Circumpolar Arctic Vegetation

Barrens

B1. Cryptogam, herb barren
Dry to wet barren landscapes with very sparse, very low-growing plant cover. Scattered herbs, lichens, mosses, and liverworts. *Subzone A and B, some C at higher elevations.*


Eskimoeiland, North Greenland, C. Bay

B2. Cryptogam barren complex (bedrock)
Areas of exposed rock and lichens interspersed with lakes and more vegetated areas, as found on the Canadian Shield. *Subzones C and D.*


Daring Lake vicinity, Canada D.A. Walker

B3. Noncarbonate mountain complex
Mountain vegetation on noncarbonate bedrock. The variety and size of plants decrease with elevation and latitude. Hatching color and code indicate the bioclimate subzone at the mountain base. B3a through B3e indicate subzones A through E; B3n indicates noncarbonate nunatak areas. For more explanation see reverse side.


Dyrgrefjeld, Fjord, SE Greenland, F.J.A. Daniëls

B4. Carbonate mountain complex
Mountain vegetation on carbonate bedrock. The variety and size of plants decrease with elevation and latitude. Hatching color and code indicate the bioclimate subzone at the mountain base. B4b through B4e indicate subzones B through E; B4n indicates carbonate nunatak areas. For more explanation see reverse side.


Brooks Range, Alaska D.A. Walker

Graminoid tundras

G1. Rush/grass, forb, cryptogam tundra
Moist tundra with moderate to complete cover of very low-growing plants. Mostly grasses, rushes, forbs, mosses, lichens, and liverworts. *Subzones A and B.*


Arlund Ringnes Island, Canada D.A. Walker

G2. Graminoid, prostrate dwarf-shrub, forb tundra
Moist to dry tundra, with open to continuous plant cover. Sedges are dominant, along with prostrate shrubs < 5 cm tall. *Subzone C, some B.*


Eureka vicinity, Ellesmere Island, Canada D.A. Walker

G3. Nontussock sedge, dwarf-shrub, moss tundra
Moist tundra dominated by sedges and dwarf shrubs < 40 cm tall, with well-developed moss layer. Barren patches due to frost boils and periglacial features are common. *Subzones D and C, some E.*


Ambarchik, Yakutia, Russia, D.A. Walker

G4. Tussock-sedge, dwarf-shrub, moss tundra
Moist tundra, dominated by tussock cottongrass (*Eriophorum vaginatum*) and dwarf shrubs <40 cm tall. Mosses are abundant. *Subzone E, some D.*


Imnavait Creek, Alaska D.A. Walker

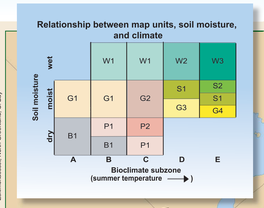
Glaciers

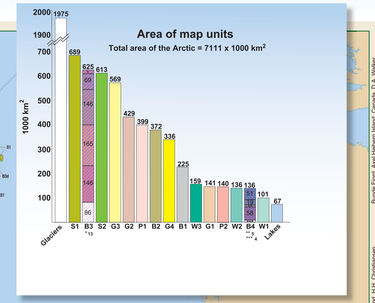
Treeline - The northern latitudinal limit beyond which trees do not generally grow. Trees may occur in *Subzone E* as scattered individuals or stands within riparian areas.

Riparian corridors - Complexes with mix of vegetation from bare gravel bars to fully vegetated areas. Characteristic plants range from herbs and cryptogams (*Subzones A and B*) to dense tall shrubs (*Subzone E*).

Water

Non-Arctic areas





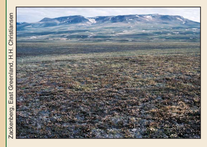
0 100 200 300 400 500 km
Lambert Azimuthal Equal-Area Projection
Scale 1:7,500,000

Prostrate-shrub tundras


Brooks Foot, Arctic Foothills, Alaska D.A. Walker

P1. Prostrate dwarf-shrub, herb tundra
Dry tundra with patchy vegetation. Prostrate shrubs < 5 cm tall (such as *Dryas* and *Salix arctica*) are dominant, with graminoids and forbs. Lichens are also common. *Subzones B and C.*

P1


Zackenberg, Fjord Greenland, U.H.C. Christiansen

P2. Prostrate/ Hemiprostrate dwarf-shrub tundra
Moist to dry tundra dominated by prostrate and hemiprostrate shrubs < 15 cm tall, particularly *Cassiope*. *Subzone C.*

P2

Erect-shrub tundras


Darry Lake, Canada D.A. Walker

S1. Erect dwarf-shrub tundra
Tundra dominated by erect dwarf-shrubs, mostly < 40 cm tall. *Subzone D.*

S1


Seward Peninsula, Alaska D.A. Walker

S2. Low-shrub tundra
Tundra dominated by low shrubs > 40 cm tall. *Subzone E.*

S2

Wetlands


Resolute, Cornwallis Island, Canada, D.A. Walker

W1. Sedge/grass, moss wetland
Wetland complexes in the colder areas of the Arctic, dominated by sedges, grasses, and mosses. *Subzones B and C.*

W1


North Slope coastal plain, Alaska D.A. Walker

W2. Sedge, moss, dwarf-shrub wetland
Wetland complexes in the milder areas of the Arctic, dominated by sedges, grasses, and mosses, but including dwarf shrubs < 40 cm tall. *Subzone D.*

W2


Yukon-Kuskokwim Delta, Alaska, S.S. Talbot

W3. Sedge, moss, low-shrub wetland
Wetland complexes in the warmer areas of the Arctic, dominated by sedges and low shrubs > 40 cm tall. *Subzone E.*

W3

About the CAVM

The Circumpolar Arctic Vegetation Map (CAVM) shows the types of vegetation that occur across the Arctic, between the ice-covered Arctic Ocean to the north and the northern limit of forests to the south. Environmental and climatic conditions are extreme, with a short growing season and low summer temperatures. The region supports plants such as dwarf shrubs, herbs, lichens and mosses, which grow close to the ground. As one moves southward (outward from map's center in all directions), the amount of warmth available for plant growth increases considerably. Warmer summer temperatures cause the size, abundance, and variety of plants to increase. Climate and other environmental controls, such as landscape, topography, soil chemistry, soil moisture, and the available plants that historically colonized an area, also influence the distribution of plant communities.

The colors on the map indicate the differences that occur in the general outward appearance of vegetation (physiognomy). The CAVM team grouped over 400 described plant communities into 15 physiognomic units based on plant growth forms. The insert diagram (upper left) shows the relationship between the map units (except for B2, B3, and B4, which are barren rock or mountain complexes), and the principal environmental controls, summer temperatures and site moisture. The total area of each map unit (in square kilometers) is summarized in the bar chart (upper right).

An international team of arctic vegetation scientists representing the six countries of the Arctic—Canada, Greenland, Iceland, Norway, Russia, and the United States—prepared the map. The methods used to create the map, more detailed descriptions of the map units, and additional maps and information are on the reverse side.

Glossary

Arctic bioclimate zone: The region of this map; the bioclimate zone north of the climatic limit of trees that is characterized by an Arctic climate, Arctic flora, and tundra vegetation. It includes all the arctic tundra regions with an Arctic climate and Arctic flora, but it excludes tundra regions that have a boreal flora such as the boreal oceanic areas of Iceland and the Aleutian Islands, and alpine tundra regions south of the latitudinal treeline.

Bioclimate zone: A region of the Earth's surface with characteristic climate, flora, and vegetation. Bioclimate **subzones** are subdivisions based on a combination of floristic composition, dominant plant community structure (physiognomy), and the suite of plant communities in common habitats (See Table 1, reverse side). The bioclimate subzones used here are adopted with modification from the phytogeographic subzones of Yurtsev (1994) and the bioclimate zones of the Panarctic Flora Initiative (Elvebakk et al. 1999).

Carbonate: Refers to limestone or dolomite bedrock. These bedrock types result in soils with high calcium content, high pH, and plant communities adapted to such conditions. **Noncarbonate** refers to sandstone, granite, or other rock types with few carbonates.

Cryptogam: A plant that reproduces sexually without forming seeds. This group includes many common tundra ground plants, such as **lichens**, symbiotic associations of algae and fungi, and **mosses**, members of the class Musci.

Forb: A broadleaf herbaceous (nonwoody) flowering plant. Does not include graminoids.

Graminoid: A grass-like herbaceous plant with leaves mostly very narrow or linear in outline. This group includes **grasses**, members of the plant family Poaceae; **rushes**, members of the plant family Juncaceae; and **sedges**, members of the plant family Cyperaceae. Sedges are further divided into **tussock sedges**, those with a caespitose or bunch-forming habit (refers here mainly to *Eriophorum vaginatum*), and **nontussock sedges**, those with other growth forms, usually growing from rhizomes, stolons, or singly.

Herb: A flowering plant with no significant woody tissue above ground. Herbaceous plants include forbs and graminoids.

Nunatak: A nonglaciated area surrounded by glaciers, often a mountain peak taller than the surrounding glaciers.

Physiognomy: The general outward appearance of a plant community, determined by the life forms of the dominant species, e.g., grassland, forest, tundra.

Plant functional type: A category of plants based on factors such as growth form, size and taxonomic status. The tundra plant functional types used in the map-unit names include **graminoids**, **forbs**, **shrubs** of various stature, and **cryptogams** (mosses and lichens). (See these categories for further explanation.)

Riparian: An intrazonal habitat pertaining to streamside environments.

Shrub: A woody perennial plant differing from a tree by its lower stature and by producing several basal stems instead of a single trunk. This group includes: **tall shrub**, greater than 2 m tall (e.g., *Alnus crispus*, *Salix alaxensis*); **low shrub**, between 0.4 and 2 m tall (e.g., *Betula glandulosa, Salix glauca*); and **dwarf shrub**, less than 0.4 m tall. Dwarf shrubs are further divided into **erect dwarf shrub**, less than 0.4 m tall with erect stems (e.g., *Vaccinium uliginosum*, *Ledum decumbens*, *Betula nana*); **hemiprostrate dwarf shrub**, very short, generally less than 0.15 m tall, with a semi-erect or trailing stem (refers here mainly to *Cassiope tetragona*); **prostrate dwarf shrub**, lying flat on the ground (e.g., *Dryas, Arctous rubra*, *Salix arctica*).

Tundra: A physiognomic descriptor of low-growing vegetation beyond the cold limit of tree growth, both at high elevation (alpine tundra) and at high latitude (arctic tundra). Tundra vegetation types are composed of herbaceous plants, shrubs, mosses, and lichens.

Wetland: An intrazonal habitat where soil water saturation is the dominant factor determining the nature of soil development and vegetation.

Zonal vegetation: Vegetation within a specified bioclimate zone that ultimately develops on sites with moderate slope, soil, snow, site moisture, and disturbance.

Circumpolar Arctic Vegetation Map

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Funded by:
U.S. National Science Foundation grant number OPP-9908-829, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Bureau of Land Management.

Suggested Citation:
CAVM Team. 2003. Circumpolar Arctic Vegetation Map. Scale 1:7,500,000. Conservation of Arctic Flora and Fauna (CAFF) Map No. 1. U.S. Fish and Wildlife Service, Anchorage, Alaska.

Web sites: www.geobotany.uaf.edu, www.caff.is