

# Svalbard

## Innholdsfortegnelse

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# Svalbard

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The Governor of Svalbard and the Norwegian Polar Institute will publish webpages on the state of the environment in 2018. Contact: Stein Ø. Nilsen, Norwegian Polar Institute, Phone +47 77750634 

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## Varied climate

Despite the high Arctic latitude the west coast of Spitsbergen enjoys a mild climate. The sea is usually ice-free from June to December. Northern and eastern parts of Svalbard are colder than the west. The maximum temperature recorded in Svalbard is 21.3 °C and the minimum -49.2 °C. Strong winds prevail during the winter six months whilst fog is a common summer condition. There is little precipitation. Longyearbyen sees the midnight sun between 20th April and 23rd August, but is dark between 26th October and 15th February.

## The Governor of Svalbard

The Governor has represented Norwegian sovereignty since this was established on 14th August 1925. It is the Governor's task to assert Norway's rights and obligations under the Svalbard Treaty, and to ensure that all citizens of the signatory nations are given equal rights within the Treaty area.

The Governor also acts as chief of police and environmental authority for the whole of Svalbard. In addition, the governor's office also has a wide range of administrative duties in fields such as population registry, civil matters, child welfare, rescue services, pollution control and oil spill containment, nature conservation, cultural heritage management, and wildlife and freshwater fish management.



Ropeway for transporting coal in Longyearbyen, Svalbard. Photo: Norwegian Polar Institute.

# 1. Plants

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Glaciers cover 60 per cent of Svalbard's land area, and much of the remaining area is mountainous. The terrain is often steep and includes large areas of scree and moraine. Less than 10 per cent of the area is covered by vegetation. However, the climate is relatively favourable for plant growth. Low-lying valleys, plains and coastal areas are generally covered by vegetation to some extent. The plants are small and seldom more than 20 cm tall. There are no upright trees or bushes, and the only woody plants are low or creeping dwarf shrubs.



Purple Saxifrage. Photo: Stein Ø. Nilsen, Norwegian Polar Institute

## STATE

### More vegetation than might be expected

Considering that Svalbard lies so far north, there is a surprising amount of plant cover. However, the species diversity is not particularly high, probably because of the isolated position of the islands.

Botanists have registered 173 species of vascular plants, 373 mosses, 597 lichens and 705 fungi, and in addition 1122 species of cyanobacteria and algae, including marine and fresh-water species. The terrestrial vegetation provides food supplies for about 10 000 reindeer and large numbers of geese in the summer.

Of the 173 species of vascular plants, 9 are classified as endangered and 16 as vulnerable in Svalbard. Most of the endangered species and many of the vulnerable species are found more commonly in mainland Norway. Five of the 9 endangered species are found in a locality in the Northwest Spitsbergen National Park where there are hot springs.

## PRESSURE

# Humans put pressure on Svalbard's vegetation

Wear and tear from people and vehicles, infrastructure development and tourism all affect the vegetation in Svalbard. Even though only a small proportion of Svalbard is affected by these activities, this includes a large part of the areas with a continuous and relatively species-rich vegetation cover. Acid rain also has a negative effect on some species.

## Motorised traffic and infrastructure development

The area between Longyearbyen and Barentsburg is most seriously affected by infrastructure development and tracks made by offroad vehicles. There are also obvious tracks in the valleys Gipsdalen, Reindalen and the lower part of Sassendalen. These areas have some of the highest species diversity in Svalbard. Vehicle tracks remain visible on the tundra for a very long time, and the damage may even become worse over time once the plant cover is worn away. Most vehicle tracks result from mining activities and oil exploration before 1990.

The Russian mining company has shown interest in resuming its activities in Grumantbyen and Colesbukta, and has applied for permission to construct a road from Barentsburg to Colesbukta. Colesbukta is a botanically vulnerable area with several rare plant species that require relatively warm conditions, such as cloudberry (*Rubus chamaemorus*) and an Arctic species of harebell (*Campanula gieseckiana*). Short stretches of road have been constructed and others are under consideration in connection with Norwegian mining activities.



Withlowgrass. Photo: Stein Ø. Nilsen, Norwegian Polar Institute

## Tourism

Plants in general, and particularly the species that grow near the hot springs in Northwest Spitsbergen National Park, are under pressure from tourist traffic. This applies to cruise ships in particular, since they usually land large numbers of people in one place. Concentrated wear and tear in a small area can cause damage to the vegetation and soil that may take years to recover, because plants grow so slowly and soil formation is also very slow. Snowmobile traffic can also damage the soil and vegetation.

## Climate change

Climate change is expected to bring milder winters, wetter summers and more unstable weather conditions. This will have a particularly serious effect in polar regions, where temperatures are normally low and stable and there is little precipitation. Plants adapted to a cold climate and dry summers will be negatively affected. Climate change will result in changes in species composition, which in turn will affect grazing animals such as reindeer and geese.

## Acid rain

Emissions from Europe and Russia add to the deposition of acid rain in Svalbard. Nitrogen and sulphur are stored in the snow and may be released in high concentrations during the thaws. Woody plants and dwarf shrubs are affected because the mycorrhiza (the symbiotic relationship between specific fungi and the plants' root systems) is damaged by acidity, and nutrient uptake therefore suffers. Lichens and mosses are also very sensitive to nitrogen deposition.



Tufted saxifrage in Spitsbergen. Photo: Stein Ø. Nilsen, Norwegian Polar Institute

## RESPONSE

### Plans for new protected areas

Large areas of Svalbard are protected as national parks and nature reserves. In addition, large plant protection reserves were established in central Spitsbergen and at the head of Kongsfjorden in 1932.

However, the plant protection reserves are not considered to be a very effective means of nature conservation. The most species-rich and productive habitats in Svalbard are also poorly represented in the existing protected areas. Increased motorised traffic and new developments outside the existing settlements and mines may also add to the pressure on vulnerable vegetation unless nature conservation measures are strengthened. A new plan for area protection is intended to amend this situation.

## 2. Travel

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No other high Arctic locations in the world have as many visitors as Svalbard does. This is mainly due to good air links and easy sea access for much of the year. A special feature of the islands is the absence of a road network. There are simply no roads except for short stretches in and near the settlements. All travel outside settlements must be offroad, by sea, or by air. Since the terrain in Svalbard is so vulnerable, organising travel to avoid damaging the environment is a real challenge.

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### STATE

## Snowmobiles and boats primary means of transport

Off-road travel in Svalbard is connected mainly with tourism, recreation, research, and administration. Snowmobiles and boats are the key means of transport. Large and small cruise ships ply the coast during the summer season, mainly between Longyearbyen and northward along the west coast of Spitsbergen. Snow mobiling occurs mostly between February and May and focuses on the settlements and certain popular destinations on Nordenskiöld Land. Helicopters, aircraft and launches are also used for government and commercial purposes.

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### IMPACT

## The impact of travel

Motorised traffic in Svalbard can have direct negative impacts as a result of noise and other disturbances to animal life. It also causes damage to vegetation, tundra, and cultural remains. It is relatively uncertain just how serious this impact is.

The most common impacts of traffic on Arctic tundra are changes in species composition and the distribution of vegetation, compaction of the soil, changes in pathways for water and nutrients, changes in mechanical structure, and changes in temperature and thus the ice/water threshold. The damage may vary from shallow tracks to deep gullies with accelerating erosion. In the central parts of Nordenskiöld Land we find several examples which were mainly caused by the use of heavy vehicles for coal mining before 1990.

### Snowmobiling damages the terrain

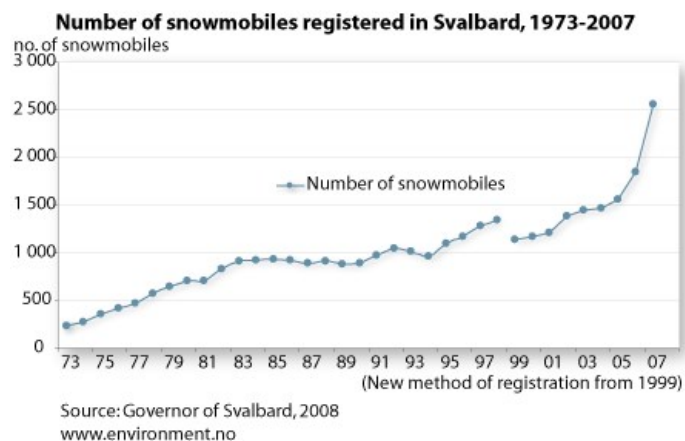
Studies in the USA and northern Sweden have shown that snowmobiles driven on snow-covered ground have no detectable effect on ground vegetation. However, during a thaw significant damage can arise from snowmobiles churning up the vegetation, potentially damaging early spring plants. Snowmobile tracks are not considered a major problem as yet, but we must keep a watchful eye on developments in the central areas where traffic is heaviest.

### Wildlife may suffer

Some animals are disturbed by motorised traffic, and - as a result of direct disturbance, stress, or hunting - the animals' condition may deteriorate, or they may choose to avoid otherwise attractive habitats. Again, this has not been identified as a major problem in Svalbard.

### Noise detracts from the wilderness

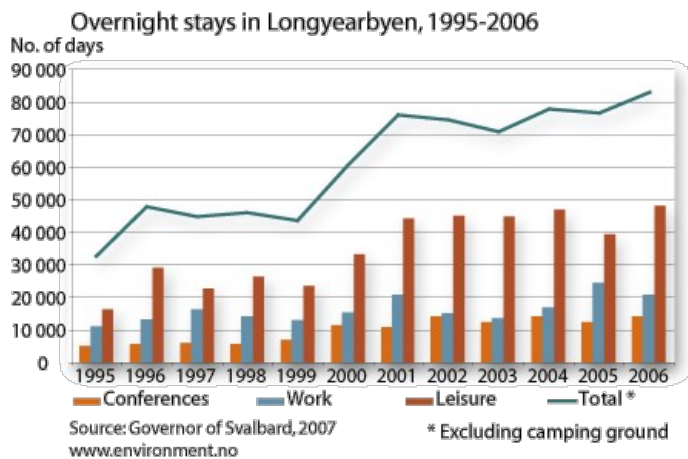
Many people find that noise and vehicle tracks spoil their enjoyment of the pristine environment they came to see. On the other hand, snowmobiles have a long history in Svalbard in connection with recreation activities. It is now difficult to enjoy traditional outdoor recreational activities around the settlements without disturbance, for much of the year. Cruise ships and aircraft can also disturb the peace and quiet for adventurers wishing to explore the wilderness of Svalbard. Wilderness and quiet are key factors for marketing Svalbard as a travel destination, and the lack of areas that are closed to motor vehicles may reduce the islands' appeal.



DRIVING FORCES

## Growing interest in Svalbard

Recent years have seen a growing interest in Svalbard as a tourist destination. One reason is the Norwegian government's decision to develop tourism in response to the decline in coal mining. There is also a general worldwide interest in "extreme tourism" where Svalbard has much to offer. Scientific research is another key reason to visit the islands, so the authorities provide special facilities to accommodate these activities.



PRESSURE

## Tourists and ships pose the greatest threats

Limited environmental impact has been recorded as a result of cruise traffic around Svalbard. There has been some damage to vegetation and to cultural remains in the most frequently visited areas of Northwest Spitsbergen. Cultural remains are non-renewable resources and can be partly or completely destroyed by visitors.

The potential danger of shipwreck and oil pollution from boat traffic is another important threat to the environment. Drift ice and unreliable navigation charts contribute to increasing the risk of accidents, which is considerably higher here than compared to the Norwegian mainland coast.

RESPONSE

## Tourism is regulated

In order to safeguard the environment and cultural heritage tourism and other travel activities are regulated by law. This has also been done for safety reasons. The regulations require non-residents to register with the Governor of Svalbard before they leave the local area around Longyearbyen, Administrative Region 10. The Governor may demand amendments to tour plans in the national parks and nature reserves if there is risk of damage to the natural environment or cultural heritage.

### Monitoring and research

The physical environment in Svalbard is constantly monitored. The environmental monitoring programme for Svalbard and Jan Mayen (MOSJ) will bring together data from a variety of sources, so that the results can be seen in context and compared. The system is being developed now, and will be a useful tool in the management of Svalbard. It is also hoped that the system will help us to identify areas where future research is required.

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