Chelone obliqua Pennell & Wherry — purple turtlehead

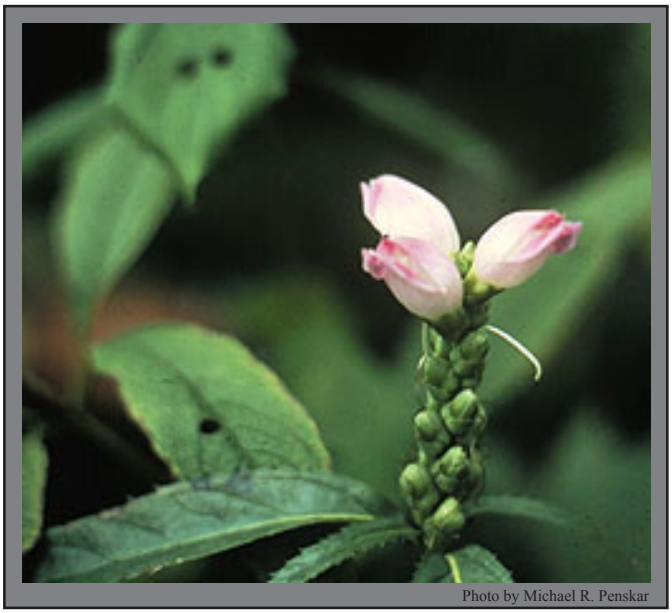
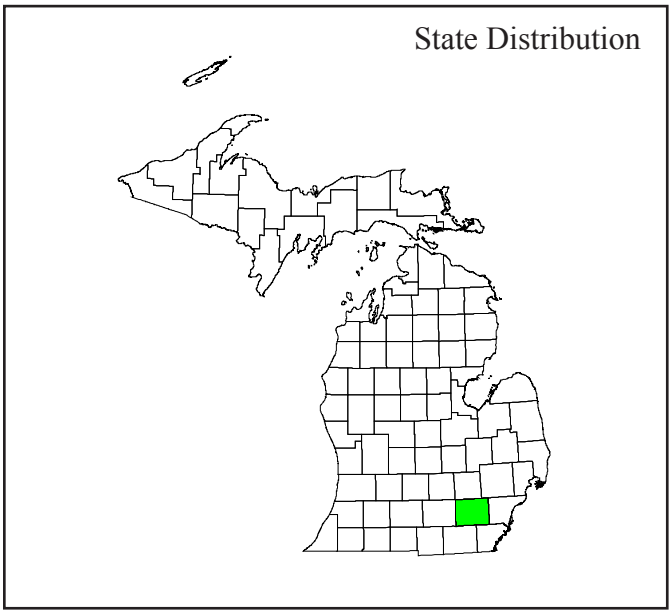
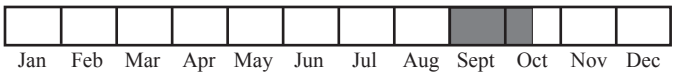


Photo by Michael R. Penskar



Best Survey Period



Status: Endangered

Global and state rank: G4/S1

Other common names: Pink turtlehead; rose turtlehead

Family: Scrophulariaceae (snapdragon family)

Taxonomy: Our plants belong to var. *speciosa*, which intergrades in the Mississippi embayment with the more coastal var. *obliqua*. Morphological and molecular research to analyze the evolutionary relationships within Tribe *Cheloneae*, which includes *C. obliqua*, has been conducted by Nelson and Elisens (1999) and Wolfe et al. (1997).

Total range: Purple turtlehead in the broad sense (*Chelone obliqua* var. *obliqua*) occurs on the Atlantic coastal plain from Maryland to Alabama, and inland in the southern Appalachians to Tennessee and the Mississippi valley to Arkansas, Iowa, and Indiana. C. *obliqua* var. *speciosa* ranges from Minnesota in the upper Midwest south to Arkansas, occurring from Michigan through Indiana into Kentucky in the eastern portion of its distribution. It is considered rare in Illinois, Indiana, Iowa, and Kentucky, and is known only from historical records in Arkansas (NatureServe 2009).

State distribution: *C. obliqua* is known in Michigan only from Washtenaw County, where it has been documented as extant at four sites ranging from a Dexter metro park locality to an occurrence recently discovered near the western border of Ypsilanti. This species was collected in the Ann Arbor vicinity as early as 1904, and again in 1922. At least one of those localities was east of Ann Arbor and may be represented by the Ypsilanti locality. All of the extant sites occur along the Huron River, and there is a strong likelihood that additional colonies exist owing to the presence of considerable potential habitat both downriver and upriver from the known localities.

Recognition: Purple turtlehead is a tall, perennial forb that ranges from ca. 3-7 dm or more in height, with opposite, **short stalked, narrowly lance-shaped leaves** that are elongate (commonly over 20 cm) and **sharply saw-toothed**. The flowers are large (2.5-3.5 cm), tubular, arching, and produced in dense terminal spikes. **The most distinctive and diagnostic feature of this species is the flower, which has finely hairy sepals, a two-lipped pinkish purple corolla, and contains a white staminodium (a sterile stamen).** The common turtlehead, *C. glabra*, which blooms somewhat earlier, is very similar but can be easily distinguished by its completely white flowers with smooth sepals (these may bear some obscure hairs) and greenish staminodia.

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Voss (1996) also notes that in *C. obliqua* the leaves are ca. 3-5 times as long as broad whereas in *C. glabra* the leaves are 4.5-15 times as long as broad.

Best survey time/phenology: *C. obliqua* is a late blooming species, with most observations of flowering plants made in September through early October, thus the optimal survey period is considered to be from September through mid-October.

FQI Coefficient and Wetland Category: 9, OBL

Habitat: Purple turtlehead is restricted to floodplain habitat in Michigan, occurring immediately adjacent to the Huron River in small depressions or wet swales subject to annual flooding and silt deposition. Typical overstory associates include such species as *Populus deltoides* (Eastern cottonwood), *Gleditsia triacanthos* (honey locust), *Ulmus americana* (American elm), *Fraxinus pennsylvanica* (red ash), *Acer negundo* (boxelder), *Acer saccharinum* (silver maple), and *Salix nigra* (black willow). Understory and herbaceous associates include *Cornus amomum* (silky dogwood), *Cephalanthus occidentalis* (buttonbush), *Zanthoxylum americanum* (prickly ash), *Salix exigua* (sandbar willow), *Viburnum opulus* (highbush blueberry), *Vitis riparia* (riverbank grape), *Toxicodendron radicans* (poison ivy), *Onoclea sensibilis* (sensitive fern), *Urtica dioica* (common nettle), *Boehmeria cylindrica* (false nettle), *Lobelia siphilitica* (great blue lobelia), *Calamagrostis canadensis* (bluejoint), Eupatorium rugosum (white snakeroot), *Lysimachia ciliata* (fringed loosestrife), *Solidago gigantea* (late goldenrod), and *Elymus virginicus* (wild-rye). One rare associate noted as occurring with purple turtlehead is the state threatened *Morus rubra* (red mulberry). Several non-native species typical of the region are, unfortunately, also frequent associates in the Huron River sites, and they include such species as *Alnus glutinosa* (European black alder), *Lonicera* spp. (honeysuckle), *Rhamnus cathartica* (buckthorn), *R. frangula* (glossy buckthorn), *Lysimachia nummularia* (moneywort), *Rosa multiflora* (multiflora rose), and *Myosotis scirpoides* (forget-me-not). Throughout its range, purple turtlehead occurs in wet woods and alluvial swamp forests, marshes, stream and creek banks, seepage areas, and along small ponds and lakes (NatureServe 2009).

Biology: According to Pennell (1935), the genus *Chelone* is pollinated by bees, which enter the arched flower tube by clinging to the hairs and ridges on the lower side. *Chelone* species are known to be highly susceptible to several insect herbivores, including two species of sawflies and the larvae of the Baltimore checkerspot butterfly (Stamp 1984, 1982). The larvae of the Baltimore checkerspot butterfly are known to decimate C. glabra following their emergence in the spring (Stamp 1982). Stamp (1986) also identified two significant larval seed predators of *C. obliqua*, including a moth (Tortricidae) and a leaf-miner fly (Agromyzidae), which were observed to reduce seed production by 21%.

Conservation/management: Since the mid-1980s, when only a single small colony of *C. obliqua* was known within a Dexter MetroPark, three additional occurrences have been identified downstream along the Huron River, and thus the state status has improved. The more recently discovered colonies are larger, and at least one of them is managed and protected within the City of Ann Arbor natural area system. Annual monitoring of these colonies to track their status coupled with the identification and inventory of potential sites to discover new occurrences are the principal conservation needs at present. An observation of the most recently discovered locality near Ypsilanti indicated that whitetail deer can trample plants and may browse them, and thus future efforts to control deer populations or restrict their access may be necessary in the future.

Comments: *C. obliqua* is unique within the genus as the only polyploid species (i.e. having chromosome levels that are a multiple of the normal diploid (2x) number), occurring as both tetraploid (4x) and hexaploid (6x) races (Nelson and Elisens 1999; see also Nelson and Elisens 1998 and Cooperrider and McCready 1970).

Research needs: Copious habitat for purple turtlehead appears to exist elsewhere along the Huron River, and the species should be actively sought to identify additional occurrences.

Related abstracts: Floodplain forest, Blanding's turtle, box turtle, cerulean warbler, red-shouldered hawk, smallmouth salamander, yellow-throated warbler, American beak grass, cup-plant, heart-leaved plantain, pumpkin ash, red mulberry, snow trillium, Virginia bluebells, Virginia water-horehound.

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Abstract citation:

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