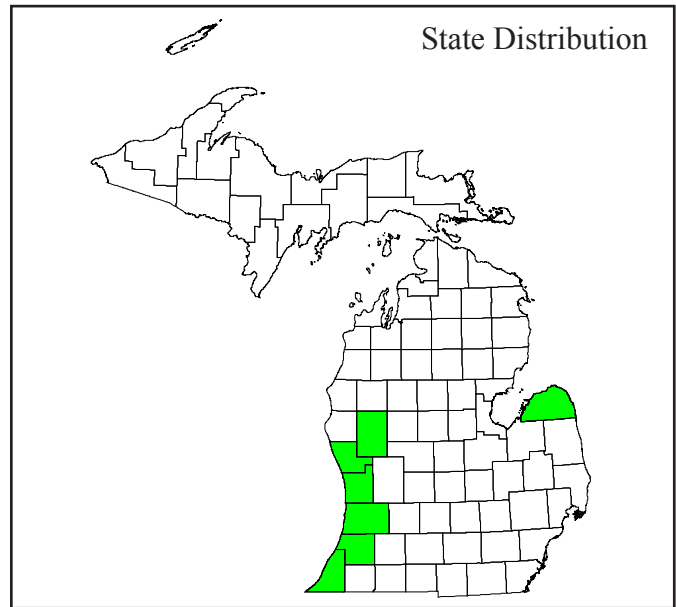


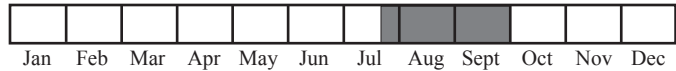
Pycnanthemum verticillatum (Michaux) Pers. whorled mountain-mint



Photo by Ryan P. O'Connor



Best Survey Period



Status: State special concern

Global and state rank: G5/S2

Family: Lamiaceae (mint family); also known as the Labiatae

Synonym: *P. pilosum* Nutt.

Taxonomy: *Pycnanthemum verticillatum* appears to be closely related to *P. muticum* and *P. pilosum*, with which it likely hybridizes and intergrades (Voss 1996). Cooperrider (1984) recognizes two distinct varieties of the species, the more eastern var. *verticillatum* and the more western var. *pilosum*, both of which are considered to occur in Michigan. The latter variety comprises what other botanists separate as *P. pilosum*.

Range: Whorled mountain-mint is distributed from southern Quebec and New England south to Georgia, occurring west to the Great Plains from Nebraska to Oklahoma. It is considered rare in Delaware, Maryland, North Carolina, and Ontario, and is known only from historical records in Tennessee (NatureServe 2006).

State distribution: *P. verticillatum* occurs in just over 20 sites, occurring principally in southern Lower Michigan where it is concentrated in the southwest, with nearly half of the localities documented in Berrien and

Allegan counties. Three widely disparate localities are known in the southeastern portion of the state in Huron, Saginaw, and Monroe counties.

Recognition: Whorled mountain-mint is a perennial arising from a rhizome, producing leafy stems that range to about 1.5 m in height. The square stems are **hairy throughout**, not just on the angles (as is characteristic of the more common *P. tenuifolium* and *P. virginianum*). The leaves are opposite, narrowly lance-shaped, and stalkless or have very short petioles. In addition, **the leaves are at least 7 mm or more wide, and are hairy on the undersurface only on the main veins**. In this species, the stems are **branched above, terminating in relatively dense, roundish inflorescences** (which are also borne in short axillary branches immediately below) with **outer, leaf-like bracts (involucral bracts) that are hairy on both their upper and lower surfaces**. *P. pilosum* is the species most similar to *P. verticillatum*, and can be distinguished by its leaves, which are hairy across the undersurface and not just on the veins, and the acute-tipped outer bracts of the inflorescence, which in *P. verticillatum* are sharper and more prolonged. *P. muticum* is also a very similar species, but has markedly broader leaves (less than 3 times as long as broad) and outer inflorescence bracts that are smooth on both surfaces.

Best survey time/phenology: *P. verticillatum* blooms



in the latter part of the growing season, and based on herbarium specimens and field reviews, the species has been observed primarily from late July through mid- and late-September, with most observations recorded in August.

FQI Coefficient and Wetland Category: 10, UPL

Habitat: Most recent observations of whorled mountain-mint have been recorded within complexes of lakeplain wet-mesic prairie and coastal plain marshes, which are best developed in glacial outwash and lakeplain landscapes, such as extensive areas of these landforms in Newaygo and Allegan counties, respectively. The upland context typically supports an array of oak and pine vegetation, much of which was formerly barrens but is now represented by closed canopy forest. Whorled mountain-mint typically thrives in the outer zone of seasonally inundated, shallow wetlands and lakes, where it is commonly associated with prairie grasses such characteristic indicator species as *Andropogon gerardii* (big bluestem), *Sorghastrum nutans* (Indian grass), *Spartina pectinata* (prairie cordgrass), and *Panicum virgatum* (switch grass), among many other graminoids and forbs, including such representative species as *Calamagrostis canadensis* (blue-joint), *Liatris spicata*, (blazing star), *Scleria triglomerata* (nut-rush), *Rhynchospora capitellata* (beak-rush), *Aster dumosus* (bushy aster), *Stachys hyssopifolius* (hyssop hedge-nettle), *Euthamia remota* (flat-topped goldenrod), *Panicum spretum* (panic grass), *Cladium mariscoides* (twig-rush), *Andropogon virginicus* (little bluestem), and *Aletris farinosa* (colic-root). Elsewhere within the range, the habitat is generally categorized as upland woods and thickets.

Biology: Whorled mountain-mint is a rhizomatous perennial. Chambers and Chambers (1971) and Chambers (1961) determined that it is a tetraploid species ($2n = \text{ca. } 76-78$), and apparently reproduces largely through apomixis (the development of vegetative buds within seeds without sexual reproduction). As noted above, hybridization and backcrossing occur with closely related species. Chambers and Chambers (1971) provide a detailed overview of chromosome numbers and known natural and artificial hybrids in *Pycnanthemum*.

Conservation/management: Owing to their richness in biodiversity and high priority for conservation,

a number of coastal plain marshes and lakeplain wet-mesic prairies are being protected and managed on both private and public lands, helping to ensure the perpetuation and long-term viability of whorled mountain-mint and several other rare plants and animals. Current management activities include the application of prescribed fire, which plays an important role in maintaining these wetlands as well as their landscape context, and conservation planning and protection to help maintain hydrological regimes. Many sites remain highly vulnerable to degradation through illegal off-road-vehicle (ORV) use and thus require constant vigilance to prevent and minimize access to these fragile and unique natural communities.

Comments: According to Chambers (1961), the center of diversity within the genus *Pycnanthemum* is North Carolina.

Research needs: A review of the available literature for *P. verticillatum* indicates that studies have primarily focused on taxonomy and breeding system. Desirable future research activities include life history studies and particularly the response of populations to wetland regimes and management efforts.

Related abstracts: Coastal plain marsh, intermittent wetland, American bittern, black rat snake, black tern, Blanchard's cricket frog, Blanding's turtle, eastern box turtle, eastern massasauga, Freija fritillary, king rail, least bittern, merlin, marsh wren, red-disked alpine, northern harrier, secretive locust, short-eared owl, spotted turtle, yellow rail, black-fruited spike-rush, few-flowered nut-rush, Hall's bulrush, meadow beauty, mermaid-weed, northern appressed bog club-moss, panicked screw-stem, short-fruited rush.

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