
Glossary, References, and Indices

Glossary
References
Index of Common Names
Index of Scientific Names

Glossary

Most technical terminology used in the description of sedges has been removed from this guide; however, an occasional more-technical term used in the description of sedges will be encountered. A glossary is provided for reference which may also be useful when referring to other sedge guides and more technical manuals on sedge and sedge-like plants. This set of sedge terminology is largely credited to Hurd et al. (1998), with additions from Harrington (1977) and Harris and Harris (1994). Wetland and plant ecological terminology follows Gabriel and Talbot (1984), Glazer (1987b) and Vitt *in* Johnson et al. (1995).

- Abaxial**- The side away from the axis (dorsal).
- Achene**- A small, dry, hard, one-celled, one-seeded, persistently closed (indehiscent) fruit with the seed attached at one point to the ripened outer wall of the mature fruit (pericarp).
- Acicular**- Needle-shaped.
- Acuminate**- Gradually tapered to a narrow tip.
- Acute**- Sharp-pointed, with the tip forming an angle of less than 90 degrees.
- Adaxial**- The side toward the axis (ventral).
- Aggregated**- Crowded into a dense cluster, but not united.
- Amphiberingian**- On and around the Bering Sea region of Alaska and Chukotka.
- Androgynous**- Having staminate (male) flowers above the pistillate (female) flowers in the same spike.
- Apex**- The highest point.
- Aphyllopodic**- With the lowermost leaves greatly reduced, bladeless or nearly so; blades, when present, nongreen, short, firm, and pointed.
- Apiculate**- Ending abruptly in a small point.
- Appressed**- Lying flat or close against something, e.g., the stem (culm).
- Approximate**- Appearing close together (opposite of remote).
- Aristate**- With a stiff bristle.
- Ascending**- Curving upward.
- Attenuate**- Slenderly tapering or prolonged; more gradual than acuminate.
- Auricle**- A small projecting lobe or appendage.
- Awl-shaped**- Narrowly triangular and sharply pointed, like an awl.
- Awn**- A bristle-shaped appendage.
- Basal**- Pertaining to the base.
- Beak**- A firm, prolonged, slender tip (the distal portion of the perigynium).
- Biconvex**- Convex on both sides.
- Bidentate**- Having two teeth.
- Bidentulate**- Minutely bidentate.
- Blade**- The broad, usually flat part of a leaf.
- Bog**- Peat-covered wetland where vegetation shows the effects of a high water table and a general lack of nutrients. Bogs receive their nutrients only from rain water; vegetation is not nourished by mineral-enriched groundwater. Calcium (Ca) and magnesium (Mg) levels in the groundwater are extremely low. Bog surfaces are virtually isolated from mineralized soil waters. The surface waters are strongly acidic (pH generally less than 4.6) and the upper peat layers are extremely low in nutrients. Cushion-forming *Sphagnum* mosses and heath shrubs are common. Trees may be present or absent; if present, they generally form open-canopied stands of low, stunted trees. Peat is primarily formed by *Sphagnum* mosses.
- Bract**- A modified leaf subtending a spike or inflorescence.

- Canaliculate**- Longitudinally channeled or grooved.
- Capitate**- Headlike; collected into a head or dense cluster.
- Cartilaginous**- Tough and firm, but somewhat flexible like cartilage.
- Castaneous**- Chestnut-colored; dark brown.
- Cauline**- Of or on the stem.
- Cespitose**- Growing in low, dense tufts; clumped or clustered.
- Chartaceous**- Papery in texture.
- Ciliate**- Marginally fringed with hairs.
- Circinate**- Coiled from the tip downward.
- Circumboreal**- Occurring at once in the northern parts of North America, Asia and Europe.
- Circumpolar**- Occurring in the polar regions of North America, Asia and Europe. Equally applied to areas around the southern polar region when referring to the southern hemisphere.
- Clavate**- Shaped like a club.
- Collar**- The area on the abaxial surface of the sedge leaf at the junction of the blade and sheath.
- Compound**- Having two or more similar parts in one organ.
- Concave**- With the surface bowed inward (see Convex).
- Concavo-convex**- With one surface bowed inward and the other outward.
- Contiguous**- Near, next, or adjacent to.
- Convex**- With the surface bowed outward (see Concave).
- Coriaceous**- Thick and leathery in texture.
- Corrugated**- Wrinkled crosswise or horizontally.
- Cross-fibrillose**- With soft tissues of a structure (for example, the leaf sheath) broken down, leaving a central longitudinal fiber and short, curving horizontal fibers connecting it with the edges.
- Crowded**- Close together.
- Culm**- Stem of a grass, sedge, or rush.
- Cuspidate**- Tipped with a cusp, a sharp or firm point.
- Cylindric**- Having the form of a cylinder.
- Deciduous**- Not persistent; falling off.
- Decumbent**- With a prostrate or curved base and an erect or ascending tip.
- Deflexed**- Bent or turned abruptly downward.
- Dioecious**- Bearing staminate (male) and pistillate (female) flowers on different plants.
- Distal**- Toward or at the tip or far end.
- Divaricate**- Widely divergent or spreading from the axis.
- Dorsal**- Pertaining to the back, or outer surface; the side away from the axis.
- Dorsal suture**- A seam visible near the tip of the dorsal (abaxial) side of the perigynium in some sedge species. It represents the line along which the lateral margins of the bract forming the perigynium are fused and is sometimes like a seam with a flap.
- Elliptic**- With the form of a flattened circle, widest in the center and with the ends equal.
- Emarginate**- With a broad, shallow notch at the apex.
- Entire**- With a smooth margin (for example, a perigynium beak without a notch or dentation).
- Erose**- With an irregular margin, as if gnawed or shallowly shredded (see Lacerate).
- Excurrent**- Running through and beyond, as a midrib projecting beyond a leaf apex.
- Exserted**- Projecting beyond the containing structure.
- Falcate**- sickle-shaped or curved like a hawk's beak.
- Fasciculate**- In close bundles or clusters.
- Fascicle**- A bundle or cluster.
- Fen**- Peatland characterized by a high water table, but with very slow internal drainage by seepage down very gradual slopes. Slow-moving groundwater is enriched by nutrients (particularly Ca and Mg) from upslope materials; fens are thus more mineral-rich than bogs. The pH of the groundwater is generally 5.5 - 7.0. Vegetation reflects quality and quantity of available water, resulting in three basic fen types: graminoid (usually sedge) fens, shrub fens, and treed fens.

Sedges and “brown mosses” are the primary peat formers in fens.

- Fibrillose-** Bearing delicate fibers or hairs.
- Filamentous-** Threadlike, very slender.
- Filiform-** Long, slender, threadlike.
- Flaccid-** Weak and lax.
- Flexuous-** Wavy, flexible, curved in a zigzag fashion.
- Flark-** A water-filled depression or pool that is elongate perpendicular to the prevailing slope. They contain distinctive species assemblages, occur in linear or reticulate networks, and represent an important element of a patterned fen (see strang).
- Foliaceous-** Leaflike, and usually green.
- Fuscous-** Gray-brown.
- Fusiform-** Spindle-shaped, thickest near the middle and tapering at both ends.
- Glabrous-** Smooth, without hairs or glands.
- Glandular-** Bearing glands.
- Glaucous-** With a waxy bluish or whitish covering.
- Globose-** Spherical.
- Graminoids-** Grass-like plants.
- Gynecandrous-** Having pistillate (female) flowers above the staminate (male) flowers in the same spike.
- Habit-** The general appearance of a plant: the general form or arrangement of the stem, roots and branches.
- Head-** A rounded or flat-topped cluster of flowers or fruits.
- Hirsute-** With rather coarse or stiff hairs.
- Hirtellous-** Minutely hirsute.
- Hispid-** Rough with firm, stiff hairs.
- Hispidulous-** Minutely hispid; bristly-hairy.
- Hyaline-** Thin and translucent.
- Indurated-** Hardened.
- Inflorescence-** A flower cluster.
- Inframarginal-** Beneath, within, or less than the margins.
- Internodes-** The portion of a stem or other structure between two other nodes.
- Involute-** Rolled up or folded: with the edges rolled inward toward the upper (ventral) side.
- Keeled-** With a dorsal, projecting, usually central rib, like the keel of a boat.

Lacerate- With the margins irregular, appearing to have been torn. Margins more deeply shredded than described for erose.

Landform- Any element of the earth's surface that is characterized by a distinctive surface expression or internal structure. In landscape ecology, vegetation landforms of peatlands are vegetation patterns that recur across a geographic area as seen on aerial photographs.

Lanceolate- Narrow and tapering to the apex, broadest toward the base, four to six times as long as broad.

Lax- Loose; with parts open and spreading; not compact.

Lenticular- In the shape of a lens; biconvex.

Ligule- The membranous appendage arising from the adaxial surface of a sedge or grass leaf at the junction of the sheath and blade.

Marsh- Wetland that is periodically inundated by standing or slow-moving water, and hence rich in nutrients. Mainly wet, mineral soil areas characterized by emergent vegetation of reeds, rushes, sedges or grasses. Peat formation is often minimal. They are subject to water drawdown, but water remains within the rooting zone for most of the growing season. Waters are usually almost neutral to slightly alkaline. Surface water levels may fluctuate seasonally, and vegetation often has distinct zones reflecting water depth, frequency of drawdowns, and/or salinity.

Membranaceous- Thin, soft, and pliable like a membrane.

Membranous- See membranaceous.

Mesotrophic- (adj.) Habitats of moderate nutrient capacity.

Minerotrophic- Sites which receive terrestrial mineral nutrition in addition to precipitation, indicating that nutrients are brought into a peatland by water that has previously extracted them from a mineral soil.

Moniliform- Resembling a string of beads.

Monoecious- With staminate (male) and pistillate (female) flowers borne on the same plant.

Micronate- Tipped with a short, sharp, slender point.

Muskeg- Colloquial and old term used to refer to the complex mosaic of fens, bogs, swamps, pools and scrubby forest that becomes increasingly common to the north. In interior Alaska and Canada, the term is used to describe a black spruce and *Sphagnum* peatland. It is also a common term for southeast Alaskan wetlands characterized by stunted, gnarled trees (many with bonsai-like forms), pit ponds and larger pools (containing skunk cabbage, yellow pond-lily, and various pondweeds) drained by rills and small streams snaking between thick lawns of *Sphagnum* moss and islands of stunted forest and shrubs. In this cool, humid, oceanic climate, they may cover depressional areas as well as slopes of considerable steepness.

Nerve- A simple or unbranched vein or slender rib of a leaf, bract, perigynium, or other organ.

Node- The point on the stem where leaves and branches originate; the joint of a stem; the point on an axis that bears other structures.

Ob- Latin prefix, meaning in a reverse direction.

Ob lanceolate- Lanceolate but with the narrowest part toward the base.

Obliquely cleft- An opening with the sides unequal or slanting.

Obovate- Ovate, but attached at the narrow end (two dimensional).

Obovoid- A three-dimensional figure, obovate in outline.

Obsolete- Rudimentary and scarcely detectable.

Obtuse- Blunt to almost rounded at the end.

Orbicular- Circular or nearly so in outline.

Orifice- An opening.

Ovary- The expanded lower portion of the pistil that contains the ovule(s).

Ovate- Having the outline of an egg; broadest toward the base, one and one half times as long as broad (two dimensional).

Ovoid- A three-dimensional figure, ovate in outline.

Ovule- The structure that becomes a seed after fertilization.

Papillose- Bearing minute rounded or nipple-like, warty projections.

Peat- The decomposing remains of plants.

Peatlands- Generic term including all types of peat-covered terrain. Areas of accumulation of more than 40 cm of peat above the mineral soil. The 40 cm depth is the thickness of rooting for the majority of wetland plants.

Pedicel- The stalk of a single flower in an inflorescence.

Peduncle- The stalk of an inflorescence or solitary flower.

Pedunculate- Borne upon a peduncle.

Perigynium (plural = perigynia)- An inflated saclike structure enclosing the ovary (achene) in the genus *Carex*.

Phyllopodic- With the lowermost leaf blades well developed and not reduced.

Pistil- The female (seed bearing) structure of a flower, consisting usually of an ovary and one or more styles and stigmas.

Pistillate flower- Female flower; a flower with one or more pistils, but no stamens.

Plane- With a flat surface.

Plano-convex- flat on one surface, rounded on the other. In a plano-convex perigynium, the dorsal side is convex or rounded and the ventral side is flat.

Plicate- Plaited or folded like a fan.

Proximal- Toward the base.

Puberulent- Minutely hairy.

Pubescent- Covered with hairs, hairy.

Punctate- Dotted with depressions or translucent glands.

Puncticulate- Minutely punctate, diminutive of punctate.

Rachilla- The axis of the spikelet in grasses and some sedges. The presence of a rachilla alongside the achene within the perigynium of some sedges demonstrates

- that each pistillate (female) flower represents an inflorescence branch reduced to a single flower. It is commonly present in single-spiked sedges.
- Remote**- Appearing slightly separated: removed to, or situated at a distance from (opposite of approximate).
- Retorse**- Bent or turned abruptly backward.
- Revolute**- Rolled under: rolled back from the margins or apex toward the dorsal side.
- Rhizome**- A prostrate underground stem, rooting at the nodes.
- Rhombic**- Diamond shaped.
- Rib**- A primary or prominent vein of a leaf, bract, or other structure.
- Rugose**- Wrinkled.
- Rugulose**- Diminutive of rugose.
- Scabrous**- Rough to the touch due to the presence of short, stiff hairs or stout projections.
- Scale**- A small, thin, or flat structure.
- Scarious**- Thin, dry, and chaffy in texture, not green.
- Separate**- Distinct from each other.
- Septate**- Divided by transverse partitions.
- Septate-nodulose**- Divided by small transverse knobs or nodules.
- Serrate**- With short, sharp teeth pointing forward.
- Serrulate**- Minutely serrate.
- Sessile**- Without a stalk, attached directly at the base.
- Setaceous**- Bristle-shaped.
- Sheath**- The basal portion of the rush, sedge, or grass leaf that forms a tubular cover surrounding the stem.
- Spiciform**- Spikelike.
- Spike**- An unbranched, elongate inflorescence with sessile or subsessile flowers maturing from the base upwards.
- Spindle-shaped**- Broadest near the middle and tapering toward both ends. Fusiform.
- Squarrose**- Spreading rigidly at right angles or recurved.
- Staminate flower**- Male flower; a flower with one or more stamens, but no pistils.
- Stigma**- The apical part of the pistil on which the pollen is deposited and where it germinates.
- Stipe**- A stalk-like structure.
- Stipitate**- Having a stipe or stalk.
- Stramineous**- Straw-colored.
- Strang (String)**- The transverse peat ridge portion of a wetland vegetation pattern of alternating peat ridges and flooded depressions (see flark) commonly known as strangs and flarks.
- Striate**- Marked with fine longitudinal lines or streaks; finely nerved.
- Strigose**- With short, stiff, appressed hairs.
- Striolate**- Minutely striate; diminutive of striate.
- Style**- The slender stalk that connects the stigma to the ovary.
- Swamp**- Wetland where standing or gently moving waters occur seasonally or persist for long periods, leaving the subsurface continuously waterlogged. Water table may drop seasonally, creating aerated conditions in the rooting zone of vegetation. Swamp waters are almost neutral to moderately acid, and show little deficiency in oxygen or mineral nutrients. They are nutritionally intermediate between bogs and fens. Substrates consist of mixtures of mineral and organic materials, or woody, well-decomposed peat. Vegetation may be dense coniferous or deciduous forest, or tall shrub thickets. Most peat-forming mosses are absent, or present only in a subordinate role. Woody species are the primary peat formers in swamps, and in many swamps, peat formation is minimal.
- Sub**- Latin prefix, meaning under, almost, or not quite.
- Subcoriaceous**- Somewhat leathery in texture.
- Suborbicular**- Egg-shaped.
- Substipitate**- With a very short stalk (peduncle or base of an achene or perigynia).
- Subtend**- To underlie so as to enclose or surround.

Subulate- Awl-shaped; flat, narrow, and tapering gradually to a sharp apex.
Suffused- Tinged, diffused, overspread.
Sulcate- Longitudinally grooved or furrowed.
Sward- Turf.
Terete- Cylindrical; circular in cross section.
Tomentum- A covering of tangled or matted, woolly hairs.
Torose- Cylindrical with alternate swellings and contractions.
Torulose- Diminutive of torose. In sedges, generally used with reference to a perigynium with a swollen base that is more or less adnate to the achene.
Trigonus- With three angles.
Triquetrous- With three sharp or projecting angles.
Truncate- Cut squarely across at the apex or base.
Tuberculate- Bearing small swellings or projections (tubercles).
Tufted- Growing in tufts or clumps; clustered; cespitose.

Tussock- A clump or tuft of grass-like plants.
Ventral- Pertaining to the inner face of an organ, or the side toward or facing the axis, adaxial.
Ventromarginal- Toward the ventral side of the margin.
Villose- Pubescent with long, soft, often bent or curved, but not matted hairs.
Water Track- Any zone in which minerotrophic water is channeled across a peatland. The streamlined vegetation pattern simulates the appearance of braided streams or networks of rills in the direction of water flow.
Wetland- Land where saturation with water is the dominant factor in determining the nature of soil development and the types of plant and animal communities living in an area.
Wing- A thin, flat appendage or the border of an organ.

References

- Abraham, K.F. and R.L. Jeffries. 1997. High goose populations, impacts and implications. pp. 7-72 *In*: Arctic Ecosystems in Peril: Report of the Arctic goose habitat working group. Arctic Goose Joint Venture Spec. Publ. U.S. Fish and Wildlife Service, Washington, DC and Canadian Wildlife Service, Ottawa, ONT, Canada.
- Adams, G.D. 1988. Wetlands of the prairies of Canada. Chapt. 5. *In*: NWWG-CCELC. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). Wetlands of Canada. Ecological Land Classification Series, No. 24. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.
- Aiken, S.G., R.L. Boles and M.J. Dallwitz. 2000. (1999 onwards). Cyperaceae of the Canadian Arctic Archipelago: descriptions, illustrations, identification, and information retrieval. Ver. 6. November 2000. <<http://www.mun.ca/biology/delta/arctic/cyp/>>
- Anderson, D.S. and R.B. Davis. 1997. The vegetation and its environments in Maine peatlands. *Can. J. Bot.* 75:1785-1805.
- Anderson, D.S., R.B. Davis, S.C. Rooney and C.S. Campbell. 1996. The ecology of sedges in Maine peatlands. *Bull. Torr. Bot. Club* 123(2):100-110.
- Atwell, G., D.L. Boone, J. Gustafson and V.D. Berns. 1977. Brown bear summer use of alpine habitat on the Kodiak National Wildlife Refuge. pp. 297-305, *In*: Pelton, M.R., J. W. Lentfer and G. E. Folk (eds.) 1976. Bears: their biology and management: a selection of papers from the Third International Conference on Bear Research and Management, held at the 54th Annual Meeting of the American Society of Mammalogists, Binghamton, NY, and First International Theriological Congress, Moscow, USSR, June 1974. Morges: International Union for Conservation of Nature and Natural Resources.
- Babcock, C.A. and C.R. Ely. 1994. Classification of vegetation communities in which geese rear broods on the Yukon-Kuskokwim delta, Alaska. *Can. J. Bot.* 72(9):1294-1301.
- Bennett, A.J. 1996. Physical and biological resource inventory of the Lake Clark National Park-Cook Inlet coastline, 1994-96. Lake Clark National Park and Preserve. Kenai Coastal Office, U.S. National Park Service, P.O. Box 2643, Kenai, AK 99611. 137 p.
- Cody, W.J. 1996. Flora of the Yukon Territory. National Research Council, Research Press, Ottawa, Canada.
- Cooke, S.S. (ed.) 1997. A field guide to the common wetland plants of western Washington and northwestern Oregon. Seattle Audubon Society Trailside Series, Seattle, WA.
- Damman, A.W.H. 1964. Key to the *Carex* species of Newfoundland by vegetative characteristics. Dept. of For. Publ. No. 1017. Queen's Printer and Controller of Stationary, Ottawa, ONT, Canada.

- Damman, A.W.H. and T.W. French. 1987. The ecology of peat bogs of the glaciated northeastern United States: A community profile. U.S. Fish and Wildl. Serv. Biol. Rep. 85(7.16). 100 p.
- DeVelice, R.L., S.L. Boudreau, C. Wertheim, C.J. Hubbard and C. Czarnecki. 2001. Vascular plant identification guide, Chugach National Forest. USDA Forest Service, Chugach National Forest, Anchorage, AK
- Douglas, G.W., G.W. Argus, H.L. Dickson and D.E. Brunton. 1981. The rare vascular plants of the Yukon. *Syllogeus* 28:1-96.
- Douglas, G.W., D. Meidinger and J. Pojar (eds.). 2001. Illustrated flora of British Columbia, Vol. 6: Monocotyledons. Research Branch Ministry of Forests, Victoria, B.C., Canada.
- ESIS. 1996. Aleutian Canada goose (DRAFT). Endangered Species Information System (ESIS). Fish and Wildlife Information Exchange. Conservation Management Institute, College of Natural Resources, Virginia Tech. <<http://fwie.fw.vt.edu/WWW/esis/lists/e107001.htm>>.
- Ford, B. A., P. W. Ball, and K. Ritland. 1993. Genetic and macromorphologic evidence bearing on the evolution of members of *Carex* section *Vesicariae* (Cyperaceae) and their natural hybrids. *Can. J. Bot.* 71:486-500.
- FNA (Flora North America Editorial Committee). 2002. Cyperaceae. *In*: Flora of North America: Magnoliophyta: Commelinidae. Vol 23. Flora of North America: North of Mexico. Edited by: Flora of North America Editorial Committee. Oxford University Press. New York, NY.
- Gabriel, H.W. and S.S. Talbot. 1984. Glossary of landscape and vegetation ecology for Alaska. BLM-Alaska Tech. Rep. 10. Bureau of Land Management, Anchorage, AK. 137 p.
- Glooschenko, W.A., I.P. Martini and K. Clarke-Whistler. 1988. Salt marshes of Canada. Chapt. 9. *In*: NWWG-CCELC. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). Wetlands of Canada. Ecological Land Classification Series, No. 24. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.
- Harrington, H.D. 1977. How to identify grasses and grasslike plants. The Swallow Press Inc., Chicago, IL.
- Harris, H.G. and H.W. Harris. 1994. Plant identification terminology: an illustrated guide. Spring Lake Publishing, Payson, UT.
- Hitchcock, C.L., A. Cronquist, M. Ownbey and J.W. Thompson. 1969. Vascular plants of the Pacific Northwest. University of Washington Press, Seattle, WA.
- Hurd, E.G., N.L. Shaw, J. Mastrogioseppe, J. Smithman and S. Goodrich. 1998. Field guide to intermountain sedges. Gen. Tech. Rep. RMRS-GTR-10. USDA Forest Service, Rocky Mountain Research Station, Ogden, UT.
- Hutton, E.E. 1976. Dissemination of perigynia in *Carex pauciflora*. *Castanea* 41:346-348.

- Hultén, E. 1968. Flora of Alaska and neighboring territories. Stanford Press, Stanford, CA.
- Jermy, A.C., A.O. Chater and R.W. David. 1982. Sedges of the British Isles. (2nd Ed. Printed 1987). Botanical Society of the British Isles, British Museum of Natural History, Cromwell Road, London, England SW7 5BD.
- Johnson, D., L. Kershaw, A. MacKinnon and J. Pojar. 1995. Plants of the western boreal forest and aspen parkland. Lone Pine Publishing, Edmonton, AB, Canada.
- Larson, G. E. 1993. Aquatic and wetland vascular plants of the northern Great Plains. Gen. Tech. Rep. RM-238. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Northern Prairie Wildlife Research Center Home Page. <<http://www.npwrc.usgs.gov/resource/1998/vascplnt/vascplnt.htm>> (Version 02FEB99).
- Lensink, C.J. and T.C. Rothe. 1986. Value of Alaskan wetlands for waterfowl. Unpubl. symposium proceedings. Pp. 78-137. In: Van der Valk, A., and J. Hall (co-organizers). Proceedings of a workshop. U.S. Fish and Wildlife Service, Anchorage, AK.
- Nilsson, E. E. 1991. Nordisk fjellflora. (Nordic Alpine Flora). J.W. Cappelens Forlag a.s. ISBN 82-02-14815-4.
- NWWG-CCELC. 1988. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). Wetlands of Canada. Ecological Land Classification Series, No. 24. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.
- Pojar, J. and A. MacKinnon (eds.). 1994. Plants of the Pacific northwest coast: Washington, Oregon, British Columbia and Alaska. Lone Pine Publishing, Edmonton, AB, Canada.
- Racine, C.H. and J.C. Walters. 1991. Groundwater-discharge wetlands in the Tanana Flats, interior Alaska. CRREL Rept. 91-14. U. S. Army Corps of Engineers, Cold Regions Research & Engineering Laboratory, Hanover, NH. 10 p.
- Roberts, A. 1983. A field guide to the sedges of the Caribou Forest Region, British Columbia. Land Management Rept. No. 14. Province of British Columbia, Ministry of Forests, Victoria, BC.
- Roberts, B.A. and A. Robertson. 1986. Salt marshes of Atlantic Canada: their ecology and distribution. Can. J. Bot. 64: 455-467.
- Rubec, C.D.A., P. Lynch-Stewart, G. M. Wickwire and I. Kessel-Taylor. 1988. Wetland utilization in Canada. Chapt. 10. *Iz* NWWG-CCELC. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). Wetlands of Canada. Ecological Land Classification Series, No. 24. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.
- Sather, J.H. and R.D. Smith. 1984. An overview of major wetland functions and values. Western Energy and Land Use Team, Div. of Biol. Serv. U.S. Fish and Wildlife Service, Washington, DC. 68 p.

Schaefer, J. A. and F. Messier. 1995. Scale-dependent correlations of Arctic vegetation and snow cover. *Arctic and Alp. Res.* 27:38–43.

Schofield, J.J. 1993. *Alaska's wild plants: a guide to Alaska's edible harvest*. Alaska Northwest Books, Anchorage, AK.

Smith, F. P. and G. A. Stuart. 1973. *Chinese medicinal herbs*. Translated and researched by Li, Shih-chen, 1518-1563. Georgetown Press. San Francisco, CA.

SWS (Society of Wetland Scientists). 1998. *Alaska's wetlands are truly amazing!* Society of Wetland Scientists, Alaska Chapter. <<http://www.sws.org/regional/alaska/wetlands.htm>>.

Tarnocai, C. and S. C. Zoltai. 1988. *Wetlands of Arctic Canada*. Chapt. 2. *Ixx* NWWG-CCELC. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). *Wetlands of Canada. Ecological Land Classification Series, No. 24*. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.

Taylor, R.J. and G.W. Douglas. 1995. *Mountain plants of the Pacific Northwest*. Mountain Press Publ. Co., Missoula, MT.

USDA-NRCS. 2003. *The PLANTS Database, Version 3.1* <<http://plants.usda.gov/plants>>. National Plant Data Center, Baton Rouge, LA 70784-4490 USA.

USFS. 2002. *Fire Effects Information System (FEIS)*. USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, July). <<http://www.fs.fed.us/database/feis/>>.

USFWS. 1996. *The 1996 draft revision of the National List of Plant Species That Occur in Wetlands: 1988 National Summary* (Reed, Jr., P.B. 1988. *National List of Plant Species That Occur in Wetlands: National Summary*. U.S. Fish & Wildlife Service. *Biol. Rep.* 88(24). 244 p.). <<http://www.nwi.fws.gov/bha/>>.

Viereck, L.A., C.T. Dyrness, A.R. Batten and K.J. Wenzlick. 1992. *The Alaska vegetation classification*. Gen. Tech. Rep. PNW-GTR-286. Pacific Northwest Research Station, U.S. Forest Service, Portland, OR. 278 p.

Welsh, S.L. 1974. *Anderson's flora of Alaska and adjacent parts of Canada*. Brigham Young University Press, Provo, UT.

Zoltai, S. C., S. Taylor, J.K. Jeglum, G. E. Mills and J. D. Johnson. 1988. *Wetlands of boreal Canada*. Chapt. 4. *Ixx* NWWG-CCELC. (National Wetlands Working Group-Canada Committee on Ecological Land Classification). *Wetlands of Canada. Ecological Land Classification Series, No. 24*. Environment Canada, Sustainable Development Branch, Ottawa, ONT, Canada, and Polyscience Publications Inc., Montreal, QUE, Canada. 452 p.

Photo and Illustration Credits

Illustration and photo credits are listed below. The alphabetic designations are coded to the sources that follow the species list. On each species page, acknowledgements are reported in a clockwise direction proceeding from the upper left corner.

- Carex anthoxanthea* S, S, S, S, S
Carex aquatilis I, I, I, I, E
Carex aurea I, I, I, I, I, I
Carex bigelowii J, J, K
Carex buxbaumii M, E, I
Carex canescens I, I, M, R
Carex capillaris H, H, I, I, I
Carex chordorrhiza S, B, S, S, N
Carex echinata ssp. *phyllomanica* I, I, I, I
Carex glareosa A, R, A, A
Carex gmelinii P, C, S, S, S
Carex gynocrates M, I, E, I, I
Carex laeviculmis D, S, S, S
Carex lasiocarpa I, I, I, I
Carex lenticularis I, I, I; 2nd pg I, F
Carex leptalea I, I, I, I
Carex limosa I, E, I
Carex livida I, I, I
Carex loliacea J, S, S, S
Carex lyngbyei Q, E, Q
Carex mackenziei J, J, T
Carex macrocephala L, T, E
Carex macrochaeta E, E, E, E
Carex magellanica ssp. *irrigua* Q, I, I
Carex maritima J, A, A
Carex media -. -. O
Carex membranacea A, A, S
Carex mertensii I, I, I, I
Carex microchaeta -. -. O
Carex microglochin I, I, I
Carex pluriflora T, E, E
Carex podocarpa G, O
Carex ramenskii T, T, I, F
Carex rariflora A, S, S, A
Carex rotundata D, S, S, S
Carex saxatilis I, I, I
Carex sitchensis E
Carex stylosa S, S, E, S
Carex tenuiflora M, B, S, S
Carex ursina A, S, S, S, S
- Carex utriculata* D, I, U, I, I, I
Carex vaginata E, E
- A** Aiken, S.G., R.L. Boles and M.J. Dallwitz. 2000. (1999 onwards). Cyperaceae of the Canadian Arctic Archipelago: descriptions, illustrations, identification, and information retrieval. Ver. 6. November 2000. <<http://www.mun.ca/biology/delta/arctic/cyp/>>.
- B** Roberts, A. (Illustrations by S. Salkeld). 1983. A field guide to the sedges of the Caribou Forest Region, British Columbia. Land Management Rept. No. 14. Province of British Columbia, Ministry of Forests, Victoria, BC.
- C** Matthew Carlson, Botanist, Alaska Natural Heritage Program.
- D** Mike Gracz, Kenai Watershed Forum.
- E** Hitchcock, C.L., A. Cronquist, M. Ownbey and J.W. Thompson. 1969. Vascular plants of the Pacific Northwest. Reprinted by permission of the University of Washington Press.
- F** Hultén, E. 1968. Flora of Alaska and neighboring territories. Stanford Press, Stanford, CA.
- G** USDA Forest Service Collection, Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, PA. <<http://huntbot.andrew.cmu.edu/>>.

- H** Flora of Iceland. <<http://www.floraislands.is/latlist.htm>>.
- I** Hurd, E.G., N.L. Shaw, J. Mastrogioseppe, J. Smithman and S. Goodrich. 1998. Field guide to intermountain sedges. Gen. Tech. Rep. RMRS-GTS-100. USDA Forest Service, Rocky Mountain Research Station, Ogden, UT. (Original drawings from Hitchcock et al. with permission of the University of Washington Press).
- J** A virtual Swedish flora [In Swedish only]. Swedish Museum of Natural History <<http://www.nrm.se/vxter.html.en>>.
- K** Nilsson, E. E. 1991. Nordisk fjellflora. (Nordic alpine flora). J.W. Cappelens Forlag a.s. ISBN 82-02-14815-4.
- L** USDA-NRCS. 2003. The PLANTS Database, Version 3.1 <<http://plants.usda.gov/plants>>. National Plant Data Center, Baton Rouge, LA 70784-4490 USA.
- M** Emmet J. Judziewicz, University of Wisconsin-Stevens Point (Wisconsin State Herbarium, University of Wisconsin). USDA-NRCS. 2003. The PLANTS Database, Version 3.1 <<http://plants.usda.gov/plants>>. National Plant Data Center, Baton Rouge, LA 70784-4490 USA.
- N** Robert W. Freckmann, University of Wisconsin-Stevens Point (Wisconsin State Herbarium, University of Wisconsin). USDA-NRCS. 2003. The PLANTS Database, Version 3.1 <<http://plants.usda.gov/plants>>. National Plant Data Center, Baton Rouge, LA 70784-4490 USA.
- O** FNA (Flora North America Editorial Committee). 2002. Cyperaceae. *In*: Flora of North America: Magnoliophyta: Commelinidae. Vol 23. Flora of North America: North of Mexico. Edited by: Flora of North America Editorial Committee. Oxford University Press. New York, NY.
- P** Pavel Krestov. 2002. Plant Images: Herb Species Geobotanica Pacifica <<http://www.geopacifica.org/>>.
- Q** Logan Sander, Oregon State University.
- R** Texas A & M University: <<http://www.csdl.tamu.edu/FLORA/imaxxcp.htm>>. Mirror site for images from C.A.M. Lindman's Flora from Project Runeberg (Sweden). All images processed by Dr. Gerhard Keuck. These images are also indexed via the BioFinder image data base <<http://www.biofinder.org>>.
- S** Texas A & M University: TAMU-BWG Vascular Plant Image Database 10/30/97. From illustrations created by Harry Charles Creutzburg for Kenneth Kent Mackenzie's (1940) North American *Cariceae*, two volumes. Edited by Harold William Rickett and published by the New York Botanical Garden. <<http://www.csdl.tamu.edu/FLORA/carex/carexout.htm>>.
- T** Gerald Tande, Vegetation Ecologist, Alaska Natural Heritage Program.
- U** Dean Wm. Taylor, California Plant Database, CALIFLORA, <<http://www.califlora.org1>>.

Index of Common Names

- Beaked sedge (*C. rostrata*) 117
Bear sedge (*C. ursina*) 115
Bering Sea sedge (*C. microchaeta nesophila*) 95
Boreal bog sedge (*C. magellanica* ssp. *irrigua*) 85
Bristlystalked sedge (*C. leptalea*) 69
Buxbaum's sedge (*C. buxbaumii*) 45
Closedhead sedge (*C. media*) 89
Creeping sedge (*C. chordorrhiza*) 51
Curved sedge (*C. maritima*) 87
Enander's sedge (*C. lenticularis* var. *dolia*) 65
Fewseeded sedge (*C. microglochin*) 97
Fragile sedge (*C. membranacea*) 91
Gmelin's sedge (*C. gmelinii*) 57
Golden sedge (*C. aurea*) 41
Grassy-slope arctic sedge (*C. anthoxantha*) 35
Hairlike sedge (*C. capillaris*) 49
Kellogg's sedge (*C. lenticularis* var. *lipocarpa*) 65
Lakeshore (Hind's) sedge (*C. lenticularis* var. *limnophila*) 65
Largehead sedge (*C. macrocephala*) 80
Lesser saltmarsh sedge (*C. glareosa*) 55
Livid sedge (*C. livida*) 73
Longawn sedge (*C. macrochaeta*) 83
Looseflower sedge (*C. rariflora*) 105
Lyngbye's sedge (*C. lyngbyei*) 77
Mackenzie's sedge (*C. mackenziei*) 79
Manyflower sedge (*C. pluriflora*) 99
Mertens sedge (*C. mertensii*) 93
Mud sedge (*C. limosa*) 71
Northern bog sedge (*C. gynocrates*) 59
Northwest Territory sedge (*C. utriculata*) 117
Ramensk's sedge (*C. ramenskii*) 103
Rock sedge (*C. saxatilis*) 109
Round sedge (*C. rotundata*) 107
Ryegrass sedge (*C. loliacea*) 75
Sheathed sedge (*C. vaginata*) 119
Shortstalk sedge (*C. podocarpa*) 101
Silvery sedge (*C. canescens*) 47
Smoothstem sedge (*C. laeviculmis*) 61
Sparseflower sedge (*C. tenuiflora*) 113
Spruce muskeg sedge (*C. bigelowii* ssp. *lugens*) 43
Star sedge (*C. echinata* ssp. *phyllomanica*) 53
Variegated sedge (*C. stylosa*) 111
Water sedge (*C. aquatilis*) 37
Woollyfruit sedge (*C. lasiocarpa*) 63

Index of Scientific Names

Note: Species shown in bold type have detailed descriptions.

- Carex adelostoma* 24, 120
C. arcta 61
C. anthoxanthea 35
C. aquatilis 37
C. aquatilis var. *dives* 37
C. aquatilis var. *stans* 39
C. atherodes 117
C. atosquama 121
C. aurea 41
C. bicolor 41
C. bigelowii 43
C. brunnescens 47
C. buxbaumii 45
C. canescens 47
C. capillaris 49
C. capitata 120
C. chordorrhiza 51
C. disperma 69, 75
C. echinata ssp. ***phyllomanica*** 53
C. garberi 41
C. glareosa 55
C. glareosa ssp. *pribylovensis* 55, 120
C. gnelinii 57
C. gynocrates 59
C. holostoma 24
C. incurviformis 87
C. krausei 49
C. lachenalii 120
C. laeviculmis 61
C. lapponica 47
C. lasiocarpa 63
C. lenticularis var. *dolia* 65
C. lenticularis var. *limnophila* 65
C. lenticularis var. ***lipocarpa*** 65
C. leptalea 69
C. leptalea ssp. *pacifica* 69
C. limosa 71
C. livida 73
C. loliacea 75
C. lyngbyei 77
C. mackenziei 79
C. macrocephala 81
C. macrochaeta 83
C. magellanica ssp. ***irrigua*** 85
C. maritima 87
C. media 89
C. membranacea 91
C. mertensii 93
C. microchaeta ssp. ***microchaeta*** 43, 95
C. microchaeta ssp. *nesophila* 43, 95
C. microglochin 97
C. micropoda 59
C. nigricans 59
C. norvegica ssp. *inferalpina* 89
C. obnupta 77
C. parryana 24, 120
C. pauciflora 97
C. paupercula 85
C. pellita 63
C. pluriflora 99
C. podocarpa 101
C. ramenskii 103
C. rariflora 105
C. rostrata 117
C. rotundata 107
C. saxatilis 109
C. sitchensis 37, 39
C. spectabilis 83, 93, 101
C. stans 39
C. stipata 61
C. stylosa 111
C. subspathacea 103
C. tenuiflora 113
C. urostachys 93
C. ursina 115
C. utriculata 117
C. vaginata 119
C. williamsii 49