

GRASS IDENTIFICATION WORKSHOP
June 2013

INSTRUCTOR: Clayton J. Antieau; 206-233-3711 (w)

GOALS OF COURSE (STUDENT LEARNING OBJECTIVES):

1. I'm able to locate and use printed, Internet, and institutional resources available for the study of grasses.
2. I'm able to discuss why it is important to correctly identify grasses.
3. I'm able to distinguish and identify the major vegetative and floral structures of grasses.
4. I'm able to demonstrate the use of field characteristics for rapidly identifying at least 25 different grasses to the genus level.
5. I'm able to explain the use of identification keys for family and genus-level identification of grasses.

RECOMMENDED "TEXTBOOK":

Clark, Lynn G. (Editor), Richard W. Pohl (Editor), and Pamela W. Henson. 1996. Agnes Chase's First Book of Grasses: The Structure of Grasses Explained for Beginners. Paperback, 4th edition. Smithsonian Institution Press, Washington D.C. ISBN: 1560986565.

READING LIST:

Ball, Donald M., J.F. Pedersen and G. D. Lacefield. 1993. The Tall-Fescue Endophyte. Amer. Scientist Vol. 81: 370-379.

Barkworth, M. E., K. M. Capels, S. Long, and M. B. Piep, eds. 2003. Flora of North America North of Mexico. Volume 25 Magnoliophyta: Commelinidae (in part): Poaceae, part 2. Oxford University Press, New York. 783 p.

Brown, L. 1985. Grasslands, the Audubon Society Nature Guides. Alfred A. Knopf, New York.

Brown, Lauren. 1992. Grasses : An Identification Guide. Houghton Mifflin Co (Paperback reprint). ISBN: 0395628814

Chapman, G.P. (Ed.) 1992. Grass evolution and domestication. Cambridge University Press.

Clayton, W.D. and S.A. Renvoise. 1986. Genera graminum: grasses of the world. Kew Bulletin Additional Series, 13. London.

Crepet, William L. And Gwen D. Feldman. 1991. The Earliest Remains of Grasses in the Fossil Record. Amer. J. Bot. 78(7): 1010-1014.

Cronquist, A., A.H. Holgren, N.H. Holmgren, J.L. Reveal, and R.K. Homgren. 1977. Intermountain Flora. Vol 6. Columbia University Press, New York.

Gould, F.W. and R.B. Shaw. 1983. Grass Systematics, 2nd Ed., Texas A & M University Press, College Station.

Grass Phylogeny Working Group. 2001. Phylogeny and subfamilial classification of the grasses (Poaceae). Annals of the Missouri Botanical Garden 88: 373 – 457.

Harrington, H.D. 1977. How to identify grasses and grass-like plants. Swallow Press, Athens, Ohio.

Hitchcock, A.S. and A. Chase. 1935. (Or 1971). Manual of the Grasses of the United States, Misc. Publ. No. 200, United States Government Printing Office, Washington (or Dover Press).

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle.

Soderstrom, Thomas R. (Ed.) 1987. Grass systematics and evolution: an international symposium held at the Smithsonian Institution, Washington, D.C., July 27-31, 1986. Smithsonian Institution Press.

Stebbins, G.L. 1981. Coevolution of grasses and herbivores. Ann. Missouri Bot. Gard. 68:75-86.

Swearingen, J. and K. Saltonstall. 2010. *Phragmites* Field Guide: Distinguishing Native and Exotic Forms of Common Reed (*Phragmites australis*) in the United States. Plant Conservation Alliance, Weeds Gone Wild.

<http://www.nps.gov/plants/alien/pubs/index.htm>

Wooten, George. 2008. Draft Key to the Grasses of Okanogan County, Washington.

<http://www.okanogan1.com/botany/flora/key-to-grasses-of-okanogan-county-2008-b.pdf>

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USEFUL INTERNET RESOURCES

University of Washington Herbarium

<http://www.washington.edu/burkemuseum/collections/herbarium/index.php>

Louisiana State University Herbarium, Generic Visual Grasses of Louisiana (requires Microsoft Silverlight free download)

<http://www.herbarium.lsu.edu/keys/>

WWWeb Site for Texas A & M grass course RELM 610 Grasslands and Grasses

<http://www.csd.tamu.edu/FLORA/taes/tracy/610/index.html>

WWWeb Site, Texas A&M Bioinformatics Working Group (Vasc. Plant Image Gallery for Poaceae) Excellent!

<http://www.csd.tamu.edu/FLORA/imaxxpoa.htm>

Flora of North America, Grass Manual on the Web

<http://herbarium.usu.edu/webmanual/>

WWWeb Site for West Virginia University Cooperative Extension: The Identification of Grasses

<http://www.caf.wvu.edu/~forage/library/cangrass/content.htm>

WWWeb Site Iowa State University Grass Weed Identification ToolKit

<http://www.agron.iastate.edu/~weeds/Ag317-99/id/GId.html>

WWWeb Site for GRASSES OF THE COLUMBIA BASIN OF BRITISH COLUMBIA

by Heather Stewart and Richard Hebda, Royal British Columbia Museums

http://livinglandscapes.bc.ca/cbasin/cb_grasses/index_grasses.html

BOTANICAL REVIEW

Taxonomy: identification, nomenclature, and classification (phylogenetics); genus, specific epithet, species, subspecific taxa [subspecies (ssp.), variety (var.), forma (f.)]

Life History: annual, perennial, biennial, monocarpic, polycarpic

Life Form: tree (>12 ft), single-stemmed; shrub (<12 ft), multi-stemmed; **herb** (forb = non-grasses)

Root: taproot, **fibrous root**, **adventitious root**, modified roots (tuberous root)

Shoot: stem, bud (terminal, axillary), **node**, **internode**, lenticel, leaf scar, vascular bundle scar, **modified stems** (thorns, tuber, **rhizome**, bulb, corm, **stolon**)

Leaf: **blade**, petiole, stipules, phyllotaxy (basal rosette), opposite, **alternate**, whorled), **composition** (**simple**, compound, multiply compound, lobed, divided, leaflets, petiolule, rachis, palmately compound, pinnately compound, trifoliolate, trifoliolate, shape (apices and bases), **margin**, **venation** (**parallel**, pinnate, netted, palmate, arcuate), modifications (prickles, spines, scales, bracts, tendrils)

Vestiture: **glabrous**, **glaucous**, viscid, lustrous, rugose, **pilose**, **pubescent**, **hispid**, **scabrous**, etc.

Flower: receptacle, sepal, petal, **stamens** (anther filament), **ovary**, **pistil**, carpel, **style**, **stigma**, placentation (axile, parietal, basal, free-central), ovary position (superior, inferior, half-inferior=perigynous), union [carpellary union (apocarpous, syncarpous); apo- and sympetally; apo- and symsepally; distinct and mona- and polydelphy], shape [actinomorphic (regular), zygomorphic (irregular)],

Inflorescence: **infructescence**, peduncle, pedicel, axillary, **terminal**, **spike**, **raceme**, head (capitulum), umbel, **panicle**, catkin,

Fruits: dry, fleshy, dehiscent, indehiscent, achene, **caryopsis** (**grain**)