



Orchid Specialist Group North American Region

FLAGSHIP TAXA

Platanthera praeclara Sheviak and Bowles Western Prairie Fringed Orchid



Habitat: Northern populations in Manitoba and Minnesota, comprising 90% of all plants, frequently occur in calcareous wet prairies and sedge meadows; the species is more likely to occupy mesic upland prairies in the southern part of its range. These prairies of the Missouri River drainage (west of Mississippi River) are the center of the Tallgrass Prairie formation, which is an ecosystem unique to the midwestern North America. The Tallgrass Prairie ecosystem is now reduced to approximately 1% of its original expanse.

Plant: Herb, erect, stout, terrestrial, 38 to 85 cm tall with underground root-stem tuberoid. Plants are non-hairy throughout. Several to many leaves have lanceolate to ovate-lanceolate leaf-blades. Up to 10 creamy-white, resupinate flowers are borne on large raceme. The lip is deeply three-lobed, and each flower measures approximately 2.5 cm wide and 3.0 cm high.

Pollinators: Large nocturnal moths.

Threats: Loss of prairie habitat to agriculture; habitat fragmentation; pesticide use for agriculture; lack of fire induced disturbance; invasive plant pressure; hydrologic changes; and illegal collecting of plants.

Economic and cultural value: The western prairie fringed orchid has economic value for ecotourism. The species is a bio-indicator of a delicate, unique, biologically diverse, and an historically important ecosystem.

Conservation methods in place: Large sites harbouring its populations are protected in Manitoba, Canada and in northern Minnesota, USA. Smaller, fragmented populations elsewhere are scattered throughout the midwest and are more threatened. Research-scale efforts for fire management, augmented pollination, and *in vitro* propagation have been attempted.

Conservation measures suggested: Natural regeneration of plants will depend on *ex situ* measures, such as, site-management and management of land around the populations. Conservation of a functioning ecosystem, including appropriate mycorrhizae, hydrology, and fire induced disturbance is needed. Tile-draining and pesticide use for agriculture should be restricted on lands adjacent to the orchid's populations. Fire (or disturbances with similar effects) should be retained or introduced at sites harbouring the orchid, and invasive species in its habitat should be managed.

Research: Its response to fire, grazing, hydrologic shifts, and climatic factors is not well understood. Methods to increase natural regeneration (pollination, seed health, mycorrhizae, and overall site-suitability) also need more attention. An assessment of the effects of management practices on lands adjacent to orchid populations also is needed.

Bibliography:

- Erickson, A. M. 2003. Effect of chemical and biological methods for leafy spurge (*Euphorbia esula* L.) control on the western prairie fringed orchid (*Platanthera praeclara* Sheviak and Bowles). Plant Sciences. North Dakota State University, Fargo, ND. 51 p.
- Hof, J., C. H. Sieg, and M. Bevers. 1999. Spatial and temporal optimization in habitat placement for a threatened plant: The case of the western prairie fringed orchid. Ecological Modelling [Ecol. Model.]. 115:61-75.
- Kirby, D. R., R. G. Lym, J. J. Sterling, and C. H. Sieg. 2003. Observation: Leafy spurge control in western prairie fringed orchid habitat. Journal of Range Management 56:466-473.
- Pleasants, J. M. and S. Moe. 1993. Floral display size and pollination of the western prairie fringed orchid, *Platanthera praeclara* (Orchidaceae). Lindleyana 8: 32-38.

- Sharma, J. 2005. Federally threatened *Platanthera praeclara*: a model for plant conservation. The Native Orchid Conference Journal 2(1): 11-14, 19-20.
- Sharma, J., L.W. Zettler, and J.W. Van Sambeek. 2003. A survey of mycobionts of federally threatened *Platanthera praeclara* (Orchidaceae). Symbiosis 34: 145-155.
- Sharma, J., L.W. Zettler, J.W. Van Sambeek, M.R. Ellersieck, and C.J. Starbuck. 2003. Symbiotic seed germination and mycobionts of federally threatened *Platanthera praeclara* (Orchidaceae). American Midland Naturalist 149: 104-120.
- Sharma, J., J.W. Van Sambeek, and C.J. Starbuck. 2003. Western prairie fringed orchid: its status, ecology, and in vitro propagation. Pp. 189-193. S. Foré (ed). Proceedings of the Eighteenth North American Prairie Conference, 250 p. Truman State University, Kirksville, Missouri.
- Sharma, J. 2002. Mycobionts, Germination, and Conservation Genetics of *Platanthera praeclara* (Orchidaceae). Ph.D. Dissertation. University of Missouri-Columbia. Missouri, USA.
- Sheviak, C.J. and M.L. Bowles. 1986. The prairie fringed orchid: a pollinator-isolated species pair. *Rhodora*, 88: 267-290.
- Sieg, C. H. and P. M. Wolken. 1999. Dynamics of a threatened orchid in flooded wetlands. in J. T. Springer, editor. North American Prairie Conference. 193-201.
- U.S. Fish and Wildlife Service. 1996. *Platanthera praeclara* (western prairie fringed orchid) recovery plan. U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota. pp. 101.
- Vitt, P. 2002. Effects of hand pollination on reproduction and survival of the eastern prairie fringed orchid. Final report to U.S. Fish and Wildlife Service. Chicago Botanic Garden, Glencoe, IL. pp 8.
- Westwood, A. R. and C. L. Borkowsky. 2004. Sphinx moth pollinators for the endangered western prairie fringed orchid, *Platanthera praeclara* in Manitoba, Canada. Journal Lepidopterists Society 58:13-20.

Links:

- Flora of North America @ efloras.org. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101850
- Minnesota Department of Natural Resources: http://www.dnr.state.mn.us/volunteer/julaug01/wpf_orchid.html
- Center for Plant Conservation: http://www.centerforplantconservation.org/ASP/CPC_ViewProfile.asp?CPCNum=9293
- Some Relevant Publications: <http://nfrec.ifas.ufl.edu/Sharma/publications.htm>
- Orchid Specialist Group: <http://www.orchidconservation.org/OSG/>
- Environment Canada - Species at Risk: http://www.speciesatrisk.gc.ca/search/speciesDetails_e.cfm?SpeciesID=200

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