



*Braya linearis*. Photo: Mora Aronsson

### 3.5 RARE SPECIES, SPECIES OF CONCERN

As elsewhere in the world, the Arctic is home to species that are threatened and of conservation concern. While only identified as a FEC for plants and fungi, they have been assessed within other taxonomic groups as well, depending on data, and are presented here when applicable.

The IUCN sets a global standard for assessing and classifying threatened species and the *IUCN Red List of Threatened Species* (Red List) is the most comprehensive information source on species status and extinction risk. Nevertheless, although more than 120,000 species have been assessed to date (IUCN 2020a), there are many species, including many that live in the Arctic, that have not been assessed globally, and no regional assessment for the Arctic as a whole has been produced.

Species under threat are found throughout the Arctic; however, the collection of data and production of lists is not standardised across countries and regions. Most countries have species lists that follow the IUCN regional guidelines for application of the Red List criteria (IUCN 2012b), but most are not comprehensive nor are they completely consistent in the application of the criteria, making comparisons or summaries difficult. The amount of data is also differing between different groups, with much more relevant data collected for mammals and birds compared to invertebrates and fungi. As of 2020, Red Lists for three regions completely within the CAFF boundary are available for Greenland, Iceland, and Svalbard. There are also regularly updated Red Lists for Norway, Sweden and Finland that include species occurring within the CAFF boundary. Russia has Red Data Books, using criteria similar to IUCN,

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### 3.5.1 GREENLAND, ISLAND AND SVALBARD

for regions that include parts of the Arctic. Both Canada and the U.S. have systems that assess species based on the IUCN criteria at the national and regional levels. They also have separate lists of species protected under legislation that do not necessarily include all species on the Red Lists.

In this chapter only species that are related to the terrestrial CBMP-plan are taken into concern, freshwater and marine species are omitted.

On the global scale, concerning the Arctic, there are only assessments made by IUCN on mammals and birds. The only mammal under the CBMP–Terrestrial Plan that meets any Red List criteria is caribou/reindeer *Rangifer tarandus*, which is considered Vulnerable (VU). All other assessed mammals are considered Least Concern (LC).

Among the birds listed in Table 3-2 (88 species), 10 species fall within the ‘threatened’ IUCN Red List categories (IUCN 2012a). These are: Critically Endangered (CR) - spoon-billed sandpiper (*Eurynorhynchus pygmeus*), siberian crane (*Grus leucogeranus*) and eskimo curlew (*Numenius borealis*) (possibly extinct); Endangered (EN) - great knot (*Calidris tenuirostris*); and Vulnerable (VU) - lesser white-fronted goose (*Anser erythropus*), red-breasted goose (*Branta ruficollis*), snowy owl (*Bubo scandiacus*), long-tailed duck (*Clangula hyemalis*), bristle-thighed curlew (*Numenius tahitiensis*) and steller's eider (*Polysticta stelleri*). An additional nine species are considered Near Threatened (NT) — red knot (although some subspecies are Threatened), curlew sandpiper (*Calidris ferruginea*), semipalmated sandpiper (*Calidris pusilla*), red-necked stint (*Calidris ruficollis*), emperor goose (*Anser (Chen) canagica*), yellow-billed loon (*Gavia adamsii*), bar-tailed godwit (*Limosa lapponica*), spectacled eider (*Somateria fischeri*) and buff-breasted sandpiper (*Tryngites subruficollis*) (IUCN, 2020b), see also Chapter 3.3.2.4 and Table 3-2.

Red Lists from the Nordic states, including Greenland, are based on the IUCN criteria (IUCN 2012a, 2012b). The latest Red List for Svalbard was published in 2015 as part of the Norwegian Red List (Henriksen & Hilmo 2015), the most recent for Iceland was published in 2018 (Icelandic Institute of Natural History 2018a, 2018b, 2018c) and the latest for Greenland in 2018 (Boertmann & Bay 2018). There are some differences in the coverage of groups of organisms between the lists, but they are all more or less complete assessments for the groups they do cover. All three Red Lists cover mammals, birds, and vascular plants. The Red List from Greenland also includes some few butterflies (Table 3-7 and Table 3-8). The caribou/reindeer in east Greenland (*Rangifer tarandus eogroenlandicus*) was last seen in 1899 and is probably Extinct (EX) due to some very harsh winters. The Regionally Extinct (RE) species from Greenland are: the vascular plant Melancholy Thistle (*Cirsium helenioides*) a marginal population of a common northwest European species; two bird species, Barrow’s Goldeneye (*Bucephala islandica*) which was always rare in Greenland with unknown reason for disappearance, and Fieldfare (*Turdus pilaris*), a species on its margin that only occurred at southernmost Greenland for 50 years. The Regionally Extinct species from Iceland are: the vascular plant Greenland Primrose (*Primula egaliksensis*) known from one site, an outlier of the North American distribution with unknown reason for disappearance; and two birds, House Sparrow (*Passer domesticus*) and Water Rail (*Rallus aquaticus*), the latter being threatened by drainage of wetlands and introduction of the invasive American mink. No species is known to have become Regionally Extinct (RE) in Svalbard to date.

Future climate change is the most frequently reported threat on the Red Lists from all three areas, with various different effects.

Table 3-7. Number of species on Red Lists in Greenland (2018), Iceland (2018) and Svalbard (2015) by IUCN category.

	REGIONAL EXTINCT	CRITICALLY ENDANGERED	ENDANGERED	VULNERABLE	NEAR THREATENED	DATA DEFICIENT	TOTAL
Greenland	4	0	1	57	36	9	<b>107</b>
Iceland	3	9	12	44	15	8	<b>91</b>
Svalbard	0	9	19	17	40	0	<b>85</b>

Table 3-8. Number of species on Red Lists in Greenland (2018), Iceland (2018) and Svalbard (2015) by taxonomic group.

	MAMMALS	BIRDS	VASCULAR PLANTS	LICHENS	ARTHROPODS	TOTAL
Greenland	3	14	89	-	1	<b>107</b>
Iceland	0	30	61	-	-	<b>91</b>
Svalbard	0	8	60	17	0	<b>85</b>

### 3.5.2 FINLAND, SWEDEN, AND MAINLAND NORWAY

Norway (mainland), Sweden and Finland regularly produce Red Lists, updated at five to ten years intervals (last editions: Norway, Henriksen & Hilmo 2015; Sweden, SLU Artdatabanken 2020; and Finland, Hyvärinen et al. 2019). Table 3-9 and Table 3-10 show the Red-listed species from these countries whose distributions include the sub-Arctic part of the CAFF area (species with distribution only in the boreal forest part of the CAFF area are not included).

Knowledge differs between the three states regarding bryophytes, lichens, and invertebrates in the alpine environment. Finland and Sweden have many more Red-listed bryophytes than Norway and Finland has many more Red-listed lichens and invertebrates than Sweden and Norway, even though the three states have

similar number of known species in the three groups. The main threats reported are primary and secondary effects from climate change, overgrowth, changing vegetation and disappearing snow patches. Some species are also impacted by overgrazing by reindeer.

Four species are listed as Regionally Extinct (RE) in Finland—two moth species, *Catastia kistrandella* and *Anarta farnhami*; a hemipteran bug, *Psammodettix frigidus*; and the wild subspecies of reindeer (*Rangifer tarandus tarandus*). The wild subspecies of reindeer is also classified as Regionally Extinct (RE) in Sweden. The cause of regional extinction of wild reindeer was hunting. The cause of the disappearance of the arthropods is unknown.

Table 3-9. Number of species on regional Red Lists within the CAFF boundary in Finland (2019), Sweden (2020) and Norway (2015) by IUCN status category.

	REGIONALLY EXTINCT	CRITICALLY ENDANGERED	ENDANGERED	VULNERABLE	NEAR THREATENED	DATA DEFICIENT	TOTAL
Norway	0	4	37	36	63	0	<b>140</b>
Sweden	1	4	25	84	98	26	<b>238</b>
Finland	4	85	145	174	251	99	<b>758</b>

Table 3-10. Number of species on regional Red Lists within the CAFF boundary in Finland (2019), Sweden (2020) and Norway (2015) by taxonomic group.

	MAMMALS	BIRDS	ARTHROPODS	MOLLUSCS	VASCULAR PLANTS	BRYOPHYTES	LICHENS	FUNGI	TOTAL
Norway	3	13	19	0	59	38	4	4	<b>549</b>
Sweden	3	14	65	1	40	110	4	1	<b>241</b>
Finland	5	26	190	0	77	178	267	15	<b>143</b>

### 3.5.3 RUSSIA

Russia has both national and regional Red Data books. Nine of the regions include portions of CAFF area. Red Data books for these regions have been published since 2000 and the criteria used have evolved to be consistent with the IUCN criteria. The main difference between the Russian and current IUCN criteria is the inclusion of a naturally rare species category. Most species listed in Russia are listed in this category. There is also a regional difference in the groups of organisms that are assessed, mainly due to different expert availability. More information on the Russian categories and criteria can be found in references listed in Table 3-11.

Table 3-12 shows the number of species within the CAFF area within each of the Russian Red Book categories and Table 3-13 lists the number of species by taxonomic group. Eight species have probably disappeared (IUCN

Regionally Extinct). These are: five vascular plants on the edge of their ranges — Mountain Kidney Vetch (*Anthyllis vulneraria subsp. lapponica*) and Alpine Chamorchis (*Chamorchis alpina*) from Murmansk Region, narrow-leaved marsh orchid (*Dactylorhiza lapponica*) and Pale Gentian (*Gentianella aurea*) from Nenets Okrug and silver cloak fern (*Aleuritopsis argentea*) from Sakha Republic; one beetle from Sakha Republic (*Carabus cancellatus*) – also on the edge of its range; and two birds — Siberian Crane (*Grus leucogeranus*) in Nenets Okrug and Swan Goose (*Anser cygnoides*) in Kamchatka Krai. Both birds are on the global Red List; the Siberian Crane as Critically Endangered (CR) and the Swan Goose as Vulnerable (VU).

Table 3-11. Russian regional Red Data books that include portions of the CAFF area.

REGION	RED DATA BOOK	PORTION OF REGION INCLUDED WITHIN THE CAFF AREA
Murmansk Region	Asming et al. 2014	all except the southeast
Arkhangelsk Region	Andreev et al. 2008	Franz Josef land and Novaya Zemlya
Nenets Okrug	Matveeva et al. 2006	almost all
Yamalo–Nenets Okrug	Ektova et al. 2010	all except southeast
Krasnoyarsk Krai	Savchenko 2012, Stepanov 2012	northern third
Sakha Republic	Anonymous 2019, Danilova 2017	northern half
Chukotsky Okrug	Chereshnev et al. 2008a, 2008c	All
Magadan Region	Chereshnev et al. 2008b	northern half
Kamchatka Krai	Artyukhin et al. 2006, Chernyagina et al. 2007	northern third

Table 3-12. Number of species in Russian Red Data books (Table 3-11) within the CAFF boundary by status category. IUCN categories shown in brackets.

REGION	PROBABLY DISAPPEARED (IUCN REGIONALLY EXTINCT)	ENDANGERED (IUCN CRITICALLY ENDANGERED/ ENDANGERED)	DECLINING (IUCN VULNERABLE)	RARE (NO IUCN EQUIVALENT)	UNDEFINED BY STATUS (IUCN DATA DEFICIENT)	TOTAL
Murmansk Region	2	53	88	237	69	<b>449</b>
Archangelsk Region	0	0	3	2	0	<b>5</b>
Nenets Okrug	3	14	19	138	13	<b>187</b>
Yamalo–Nenets Okrug	0	3	10	101	10	<b>124</b>
Krasnoyarsk Krai	0	0	5	59	52	<b>116</b>
Sakha Republic	1	4	19	144	4	<b>172</b>
Magadan Region	0	2	6	84	5	<b>97</b>
Kamchatka Krai	2	60	33	28	0*	<b>123</b>
Chokotka Okrug	0	1	9	177	16	<b>203</b>

\* Data deficient species of arthropods, vascular plants, bryophytes, and lichens are excluded from Kamchatka, because data on distribution was not reported in the Red Data books of Kamchatka, rendering it impossible to determine if they were present inside the CAFF boundary.

Table 3-13. Number of species in Russian Red Data books (Table 3-11) within the CAFF boundary in Russia by taxonomic group.

REGION	MAMMALS	BIRDS	REPTILES	AMPHIBIANS	ARTHROPODS	VASCULAR PLANTS	BRYOPHYTES	FUNGI	LICHENS	TOTAL
Murmansk Region	8	29	1	1	16	175	119	18	82	<b>449</b>
Archangelsk Region	0	5	0	0	0	0	0	0	0	<b>5</b>
Nenets Okrug	1	17	0	1	15	102	15	10	26	<b>187</b>
Yamalo–Nenets Okrug	1	16	1	4	24	56	9	8	5	<b>124</b>
Krasnoyarsk Krai	0	21	0	0	1	63	18	0	13	<b>116</b>
Sakha Republic	1	34	1	0	9	94	22	2	9	<b>172</b>
Magadan Region	13	22	0	1	7	47	0	7	0	<b>97</b>
Kamchatka Krai	6	38	0	0	1*	72*	6*	0	0*	<b>123</b>
Chokotka Okrug	9	34	0	0	4	92	37	7	20	<b>203</b>

\* Data deficient species of arthropods, vascular plants, bryophytes, and lichens are excluded from Kamchatka Krai, because data on distribution was not reported in the Red Data books of Kamchatka, rendering it impossible to determine if they were present inside the CAFF boundary.

### 3.5.4 NORTH AMERICA

In Canada, national species assessments are carried out by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) based on the IUCN criteria. Of 661 terrestrial species that had been assessed by COSEWIC in 2019 (COSEWIC 2019), 95 occurred within the CAFF boundary (Table 3-14). There are many species that have not yet been assessed in Canada, particularly in the Arctic. This is due, in part, to sparse data for widely dispersed and cryptic species and a focus on species with known threats.

Documented extinctions and extirpations of terrestrial species within the CAFF boundary in Canada are limited to one species of bird, Labrador duck (*Camptorhynchus labradorius*), thought to have gone extinct in the mid-19<sup>th</sup> century, and the Ungava population of grizzly bear (*Ursus arctos*) which has not been documented since 1948. Another possible extinction is the Eskimo curlew, which, although currently assessed as Endangered, has not been observed since 1963.

Provinces and territories also assess their species and maintain regional lists based on IUCN Red List criteria. Regional lists that include areas within the CAFF boundary are Nunavut, Yukon, and the Northwest Territories.

In the U.S. (Alaska), conservation ranks are established by the state's NatureServe member programme, the Alaska Center for Conservation Science. NatureServe is the IUCN Red List authority for North American plants and their staff serve on IUCN Red List committees for vertebrates. The state conservation ranks established by the Alaska Center for Conservation Science are non-regulatory but may be used by agencies with regulatory authority to identify species in need of protection (such as the U.S. Endangered Species Act and Alaska Endangered Species Statute 2019). The U.S. Fish and Wildlife Service and National Marine Fisheries Service are responsible for listing endangered species at the national level and

the Alaska Department of Fish and Game is responsible for listing fish and wildlife as endangered in the state of Alaska. Currently, two terrestrial Alaskan Arctic species are listed in the U.S. Endangered Species Act (Table 3-15).

### 3.5.5 CONCLUSION AND KEY FINDINGS

There is a general lack of data on rare and declining species across the Arctic, with the exception of a few birds and mammals. Today, only Arctic birds and mammals have been assessed by IUCN on a global scale and, while all Arctic states assess the threatened status of their species regionally, the results vary due to differences in resources, data, and availability of experts. There is also little pan-Arctic cooperation on data collection on occurrences, population numbers and trends for threatened species. These factors make it difficult to combine data and draw conclusions at a circumpolar scale.

Other complications in assessing status and trends of species of conservation concern include, the inclusion, in some cases, of naturally rare species in the same categories as those that are under threat, and the inclusion of species, particularly in the older Russian Red Data books, that are at the northernmost edge of their range. In terms of threats, the more recent the Red List assessment, the more likely climate change is identified as a significant threat.

Table 3-15. Terrestrial Arctic species in Alaska listed under the U.S. Endangered Species Act.

ENDANGERED	
<i>Polystichum aleuticum</i>	Aleutian Shield Fern
<i>Numenius borealis</i>	Eskimo Curlew*

\*Also listed under the State of Alaska Endangered Species Statute. The Eskimo curlew is presumed Extinct, with the last confirmed sighting in 1963.

Table 3-14. Number of species at risk by threat category as assessed by COSEWIC and listed under the federal Species at Risk Act within the CAFF boundary in Canada, 2011. IUCN categories are in brackets.

	EXTIRPATED (IUCN REGIONALLY EXTINCT)	ENDANGERED (IUCN CRITICALLY ENDANGERED/ ENDANGERED)	THREATENED (IUCN VULNERABLE)	SPECIAL CONCERN (IUCN NEAR THREATENED)	NOT AT RISK (IUCN LEAST CONCERN)	DATA DEFICIENT (IUCN DATA DEFICIENT)
Mammals*	1	5	3	5	3	1
Birds*	2	4	6	13	23	0
Amphibians	0	0	0	2	2	0
Arthropods	0	1	1	4	0	0
Vascular plants	0	1	1	8	5	0
Mosses	0	0	1	0	0	1

\*COSEWIC can assess 'designatable units' or distinct populations and subspecies. This can result in multiple designations for some species. In the mammal group, for example, different populations and subspecies of *Rangifer tarandus* are listed as Endangered, Threatened and Special Concern depending upon the population. Also, and the subspecies Arctic grey wolf (*Canis lupus arctos*) is listed as Data Deficient while the Northern Grey Wolf (*Canis lupus occidentalis*) is listed as Not at Risk. In the bird group, different subspecies of Red Knot (*Calidris canutus*) are listed as Special Concern, Threatened and Endangered.