# Science & Education Report

# MS Spitsbergen

## 24 – 31 January 2026

## Ultimate Norway – Arctic Expedition under the Northern Lights

# Science & Education Programme

Our Science and Education Team accompanied you during your voyage along the European Atlantic coast.

We had the opportunity to explore our destination's rich history, culture, natural beauty, and exceptional wildlife. We organized lectures and interactive activities onboard and explored our destinations during land-based excursions and from the water.

# Tranøya

On Tranøya there are burial mounds, a boathouse, and house foundations from the Viking Age. The church was built in 1775 and is one of three churches built on the Island. The second oldest church (1450) was situated about 100 metres from the new church. A new church was built, because in the 14th century, they used to bury people under the church floor. When summer came a distinct smell filled the church, leading to the building of a new church and also a start to burying people in the ground instead of under the church.

The first priest which we know about on Tranøya is Elling Rosted . He had a big vicarage built which is still there today. He was married three times and had 13 children. Sadly, most of them died very young. After Rosted there were five different priests living on the Island. The last priest on the island was Leif Andreassen who was appointed in 1960. He left the island after a few years.

# History

Our voyage through Northern Norway followed a coastline shaped by exploration, fishing, and resilience. We began in Tromsø, the historic ‘Gateway to the Arctic’, which from the 19th century served as a base for Arctic hunting, scientific research, and famous expeditions, including those of Roald Amundsen.

We visited Lofoten, well known for the Lofoten fishery that takes place from January until end of April. Thousands of fishermen attend this traditional fishery of the *skrei* (cod) that are coming to Lofoten to spawn.

The Vikings started to hang the cod up to dry it so they could use it for food one their journeys. The cod is still being dried on racks today, like the Vikings did.

# Culture

Over this seven-day voyage, we immersed ourselves in nature through what Norwegians call '*friluftsliv*'. More than simply spending time outdoors, friluftsliv is about actively engaging with nature and recognising our place within it. Throughout the journey, we embraced this philosophy firsthand.

In Lofoten, we explored both landscape and history, learning about the famous winter cod fishery that takes place from January to April. First practiced by the Vikings over a thousand years ago, this fishery continues today, drawing fishermen from across Norway and remaining a cornerstone of coastal life.

# Guest Researcher – Dr. Rebecca Robinson

On this voyage we were joined by a Heliophysicist, also known as a 'Sun Physicist'. She specializes in in researching the nuances of the magnetic connection between the Earth and the Sun. She got her Bachelor's degrees in Physics and Astrophysics from Michigan State University, her Master of Science in Geophysics from the University of Iceland in Reykjavík, and her PhD in Theoretical Astrophysics from the University of Oslo. She is currently working as the Outreach Director for NASA's Multi-slit Solar Explorer mission but is able to take a small break to share the wonders of the aurora with all of us!

NASA SETI INSTITUTE

MUSE MULTISLIT SOLAR EXPLORER

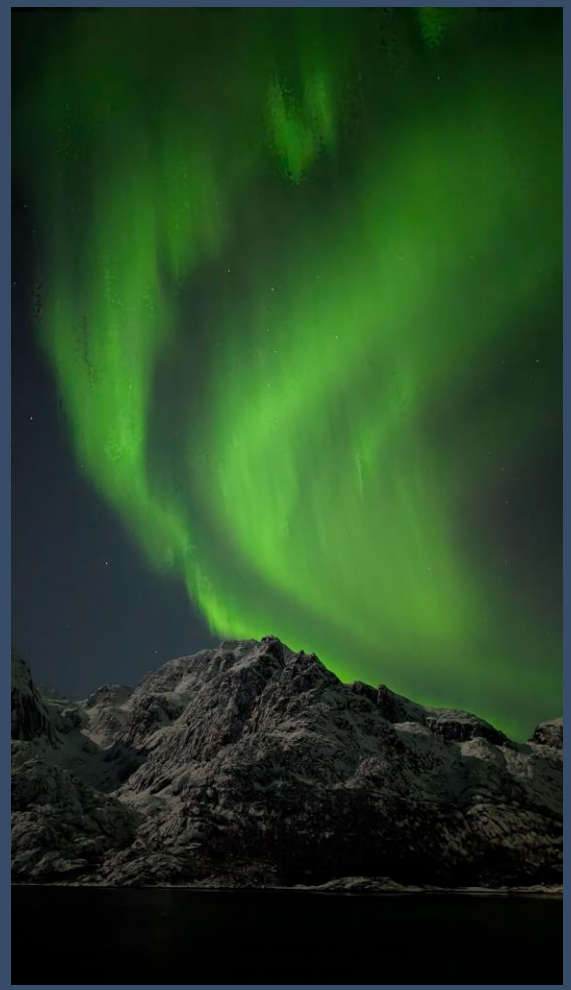
SOLAR AND ASTROPHYSICS LAB

# What a Solar Storm!

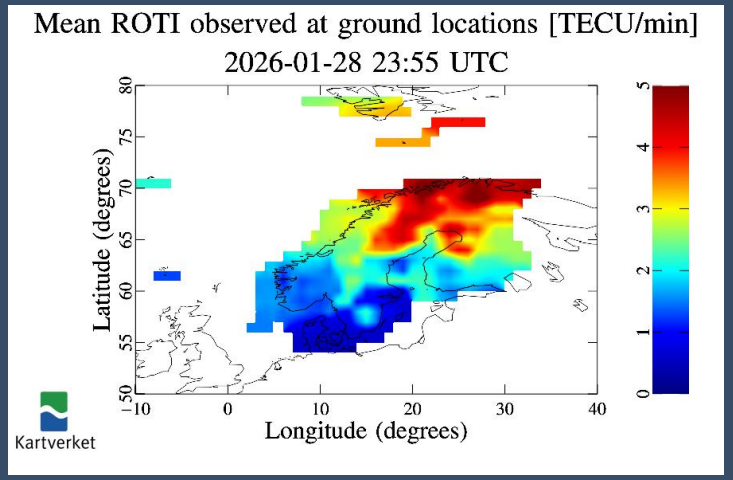
Despite several days of cloudy and snowy weather during this trip, we were treated to a brief level-1 geomagnetic storm at ~12:25am on January 29th. This storm likely came from either a small Coronal Mass Ejection (CME) or an accelerated plasma from a coronal hole. The storm was extremely short-lived but included two auroral substorms. Pre-storm conditions included lots of background sky glow to the east, and even pulsating patch aurorae!

Auroral structures we saw:

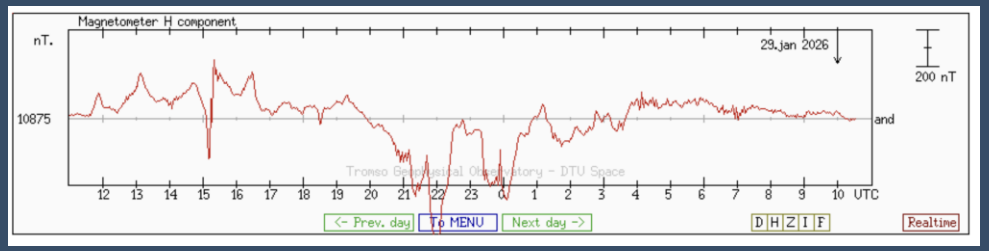
- Discrete arcs
- Vertical columns
- STEVE-like, field-aligned currents (but not proper STEVE (Strong Thermal Emission Velocity Enhancement)
- Diffuse glows
- Pulsating patches (!! rare !!)



This image shows a system of bright green auroral arcs during the second substorm of the G1 geomagnetic storm. We witnessed bright greens, deep reds, vertical structure, and active motion.




This plot from SeSolstorm shows the change in atmospheric electrons at the time I took the picture to the left. Notice the deep red colors over northern Norway? This corresponds to the aurorae that we would've seen to our north and east during that time.

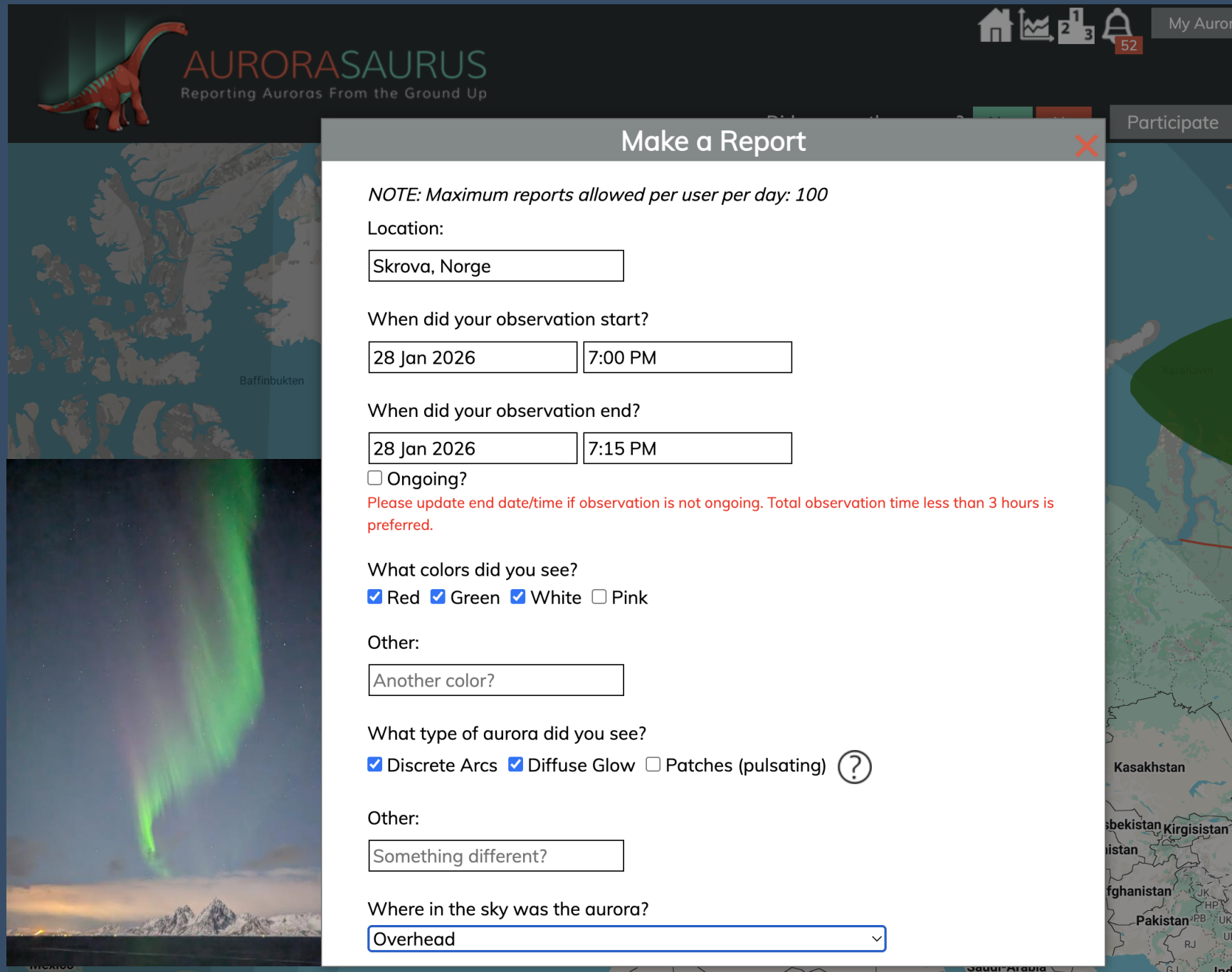



This magnetometer readout shows the disturbances in the local magnetic field in Andenes, Norway – close to where we were sailing. Notice the deep disturbance in the highlighted area? This corresponds to the time I took the picture to the right and illustrates an intense magnetic disturbance!

# Aurorasaurus

We contributed to aurora science by providing 15+ boots-on-the-ground observations of aurorae during geomagnetic storms and auroral substorms! This will help Aurorasaurus scientists collect storm and substorm data from Northern Norway, a place where not many people live. If you still want to contribute your observations, it's not too late!

Head to aurorasaurus.org or scan the QR code below to submit your photos any time.



# Geology

Here you can see our Geologist explaining that Northern Norway has an ancient and complex geological history. Mountains in this part of the country are composed of Precambrian rocks. These rocks are exposed in geological basement windows, where erosion and tectonic processes have revealed the deeply buried crystalline basement. The basement mainly consists of granitic gneisses as well as mangerite and charnockite that are about 1.8 billion years old. Later, during the Caledonian Orogeny 400 million years ago, a continental collision between two paleo-continents caused significant mountain building and uplifted these two geological terrains. Subsequent erosion erased much of the Caledonian cover. During glacial/interglacial times over the past two million years, a combination of sea level, isostatic rebound, and erosion enhanced the relief, forming today's landscape: jagged mountains, fjords, and sounds.

# Underwater Drone

We used a Blueye Pioneer underwater drone to explore the underwater world of Tranøya, Northern Norway.

Under the surface, we discovered forests of seaweed, numerous hermit crabs, and even some bottom-dwelling (benthic) fish and shrimp species.

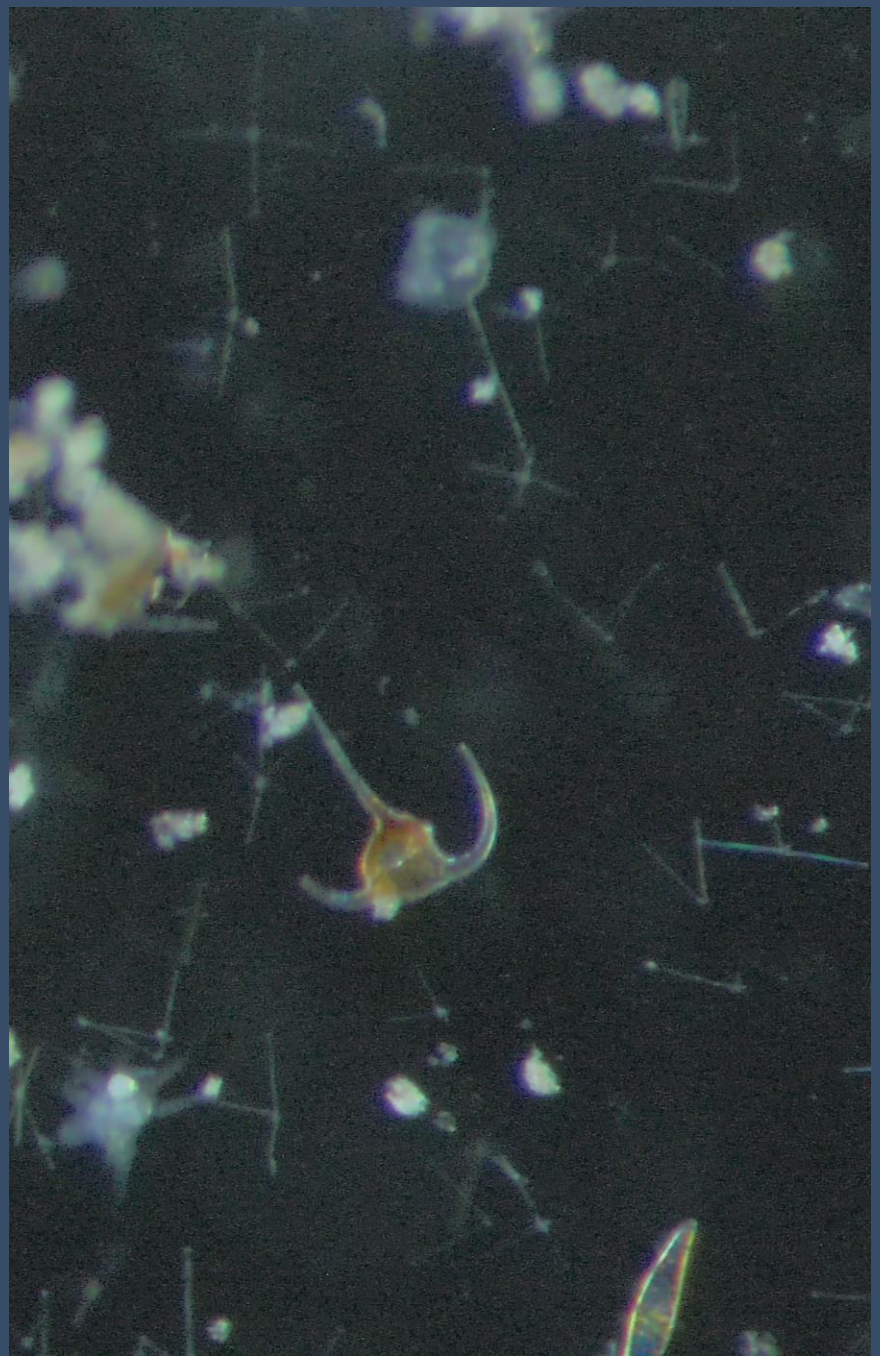
View the highlights from our underwater drone footage on YouTube

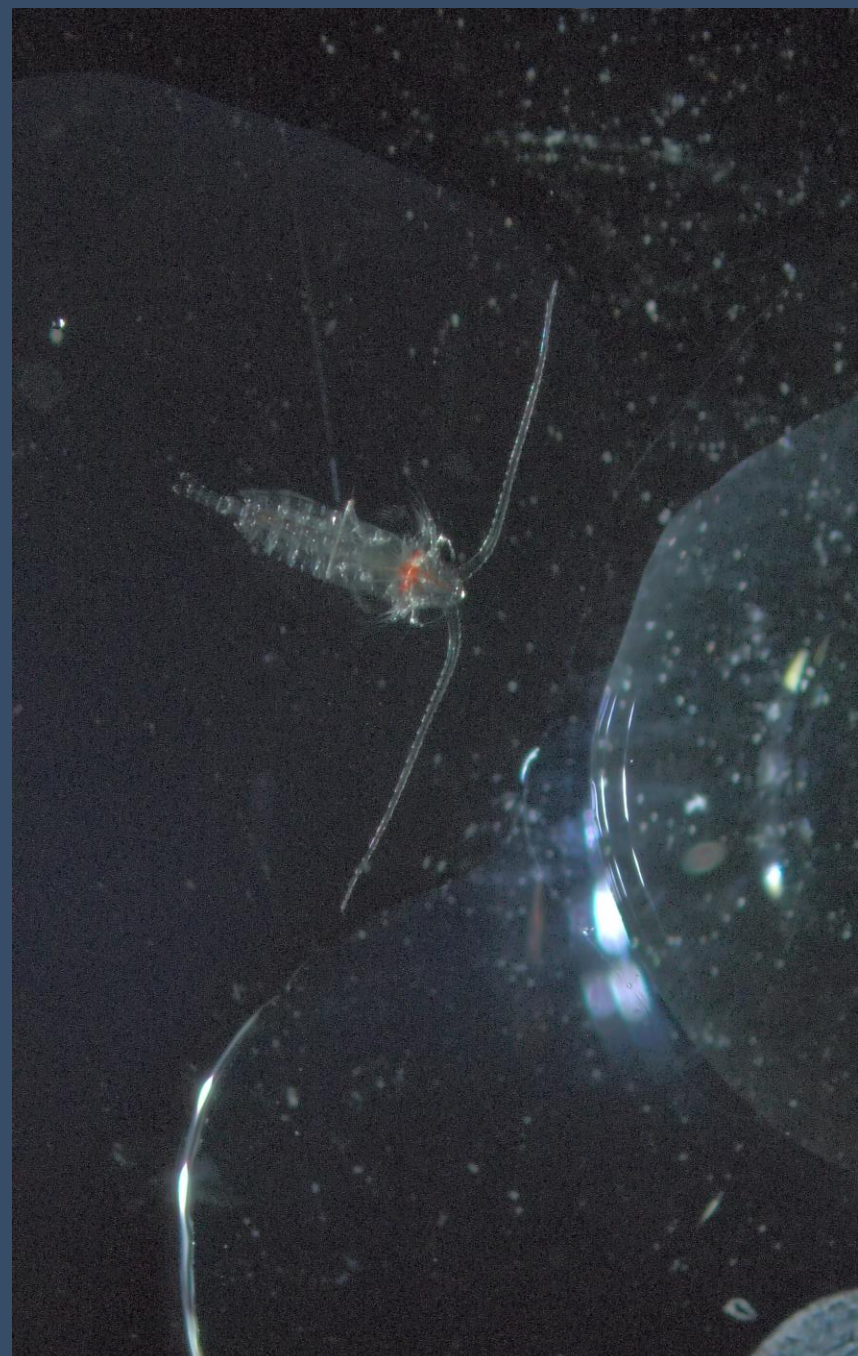
# Plankton Sample

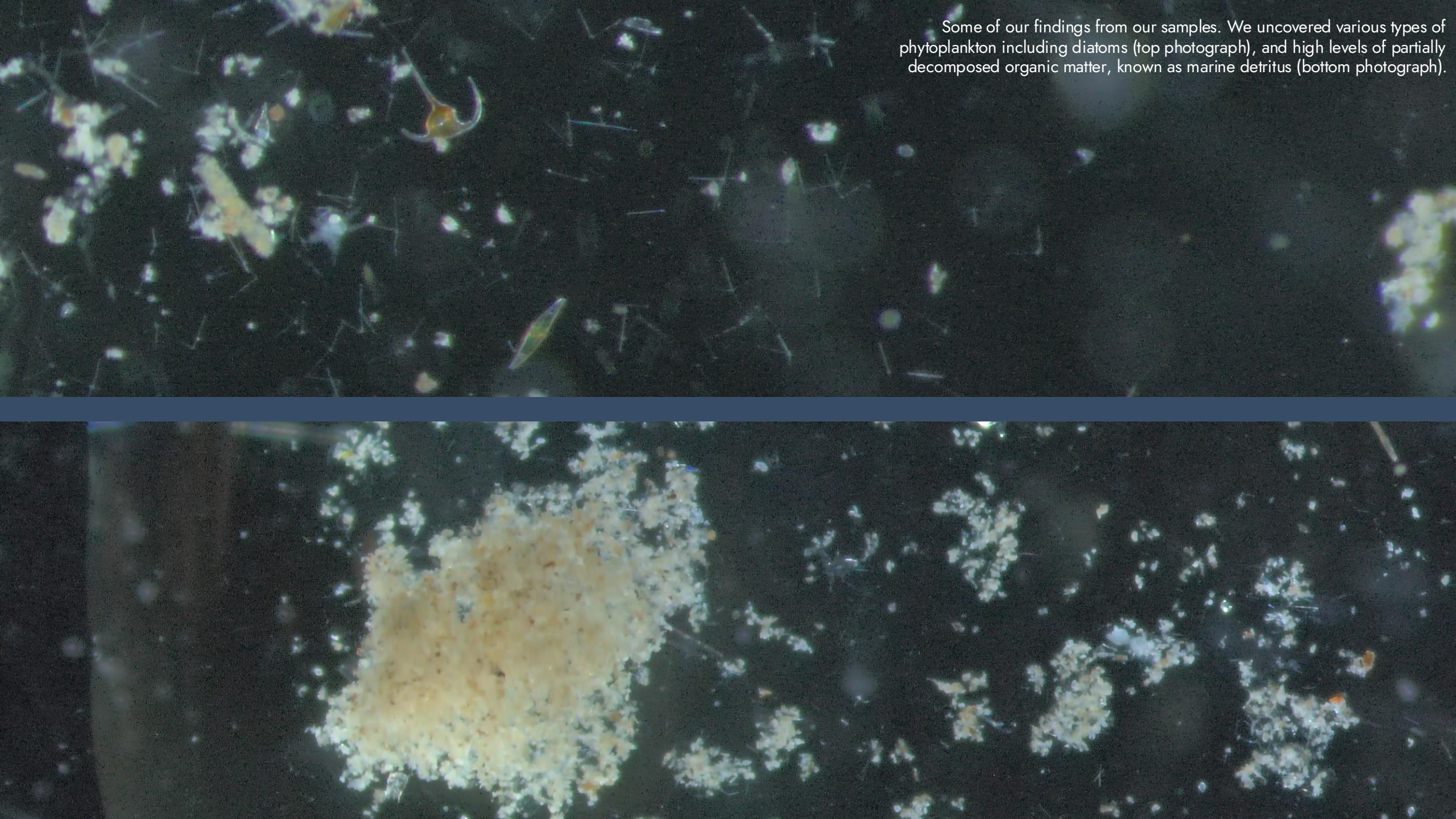
During the polar night season, the levels of plankton in the fjords are very low. But upon the return of the Sun, we are able to see life returning to the fjords.

This voyage we took two plankton samples in Ulvøya, one for phytoplankton and one for zooplankton. In the picture on the left you can see a dinoflagellate, a type of photosynthetic micro-organism from our phytoplankton sample. In the picture on the right, you can see a Calanus copepod from our zooplankton sample.

The plankton nets were towed for an impressive 25 minutes! We didn't collect a large number of creatures, but we had a beautiful diversity of diatoms, radiolarians, and copepods – how special it was to watch them swim around under the microscope!





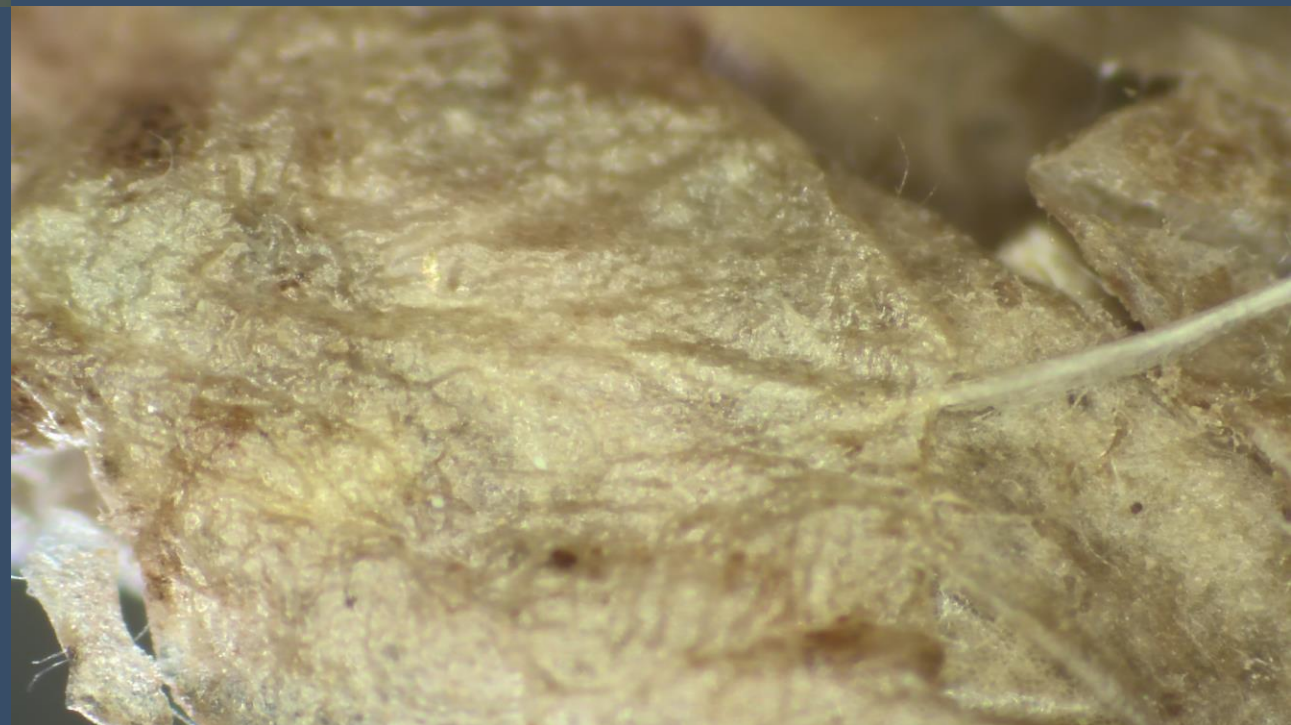


Some of our findings from our samples. We uncovered various types of phytoplankton including diatoms (top photograph), and high levels of partially decomposed organic matter, known as marine detritus (bottom photograph).

# Eagle Pellet Dissection

During our microscope session we also dissected a pellet regurgitated by a sea eagle! Found in Sund, this small, hard pellet was made up of non-digestible material.

We found parts of fish, including an eyeball (pictured above) fish skin (pictured to the right), and also many small feathers.



# Wildlife List – Birds

White-tailed Eagle, Geraldine Prince/HX

Razorbill, © Geraldine Prince/HX

Black guillimot, © Geraldine Prince/HX

White-tailed eagle, © Geraldine Prince/HX

Purple Sandpiper, © Geraldine Prince/HX

# Wildlife List – Seabirds

| SCIENTIFIC NAME | ENGLISH | DEUTSCH | FRANÇAIS | NORSK |
|---|---|---|---|---|
| *Phalacrocorax carbo* | **great cormorant** | Kormoran | grand cormoran | storskarv |
| *Larus marinus* | **great black-backed gull** | Mantelmöwe | goéland marin | svartbak |
| *Larus argentatus* | **European herring gull** | Silbermöwe | goéland argenté | gråmåke |
| *Rissa tridactyla* | **black-legged kittiwake** | Dreizehenmöwe | mouette tridactyle | krykkje |
| *Alca torda* | **razorbill** | Tordalk | petit pingouin | alke |
| *Cepphus grylle* | **black guillemot** | Grylllteiste | guillemot à miroir | teist |

# Wildlife List – Water birds

| SCIENTIFIC NAME | ENGLISH | DEUTSCH | FRANÇAIS | NORSK |
|---|---|---|---|---|
| *Somateria mollissima* | **common eider** | Eiderente | eider à duvet | ærfugl |
| *Mergus serrator* | **red-breasted merganser** | Mittelsäger | harle huppé | siland |
| *Calidris maritima* | **purple sandpiper** | Meerstrandläufer | bécasseau violet | fjæreplytt |

# Wildlife List – Land birds

| SCIENTIFIC NAME | ENGLISH | DEUTSCH | FRANÇAIS | NORSK |
|---|---|---|---|---|
| *Corvus corax* | **northern (common) raven** | Kolkrabe | grand corbeau | ravn |
| *Corvus cornix* | **hooded crow** | Nebelkrähe | corneille mantelée | kråke |
| *Pica pica* | **Eurasian magpie** | Elster | pie bavarde | skjære |
| *Haliaeetus albicilla* | **white-tailed eagle** | Seeadler | pygargue à queue blanche | havørn |

# Species in the Spotlight: the White-Tailed Eagle

We were hoping to see one of Norway's most iconic birds, the white-tailed eagle!

Once classified as endangered throughout Norway and becoming locally extinct throughout parts of their range, conservation actions in Norway have aided in bringing this species back from the brink on an international scale.

Whether it was from surprise sightings during our time on land or in zodiacs, or on the Eagle Safari in Svolvær, we hope you managed to catch a glimpse of this true master of the skies.

# Wildlife List – Mammals

Harbour seals (Common Seals), © Geraldine Prince/HX

# Wildlife List – Mammals

## Marine Mammals

| SCIENTIFIC NAME | ENGLISH | DEUTSCH | FRANÇAIS |
|---|---|---|---|
| *Phoca vitulina* | **harbour Seal** | Seehund | phoque Veau-Marin |
| *Halichoerus grypus* | **grey Seal** | Kegelrobbe | phoque gris |

## Land Mammals

| SCIENTIFIC NAME | ENGLISH | DEUTSCH | FRANÇAIS |
|---|---|---|---|
| *Alces alces* | **moose** | Elch | élan |

Scat of a Moose *(Alces alces) Tranøya*

# Tracing Tracks

We do not always have to see the wildlife to know it has been around. Taking note of the tracks and signs left behind by fauna, can give us valuable insights into who has been roaming around the wilderness.

Taking the opportunity to slow down and absorb nature, reminds us that if we take the time, there is often more to see in that meets the eye.

We hope you enjoyed exploring the more subtle signs of nature with us, and embrace this wherever you may explore next on your travels.

Ptargmigan scat, Sandøya

Bird trakcs in the snow, possibly Ptarmigan, Sandøya

# HX

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