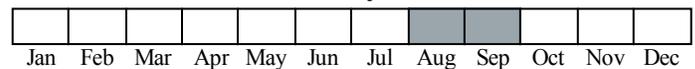


Best Survey Period



Legal status: State threatened

Global and state rank: G5/S1

Other common names: bladderwort

Family: Lentibulariaceae (bladderwort)

Taxonomy: A depauperate (reduced) form with pale, cleistogamous (non-opening) flowers has been named forma *cleistogama*, and has sometimes been recognized as *U. cleistogama* (Gray) Britt.

Total range: This bladderwort occurs primarily on the southern third of the Atlantic Coastal Plain, and is scattered along the coast northward to Nova Scotia and inland in the southeastern United States to Tennessee and Arkansas. It is a marked disjunct in the Midwest, where it occurs along the southern shores of Lake Michigan. It is considered endangered in Indiana, threatened in Tennessee, and rare in Nova Scotia, Rhode Island, Massachusetts, and New York.

State distribution: *Utricularia subulata* was discovered in Michigan in 1986 by Ken Klick of Indiana Dunes National Lakeshore, who identified this species at single localities in Berrien, Muskegon, and Allegan counties.

Recognition: This **extremely tiny, delicate plant, smaller than a blade of grass**, sends up a **single aerial shoot only a few centimeters in height**. All plants found in Michigan have been forma *cleistogama*, with **pale, closed flowers only 1-2 mm** in size. Non-cleistogamous plants (i.e. those with open flowers), bear yellow, two-lipped flowers with a short, blunt, **inconspicuous spur**

that is closely appressed to the enlarged lower lip. A single bract at the base of the flower stalk is **attached near its center (peltate)**. Minute, very slender, elongate leaves are borne on basal branches hidden in the wet sand substrate. Separate branches bear the bladder-like sacs characteristic of this genus. The fruiting capsules extend well beyond the calyx lobes. This is our only bladderwort species with a peltate bract at the base of the flower stalk, and is the smallest of the terrestrial, yellow-flowered species of bladderwort.

Best survey time: *Utricularia subulata* is best sought during late summer, from August through September. Plants may continue to emerge in interdunal wetlands as water levels recede, and thus may be visible into early fall, through October and likely beyond.

Habitat: This tiny plant inhabits damp, bare sand in interdunal wetlands along the southern shores of Lake Michigan. It typically grows rooted in the substrate, not floating in water as do some bladderwort species. Throughout its range, it inhabits acidic wet sand and bogs (Schnell 1976). In Michigan it has been observed in damp sand at the margins of interdunal wetlands, where common associates include such species as *Cladium mariscoides* (twig-rush), *Scirpus americanus* (threesquare or bulrush), *Eleocharis elliptica* (spikerush), *Eleocharis pauciflora* (few-flowered spikerush), *Lobelia kalmii* (Kalm's lobelia), *Rhynchospora alba* (beak-rush), *Panicum implicatum* (panic grass), *Cyperus rivularis* (nut-grass), *Sagittaria latifolia* (arrowhead), *Juncus pelocarpus* (rush), *Carex stricta* (strict sedge), and *Potentilla anserina* (silverweed).



Biology: *Utricularia subulata* is a late-flowering perennial species, and forms overwintering buds beneath the soil surface. Its tiny stems are practically undetectable until flowering occurs in mid-September, and even when in “full bloom” this species is difficult to find without a sense of size as well as potential habitat (see photo). Non-opening flowers are self-pollinating. The extremely small subterranean bladders trap tiny wetland soil organisms, which the plant digests to supplement nutrients in relatively low availability, particularly nitrogenous compounds.

Conservation/management: All three Michigan localities are in State Parks. This species’ habitat is most vulnerable to hydrological and mechanical disturbances (especially those due to development, ORVs, and excessive recreational use), which do not usually pose the major threat to interdunal wetlands compared to open dunes composed of large dune hills. The species is undoubtedly adapted to water level fluctuations and, like several other southeastern disjunct species, many of which are annuals, likely maintains a substantial seedbank. Ken Klick has observed large variations in population size from year to year in similar habitats within Indiana Dunes National Lakeshore.

Research needs: Little is apparently known of this species’ biology and ecology, and thus research on virtually any aspect of life history and dynamics in relation to habitat would be useful. In addition, further inventory in additional shoreline habitats is desirable, as well as surveys of inland intermittent wetlands in southwestern Lower Michigan known to support other Atlantic Coastal Plain disjunct plants.

Related abstracts: open dunes, wooded dune and swale complex, dunewort, Houghton’s goldenrod, Lake Huron tansy, Pitcher’s thistle, Lake Huron locust, piping plover

Selected references

Crow, G.E. and C.B. Hellquist. 1985. Aquatic vascular plants of New England: Part 8, Lentibulariaceae. New Hamp. Ag. Exp. Sta. Bull. No. 528.

Schnell, D.E. 1976. Carnivorous plants of the United States and Canada. John F. Blair, Publ., Winston-Salem, N.C. 125 pp.

Voss, E.G. 1996. Michigan Flora: Part III, Dicots (Pyrolaceae-Compositae). Bull. Cranbrook Inst. Sci. 61 & U. of Mich. Herb. xix + 622 pp.

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