

## Norway: History

The first humans came from Siberia at the end of the Ice Age, 11 000 years ago with the earliest archaeological finds dating from 9 200 BC. These hunter-trappers were the Sami forebears and became hunter-fisher-herders. As the ice receded, other hunter-gatherers with a Germanic language migrated from central Europe into southern Scandinavia. Several prehistoric sites have been found. Around 2500 BC, these people were seafarers using stone tools, who then traded amber for bronze from mainland Europe. By the time of the Roman Empire when the area was called Thule, they were trading for iron, fabric and pottery from Rome; the iron implements allowed them to clear trees for farmland and build bigger boats. By the 3rd century they had a runic alphabet, seen on stone slabs today.

The Viking Age ran from the 8th to the 11th century. At its start, the many small independent kingdoms were overpopulated; young men sought their fortune overseas and farmers settled the Orkneys and Shetlands. Raiders plundered the Lindisfarne monastery in 793 and were feared in Scotland, Ireland, northern England, the west coast of Europe as far south as Spain and eastwards to Russia and the Middle East. They established further settlements in the Faroes, Hebrides, Dublin, the Isle of Man (with the world's oldest parliament), N England and Normandy (named after Norse men). After a civil war, Harald Hårfagre (the fairhaired) united the petty Viking kingships into a single realm around 885, commemorated at a site in Haugesund alongside the Norvegen strait which gave its name to Norway; about 20 000 opposing Vikings fled to Iceland. King Olav II converted the country to Christianity and introduced the Latin alphabet around 1000 when the population was about 150 000; he was martyred in 1030 and is Norway's national saint. As adventurous seafarers, Vikings crossed the Atlantic. Erik the Red visited Greenland from Iceland and according to sagas, in 1001 his son, Leif Eriksson, explored the North American coast naming it Vinland. In 1066, King Harald Hardråde was killed at the Battle of Stamford Bridge and Viking power began to wane. Ironically, the Viking descendants in Normandy conquered England later that year. The Viking legacy can be found in place names in the north of England (eg York = *Jorvik*, Whitby = *Hvit by*) and many English words derive from Old Norse (eg *myr*, meaning marsh, gave us moor and mire).

The first capital was Trondheim (then called Nidaros), founded in 997. There were many civil wars until a peaceful period when Bergen (*Bjørgvin*) became capital in 1240 and was a major trading port of the Hanseatic League of merchants. Greenland (in 1261) and Iceland (1262) voluntarily joined the Kingdom of Norway; the Hebrides and Isle of Man were sold to Scotland in 1266. In 1299, Oslo, founded by Harald Hardråde in 1050, emerged as the centre of power and became capital, there was a period of prosperity until the royal line died out in 1319 and Norway and Sweden united. In the mid 14th century, bubonic plague wiped out over half the population, followed by severe famine. In 1397, Norway, including the Færoes, Iceland and Greenland, the Orkneys and Shetlands, was absorbed with Sweden into the Kalmar union with Denmark, followed by 200 years of decline as an impoverished backwater Danish province. Danish became the language of administration, church and education; written Norwegian died out but the spoken language survived in many dialects. The Danes gave the Orkneys and Shetlands to Scotland in 1469 and Sweden separated in 1523. In 1537, Denmark replaced the Catholic faith by Lutheran Protestantism with Danish-trained pastors, a Danish bible and hymns. A series of wars with Sweden, from 1563 to 1720, lost some Norwegian areas to Sweden. From the late 16th century, the timber and shipping trades developed with a gradual return to relative prosperity. Oslo was destroyed by fire in 1624 and rebuilt in brick and stone by King Christian IV who renamed it Christiania (it reverted to its original name in 1925). The first census was held in 1769 with the population at just over 723 000.

In the Napoleonic Wars, Denmark sided with France and after Napoleon's defeat, the 1814 Treaty of Kiel ceded Norway to Sweden, but Denmark retained Iceland, the Faeroes and Greenland. On 17 May 1814, a defiant Norway asserted its independence with its own

constitution (derived from those of France and the USA, but more democratic) giving the vote to all landowning men and the right to choose a king; however, it was quickly defeated by a Swedish invasion. Norwegians were allowed to keep their constitution and elected national assembly (*Storting*) with an independent judiciary on condition they accepted the Swedish king. Between 1825 and 1932, rural poverty led to widespread emigration of over 850 000 Norwegians throughout the world, most to the USA and Canada, but about a quarter of these subsequently returned. In the mid-1800s, written Danish was adapted to represent the different Norwegian pronunciation and grammar, becoming *bokmål*, and, separately, spoken dialects were used to reconstruct what the written language might have looked like before it died out, this version becoming *nynorsk*. In 1875, the currency of 1 *specidaler* = 120 *skilling* was replaced by the *krone* with 30 *skilling* becoming 1 *krone*. Parliamentary government was introduced in 1884, reducing the king's role, and both versions of the language were officially adopted in 1885. A nationalist movement led to a peaceful secession from Sweden on 26 October 1905. Norwegians voted in a referendum for a monarchy instead of a republic, and parliament selected Prince Carl of Denmark (of the House of Glücksburg) as king. He took the title Haakon VII and renamed Alexander, his son, as Olav to reflect the ancient Viking past; his wife was Maud, daughter of Edward VII of Britain. Hydro-electric power was first harnessed in 1895, new industries and increasing exports began to relieve Norway of poverty, but the Great Depression reversed this. By 1932, nearly half the adult population was unemployed. Voting for women was introduced in 1913 and the first woman was elected to the Storting in 1922; the first woman in government office was in 1945 and the first woman prime minister in 1981.

Norway is famed for its explorers Roald Amundsen (1872 - 1928) who charted the Northwest Passage between the Atlantic and Pacific and led expeditions to both North and South Poles; Fridtjof Nansen (1861 - 1930) who was a champion skier and skater, led Arctic expeditions, then became a diplomat and Nobel Peace Prize winner; Otto Sverdrup who led further polar expeditions and later Thor Heyerdahl (1914 - 2002) who investigated migration of ancient peoples by crossing the Pacific on the raft Kon-Tiki and later the Atlantic and Arabian Sea in primitive boats.

In World War I, Norway was neutral and in 1920 joined the League of Nations. Despite reasserting its neutrality at the start of World War II, Germany invaded on 9 April 1940. King Haakon set up a government in exile in England and placed the Norwegian merchant fleet of over 1000 ships under Allied command. The fascist Vidkun Quisling (1887 - 1945) headed an unpopular collaborative government under the Germans. There was an active resistance movement in Norway but their actions resulted in many brutal reprisals against the civilian population. In 1943, a small Norwegian force parachuted onto the Hardangervidda plateau and blew up the Vemork heavy water plant at Rjukan, preventing Germany from developing an atomic bomb. This action is celebrated in the film *The Telemark Heroes*. Retreating from Russian forces at the end of the war, the Germans torched and razed almost every town and village in northern Norway. After the war Quisling and 24 other Norwegians were tried for treason; Quisling was executed. There was a post-war surge in rebuilding, hydroelectric power and industrial development.

The royal family returned in 1945. King Haakon died in 1957, succeeded by Olav V, a popular reign until his death in 1991. Olav's son Harald V is the current monarch.

Norway is a charter member of the United Nations and a founder member of NATO in 1949. In 1960, Norway joined EFTA, the European Free Trade Association, but has twice rejected closer ties with Europe due to concerns about farming and fishing. A referendum in 1972 was against joining the then EC and another in 1994 rejected EU membership. Current opinion polls show around 56% wish to remain outside the EU. Norway often takes a humanitarian and peace brokering role in world conflicts rather than contributing armed forces.

Books: The Viking World, by James Graham-Campbell (Frances Lincoln 2001 ISBN 978 071 121 800 0) £16.99, Viking history.  
The Oxford History of the Vikings, by Peter Sawyer (OUP 2001 ISBN 978 019 285 434 6) £15.99  
In Their Own Words, by Solveig Zempel (University of Minnesota Press 1991 ISBN 978 081 661 859 0) £11, collection of letters from Norwegian immigrants in the USA.  
Nansen, by Roland Huntford (Abacus ISBN 978 034 911 492 7 2001) £14.99

# Norway: Geography

Norway is a long narrow country on the west side of the Scandinavian peninsula, sharing borders to the East with Sweden (1619 km), Finland (727 km) and Russia (196 km.). It has a very long rugged coastline – to the NE is the Barents Sea, to the N the Arctic Ocean, the Norwegian Sea (part of North Atlantic Ocean) lies to the W, the North Sea to the SW and the Skagerrak inlet of the Baltic Sea to the S. It is located between 57° and 71° N, 04° and 31° E (the same longitude as Cairo), 1792km from north to south (2450km by road), 1.6km from east to west at its narrowest point and 432km at its widest. The total mainland area is 323 802 km<sup>2</sup> (7th largest in Europe) including 19 522 km<sup>2</sup> of fresh water. 1:50 000 topographical maps published by Uglund (formerly *Statens Kartverk*, the Norwegian OS) are available in book and sports shops and tourist offices.

Nearly a third of the country is north of the Arctic Circle (*Polarsirkel*), the point where the sun never sets for one full day and never rises for one day. Moving further north, the Land of the Midnight Sun has increasingly longer periods of continuous daylight in summer and night in winter. At Nordkapp, promoted as continental Europe's northernmost point and nearer to the North Pole than to Oslo, the sun never sets from 11 May to 31 July; the true northernmost point is actually Knivskjellodden, 5km to the west, and a 9km rough hike from the Nordkapp road. Major island groups include the 365 islands of the Lofotens chain inside the Arctic Circle and Svalbard archipelago (area 61 020 km<sup>2</sup>) at latitude 80°N, halfway between the mainland and the North Pole, discovered in the 12th century; its population is 2165 (2008), Norwegian 55%, Russian 44%; ice covers over 60% of Svalbard, including Austfonna the largest glacier in Europe. Norway gained sovereignty of Svalbard in 1920; other countries were granted mineral rights but these are now exercised only by Russia. Jan Mayen Island (area 377 km<sup>2</sup>, discovered 1614, claimed in 1929) NE of Iceland with Beerenberg, the world's most northern and Norway's only active volcano, and Bouvet Island (49 km<sup>2</sup>, discovered 1739, claimed in 1928) in the South Atlantic are Norwegian territories. In Antarctica, Norway also claimed Peter I Island in 1931 and Queen Maud Land in 1938 but under the Antarctic Treaty 1959, political claims are no longer recognised.

Geology: Norway is pre-Cambrian, mostly granite and gneiss, continuous with the Appalachian Mountains in the USA and mountains of Ireland and Scotland. Almost the entire country was covered by a thick ice sheet in the ice ages and glaciers carved out deep valleys and fjords and left deep lakes. Land is still rising several mm per year after the weight of ice disappeared and coastal agricultural land was once the seabed. Svalbard has sedimentary rock layers that include fossils, coal and oil, also iron ore, copper, zinc, phosphate and gold. Two rift valleys in the North Sea contain upper Jurassic shale with oil and gas and the continental shelf has large potentially exploitable coal reserves.

Norway has breathtaking scenery with high steep rugged mountains, 291 peaks over 2 000m, and plateaux covering over half the land mass; 20% above 900m, average elevation 460m and 32% above the treeline. The Hardanger plateau is the largest in Europe. There are 11 major glacier systems (*breer*); Jostedalbreen is the largest in mainland Europe, 80km long, 487 km<sup>2</sup>; 7% of the country is glacier and fresh water with 450 000 lakes (largest Mjøsa at 362 km<sup>2</sup>, Hornindalsvatnet at 514m deepest in Europe), rivers (longest Glomma, 601km) with spectacular waterfalls (*foss*) including nine of the world's 20 highest (highest Kjelfossen, 840m). Rivers are fast-flowing and dangerous in spring and early summer due to melting snow and some are always dangerous as water may be released from dams upstream. In upland areas, many feed lakes and reservoirs connected to pipes that drop to hydro-electric power stations in the valleys. Last century, mountainsides collapsing into a fjord or lakes caused three local tsunamis with the loss of about 180 lives. There are vast forests (24% of the land mass productive, 14% unproductive), treeless Arctic tundra and about 150 000 islands (2000 inhabited, largest excluding Svalbard is Hinnøya 2198 km<sup>2</sup>, 200 km inside the Arctic Circle). Hundreds of deep fjords on the west coast have high cliffs and extend inland for up to 200km making the mainland coastline 25 148km long; with

islands, it's 83 281km, twice the Equator's circumference. Many are crossed by car ferries and there are cruises past waterfalls that drop 100s of metres straight into the fjord, also with spectacular views in the mountains above. Main fjords worth visiting are Geirangerfjord, Nordfjord, Sognefjord/Nærøyfjord (world's second deepest at 1308m), Hardangerfjord, Lysefjord. The world's strongest tidal current near Bodø produces the maelstrom Saltstraumen, spectacular at some high tides. Mirages are often seen in the clear Arctic air, due to water, ice and snow reflections combined with temperature inversions. The deep valleys in the West give way to wider fertile valleys and rolling hills in the East; sandy beaches in the South; 3% of land is arable, 1% buildings and roads)

Climate: There are many climate types. Interior highlands and the far North have an Arctic winter climate with strong winds but the Gulf Stream gives a mild coastal climate keeping ports ice-free in winter and may bring jellyfish to south coast beaches. In summer the south coast has long dry sunny periods (sometimes drought) and long daylight hours (4am to 11pm plus 3.5 hours of twilight) with more sunshine than the Mediterranean. The west coast has the highest rainfall in Europe (3575mm per year); Bergen has umbrella vending machines. The central eastern area has a continental climate with cold drier winters but hot wet summers. Autumn is short; vegetation colours change rapidly. Average maximum July temperature is 20°C in the south, 10°C in the north; the best times to visit are May (uncrowded, with Spring blossom) to September. Average maximum January temperature is 3°C in the south, -16°C in the north with visitors for skiing or the Aurora Borealis in the far north from November to February. Heavy snowfalls may close mountain roads all winter. Temperature extremes occur inland, reaching over 35°C in summer and -50°C in winter. A more extreme future climate is produced with increased precipitation, especially heavy rain within a short period and possible landslides and local floods; winters may be significant milder. For weather reports, check the Norwegian Meteorological Institute <<http://met.no/english/>> or <<http://www.worldclimate.com>> or <<http://www.yr.no/english/>> .

Aurora Borealis (Northern Lights or *Nordlys*): When charged particles ejected by solar flares reach the earth's magnetic field, they are drawn towards the poles and interact with electrons in gas molecules in the upper atmosphere to give off diffuse changing light in the form of drapes and streamers, usually yellow-green from oxygen molecules about 90km above the earth, red from oxygen up to 320 km and blue or pink from nitrogen, purple from helium and occasionally orange from neon. Book: Northern Lights: The Science Myth and Wonder of Aurora Borealis, by Calvin Hall (Sasquatch Books 2002 ISBN 978 157 061 290 9) £11.14.

Population: 4.8 million people (2009), the lowest population density in Europe after Iceland. Annual population growth was 1% in the immediate post-war years, mainly due to the high birth rate, but has now dropped to 0.34%. The birth rate has fallen to 1.1%, although still one of the highest in Europe; growth is also due to immigration and increasing longevity – 13% of the population is over 67. Only 20% live in rural areas; half the population lives in the SE, 20% in Greater Oslo. Most Norwegians are of Nordic origin with about 60 000 Sami people (the name Lapp is now considered derogatory), many living a nomadic life herding reindeer across northern Scandinavia and the Kola peninsula in Russia, a total of about 75 000 in all four countries. There are 460 000 non-nationals (9.7%), including 79 000 born in Norway to immigrant parents; about 100 000 have refugee status. Most immigrants are from Poland, Pakistan, Sweden, Iraq, Somalia, Vietnam, Denmark, Germany, the former Yugoslavia and Iran; 46% of them have Norwegian citizenship. The largest cities are Oslo (population 560 000 of whom 25% are immigrants). Bergen (248 000), Trondheim (165 000), Stavanger (119 000), Bærum (108 000) and Kristiansand (79 000). The outer parts of cities are quite rural; over half of Oslo's area is forest.

Time Zone: Central European Time, 1 hour ahead of GMT, the same as Sweden, Denmark and the western coast of Europe; daylight-saving time is observed for the same period as British Summer Time.

## Norway: Ecology & Environment

12% of Norway is wilderness (48% in 1900), defined as more than 5km from any road or track. There is public right of access (*allemansretten*) to uncultivated land everywhere, provided no damage is done, but there are restrictions in protected areas. Lighting fires in the open, including paraffin/petrol stoves, is prohibited from 15 April to 15 September.

Norwegians care for the countryside; there is little litter and industrial waste is highly regulated. About 24% of all waste is household waste, half of which is recycled. Car purchase prices include a recycling charge to ensure they are returned to a scrap metal centre. The government has an active climate change policy and has undertaken to reduce carbon emissions by 10% more than its Kyoto commitment by 2012 and a total of 30% by 2020, becoming carbon neutral by 2030. In 1996, Statoil's Sleipner oilfield was the world's first to store CO<sub>2</sub>, about one million tonnes a year. Pollution by chemicals injurious to human health has decreased but those affecting the environment have increased. Despite improvements in recent decades, acid rain (90% of which comes from other European countries) is still a serious problem affecting vegetation, water and fish in southern Norway and Finnmark; 27% of inland lakes and rivers and 17% of coastal waters are classified as 'at risk'.

Away from towns and cities, rural areas have little light pollution. The night is very dark and many stars and the Milky Way are visible with the naked eye, unlike most of the UK.

Due to the range of latitude, topography and climate, Norway has a larger variety of ecological zones and habitats than any other European country. From 1904, the DNT lobbied hard for a nature protection act, eventually agreed in 1954. There are now 40 National Parks (with a further 5 planned) where the landscape, marine environment, plants and wildlife are protected. 14% of mainland Norway and 57% of Svalbard is protected within these parks, 1790 nature reserves, 174 protected landscapes and 200 other types of protected areas, most with little tourist development; access is mostly via toll roads. The endangered or vulnerable list of 1 988 species (2006) of flora and fauna includes 430 fungi mostly associated with small areas of old-growth forests, 90 birds and 25 mammals.

Current national parks:

Blåfjella-Skjækerfjella 1924 km<sup>2</sup>, Nord-Trøndelag, established 2004 (info centre, trails, cabins) <<http://www.nasjonalparken.no>>

Breheimen, 1707 km<sup>2</sup>, Sogn og Fjordane, Oppland, 2009 (varied glacier-formed landscape from sea level to 2000m)

Børgefjell, 1447 km<sup>2</sup>, Nord-Trøndelag, Nordland, 1963 (alpine vegetation, birds, info centre)

Dovre, 289 km<sup>2</sup>, More og Romsdal, Oppland, Sør-Trøndelag, 2003 (trails, cabin)

Dovrefjell-Sunndalsfjella, 1693 km<sup>2</sup>, More og Romsdal, Oppland, Sør-Trøndelag, 2002 (Europe's most diverse alpine ecosystem, highlands, musk ox, reindeer Arctic fox, wolverine, Fokstumyra marshes rich in birdlife, info centres, trails, cabins)

<<http://www.nasjonalparkriket.no>>

Femundsmarka, 673 km<sup>2</sup>, Sør-Trøndelag, Hedmark, 1971 (glaciers, highlands, lake, musk ox, reindeer, falcon, trails, cabins, shelters)

Folgefonna, 545 km<sup>2</sup>, Hordaland, 2005 (third largest glacier, cabin)

<<http://www.folgefonna.info>>

Forlandet, 4647 km<sup>2</sup>, (616 km<sup>2</sup> land, 4031 km<sup>2</sup> marine), Svalbard, 1973 (northernmost nesting place of some birds, seal and walrus breeding grounds)

Forollhogna, 1062 km<sup>2</sup>, Sør-Trøndelag, Hedmark, 2001 (trails)

Gressåmoen, 182 km<sup>2</sup>, Nord-Trøndelag (original spruce, birds)

Gutulia, 23 km<sup>2</sup>, Hedmark, 1968 (primeval forest, info centre, trail)

Hallingskarvet, 450 km<sup>2</sup>, Hordaland, Buskerud, 2006 (ice age landscape, trails, cabin)

Hardangervidda, 3422 km<sup>2</sup>, Hordaland, Telemark, Buskerud, 1981 (upland plateau, largest wild reindeer herds, info centre, trails, cabins)

<<http://www.hardangervidda.org/enmeny.html>>

Indre Wijdefjorden, 1127 km<sup>2</sup> (745 km<sup>2</sup>land; 382 km<sup>2</sup>marine), Svalbard, 2003  
Jostedalbreen, 1310 km<sup>2</sup>, Sogn og Fjordane, 1991 (glaciers, mainland Europe's largest icecap, info centres, trails, cabins) <<http://www.jostedalsbre.no>>

Jotunheimen, 1151 km<sup>2</sup>, Oppland, Sogn og Fjordane, 1980 (includes all Northern Europe's peaks over 2300m, highest Galdhøpiggen 2469m, and 60 glaciers, info centres, trails, cabins) <<http://www.nasjonalparkriket.no>>.

Junkerdal, 682 km<sup>2</sup>, Nordland, 2004 (botanical reserve, info centre, trails)

Lierne, 333 km<sup>2</sup>, Nord-Trøndelag, 2004 <<http://www.nasjonalparken.no>>

Lomsdal-Visten, 1102 km<sup>2</sup>, Nordland, 2009

Møysalen, 51 km<sup>2</sup>, Nordland, 2003 (Lofotens last wilderness, info centre, trails)

Nordenskiöld Land, 1362 km<sup>2</sup> (1207 km<sup>2</sup> land; 155 km<sup>2</sup> marine), Svalbard, 2003

Nordre Isfjorden, 2954 km<sup>2</sup> (2050 km<sup>2</sup> land; 904 km<sup>2</sup> marine), Svalbard, 2003

Nord-Vest Spitzbergen, 9914 km<sup>2</sup> (3683 land; 6231 marine), Svalbard, 1973 (ice field, archaeological sites, caribou and marine mammal breeding grounds)

Ormtjernkampen, 9 km<sup>2</sup>, Oppland, 1968 (old pine forest, birch forest, trail)

Rago, 171 km<sup>2</sup>, Nordland, 1971 (high peaks, deep valleys, waterfalls, beaver, wolverine, info centre, trails. cabin)

Reinheimen, 1974 km<sup>2</sup>, Oppland, Møre og Romsdal, 2006 (reindeer, wolverine, golden eagle, gyrfalcon, trails)

Reisa, 803 km<sup>2</sup>, Troms, 1986 (gorge, waterfalls, wildlife, trails. cabins)

Rondane, 963 km<sup>2</sup>, Oppland, Hedmark, 1962 (28 mammal species including lemming, reindeer, 124 bird species, archaeological sites, info centres, trails. cabins)

<<http://www.nasjonalparkriket.no>>.

Saltfjellet/Svartisen, 2105 km<sup>2</sup>, Nordland, 1989 (moors, icecaps, Sami archaeological sites, info centre, trails. cabins)

Sassen-Bünsow, 1230 km<sup>2</sup> (1157 km<sup>2</sup> land; 73 km<sup>2</sup> marine), Svalbard, 2003

Seiland, 316 km<sup>2</sup>, Finnmark, 2006

Skarvan og Roltdalen, 441 km<sup>2</sup>, Nord-Trøndelag, Sør-Trøndelag, 2004 (trails. cabins)

Stabbursdalen, 747 km<sup>2</sup>, Finnmark, 1970 (world's northernmost pine forest, info centre, trails. cabins)

Sør-Spitzbergen, 13282 km<sup>2</sup> (5025 km<sup>2</sup> land; 8257 km<sup>2</sup> marine), Svalbard, 1973 (65% of land is glacier or permanent snow, seabird breeding grounds)

Varangerhalvøya, 1804 km<sup>2</sup>, Finnmark, 2006

Ytre Hvaler, 354 km<sup>2</sup> (14 km<sup>2</sup> land; 340 km<sup>2</sup> marine), Østfold, 2009 (boats)

Øvre Annarjåkka, 1390 km<sup>2</sup>, Finnmark, 1975 (birch and pine forests, bogs, lakes, trails. cabins)

Øvre Dividal, 750 km<sup>2</sup>, Troms, 1971 (Arctic rhododendron and heather, wolverine, trails. cabins)

Øvre Pasvik, 119 km<sup>2</sup>, Finnmark, 1970 (tundra bogs, virgin taiga forest, rare birds, moose, wolf, wolverine, lynx, last habitat of brown bear, trails)

Ånderdalen, 125 km<sup>2</sup>, Troms, 1970 (bogs, ancient coastal pine and birch forests, trails)

Future national parks:

Goahteluoppal, ~300 km<sup>2</sup>, Finnmark (trails)

Rohkunborri, 571 km<sup>2</sup>, Troms (trails)

Sjunkhatten, 417 km<sup>2</sup>, Nordland

Treriksrøysa, ? km<sup>2</sup>, Troms

Tysfjord-Hellemobotn, ~1000 km<sup>2</sup>, Nordland (boat)

Bouvet Island has been a nature reserve since 1977; it is almost entirely glaciated with no inhabitants. There is an automatic meteorological station.

Directorate for Nature Management, Tungasletta 2, N-7484 Trondheim (T: 73 58 05 00, fax: 73 58 05 01) <<http://www.dirnat.no>> or <<http://www.norgesnasjonalparker.no>> <[postmottak@dirnat.no](mailto:postmottak@dirnat.no)>

<<http://www.environment.no>> is a comprehensive site on everything environmental.

Flora: There are fewer tree species in Norway than western North America areas with a similar climate because the mountain, Baltic and North Seas barriers prevented post-ice age migration. Mild temperatures along the western coast allow some hardy species of palms to grow in the north and planted deciduous trees like horse chestnut and beech thrive north of the Arctic circle in a suitable soil and microclimate. Plants needing comparatively more summer sunshine, less humidity and tolerant of cold winters occur in the southeast and inland areas. There are species where both winter and summer climate is important such as pedunculate oak, European ash and Dog's Mercury. Other plants are dependent on the type of bedrock. Alpine species mainly in the mountains and Arctic tundra are intolerant of comparatively long warm summers; many are common in the North Boreal zone and some in the Middle Boreal zone. Many hardy species have adapted to use more than one summer to ripen seeds. Imported plants have been able to ripen seeds and spread and less than half the 2 630 plant species (about 250 flowering) in Norway today occur naturally. About 210 species are listed as endangered.

Norway has four floristic zones in the Circumboreal Region: Nemoral, Hemiboreal, Boreal and Alpine Tundra. Nemoral (0.5% of land area) lies along the southern coast below 150m elevation up to 30km along valleys, with oak dominating and no Norway spruce or grey alder. Hemiboreal, or Boreonemoral (7% of land area) follows the coast from Oslofjord to Ålesund reaching an elevation of 200m or up to 400m in southern valleys and some sheltered fjords and valleys further north. Nemoral species dominate southwest facing slopes on good soil, while boreal species dominate on north facing slopes and waterlogged soil. Nemoral species (needing high humidity with low tolerance of winter frost) are english oak, sessile oak, European ash, elm, Norway maple, hazel, black alder, lime, yew, holly (only on SW coast), wild cherry, ramsons, beech (only common in Vestfold), bell heather and primula vulgaris. Typical boreal species are Norway spruce, pine, downy birch, grey alder, aspen, rowan, wood anemone and Viola riviniana. Boreal species are adapted to a long cold winter; most can tolerate colder temperatures than occur in Norway. The large boreal zone has three subzones: South Boreal, Middle Boreal and North Boreal. Bogs are common in the boreal zone, the largest areas in North and Middle zones, as well as just above the tree line. Heather is common in all upland boreal areas and berries, particularly blueberries, bilberries, crowberries and cranberries, are found throughout the boreal zones; cloudberries are common in marshes. Woodland fungi are widespread in the autumn. The South Boreal (12% of the land area) is dominated by boreal species, and has a few scattered broadleaf deciduous trees. Some species in this zone need fairly warm summers and are very rare in the middle boreal zone, eg black alder, hop, oregano and guelder rose. The zone occurs above the hemiboreal zone, up to 450m in Østlandet, 500m in southern valleys and coastal areas further north below 180m. Agriculture, including grain cultivation, takes place mostly in the hemiboreal and South Boreal zones.

Middle Boreal (20% of land area) is located up to 800m in southern valleys down to 100m maximum in Troms with small pockets further north. This is the most northerly area with some farming. It typically has closed-canopy forest dominated by the commercially important Norway spruce. Silver birch, yellow bedstraw, raspberry, mugwort and Myrica gale are species in this zone. Birch is usually dominant in northern areas, but pine, aspen, rowan, bird cherry and grey alder are also common. Birch is often a cross between silver birch and downy birch, larger than birch growing near the tree line. Some alpine plants grow in this zone, nemoral species are rare. The understory is usually well developed if the forest is not too dense.

North Boreal, or open or sparse taiga (28% of land area) is the zone closest to the tree line, bordering the alpine or polar area with its harsh subarctic climate. It is located up to 1200m in central mountain areas, 500m on the western coast. North Norway is dominated by this zone. Trees grow very slowly and do not get very large; the forest is not as dense. The tree line is mostly mountain birch, a subspecies of downy birch; in the far north, it grows down to sea level. Inland, the tree line includes spruce and pine and lower areas also have conifers. Alpine plants are common.

Alpine Tundra (32% of land area) is the area above the tree line and reaches 1 500m in

Jotunheimen and about 800m in the Lofotens; it includes most of Hardangervidda. The low alpine area has continuous plant cover with willow species up to 0.5m tall, blueberry, common juniper and twinflower; it was traditionally used as summer pastures. The higher mid-alpine tundra has smaller plants, mosses and lichens; plants still cover most of the ground even if snowfields last into mid-summer. The highest high-alpine tundra ground is dominated by bare rock, snow and glaciers, with few plants. Glacier buttercup has been found 100m below the summit of Galdhøpiggen and mosses and lichens at the summit. Svalbard and Jan Mayen have tundra vegetation except for areas covered by glaciers; some areas are fertilised by sea bird colonies. Sheltered fjord areas in Spitsbergen with higher summer temperatures, little snow and earlier snowmelt have about 165 species of small plants including dwarf birch, cloudberry, Svalbard poppy and harebell. The Svalbard Global Seed Vault, a seed conservation repository established by the Global Crop Diversity Trust and the Norwegian Government, is located under permanent ice on Spitsbergen.

Fauna: Native wild mammal species include Insectivores: Western European hedgehog (S Norway), Common shrew, Eurasian pygmy shrew, Eurasian least shrew, Taiga shrew, Laxmann's shrew, Eurasian water shrew. Bats: Daubenton's bat, Natterer's bat, Whiskered bat, Brandt's bat, Parti-coloured bat, Northern bat, Common noctule, Soprano Pipistrelle, Nathusius's pipistrelle, Common long-eared bat. Lagomorphs: European rabbit, European hare, Mountain hare. Rodents: Red squirrel, European beaver (S Norway), Wood lemming, Norway lemming, Northern red-backed vole, Bank vole, Grey red-backed vole, Northwestern water vole, Muskrat (introduced), Field vole, Root vole, Sibling vole (Svalbard only), Harvest mouse, Yellow-necked mouse, Wood mouse, Brown rat, House mouse, Northern birch mouse. Cetaceans: Sowerby's beaked whale, Bottle-nosed whale, White whale, Narwhal, Sperm whale, Common porpoise, Striped dolphin, Common dolphin, Risso's dolphin, Bottle-nosed dolphin, Atlantic white-sided dolphin, white-beaked dolphin, Killer whale, Pilot whale, Minke whale, Sei whale, Fin whale, Blue whale, Humpback whale, Bowhead whale. The North Atlantic right whale is now extinct in Norwegian waters. Other marine mammals: Walrus, Common seal, Ringed seal, Harp seal, Bearded seal, Grey seal, Hooded seal. Carnivores: Raccoon dog (introduced), Red fox, Arctic fox, Polar bear (Svalbard only), Stoat, Least weasel, American mink (introduced), European polecat, Pine marten, Badger (S Norway), Otter (S Norway) and in remote areas Eurasian wolf, Wolverine, Brown bear and Eurasian lynx. Even-toed ungulates: Fallow deer (introduced), Red deer, Elk, Roe deer, Reindeer. Cattle: Musk ox (introduced). Global warming is threatening polar bears but also increasing the number and spread of deer.

The Hardangervidda has Europe's only wild reindeer, about 15 000. There are organised elk, musk ox, beaver, seal, whale or sea eagle watching safaris in some areas. Polar bears, arctic fox, reindeer, Svalbard caribou, seals, walrus and several species of whale are found in Svalbard but independent travel is not permitted because of the danger from polar bears; you must always use a local guide.

Reptiles & Amphibians: There are 7 reptile and 5 amphibian species. The only poisonous snake is the adder (hoggorm), found in most of Norway south of Tysfjord near Narvik. They are rarely seen but be observant when in wilderness areas.

Birds (fugler): There are 473 recorded species in Norway. Flocks of sea birds found at Runde, near Ålesund include half a million including kittiwake, puffin in summer, razorbill, guillemot, gannet, fulmar, shag, oyster catcher, curlew, eider, shelduck, white-tailed eagle, eagle owl, peregrine falcon, golden eagle. On the islands of Røst and Værøy in the Lofotens, there are razorbill, black guillemot, kittiwake, fulmar, tern, gannet, puffin, cormorant, skua, little auk, black-tailed godwit, white-tailed eagle; there are also seals and occasional killer whales. The Fokstumyra marsh area near Dombås has over 80 species including great snipe, hen harrier, whimbrel, lapwing, Temminck's stint. Gray sea eagles are found in Troms. Rough legged buzzard, osprey, short-eared owl, pygmy owl, eagle owl, snowy owl, waxwing, red throated diver, horned grebe, corncrake and dipper are also seen. There are nature reserves throughout Norway — ask for details at tourist offices. Collecting eggs of specified sea birds in some areas is permitted within specified periods.

For a list of bird species see <[http://en.wikipedia.org/wiki/List\\_of\\_birds\\_of\\_Norway](http://en.wikipedia.org/wiki/List_of_birds_of_Norway)>. Norwegian Ornithological Society <<http://www.birdlife.no/organisasjonen/english.php>> <[nof@birdlife.no](mailto:nof@birdlife.no)>

Insects: About 15,000 species have been recorded but many are still unknown and the total is estimated at 23,000 species. The vast number of lakes and marshes are breeding grounds for many insects including mosquitoes and biting flies. Ticks are becoming more common.

There is a zoo at Kristiansand <<http://www.dyreparken.com>>, a polar zoo in Troms and aquariums in Bergen, Tromsø, Trondheim and Ålesund.

There is a certified ecotourism scheme for businesses that meet over 100 nature and sustainability criteria. <<http://www.grip.no/okoturisme/english%20info.htm>>

Books: Marine Mammals of the North Atlantic, by Carl Christian Kinze (Princeton University Press 2003 ISBN 978 069 111 308 1) £12.82