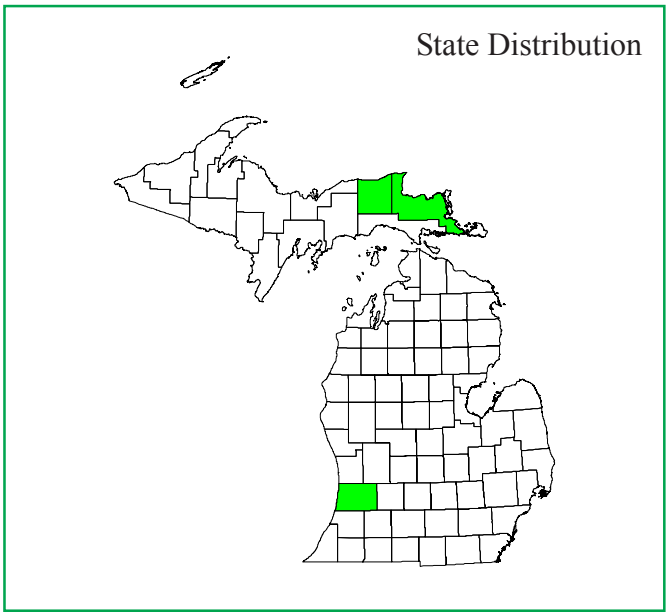
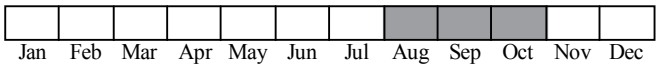
Bartonia paniculata (Michx.) Muhl. panicled screw-stem

Photo by Phyllis J. Higman.



Best Survey Period



Status: State threatened

State and global rank: G5/S2

Family: Gentianaceae (Gentian family)

Total range: Panicled screw-stem is known primarily along the Atlantic Coastal Plain from Newfoundland to Louisiana, and inland in the southeast to Arkansas and Kentucky. The species is strikingly disjunct in Michigan and Ontario (Reznicek and Whiting 1976). Plants in the northern coastal part of this range (from Massachusetts northward) are ssp. *iodandra,* with those to the south and, surprisingly, in the Great Lakes region being ssp. *paniculata*. The species is considered endangered in Illinois and Missouri and rare in Michigan, Delaware, Oklahoma, Maryland, New Brunswick, and Ontario. It is known only from historical records in Maine.

State distribution: Panicled screw-stem was documented as an Atlantic Coastal Plain disjunct species in Michigan for the first time in 1983 (Henson 1985) in western Luce County in the Upper Peninsula. It was known only from this site until 1995 when two additional occurrences were discovered in Chippewa and Allegan Counties.

Recognition: Panicled screw-stem has **very slender shoots** that reach 20-40 cm in height and bear **only very small scale-leaves. Tiny (2.5-4 mm), pink, four-petalled flowers** are borne individually at the tips of branched stalks. Few other Michigan flowering plants have these very slender, apparently leafless shoots, and of those, only screw-stems are pink-flowered. *Bartonia paniculata* has **alternate leaves** and flowers with lanceolate **petals that taper to a sharp apex,** whereas the leaves of the more common *B. virginica* are essentially opposite and the petals more ovate or oblong, tapering abruptly to a rounded tip with a tiny (mucronate) point.

Best survey time/phenology: Although the phenology of *Bartonia paniculata* is not well documented in Michigan, it is known to flower in August. The fruiting time is likely similar to that of populations in other parts of its range, from late summer to early fall. It is recommended that surveys be conducted during the flowering and fruiting period.

Habitat: The Luce County habitat of *Bartonia paniculata* is a patterned fen or "string bog" (strangmoor), with flarks (hollows) dominated by *Menyanthes trifoliata* (bog-bean), *Scirpus subterminalis* (bulrush), and *Nymphaea* (water lily). The strangs (ridges) support *Carex exilis* (sedge), *C. oligospema* (sedge), *Rhynchospora alba* (beak-rush), *Aronia prunifolia* (chokeberry), and *Larix laricina* (tamarack). In Chippewa County it was found near the edges of several intermittent wetlands bordered by *Chamydaphne calyculata* (leatherleaf). Among its associates were *Euthamia remota* (lakes flat-topped goldenrod), *Rhynchospora capitellata* (beak-rush), *Muhlenbergia uniflora* ("muhly" grass), and coastal plain disjunct, *Lycopediella subappressa.* In one locality the coastal plain disjunct species *Rhexia virginica* (meadow beauty) was also present. At the

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time of discovery, these intermittent wetlands were experiencing significant drawdown, similar to that which occurs in typical coastal plain marsh habitat known primarily from the southeastern Lower Peninsula. The Allegan County occurrence of panicled screw-stem was found in a coastal plain marsh experiencing a similar drawdown during the same year. In Ontario, panicled screw-stem grows in a "very wet *Sphagnum* bog on the Canadian Shield between low ridges of granitized rock, [where] it grew...among scattered clumps of *Larix laricina, Aronia prunifolia,* and *Chamaedaphne calyculata* [in openings] dominated by *Rhynchospora alba* (beak-rush), *Scheuchzeria palustris* (arrow-grass)*, Woodwardia virginica* (Virginia chain fern)*, Eriophorum virginicum* (tawny cotton-grass)*,* and *Habenaria blephariglottis* (white fringed orchid)" (Reznicek and Whiting 1976). In the main portion of its range, this species inhabits sphagnum bogs, cedar swamps, and sandy or peaty pond shores.

Biology: Plants of this genus are annuals and are saprophytic, deriving their nourishment from decayed material. At the Luce County site, panicled screw-stem was found flowering in August.

Conservation/management: Maintenance of natural hydrology is critical to protection of this species' habitat. Alterations to wetlands in the watershed (especially upslope) should be avoided, and activities in adjacent uplands which drain into the wetlands should be undertaken with caution. Patterned fens are boreal ecosystems which are rare this far south and may be highly sensitive to thermal warming and acidification, as well as water table disturbances.

Research needs: A thorough status survey for *Bartonia paniculata* in Michigan is warranted. The recent findings of this species in intermittent wetland and coastal plain marsh habitat indicate that it may be more widespread than is currently known.

Comments: Screw-stems are thus named because the shoots are often twisted (even twining), with the leaves arranged spirally.

Related abstracts: coastal plain marsh, intermittent wetland, meadow beauty, patterned fen.

Selected references:

Gillett, J.M. 1959. A revision of *Bartonia* and *Obolaria* (Gentianaceae). Rhodora 61:43-62.

Henson, D. 1985. *Bartonia paniculata*, new to Michigan. Mich. Bot. 24(1):19-20.

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Abstract citation:

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