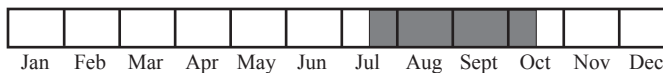


Best Survey Period



Status: Threatened

Global and state rank: G5/S2

Other common names: Virginia water horehound, water horehound, bugleweed or bugle weed

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

Synonyms: *Lycopus communis* E.P. Bickn.; *L. membranaceus* E.P. Bickn. (Henderson 1962).

Taxonomy: One of the few available taxonomic references for this genus is the thorough review provided by Henderson (1962). Michigan is not included in the known distribution of *L. virginicus* for North America as depicted by Henderson, although one station (Ingham County) was identified by Waterman (1960) in her earlier treatment of the mints of Michigan. *L. virginicus* commonly hybridizes with *L. uniflorus*, forming the hybrid called *L. ×sherardii* Steele.

Range: Virginia water-horehound is a widely distributed species in central and eastern North America, ranging from Ontario and Quebec to Florida and occurring from the Minnesota in the Upper Midwest through Nebraska, Kansas, and Oklahoma to Texas. It

is considered rare in Ontario, Quebec, and Vermont (NatureServe 2009).

State distribution: *L. virginicus* is known from about 10 localities in southern Lower Michigan, where it ranges from Muskegon and Kalamazoo counties in the southwest to Lapeer and Wayne counties in the southeast.

Recognition: Virginia water-horehound is a relatively tall perennial forb that may range from 50-75cm or more in height, arising from a stolon and **lacking a tuberous base**. The stem is square with slightly concave sides and may be hairy, with a closely appressed pubescence. This robust mint has opposite, stalked, elliptic to lance-shaped leaves that are coarsely saw-toothed and often pubescent on the underside. The tiny, white to occasionally pinkish flowers are borne in dense, roundish clusters at the leaf bases. The calyx lobes are less than 1 mm long, triangular in shape, and do not exceed the length of the mature fruits (nutlets). **In this species the stamens remain included within the tubular flower and are therefore not conspicuous. The tiny nutlets (which will require a good hand lens or a dissecting microscope for adequate study) range from ca. 1.3-2.1 mm long, bear teeth all across their apex and are thus even to somewhat convex across their surface.** *L. virginicus* is most likely to



be confused with the common and wide ranging *L. uniflorus*, which can be distinguished by its tuberous base, more open corollas with conspicuous (exserted) stamens, and nutlets that are not over 1.5 mm long and only bear teeth around their rim, thus forming a depressed or concave top surface. The small flowers and fruits in this species require careful examination, and it is suggested that the ubiquitous *L. uniflorus* be studied to become familiar with flower and fruit morphology in this genus and to learn the contrasting characters.

Best survey time/phenology: The majority of Michigan records have been collected in September and October, but good fruiting plants have been obtained from in mid-July and mid-October, thus the optimal survey period is considered to occur from mid-July through mid-October.

FQI Coefficient and Wetland Category: 8, OBL

Habitat: All of Michigan's collections and observations of this species are from floodplain forests, thus to date this species is known as an exclusively riparian plant. Collectively these records provide almost no habitat or associate data, only noting that the collections were made in southern floodplain forests with moist soils. Typical dominant species would likely include such trees as *Acer saccharinum* (silver maple), *Platanus occidentalis* (Eastern sycamore), *Populus deltoides* (Eastern cottonwood), *Fraxinus pennsylvanica* (red ash), *Ulmus americana* (American elm), *Celtis occidentalis* (hackberry), and *Salix nigra* (black willow). Other typical species likely to be present in such sites would include shrubs such as *Lindera benzoin* (spicebush), *Cercis canadensis* (redbud), *Euonymus obovata* (creeping strawberry bush), and possibly the rare *E. atropurpurea* (wahoo), and riparian zone forbs such as *Verbesina alternifolia* (wingstem), *Rudbeckia laciniata* (cut-leaved coneflower), *Laportea canadensis* (wood nettle), *Trillium* spp. (trillium), *Asarum canadense* (wild ginger), *Arisaema dracontium* (green dragon), and many other taxa .

In the Chicago region, Virginia water-horehound is confined to river bottoms with a strong history of alluvial deposition, where it is associated with such species as *Boehmeria cylindrica* (false wood nettle), *Eragrostis hypnoides* (creeping love grass), *Rumex altissimus* (water dock), *Salix interior* (sandbar

willow), and American elm (Swink and Wilhelm 1994). Elsewhere within its broad range this species is known from floodplain forests, swamps, wet woodlands, bottomland forests, stream banks, margins of wooded ponds and lakes, wet clearings, ditches, and thickets (Godfrey and Wooten 1981, Jones 1976). Ebinger (1979) reports of the occurrence of *L. virginicus* on sandstone cliff outcrops in Illinois, where it was restricted to cliff bases, possibly (in the opinion of this author) due to moisture availability via seeps.

Biology: *L. virginicus* is a perennial forb that reproduces vegetatively via slender runners developed from the lower leaf nodes or uncommonly from the upper nodes of the main stem, and in very rare cases plants are known to produce tubers (Henderson 1962). The strong affinity of this species to floodplains throughout its ranges indicates that it is adapted to natural disturbance, including periodic and seasonal flooding cycles and alluvial soil deposition.

Conservation/management: The protection and conservation of hydrology appears to be the principal management need for this species, which is dependent on the maintenance of periodic, seasonal flooding cycles, alluvial soil deposition, and the related natural perturbations (e.g. water level fluctuations, tree windthrow, channel/bank scouring and erosion) that are also expected in its habitats. Michigan's occurrences of Virginia water-horehound warrant more thorough survey to acquire information on status (population size and condition) and threats. Further inventory also has strong merit owing to the considerable potential habitat for this species along the many riparian corridors that exist in southern Michigan, many of which are known to support a high degree of biodiversity. Conducting such inventories will assist in identifying the highest priority areas for conservation action.

Research needs: Based on the paucity of published literature on Virginia water-horehound, virtually any study related to the natural history and ecology of this species would assist in conservation and management. Beyond the priority need for status surveys (including more specific population mapping) and acquiring population status data, studies that investigate population structure and genetic diversity may assist land managers in identifying priority conservation sites.



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

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