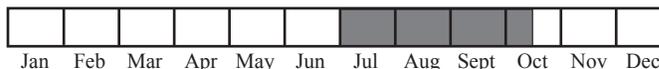


Best Survey Period



Status: State threatened

Global and state rank: G3/S2

Other common names: pondweed

Family: Potamogetonaceae (pondweed family)

Synonyms: *Potamogeton porteri* Fern.

Taxonomy: An extensive molecular analysis of the Potamogetonaceae, which largely corroborates the separation of broad-leaved versus narrow-leaved pondweed species, is provided by Lindqvist et al. (2006).

Range: This aquatic plant is rare throughout much of its range, which extends from Vermont to Michigan, and south to Pennsylvania. Centers of distribution appear to be in western New England and the north central Great Lakes region. It is considered rare in Connecticut, Massachusetts, New York, Ohio, Ontario, Pennsylvania, Vermont, Virginia, and Wisconsin (NatureServe 2007).

State distribution: Hill's pondweed is known only from ten Michigan localities, ranging from Mackinac County in the eastern Upper Peninsula through several counties in northern Lower Michigan. Most of these occurrences were relocated or discovered during the

1980's. The type locality for this species, in Manistee County, has been destroyed.

Recognition: The stem of this pondweed is slender and much branched, reaching up to 1 m in length. The **alternate leaves are all submersed, and very narrow (0.6-2.5 mm), ranging from 2-6 cm in length.** The leaves are characterized by having **three parallel veins and a short bristle tip.** The stipules are **relatively coarse and fibrous** (shredding when old) and are **free from each other and the leaf stalk bases.** **Short (5-15 cm), curved fruiting stalks (peduncles) are terminated by globose flower/fruit clusters that arise from leaf axils or stem tips.** The tiny (2-4 mm) fruits have ridges along the backside. Other narrow-leaved species that lack floating leaves have either narrower leaves (less than 0.5 mm in width, such as *P. confervoides* and *P. bicipulatus*), stipules that are attached near their bases (*P. foliosus*, *P. pusillus*), longer peduncles (1.5-4 mm) (*P. friesii*, *P. strictifolius*), or oval to cylindrical flower and fruit clusters (*P. pusillus*, *P. berchtoldii*). Hill's pondweed is further distinguished from the similar *P. foliosus* by its much larger fruits and bristle-tipped leaves, and vegetatively from *P. strictifolius* by its nodal glands (Hellquist 1987).

Best survey time/phenology: Michigan observations and collections of this species have occurred principally



in July and August, but based on collection data, this species may be identified through at least mid-October.

FQI Coefficient and Wetland Category: 9, OBL

Habitat: Hill's pondweed has been found in a rather wide variety of Michigan aquatic habitats, including clean, often cool streams or backwaters (occasionally lakes) occurring in sandy, mucky, and marly substrates. Common associates include *Nuphar* (yellow pond-lily), *Potamogeton natans*, and *P. amplifolius* (pondweeds), *Schoenoplectus* spp. (bulrush), *Nymphaea odorata* (white water-lily) and the green alga *Chara* (stonewort). Studies primarily in New England indicate that Hill's pondweed prefers clear, cold, alkaline waters (avg. 124 mg/l CaCO₃), with muddy substrates and slow currents often near flow obstructions, such as emergent vegetation, stumps, or culverts (Hellquist 1984). It usually inhabits shallow waters up to 1 m in depth. Habitats in Ontario include highly alkaline ditches, beaver ponds, and slow-moving cold waters (Hellquist 1987).

Biology: Hill's pondweed is a perennial plant with overwintering buds (turions) that are produced in the fall and germinate the following spring, but these are considered to be rare (Flora of North America 2000). Mature fruits are generally present in late July and August. Vegetative reproduction by overwintering buds may be an important means of propagation and dispersal (Hellquist 1984). These plants are presumably water-pollinated (Haynes 1974). Philbrick and Anderson (1987) provide an overview of the reproductive biology of *Potamogeton* and the mechanisms and implications of selfing (autogamy) in aquatic angiosperms.

Conservation/management: Three stations lie on State Forest lands, with one 1950 collection locality in a State Park. This species may depend on maintenance of good water quality, cool water temperatures, and a relatively undisturbed habitat. That it sometimes persists in the vicinity of developments (homes, roads) suggests that it can survive certain types or degrees of disturbance.

Comments: Fruits of *Potamogeton* species are a favorite food of wildfowl, which probably act as major dispersal agents for the seeds of pondweeds (Haynes 1974). Well informed surveys of aquatic habitats might

turn up a number of new localities for this obscure aquatic plant in northern Michigan.

Research needs: Status surveys as well as inventories to detect additional populations are of high priority, particularly to determine threats to the perpetuation of these colonies.

Related abstracts: Emergent marsh, American bittern, black tern, Blanding's turtle, king rail, Forster's tern, alga pondweed, rose-pink, wild rice.

Selected references:

- Crow, G. E. 1982. New England's rare, threatened, and endangered plants. U.S. Govt. Printing Off., Wash., D.C.
- Crow, G.E. and C.B. Hellquist. 2000. Aquatic and Wetland Plants of Northeastern North America. Volume 2. Angiosperms: Monocotyledons. University of Wisconsin Press, Madison. 400 pp
- Fernald, M. L. 1932. The linear-leaved North American species of *Potamogeton*, Section Axillaries. Mem. Amer. Acad. 17: 1-183.
- Flora of North America Editorial Committee. 2000. *Flora of North America, North of Mexico*. Volume 22: *Magnoliophyta: Alismatidae, Arecidae, Commelinidae (in part), and Zingiberidae*. Oxford Univ. Press. New York, N.Y. 352 pp.
- Haynes, R. R. 1974. A revision of North American *Potamogeton* subsection *Pusilli* (Potamogetonaceae). *Rhodora* 76: 564-649.
- Hellquist, C. B. 1984. Observations of *Potamogeton hillii* in North America. *Rhodora* 86: 101-111.
- Hellquist, C. B. 1987. *Potamogeton hillii* Morong in G. W. Argus & D. J. White, eds. Atlas of the rare vascular plants of Ontario. National Mus. Nat. Sci., Ottawa.
- Lindqvist, C., J.D. Laet, R.R. Haynes, L. Aagesen, B.R. Keener, and V.A. Albert. 2006. Molecular



phylogenetics of an aquatic plant lineage,
Potamogetonaceae. *Cladistics* 22: 568-588.

NatureServe. 2007. NatureServe Explorer: an online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: September 11, 2007).

Philbrick, C.T. and G.J. Anderson. 1987. Implication of pollen/ovule ratios and pollen size for the reproductive biology of *Potamogeton* and autogamy and aquatic angiosperms. *Syst. Bot.* 12: 98-105.

Voss, E. G. 1965. Some rare and interesting aquatic vascular plants of northern Michigan, with special reference to Cusino Lake (Schoolcraft Co.). *Mich. Bot.* 4(1): 11-25.

Abstract citation:

M.R. Penskar and S.R. Crispin. 2009. Special Plant Abstract for *Potamogeton hillii* (Hill's pondweed). Michigan Natural Features Inventory. Lansing, MI. 3 pp.

Copyright 2009 Michigan State University Board of Trustees.

Michigan State University Extension is an affirmative-action, equal-opportunity organization.

Funding for abstract provided by the Michigan Department of Transportation.

