Stachys hyssopifolia var. *hyssopifolia*

Hyssop Hedge-nettle

Lamiaceae

Stachys hyssopifolia var. *hyssopifolia* courtesy R. W. Smith, Lady Bird Johnson Wildflower Center

Stachys hyssopifolia var. *hyssopifolia* Rare Plant Profile

New Jersey Department of Environmental Protection
State Parks, Forests & Historic Sites
Forests & Natural Lands
Office of Natural Lands Management
New Jersey Natural Heritage Program

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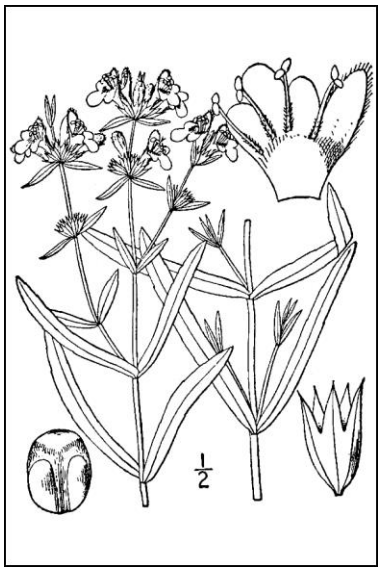
Life History

Stachys hyssopifolia var. *hyssopifolia* (Hyssop Hedge-nettle) is a rhizomatous perennial herb in the mint family. The roots are thick and tuberous or stoloniferous. The tubers are edible, but they should not be harvested in places where the species is endangered (Kendler and Pirone 1989). *S. hyssopifolia* var. *hyssopifolia* stems are generally under a half meter tall, branched, and smooth, although some hairs may be present at the nodes. The leaves are opposite and narrow—about 10 times as long as wide—with short petioles or none at all. The leaf margins are often smooth but a few shallow, rounded teeth may be present toward the tips. The flowers occur in small whorls near the top of the stems that are subtended by pairs of leaflike bracts. The corolla is two-parted with a hooded upper lip and a three-lobed lower lip and it may be violet, white, or pinkish with purple and white mottling (Wood and McCarthy 1886, Oswald 1964, Cazier 2020). The calyx has five long, narrow teeth about as long as the floral tubes that spread when the plants are in fruit. The dry fruits split into four single-seeded nutlets at maturity. (See Britton and Brown 1913, Fernald 1950, Nelson 1981, Gleason and Cronquist 1991).



Left: Britton and Brown 1913, courtesy USDA NRCS 2025a. Right: Doug McGrady, 2022.

Eleven species of *Stachys* have been documented in New Jersey but the majority of them are introduced and not particularly widespread in the region (Hough 1983, Van Clef 2009, Kartesz 2015). The most common non-native species in the state, *S. palustris*, has red-purple flowers and a hairy stem. Other than Hyssop Hedge-nettle only two are native: *Stachys pilosa* is historical in New Jersey and *S. tenuifolia* is rare but more common than *S. hyssopifolia* (NJNHP 2024). Both have leaves that are wider and more sharply toothed when compared to *S. hyssopifolia*, and those of *S. tenuifolia* have long petioles (Rhoads and Block 2007, Weakley et al. 2024). Other varieties of *S. hyssopifolia* are not universally recognized (see Synonyms section) and none appear to occur in New Jersey.

In New Jersey and elsewhere throughout its range, *Stachys hyssopifolia* blooms from late June through August and the fruits develop from August through October (Wood and McCarthy 1886, Stone 1911, Hough 1983, Pasztor and Tyndall 1987, Young and Weldy 2004, Weakley et al.

2024). Observations of other perennial *Stachys* species indicate that the shoots senesce in the fall and re-emerge in the spring, but the dry fruiting stems may remain standing throughout the winter (Levine 1995, Taylor and Rowland 2011).

Pollinator Dynamics

Stachys plants often produce odors that are distasteful to humans (Genders 1977). Austin (1878) likened the scent of *Stachys hyssopifolia* to that of a common mushroom (*Agaricus edulis*), although he did not describe it as unpleasant. Nevertheless, the nectar of hedge-nettle flowers is highly attractive to insects and they are visited by an assortment of bees, wasps, flies, butterflies, and moths, with bees being the primary pollinators (Robertson 1929, Stubbs et al. 1992, Hilty 2020, Darbyshire et al. 2014). Some species (e.g. *S. palustris, S. sylvatica*) are capable of self-fertilization in the absence of insect activity but cross-pollination results in a higher proportion of viable seeds (Taylor and Rowland 2010 & 2011, Darbyshire et al. 2014).

Stachys hyssopifolia is a preferred forage species for bumblebees (*Bombus* spp.) and honeybees (*Apis mellifera*) (Grimmer 2015, Cazier 2020). Cazier (2020) found that bumble bees were the most frequent visitors to *S. hyssopifolia* blooms. Other potential pollinators observed included smaller bees (*Ceratina, Halictus*, and *Lasioglossum* species) and a cuckoo wasp (*Chrysis* sp.)

Seed Dispersal and Establishment

The mature nutlets of *Stachys hyssopifolia* are blackish in color, 1.5–2 mm long, and smooth or lightly veined on the surface (Fernald 1950, Nelson 1981). Hyssop Hedge-nettle maintains a seed bank (Mulhouse 2004, Neill et al. 2009), but no additional information was found about its dispersal or establishment. Studies of other *Stachys* species indicate that most of the seeds are dispersed by gravity and remain close to the parent plants. Distribution of propagules over longer distances may sometimes be accomplished by animals, as the teeth of the persistent calyx surrounding the fruit can adhere to fur or feathers. The seeds of *Stachys palustris* are buoyant and water dispersed, sometimes even germinating while they are afloat (Dunn 1997, Hermy et al. 1999, Taylor and Rowland 2010 & 2011, Darbyshire et al. 2014).

Stachys seeds are generally dormant when they are dispersed and can remain in that state until conditions are suitable for germination, which usually takes place during the spring season. Sprouting is promoted by warm temperatures, moist soil, and plentiful light (Deno 1993, Dunn 1997, Taylor and Rowland 2010). Most species of *Stachys* that have been examined are mycorrhizal, or at least facultatively so (Dunn 1997, Taylor and Rowland 2010 & 2011, Wang and Qiu 2006).

Habitat

Stachys hyssopifolia is usually found growing in moist or wet open places with sandy or gravelly substrates (Stone 1911, Hough 1983, Batson et al. 1985, Kendler and Pirone 1989). The plants

are often situated on the shores of intermittent or permanent freshwater ponds (Blankinship 1903, Beals et al. 1939, Carr 1940, Pierce 1974, Coddington and Field 1978, Sorrie 1987, Fleming and Van Alstine 1999, Neill et al. 2009, Young 2012). Studies of vegetation zones surrounding coastal plain ponds found that *S. hyssopifolia* was most prominent in the zone midway between the shoreline and the surrounding uplands (Graham and Henry 1933, Parker 1945). Plants in one Massachusetts pond were notably more vigorous when growing in up to 15 cm of water than they were on the shore (Bicknell 1915), but *S. hyssopifolia* has also been found in dried-up ponds (Fernald 1936, Oswald 1964). Additional reported habitats include swamps, marshes, swales, streambanks, moist meadows, fields, thickets, and pine savannas (Riddell 1836, Keller and Brown 1905, Lyon 1927, Pasztor and Tyndall 1987, Stalter and Lamont 1993, Rhoads and Block 2007, Lamont et al. 2020, Weakley et al. 2024). *S. hyssopifolia* occasionally utilizes canopy gaps in forested sites (Greller 1977) and it has been noted to grow in dry prairies or fields in New York and Michigan (Ferguson 1925, Pierce 1974).

Stachys hyssopifolia sometimes establishes in anthropogenic habitats such as ditches, roadways, powerline cuts, abandoned fields, or other artificial clearings (Musselman et al. 1977, Sorrie 1987, Greller 1989, Young 2012). Historic collection sites in New Jersey include both natural habitats (e.g. ponds, meadows, fields, and other moist open places) and disturbed sites such as sandy roadsides or a "rubbish heap" in the woods. Some more recent occurrences in the state were associated with an abandoned gravel pit and a utility right-of-way (NJNHP 2024).

When conditions are favorable, *Stachys hyssopifolia* can become dominant in the community (Reznicek 1994). At a former location in Queens, Ruger (1875) observed a field that "was so covered with *Stachys hyssopifolia*, as to seem to be under cultivation." Some common associates in seasonally flooded habitats in the northeast include *Rhexia virginica*, *Coreopsis rosea*, *Eupatorium hyssopifolium*, *Hypericum adpressum*, *Panicum* species (*rigidulum, verrucosum, virgatum)* and assorted sedges (Graham and Henry 1933, Parker 1945, Breden et al. 2001, Goltz 2013).

Wetland Indicator Status

The U. S. Army Corps of Engineers divided the country into a number of regions for use with the National Wetlands Plant List and portions of New Jersey fall into three different regions (Figure 1 below). *Stachys hyssopifolia* has more than one wetland indicator status within the state. In the Atlantic and Gulf Coastal Plain region, it is an obligate wetland species, meaning that it almost always occurs in wetlands. In the rest of the state it is a facultative wetland species, meaning that it usually occurs in wetlands but may occur in nonwetlands (U. S. Army Corps of Engineers 2022).

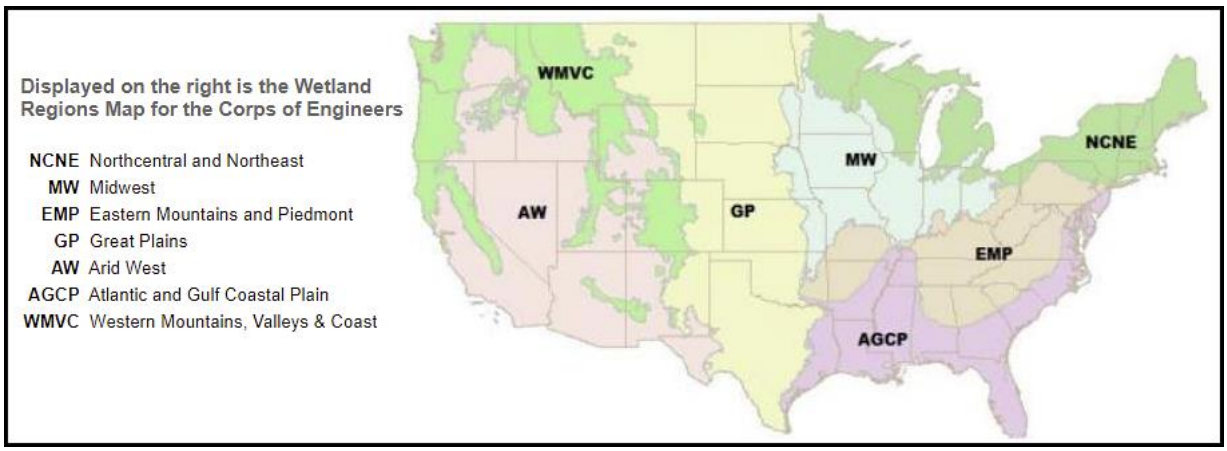


Figure 1. Mainland U. S. wetland regions, adapted from U. S. Army Corps of Engineers (2022).

USDA Plants Code (USDA, NRCS 2025b)

STHY3

Coefficient of Conservancy (Walz et al. 2020)

CoC = 5. Criteria for a value of 3 to 5: Native with an intermediate range of ecological tolerances and may typify a stable native community, but may also persist under some anthropogenic disturbance (Faber-Langendoen 2018).

Distribution and Range

The global range of *Stachys hyssopifolia* var. *hyssopifolia* is restricted to the eastern and central United States (POWO 2025). The map in Figure 2 depicts the extent of the species in North America. *S. hyssopifolia* is most frequently encountered on the Atlantic coastal plain. Inland occurrences have been documented in a number of states but there are notable gaps in the species' distribution (Sinnot 1912, Fernald 1937, Lamerson 1950, Harvill 1969, Pierce 1974, Reznicek 1994, Fleming and Alstine 1999, Sorrie and Weakley 2001).

The USDA PLANTS Database (2025b) shows records of *Stachys hyssopifolia* in 14 New Jersey counties: Bergen, Burlington, Camden, Cumberland, Essex, Gloucester, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Salem, and Union (Figure 3). The data include historic observations and do not reflect the current distribution of the species.

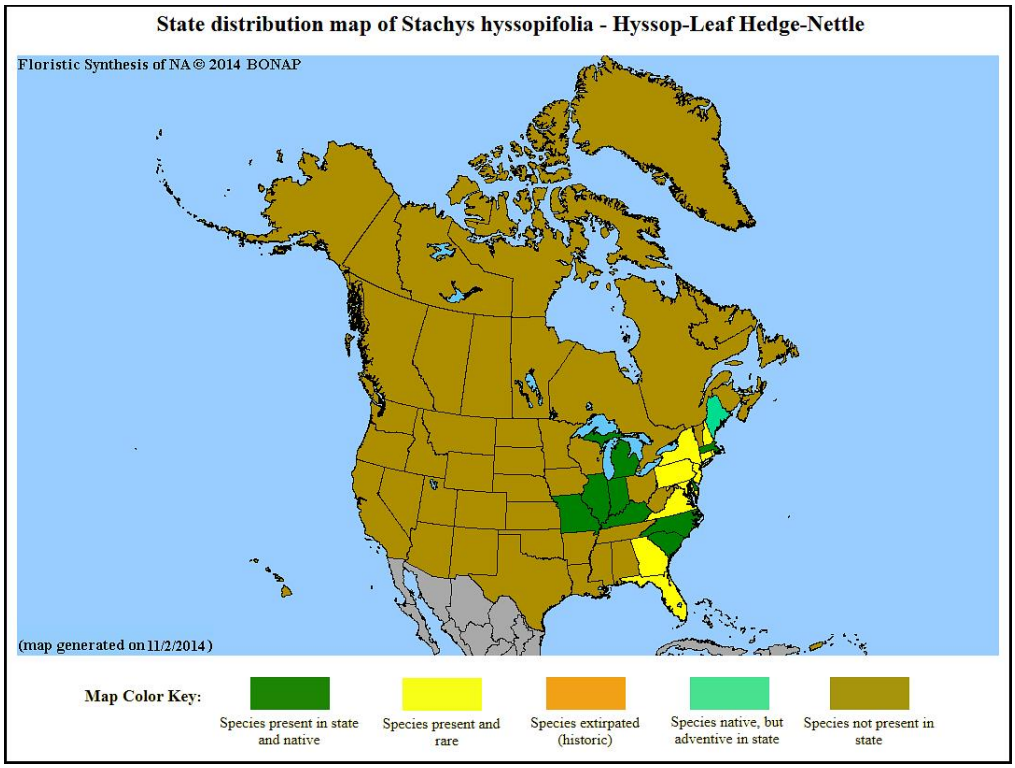


Figure 2. Distribution of S. hyssopifolia var. hyssopifolia in North America, adapted from BONAP (Kartesz 2015).

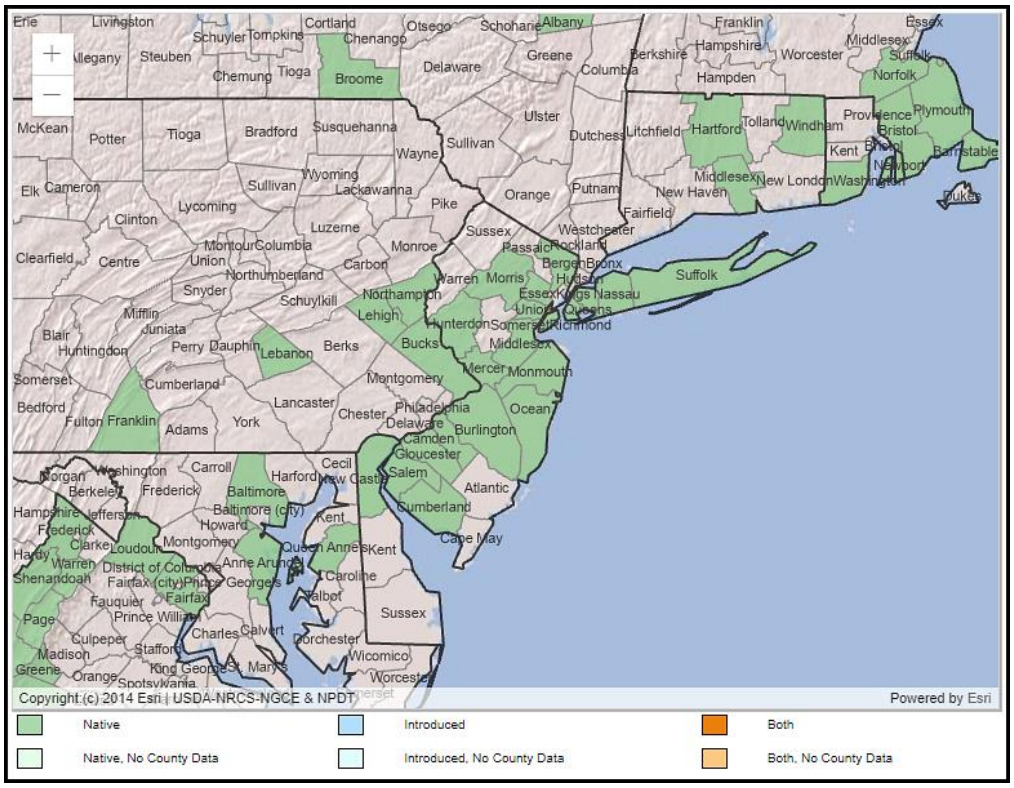


Figure 3. County records of S. hyssopifolia var. hyssopifolia in New Jersey and vicinity (USDA NRCS 2025b).

Conservation Status

Stachys hyssopifolia has a global rank of G4G5, meaning there is some uncertainty as to whether it should be considered apparently secure or secure. A G4 species has a fairly low risk of extinction or collapse due to an extensive range and/or many populations or occurrences, although there is some cause for concern as a result of recent local declines, threats, or other factors. A G5 species has a very low risk of extinction or collapse due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats (NatureServe 2025). The map below (Figure 4) illustrates the conservation status of *Stachys hyssopifolia* throughout its range. The species is vulnerable (moderate risk of extinction) in one state and critically imperiled (very high risk of extinction) in three states. In some of the states where it appears to be unranked it may have been ranked at the varietal level.

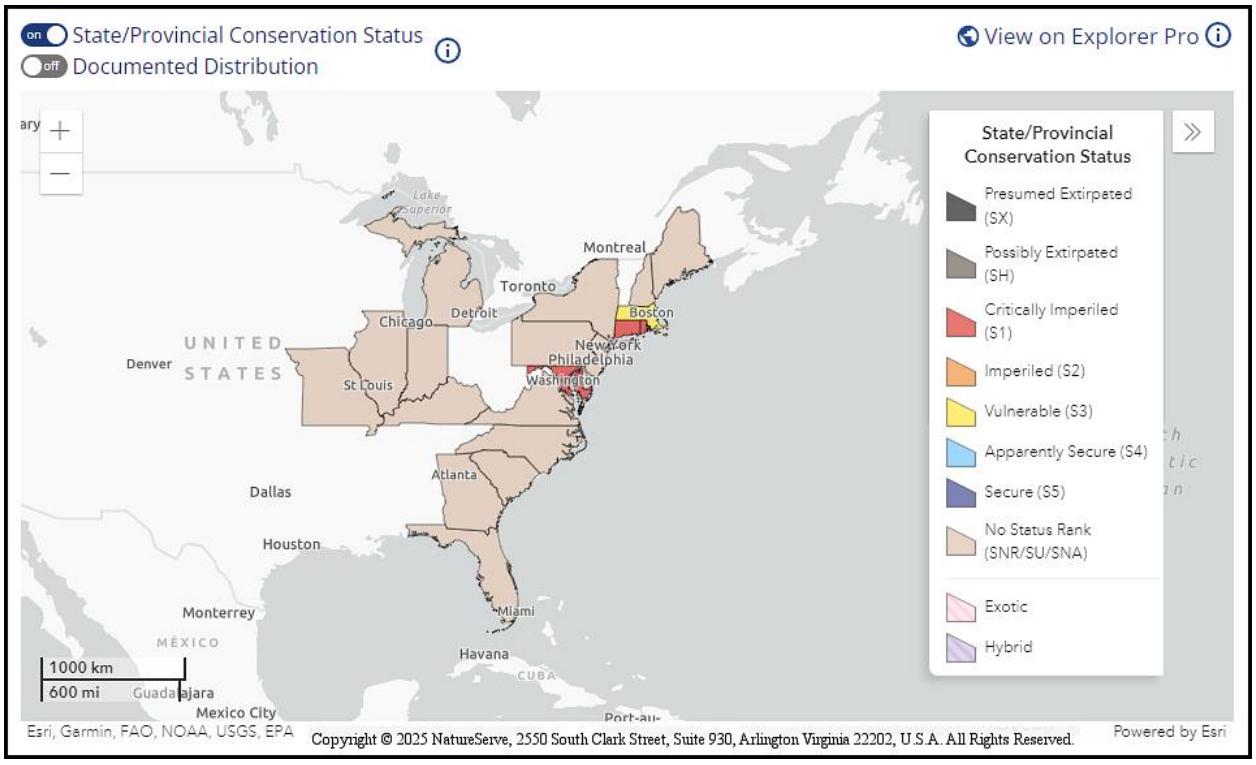


Figure 4. Conservation status of S. hyssopifolia var. hyssopifolia in North America (NatureServe 2025).

Stachys hyssopifolia var. *hyssopifolia* is critically imperiled (S1) in New Jersey (NJNHP 2024). The rank signifies five or fewer occurrences in the state. A species with an S1 rank is typically either restricted to specialized habitats, geographically limited to a small area of the state, or significantly reduced in number from its previous status. Hyssop Hedge-nettle has also been assigned a regional status code of HL, signifying that the species is eligible for protection under the jurisdiction of the Highlands Preservation Area (NJNHP 2010).

The earliest New Jersey record of *Stachys hyssopifolia* was from Camden County (Willis 1874), but during the decades that followed scattered reports of the species emerged from Atlantic, Bergen, Burlington, Essex, Gloucester, Middlesex, and Union counties—mainly outside of the

Pine Barrens (Britton 1889, Keller and Brown 1905, Stone 1911, Taylor 1915). Abraitys (1981) listed Hyssop Hedge-nettle as a species that had historically been known from Hunterdon County. Hough (1983) indicated that *S. hyssopifolia* had been documented in 14 counties but only four of those (Bergen, Cumberland, Morris, and Salem) had records that were less than a half century old. The Natural Heritage Program presently tracks 29 occurrences in 11 New Jersey counties although only three populations in Middlesex County are thought to be extant (NJNHP 2024).

Threats

A century ago, Ferguson (1925) predicted that the Long Island prairie where he had found *Stachys hyssopifolia* would "soon be a memory" due to the rapid pace of regional development, and as of today more than 99% of that habitat has been lost (Feldman 2023). Development pressures continue to threaten *S. hyssopifolia* populations throughout the northeast, both by eliminating suitable habitat and by increasing the amount of foot and vehicular traffic in sensitive plant communities (Sorrie 1987, Young 2012). One New Jersey colony was destroyed by the construction of a park (NJNHP 2024).

Different reasons were identified for the recent demise of several other New Jersey populations. The site of one long-known occurrence was eventually rendered unsuitable by agricultural activities on adjacent land, a roadside colony was eradicated by excessive mowing, and another population was overtaken by invasive plants including *Artemesia vulgaris* and *Persicaria perfoliata* (Sundue 2006, NJNHP 2024). The proliferation of invasive species has also been identified as a threat to some of the state's remaining *S. hyssopifolia* populations, and a similar concern has been noted in New York due to the spread of *Phragmites australis* ssp. *australis* (Young 2012). *Stachys hyssopifolia* occurrences can also be vulnerable to habitat changes that result from natural successional processes (Young 2012, NJNHP 2024).

Climate Change Vulnerability

Information from the references cited in this profile was used to evaluate the vulnerability of New Jersey's *Stachys hyssopifolia* var. *hyssopifolia* populations to climate change. The species was assigned a rank from NatureServe's Climate Change Vulnerability Index using the associated tool (Version 3.02) to estimate its exposure, sensitivity, and adaptive capacity to changing climactic conditions in accordance with the guidelines described by Young et al. (2016) and the state climactic computations by Ring et al. (2013). Based on available data Hyssop Hedge-nettle was assessed as Moderately Vulnerable, meaning that it is likely to show some decrease in abundance or range extent in New Jersey by 2050. However, the conclusion was reached with only moderate confidence due to gaps in knowledge about the species' ecological requirements.

As the climate continues to warm, plant communities in New Jersey are increasingly exposed to higher temperatures while changing precipitation patterns in the region are resulting in more frequent floods and lengthier droughts (Hill et al. 2020). The natural distribution of *Stachys*

hyssopifolia suggests that the species will be able to tolerate warmer conditions and a longer growing season. While the habitats utilized by the hedge-nettle can range from wet to dry, its ability to withstand extended periods of drought is unknown. Limited information regarding dispersal capabilities and establishment requirements makes it difficult to assess the species' potential for colonizing new sites if existing locations become unsuitable. Threats to *S. hyssopifolia* from the proliferation of invasive plants are likely to be exacerbated by climate change. The northeastern and mid-Atlantic regions are predicted to become hotspots for the establishment of introduced species, many of which are expected to have a significant detrimental impact on native plant communities (Bellard et al. 2013, Salva and Bradley 2023). Other assessments have projected that a number of the non-native species which have already gained a foothold in the northeast are likely to become more abundant (Dukes et al. 2009, Tougas-Tellier et al. 2015, Coville et al. 2021, O'Uhuru 2022).

Management Summary and Recommendations

The New Jersey *Stachys hyssopifolia* population with the greatest potential for long-term viability appears to be facing threats from both native woody plants and introduced invasive species (NJNHP 2024). The occurrence is located in a utility right-of-way and its fate may depend on the strategies used to maintain the corridor. Contact with the land manager is recommended in order to identify current management practices and initiate a cooperative agreement for protection of the rare plants. Although *Stachys hyssopifolia* populations can be threatened by an excessive amount of mowing, in moderation and with appropriate timing mowing can be a valuable tool to manage the spread of certain invasive plants or deter succession. The use of herbicides in the vicinity of the hedge-nettle should be discouraged. A number of New Jersey's *Stachys hyssopifolia* occurrences persisted in the same localities for decades, and the examination of selected collection sites has resulted in the rediscovery of some historic populations. There are many additional locations around the state that could still harbor the species so searches of places where the plants were previously documented might be worthwhile.

More research on *Stachys hyssopifolia* is needed in order to establish a foundation for meaningful conservation planning. For example, dispersal mechanisms vary considerably in the genus so information specific to *S. hyssopifolia* would be helpful. Other potential topics for study include germination and establishment requirements, plant longevity, responses to fire, and tolerance for climactic extremes.

Synonyms

The accepted botanical name of the species is *Stachys hyssopifolia* Michx. var. *hyssopifolia*. Orthographic variants, synonyms, and common names are listed below (ITIS 2025, POWO 2025, USDA NRCS 2025b). Most current sources do not recognize any subtaxa; however, there is some disagreement regarding the disposition of the two varieties accepted by Nelson (1980, 1981). Weakley et al. (2024) noted the need for molecular studies to clarify relationships within the genus.

Botanical Synonyms	Common Names
Stachys atlantica Britton	Hyssop Hedge-nettle
Stachys hyssopifolia var. *lythroides* (Small) J. B. Nelson	Hyssopleaf Hedgenettle
Stachys hyssopifolia f. *oswaldiae* Oswald	Rough Hedge-nettle
Stachys lythroides Small	

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