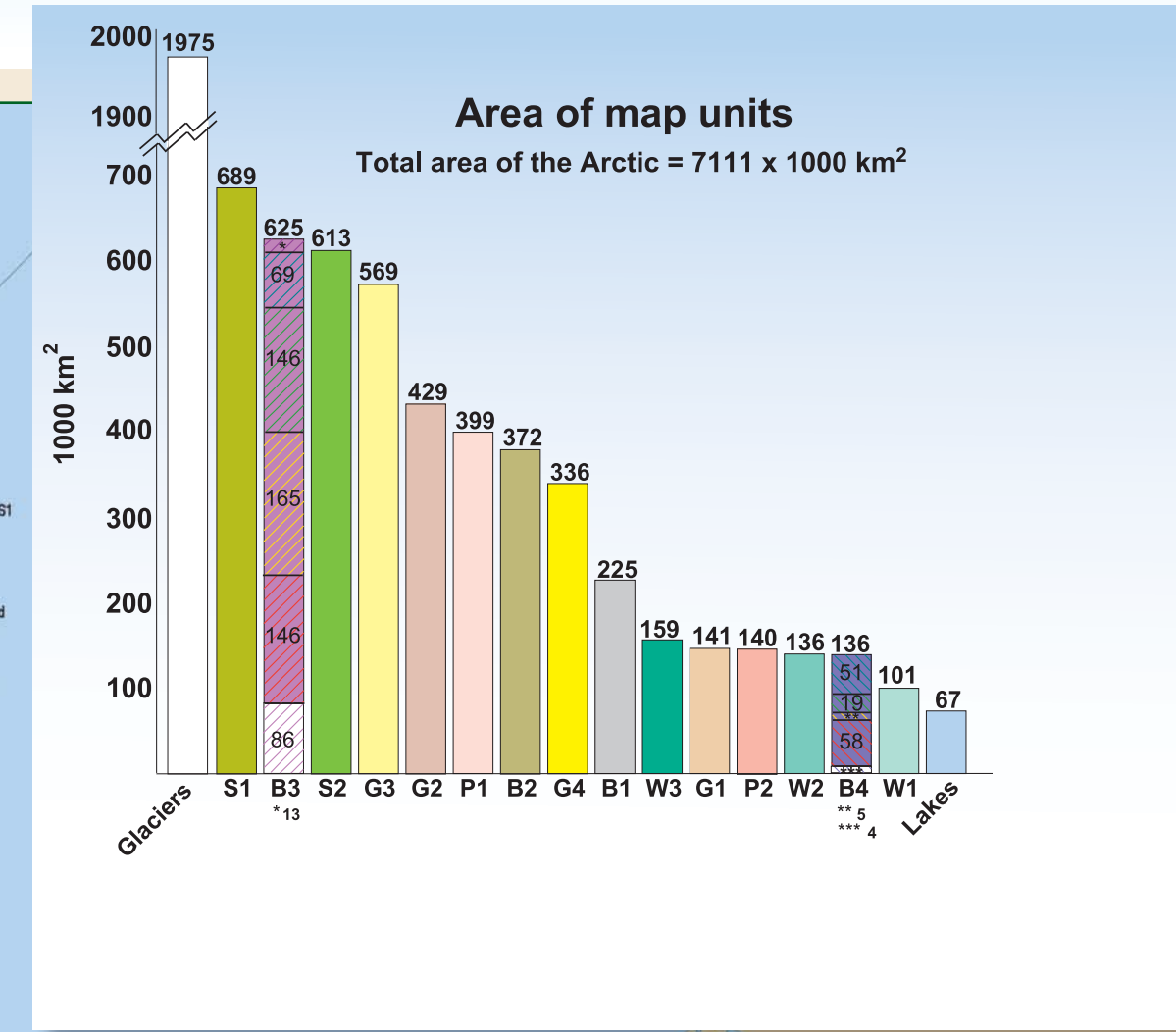
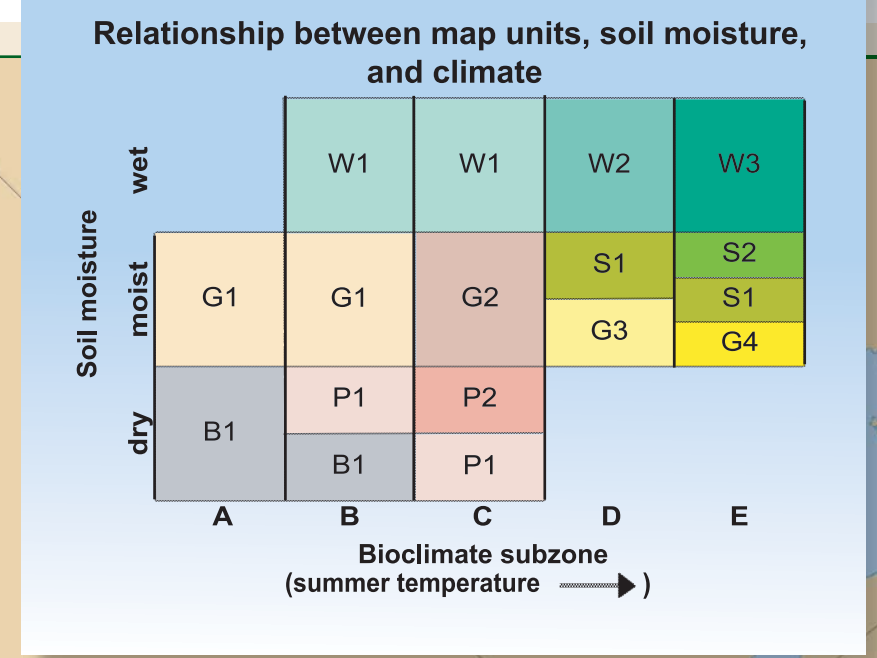
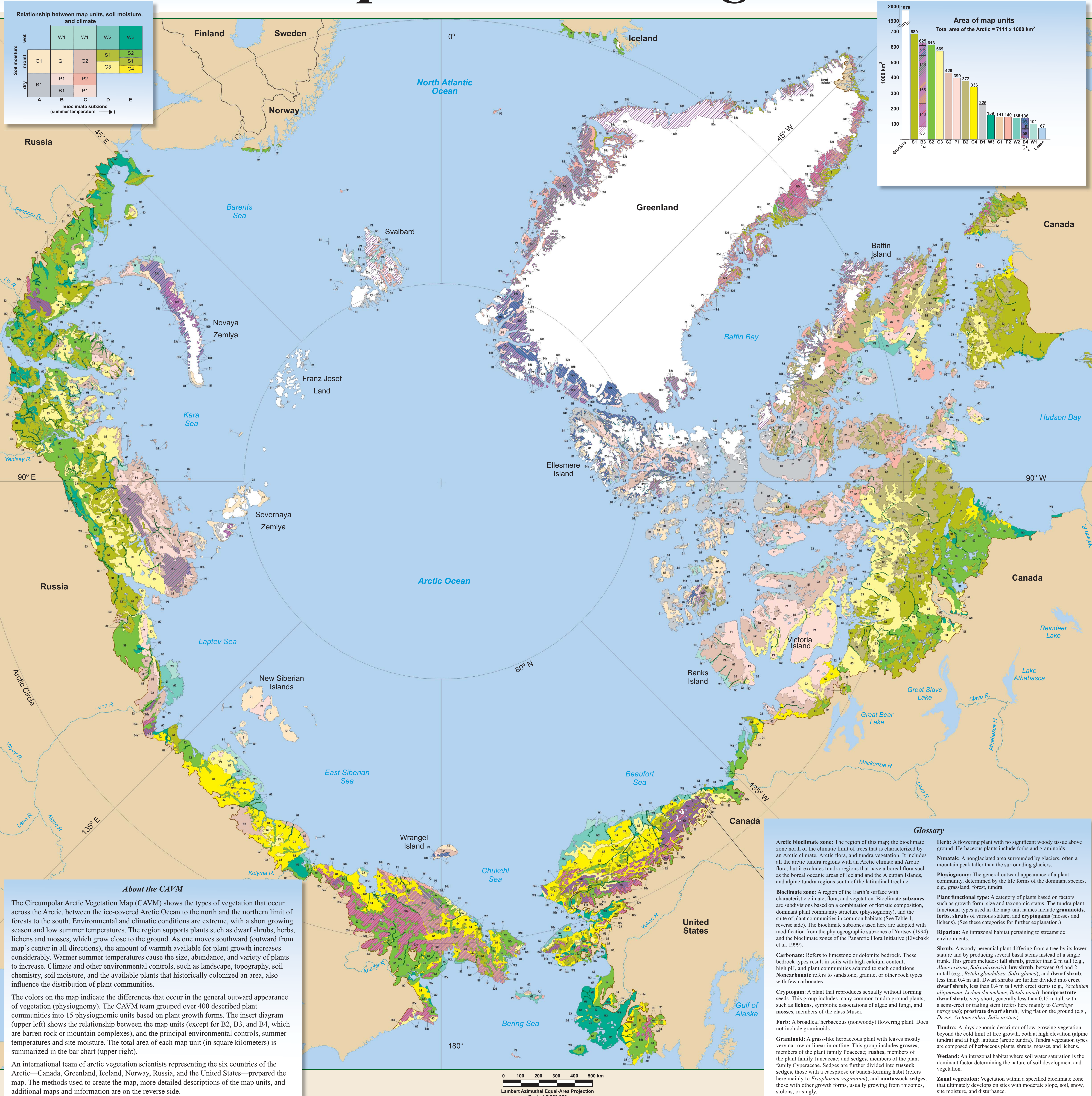


# Circumpolar Arctic Vegetation



**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.*

**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.*

**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 B3c indicate subzones A through E; B3n indicates noncarbonate nunatak areas. For more explanation see reverse side.

**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.

**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.*

**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.*

**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.*

**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.*

- 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**

**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.

**Prostrate-shrub tundras**

**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.*

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

**Erect-shrub tundras**

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

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

**Wetlands**

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

**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.*

**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.*

**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 zones 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 zones used here are adopted with modification from the physiogeographic subzones of Yurtsev (1994) and the bioclimate zones of the Panarctic Flora Initiative (Eivbakkt 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 sizes, 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 tetragyna*); and **prostrate dwarf shrub**, lying flat on the ground (e.g., *Dryas octopetala*, *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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**Web sites:** www.geobotany.uaf.edu, www.caiff.is

**CAFF** U.S. Geological Survey **USGS** science for a changing world

