri) of a barnacle



Barnacle larvae



Copepod - *Calanus sp.*



Unidentified

Underwater Drone

In Svolvær and Tromsø the expedition team used the underwater drone to explore the submerged world of Norway.

The footage collected revealed great marine biodiversity such as sea anemonies, sea vases, blue mussels, sea urchins, sea cucumbers, common star fish, crabs and a large school of young pollock.



21.03.2024 16:15:50

Svolvær



Temperature: 4.1 °C

Heading: 126°

Camera: -10°

Depth: 1.3 m

blueye

22.03.2024 15:33:42



Tromsø



Temperature: 5.7 °C

Heading: 89°

Camera: -10°

Depth: 0.2 m

blueye



Beach Clean-up

On the afternoon of the 25th March, Skorpa Island clean-up resulted in ~80kg of waste collected including plastic containers, styrofoam, fishing ropes, single use plastics, and other items such as light bulbs, a baseball, a ketchup bottle and a ski glove.

Thank you very much for joining the clean-up. The issue of ocean trash can be addressed, and we can prevent its most severe consequences. No individual effort is sufficient on its own; it is through collective action that we can make a difference!

Wildlife Watch

While sailing, you were invited to join the expedition team on the deck to scan for marine life and admire the breathtaking scenery of Norway.

Our sightings included various avian and mammal species such as sea gulls, cormorants, ducks, humpback & fin whales, and majestic white-tailed eagles, among others.



Wildlife List — Birds



Wildlife List – Seabirds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	DUTCH
<i>Clangula hyemalis</i>	Long-tailed Duck	Eisente	Harelde kakawi	Ijseend
<i>Somateria spectabilis</i>	King Eider	Prachteiderente	Eider à tête grise	Koningseider
<i>Somateria mollissima</i>	Common Eider	Eiderente	Eider à duvet	Eider
<i>Uria aalge</i>	Common Guillemot	Trottellumme	Guillemot marmette	Zeekoet
<i>Cepphus grylle</i>	Black Guillemot	Gryllteiste	Guillemot à miroir	Zwarte Zeekoet
<i>Alca torda</i>	Razorbill	Tordalk	Petit Pingouin	Alk
<i>Rissa tridactyla</i>	Black-legged Kittiwake	Dreizehenmöwe	Mouette tridactyle	Drieteenmeeuw
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Lachmöwe	Mouette rieuse	Kokmeeuw
<i>Larus canus</i>	Common Gull	Sturmmöwe	Goéland cendré	Stormmeeuw
<i>Larus argentatus</i>	Herring Gull	Silbermöwe	Goéland argenté	Zilvermeeuw
	Lesser Black-Backed Gull			
<i>Larus marinus</i>	Great Black-Backed Gull	Mantelmöwe	Goéland marin	Grote Mantelmeeuw
<i>Mergus serrator</i>	Red-breasted Merganser	Mittelsäger	Harlé huppé	Middelste Zaagbek
<i>Morus bassanus</i>	Northern Gannet	Basstöpel	Fou de Bassan	Jan-van-gent
<i>Phalacrocorax aristotelis</i>	European Shag	Krähenscharbe	Cormoran huppé	Kuifaalscholver
<i>Phalacrocorax carbo</i>	Great Cormorant	Kormoran	Grand Cormoran	Aalscholver
<i>Ardea cinerea</i>	Grey Heron	Graureiher	Héron cendré	Blauwe Reiger

Wildlife List – Water Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	DUTCH
<i>Anas platyrhynchos</i>	Mallard	Stockente	Canard colvert	Wilde Eend
<i>Anser anser</i>	Greylag Goose	Graugans	Oie cendrée	Grauwe Gans
<i>Ardea cinerea</i>	Grey Heron	Graureiher	Héron cendré	Blauwe Reiger
<i>Mergus serrator</i>	Red-breasted Merganser	Mittelsäger	Harlé huppé	Middelste Zaagbek
<i>Aythya fuligula</i>	Tufted Duck	Reiherente	Fuligule morillon	Kuifeend
<i>Cygnus olor</i>	Mute Swan	Höckerschwan	Cygne tuberculé	Knobbelzwaan
<i>Tadorna tadorna</i>	Common Shelduck	Brandgans	Tadorne de Belon	Bergeend
<i>Haliaeetus albicilla</i>	White-tailed Eagle	Seeadler	Pygargue à queue blanche	Zeearend

Wildlife List – Land Birds

SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	DUTCH
<i>Chloris chloris</i>	European Greenfinch	Grünfink	Verdier d'Europe	Groenling
<i>Pyrrhula pyrrhula</i>	Eurasian Bullfinch	Gimpel	Bouvreuil pivoine	Goudvink
<i>Corvus corone</i>	Carrion Crow	Rabenkrähe	Corneille noire	Zwarte Kraai
<i>Corvus cornix</i>	Hooded Crow	Nebelkrähe	Corneille mantelée	Bonte Kraai
<i>Passer domesticus</i>	House Sparrow	Hausperling	Moineau domestique	Huismus
<i>Haematopus ostralegus</i>	Oystercatcher	Austernfischer	Huïtrier pie	Scholekster
<i>Pica pica</i>	Eurasian Magpie	Elster	Pie bavarde	Ekster
<i>Fulica atra</i>	Eurasian Coot	Blässhuhn	Foulque macroule	Meerkoet
<i>Columba palumbus</i>	Common Woodpigeon	Ringeltaube	Pigeon ramier	Houtduif
<i>Cyanistes caeruleus</i>	Eurasian Blue Tit	Blaumeise	Mésange bleue	Pimpelmees
<i>Poecile montanus</i>	Willow Tit	Weidenmeise	Mésange boréale	Matkop
<i>Parus major</i>	Great Tit	Kohlmeise	Mésange charbonnière	Koolmees
<i>Dendrocopos major</i>	Great Spotted Woodpecker	Buntspecht	Pic épeiche	Grote Bonte Specht
<i>Turdus merula</i>	Common Blackbird	Amsel	Merle noir	Merel
<i>Anthus petrosus</i>	Eurasian Rock Pipit	Strandpieper	Pipit maritime	Oeverpieper

Birds sighted: selection of photos



Blue Tit (*Cyanistes caeruleus*)



Razorbill (*Alca torda*)



King Eider (*Somateria spectabilis*)



Eurasian Bullfinch (*Pyrrhula pyrrhula*)



White-tailed eagle (*Haliaeetus albicilla*)

Wildlife List – Marine Mammals



Wildlife List – Marine Mammals



SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	DUTCH
<i>Halichoerus grypus</i>	Grey Seal	Kegelrobbe	Phoque gris	Kegelrob
<i>Phoca vitulina</i>	Harbour Seal	Seehund	Phoque commun	Gewone zeehond
<i>Balaenoptera physalus</i>	Fin Whale	Finnwal	Rorqual commun	Gewone vinvis
<i>Megaptera novaeangliae</i>	Humpback Whale	Buckelwal	Baleine à bosse	Bultrug
<i>Phocoena phocoena</i>	Harbour Porpoise	Schweinswal	Marsouin commun	Schweinswal

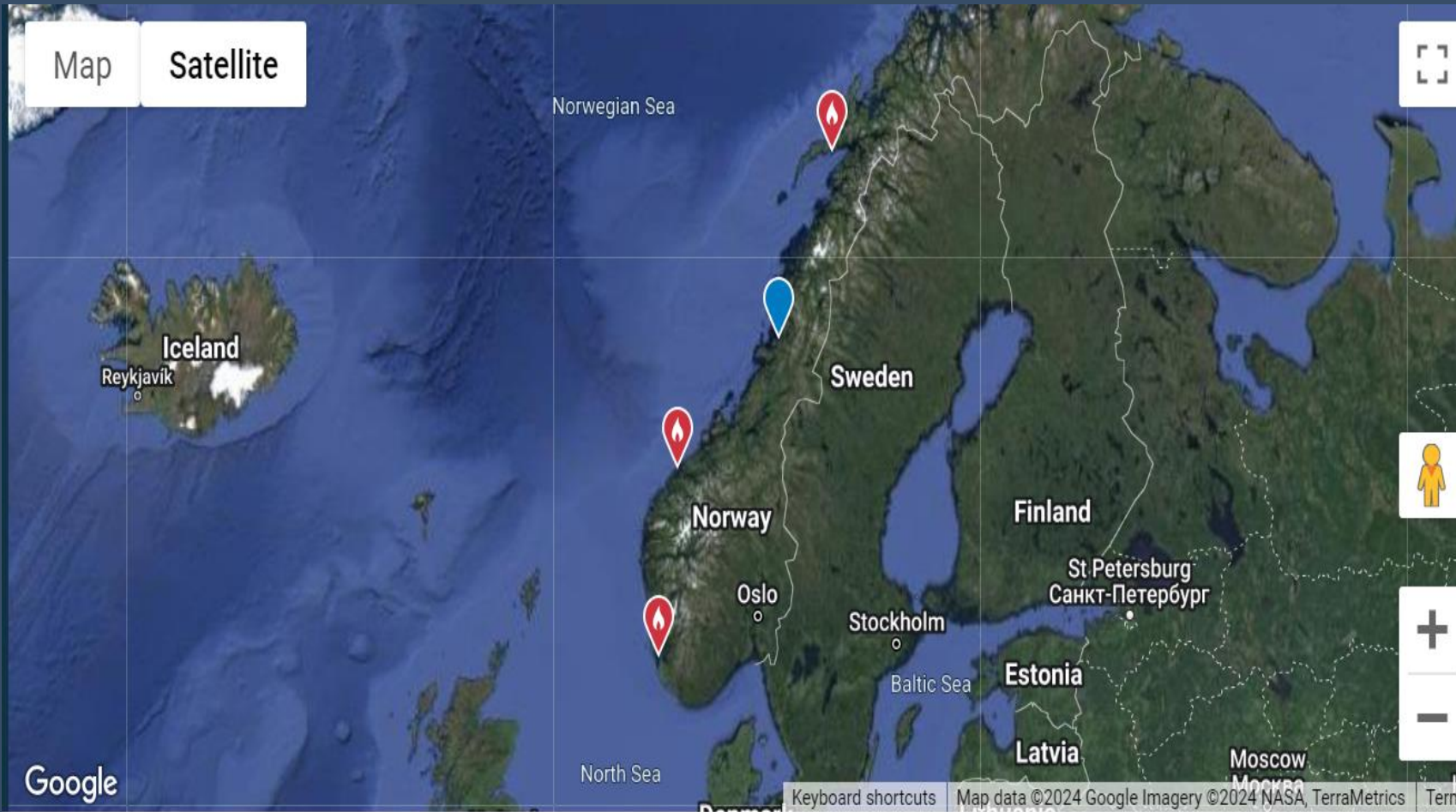
Whale sighted: selection of photos



Humpback whale (*Megaptera novaeangliae*)



Fin whale (*Balaenoptera physalus*)
















E-bird

eBird is an online platform and citizen science project allowing birdwatchers and ornithologists to record, share, and explore bird sightings from around the world. Users can submit their bird observations through the eBird website or mobile app, contributing to a vast database of bird distribution and abundance. This data is used for scientific research, conservation efforts, and birdwatching activities. eBird also provides tools for birders to track their own observations, create checklists, and discover birding hotspots in their area

Bird data collected included:
4 checklists completed
11 species recorded plus 2 other taxa

[View our data](#) on our e-Bird trip report

E-bird List

Species observed		Show all details
1	Velvet Scoter	▶  1
1	Red-breasted Merganser	▶  1
1	Black Guillemot	▶  1
3	Common Murre	▶  1
10	Black-legged Kittiwake	▶  2
11	Herring Gull	▶  3
13	Great Black-backed Gull	▶  2
16	Great Cormorant	▶  1
37	European Shag	▶  1
1	White-tailed Eagle	▶  1
2	Hooded Crow	▶  1
ADDITIONAL TAXA		
27	Anser sp.	▶  1
97	Larus sp.	▶  4

Wildlife

List - Land Mammals



Wildlife List – Land Mammals



SCIENTIFIC NAME	ENGLISH	DEUTSCH	FRANÇAIS	DUTCH
<i>Rangifer tarandus</i>	Reindeer	Rentier	Renne	Rendier



ORCA

Douglas Wainwright, ORCA Ocean Conservationist and HX Marine Scientist, recorded sightings of whales (fin and humpback whales) and harbour porpoises during your voyage.

ORCA surveys

Home ORCA Survey

A vertical timeline view of an ORCA survey. The timeline starts at 15:35 and ends at 16:19. The events are as follows:

- 16:19: Finish (Flag icon)
- 16:17: Sighting (Whale icon)
- 16:01: Sighting (Whale icon)
- 15:54: Sighting (Whale icon)
- 15:54: Sighting (Whale icon)
- 15:53: 30 Minutes (Clock icon)
- 15:50: Sighting (Whale icon)
- 15:37: Sighting (Whale icon)
- 15:35: Sighting (Whale icon)

Home ORCA Survey

Timeline | Map | Summary

A map view of an ORCA survey. The map shows a route along the coast of Honningsvåg, Norway. The route is marked with a series of icons: a flag at the start and end, and whale icons at various points along the route. The location 'Honningsvåg' is labeled on the map.

Home ORCA Survey

Timeline | Map | Summary

0:56 hrs Time spent

21.0 km Distance travelled

Species seen

- Unidentified whale (19)
- Humpback whale (2)

A summary view of an ORCA survey. It displays the total time spent (0:56 hrs) and distance travelled (21.0 km). Below this, it lists the species seen: 19 Unidentified whales and 2 Humpback whales. The summary view includes tabs for Timeline, Map, and Summary.

The image features two whales swimming in a deep blue ocean. The whale in the foreground is larger and more prominent, while the second whale is slightly behind and to the left. The text 'I W' is written in large, semi-transparent blue letters, with the 'I' on the left and the 'W' on the right, partially overlapping the whales. The main text 'Connect with your inner scientist' is centered in white, bold font across the middle of the image.

I W

Connect with your inner scientist