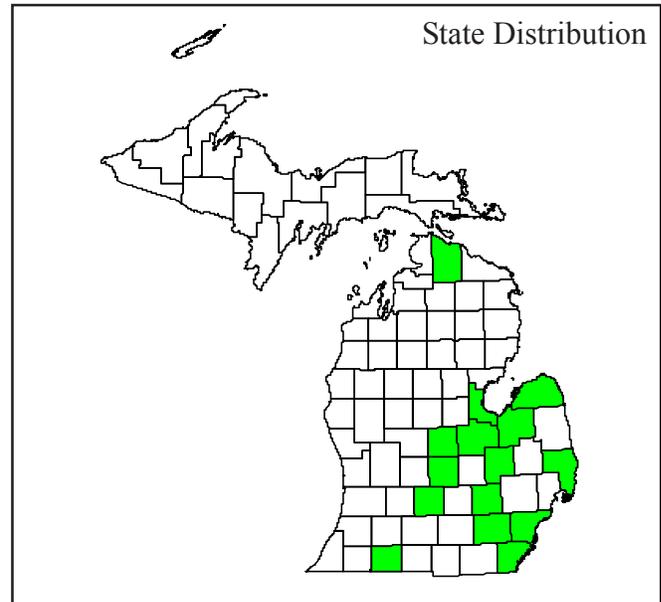


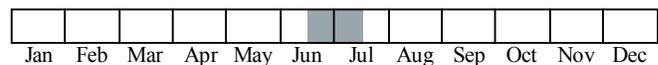
Platanthera leucophaea (Nutt.) Lindley eastern prairie fringed-orchid



Photo by Susan R. Crispin



Best Survey Period



Legal status: State endangered, Federal threatened

Global and state rank: G2/S1

Other common names: White fringed-orchid, prairie white fringed-orchid.

Family: Orchidaceae (orchid)

Synonyms: *Habenaria leucophaea* (Nutt.) A. Gray

Taxonomy: Formerly included within the genus *Habenaria* by Correll (1950), this species, in addition to several other Michigan taxa, is widely recognized as appropriately belonging to *Platanthera* (Case 1987). Western populations of what had once been considered *P. leucophaea*, comprising most populations west of the Mississippi River, have been distinguished by Sheviak and Bowles (1986) as *P. praeclara* (western prairie fringed-orchid) based on significant differences in morphology, pollination mechanism, and geographic distribution.

Total range: Centered about the Great Lakes, *P. leucophaea* occurs east to Virginia and along the St. Lawrence drainage to Maine, ranging west into the Great Plains to the Dakotas and Iowa, and south in the Mississippi drainage to Missouri and Oklahoma. Now near extinction throughout much of its range, most populations are concentrated in the southern Great Lakes region, occurring primarily in southern Wisconsin, Illinois, Ohio, and southern Lower Michigan. This species is considered rare in Illinois, Iowa, Maine, Missouri, Ohio, Oklahoma, Virginia,

Wisconsin, and Ontario. It is considered extirpated in Indiana, New Jersey, and Pennsylvania, and is known only from historical records in New York and South Dakota.

State distribution: *Platanthera leucophaea* was once known from more than 20 counties, primarily in southern Lower Michigan, with one anomalous disjunct locality documented in Cheboygan County. Extensive habitat modification and destruction has caused this species to severely decline. It is now extant in fewer than 10 counties, persisting mostly in the remnant lakeplain prairies of Saginaw Bay and western Lake Erie. The relatively high numbers of plants observed in 1984 declined markedly following years of high lake levels and drought. An exhaustive 1990 inventory of this species' remaining strongholds in Michigan found approximately 1100 plants total, with few populations supporting large numbers of plants in good quality, viable habitat. In recent years, only a fraction of the plants tallied before have been observed in many habitats, apparently due to highly droughty growing seasons.

Recognition: Prairie fringed-orchid is a tall, striking plant. It produces single stems that range from approximately 20 cm to 1 m or more in height, bearing long, narrow, sharp-pointed leaves that become progressively reduced upward. The leaves are strongly sheathing, becoming bract-like beneath the inflorescence. The stems are terminated by relatively **wide, showy racemes of up to 40 or more creamy white, stalked flowers**. Each flower has a long (2-5



cm), slender, downward-curving nectar spur behind and a **three-parted, prominently fringed lower lip, the fringe up to about half the length of the lip.** The small, wedge-shaped upper petals are rounded with **toothed or ragged margins**, forming a loose bonnet arching over the column. *Platanthera blephariglottis* and *P. lacera* are superficially similar species that can be easily distinguished. *Platanthera blephariglottis*, which occurs only in sphagnum bogs in Michigan, bears white flowers with fringed lower lips that are tongue-shaped and undivided. *Platanthera lacera* is a more common, widespread species of a variety of habitats; it bears white to greenish-white flowers with three-parted lower lips deeply divided into slender, often irregular, thread-like segments, and has upper petals that are linear.

Habitat: *Platanthera leucophaea* occurs in two distinct habitats in Michigan--wet prairies and bogs. It thrives best in the lakeplain wet or wet-mesic prairies that border Saginaw Bay and Lake Erie. These communities have relatively alkaline, lacustrine soils, and are dominated by *Carex aquatilis*, *C. stricta*, and *Calamagrostis canadensis*, as well as several prairie grasses and forbs. Common associates include *Andropogon scoparius* (little bluestem) and *A. gerardii* (big bluestem), *Spartina pectinata* (prairie slough grass), *Potentilla fruticosa* (shrubby cinquefoil), *Liatris spicata* (blazing star), *Linum medium* (flax), *Cornus stolonifera* and *C. amomum* (dogwoods), *Pycnanthemum virginianum* (mountain mint), *Gentianopsis crinita* (fringed gentian), *Solidago riddellii* (Riddell's goldenrod), *Cladium mariscoides* (twig-rush), *Typha latifolia* (cat-tail), *Juncus* spp. (rushes), and *Scirpus acutus* (hardstem bulrush). Prairie fringed-orchid frequently persists in degraded prairie remnants, and will frequently colonize ditches, railroad rights-of-way, fallow agricultural fields, and similar habitats where artificial disturbance creates a moist mineral surface conducive to germination.

Open or semi-open bog mats of *Sphagnum* and *Carex*, with slightly acidic, neutral, or somewhat alkaline lake water also support small populations of this orchid. Associates in these sites include *Thelypteris palustris* (marsh fern), *Sarracenia purpurea* (pitcher-plant), *Chamaedaphne calyculata* (leatherleaf), *Drosera rotundifolia* (sundew), *Potentilla fruticosa* (shrubby cinquefoil), *Larix laricina* (tamarack), *Betula pumila* (bog birch), and *Toxicodendron vernix* (poison sumac). Farther west and to the south, Eastern prairie fringed-orchid occurs in mesic and wet mesic black soil prairies, or rich, wet, sandy prairies, while to the east of Michigan, occurrences are generally restricted to bogs or sandy or peaty lakeshores.

Biology: Unlike many other *Platanthera* species, *P. leucophaea* is long-lived, with individuals documented to live more than 30 years (Case 1987).

According to Case (1987), this perennial produces a bud on one of its roots that develops a new set of roots or tubers, becoming next season's new plant. The development and viability of this bud is highly dependent on the vigor of the old plant. In Michigan, flowering occurs during late June through early July. Case reports that the white blossoms produce a heavy fragrance at dusk and attract many moths, including the large Sphinx moths responsible for pollination. Sphinx moths are probably co-adapted pollinators, since their tongues are long enough to reach the nectar that lies deep in the spur of the flower (M. Bowles, pers. comm.). Prior to 1998, only three hawk moth species had been positively identified as pollinators. However, in 1998, during an MNFI study by Cuthrell et al. (1999), a previously unknown hawkmoth pollinator was documented. Capsules mature in September, releasing hundreds of thousands of airborne seeds. Plants do not flower every year, frequently producing only a single leaf above ground (M. Bowles, pers. comm) and possibly even becoming dormant when conditions are unsuitable, such as the onset of drought. Fire is thought to help break dormancy and stimulate flowering (Sheviak 1974), although its role in Michigan *Platanthera* sites is highly uncertain and controversial among some botanists.

Conservation/management: Competitive encroachment by native shrubs, especially dogwoods and willows, and pernicious exotics such as *Lythrum salicaria* (purple loosestrife) pose one of the greatest threats to Michigan's remaining prairie fringed-orchids. The large-scale destruction of lakeplain prairie habitat, primarily through alteration by ditching and diking, the conversion of areas for agricultural use, and other land settlement activities have rendered this species particularly vulnerable to extinction. In its last remaining viable sites, eastern prairie fringed-orchid is best protected by maintaining the natural hydrological cycles of the lakeplain wet prairies. Protection can only be adequately afforded when sufficient refugia are available during periods of high lake levels. Unfortunately, few natural areas are left that provide the necessary landward habitat. Where refugia are available, this species is able to seed inland during high water cycles, advancing shoreward again as lake levels recede (Case 1987). This natural fluctuation along the Great Lakes shores maintains the necessary open, wet prairie habitat, preventing closure and shading by highly competitive woody plants such as dogwoods (*Cornus* spp).

In sites where active management may be required, shrub removal is of primary importance. Although fire is frequently recommended as a management tool (Bowles 1983), its role in Michigan's prairie fringed-orchid habitat is poorly understood. Case (pers. comm.) recommends great caution with the



consideration of fire management, noting that the orchid's shallow subterranean buds can be easily damaged during spring or fall burns. At present, fire should be employed only as a very selective experimental tool, to be used in testing alongside other approaches, such as mechanical brush removal and soil disking. Prescribed burns may be desirable when brush removal and soil scarification enhance the vulnerability of populations to exotics such as purple loosestrife and other invasives.

Lastly, one of the greatest recognized threats to this elegant species is poaching and trampling by orchid enthusiasts, photographers, and others. At least one Michigan colony has been obliterated by poachers, and thus great caution must be taken with regard to remaining sites. Based on the aforementioned threats and the great vulnerability of this species, Case (1987) considers Eastern prairie fringed-orchid to be possibly the most "severely endangered orchid of our region".

Comments: According to an early report, *P. leucophaea* once grew so abundantly near the bath houses on Belle Isle Park, Detroit, that visitors there gathered it in bouquets (Foerste 1882). Several decades ago, this species also grew in abundance along Saginaw Bay. These are, however, scenarios unlikely to be witnessed again.

Research needs: Important research areas include pollination and breeding system studies, and especially the role of various management techniques required to sustain viable populations and restore functioning lakeplain prairie communities and landscapes.

Related abstracts: lakeplain prairie, lakeplain wet prairie.

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Abstract citation

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