

Hypericum adpressum

Barton's St. John's-wort

Clusiaceae



Hypericum adpressum by Doug McGrady, 2021

***Hypericum adpressum* Rare Plant Profile**

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

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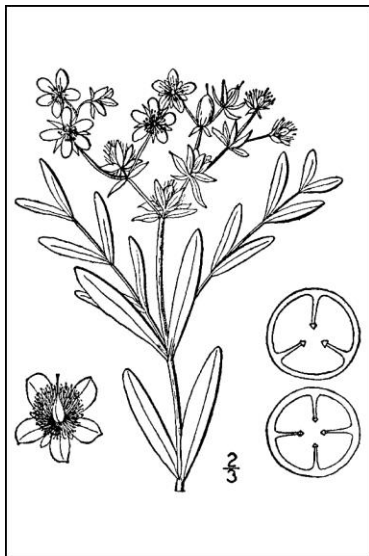
March, 2023

For:
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This report should be cited as follows: Dodds, Jill S. 2023. *Hypericum adpressum* Rare Plant Profile. New Jersey Department of Environmental Protection, State Parks, Forests & Historic Sites, State Forest Fire Service & Forestry, Office of Natural Lands Management, New Jersey Natural Heritage Program, Trenton, NJ. 17 pp.

Life History

Hypericum adpressum (Barton's St. John's-wort) is a rhizomatous perennial herb. The genus *Hypericum* has traditionally been included in the Clusiaceae but it was recently transferred to the Hypericaceae (APG III 2009, Kartesz 2015). Barton (1818) described *Hypericum adpressum* as "a very elegant species." The stems are smooth and sometimes relatively stout, ranging from 20–80 cm in height. They may be erect or somewhat creeping at the base. The plants produce numerous leaves which are opposite, stalkless, and smooth. The leaves are narrow, 3–6 cm long and 5–10 mm wide, and their margins are rolled inward below. The branching inflorescences produce 13–60 flowers and have small leaves at the base of the branches. The flowers are 10–15 mm in diameter and each one has 5 sepals and 5 bright yellow petals. The stamens are numerous (60–80) and persistent at the base of the fruits. The styles are united and also persist as beaks on the ovoid capsular fruits, which are 3.5–6 mm long and 2–4 mm wide. (See Barton 1818, Britton and Brown 1913, Fernald 1950, Fassett 1957, Gleason and Cronquist 1991, Robson 2020, Weakley et al. 2022). *Hypericum adpressum* blooms between early July and early September and produces fruit from mid-September through October (Stone 1911, Adams 1962, Hough 1983). The species can also reproduce vegetatively, so what appears to be a group of plants may be a single clone (Les 2017, Enser et al. 2020).



Left: Britton and Brown 1913, courtesy USDA NRCS 2023a. Center and Right: Janet Novak, courtesy Georgia DNR.

The typical growth form of *Hypericum adpressum* varies according to habitat conditions. In sites where the hydrologic regime shifts between wet and dry the species can behave like an annual plant, developing smaller stems and fluctuating in population size. In stable aquatic settings the plants are more robust, developing thickened stems that are spongy at the base (Adams 1962, Les 2017, Enser 2000). Robinson (1902) described the aquatic form as *H. adpressum* var. *spongiosum*, although he acknowledged that the variety was likely to be an ecotype. Fernald (1949) agreed that the growth forms were governed by habitat conditions but noted that the difference between the two was so striking that it was helpful to have a name for it.

Pollinator Dynamics

Hypericum flowers are usually nectarless but they are fertilized by insects that come to collect pollen (Nürk 2011). The blooms of *Hypericum* species in section *Myriandra*, which includes *H. adpressum*, are mainly pollinated by bees including bumblebees, honey bees, and other small generalist bees (Wood and Adams 1976). Bees known to forage on *Hypericum* species include *Augochlorella striata*, *Bombus bimaculatus*, *Bombus borealis*, *Bombus terricola*, *Dialictus admirandus*, and *Dialictus pilosus* (Stubbs et al. 1992). *Bombus griseocollis*, *Bombus impatiens*, *Megachile rugifrons*, *Augochlorella aurata*, and *Augochloropsis metallica fulgida* have been reported on *Hypericum adpressum* (Hilty 2020).

It is not clear whether or not *Hypericum adpressum* is self-compatible. Mártonfi and Mártonfiová (2011) observed that self-compatibility is widespread but not universal in the genus. *Hypericum brasiliense* develops best when self-fertilized (de Moraes 2007), *H. revolutum* was described as partially self-compatible (Anýž 2021) and *H. edisonianum* appears to be self-incompatible (Abrahamson and Vander Kloet 2014). Carta et al. (2016) found that *Hypericum elodes* was self-compatible but its fruit set and seed set were enhanced by cross-fertilization.

Seed Dispersal

Most species of *Hypericum* produce numerous seeds (Gleason and Cronquist 1991, Nürk 2011). The seeds of *H. adpressum* are very small (0.6–0.7 mm) and slightly keeled (Robson 2020). They may be dispersed slowly over time—Harper (1918) observed that the capsules are held on stiff stems that remain standing throughout the winter. If seeds are released as the stems move in the wind they are likely to remain close to the source plants. Long-distance dispersal of *Hypericum* seeds can be facilitated by animals, particularly ducks (Fassett 1957). Adams (1973) suggested that disjunct western populations of *H. adpressum* had originated from bird-transported seed, and Enser et al. (2020) noted that the species was presumed to be dispersed by waterfowl.

Hypericum adpressum seeds can persist in a seed bank. Les (2017) indicated that the seeds remain dormant through prolonged periods of high water, which suggests that drawdown may create favorable conditions for germination. However, germination and establishment do not appear to have been studied in the species. It is also uncertain whether *H. adpressum* forms fungal associations, as reports of mycorrhizae in the genus are inconsistent (Wang and Qiu 2006).

Habitat

Hypericum adpressum can grow at elevations of 0–1000 meters above sea level (Robson 2020), and its typical habitat is open and wet or moist. Adams (1962) described the distribution pattern of *H. adpressum* as "peculiar", noting that the majority of occurrences were situated on the Atlantic Coastal Plain with a few disjunct populations in midwestern states. Eastern coastal plain habitats cited for the species include bogs, marshes, ephemeral pools, boggy depressions,

wet meadows, pond margins, shorelines, wet ditches, a seasonally wet roadbed, and a wet swale in a utility right-of-way (Adams 1962, Coddington and Field 1978, Hough 1983, Sorrie 1987, Beldon et al. 2004, Les 2017, Robson 2020, Weakley et al. 2022). An early report of *H. adpressum* at a site in New York described the habitat as "a bit of prairie similar in aspect to parts of the Great Plains, and appearing quite out of place on the Atlantic seaboard" (Harper 1918). Southeastern populations may be associated with pine savannas or flatwoods (Walker 1993, Beldon et al. 2004). In New Jersey *Hypericum adpressum* is usually found in coastal plain intermittent ponds (Johnson and Walz 2013). Many of the sites are in natural depressions but some are anthropogenic in origin, including an abandoned sand pit, an artificially enlarged pasture pond, and a spot adjacent to a railroad bank (NJNHP 2022).

Hypericum adpressum can establish on substrates of sand, peat, or gravel (Les 2017). Both depression and shoreline occurrences are likely to experience some seasonal fluctuation in water levels. Pond edge populations are usually found in the area between the high and low water lines, whereas the intermittent ponds typically fill and dry annually (Johnson and Walz 2013, Gawler 2014, Enser et al. 2020). Both morphological forms of *H. adpressum* may be found growing in different microsites at the same location (Robinson 1902, Witsell 2007). The plant communities associated with coastal plain ponds often develop in bands or zones in response to hydrologic patterns (Gawler et al. 2014). Zaremba and Lamont (1993) described two zones occupied by *H. adpressum*: The 'outermost pond bottom' was usually covered with shallow water but became exposed during droughts, while the 'upper open fringe' of the pond was exposed in most years but remained inundated during years with particularly high rainfall.

Similar habitat conditions have been reported for western occurrences of *Hypericum adpressum*. Tennessee populations are found along the edges of ponds or lakes (TNNHP 2021) and Arkansas plants grow in depression wetlands in a river floodplain (Palmer 1926, Witsell 2007). In Illinois, *H. adpressum* is mainly restricted to a moist sand prairie that supports a rare coastal plain community (Phillippe et al. 2011, ILDNR 2022), although one population was found in a flatwoods habitat (Edgin and Mankowski 2013). Several other areas in the Great Lakes region are known to harbor disjunct coastal plain flora, including one that spans the border of southwestern Michigan and northern Indiana (Reznicek 1994). *Hypericum adpressum* occurs there, growing in wet, sandy depressions known as Coastal Plain Marsh (Homoya et al. 1995, Slaughter et al. 2007). The community is globally imperiled (G2) and dominated by graminoid species (Kost et al. 2007). Like the eastern coastal plain communities, Coastal Plain Marshes can experience significant variations in water level both within and between seasons, and *H. adpressum* sometimes remains dormant during extended periods of inundation or drought (Penskar and Walters 2016).

Wetland Indicator Status

Hypericum adpressum is an obligate wetland species, meaning that it almost always occurs in wetlands (U. S. Army Corps of Engineers 2020).

USDA Plants Code (USDA, NRCS 2023b)

HYAD

Coefficient of Conservatism (Walz et al. 2018)

CoC = 8. Criteria for a value of 6 to 8: Native with a narrow range of ecological tolerances and typically associated with a stable community (Faber-Langendoen 2018).

Distribution and Range

The global range of *Hypericum adpressum* is restricted to the eastern United States (POWO 2023). The map in Figure 1 depicts the extent of the species in North America. Crow and Storks (1980) reported that *H. adpressum* reached the northern limit of its range in New Hampshire but Enser (2000) indicated that reports of the species from New Hampshire and Vermont had not been substantiated.

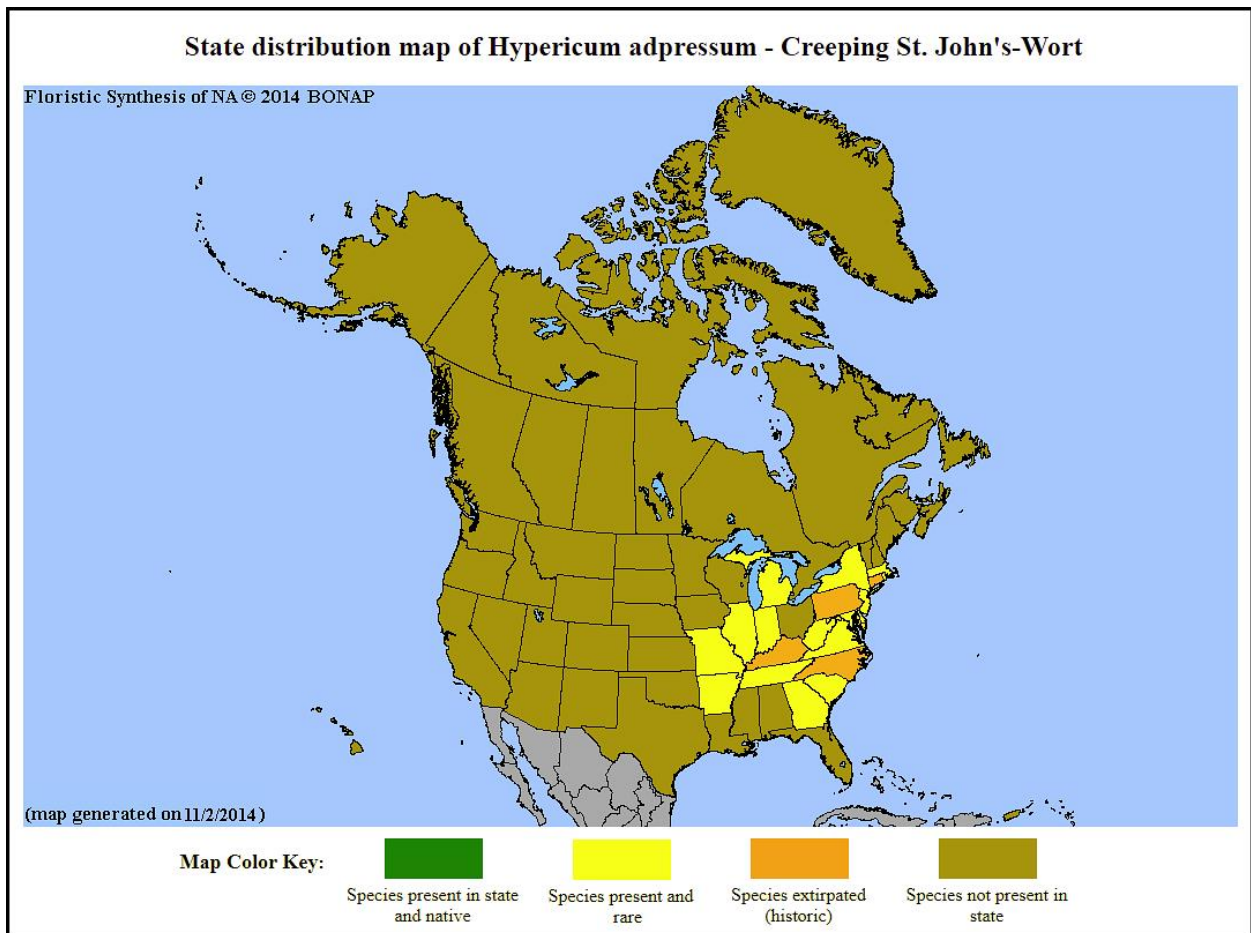


Figure 1. Distribution of *H. adpressum* in North America, adapted from BONAP (Kartesz 2015).

The USDA PLANTS Database (2023b) shows records of *Hypericum adpressum* in eight New Jersey counties: Atlantic, Bergen, Burlington, Cape May, Cumberland, Gloucester, Monmouth, and Salem (Figure 2). Records of *H. adpressum* have also been reported for Camden and Union counties (Keller and Brown 1905, Mid-Atlantic Herbaria 2023). The data include historic observations and do not reflect the current distribution of the species.

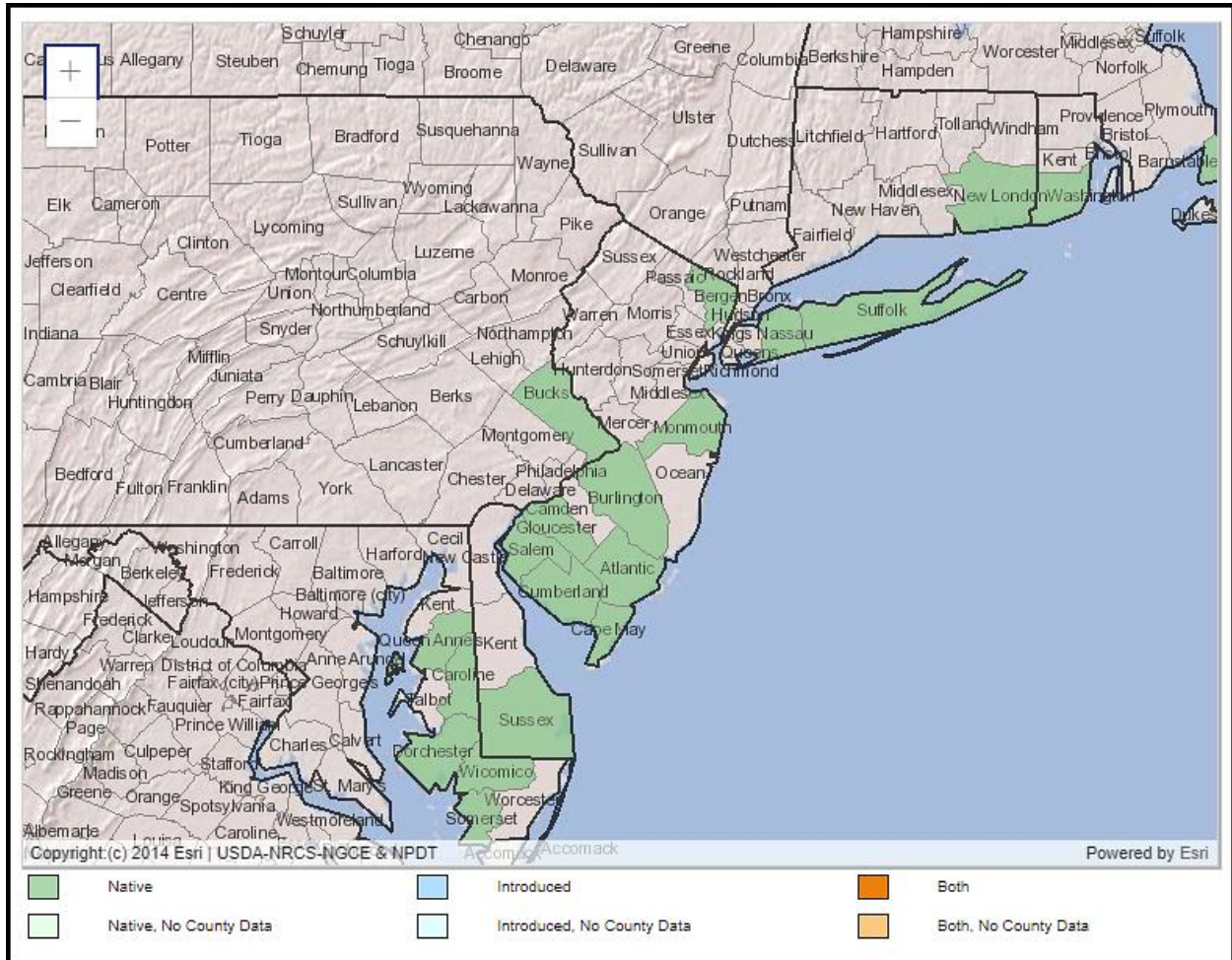


Figure 2. County records of *H. adpressum* in New Jersey and vicinity (USDA NRCS 2023b).

Conservation Status

Hypericum adpressum is globally vulnerable. The G3 rank means the species has a moderate risk of extinction or collapse due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe 2023). The map below (Figure 3) illustrates the conservation status of *H. adpressum* throughout its range. Barton's St. John's-wort does not appear to be secure anywhere, although the species is unranked in Kentucky. *H. adpressum* is imperiled (high risk of extinction) in five states, critically imperiled (very high risk of extinction) in ten states, possibly extirpated in three states, and likely extirpated in Pennsylvania.

In North America, *Hypericum adpressum* has also been identified as a plant species of highest conservation priority for the North Atlantic region, which includes four Canadian provinces and twelve U. S. states. The species has a regional rank of R2 (imperiled), signifying a high risk of regional extinction (Frances 2017). *H. adpressum* has not been listed at the national level (USFWS 2023). At the time of the last review the status of the species was reported as stable and it was placed in Category 2, indicating that listing might be appropriate but insufficient data were available to make a determination (USFWS 1993).

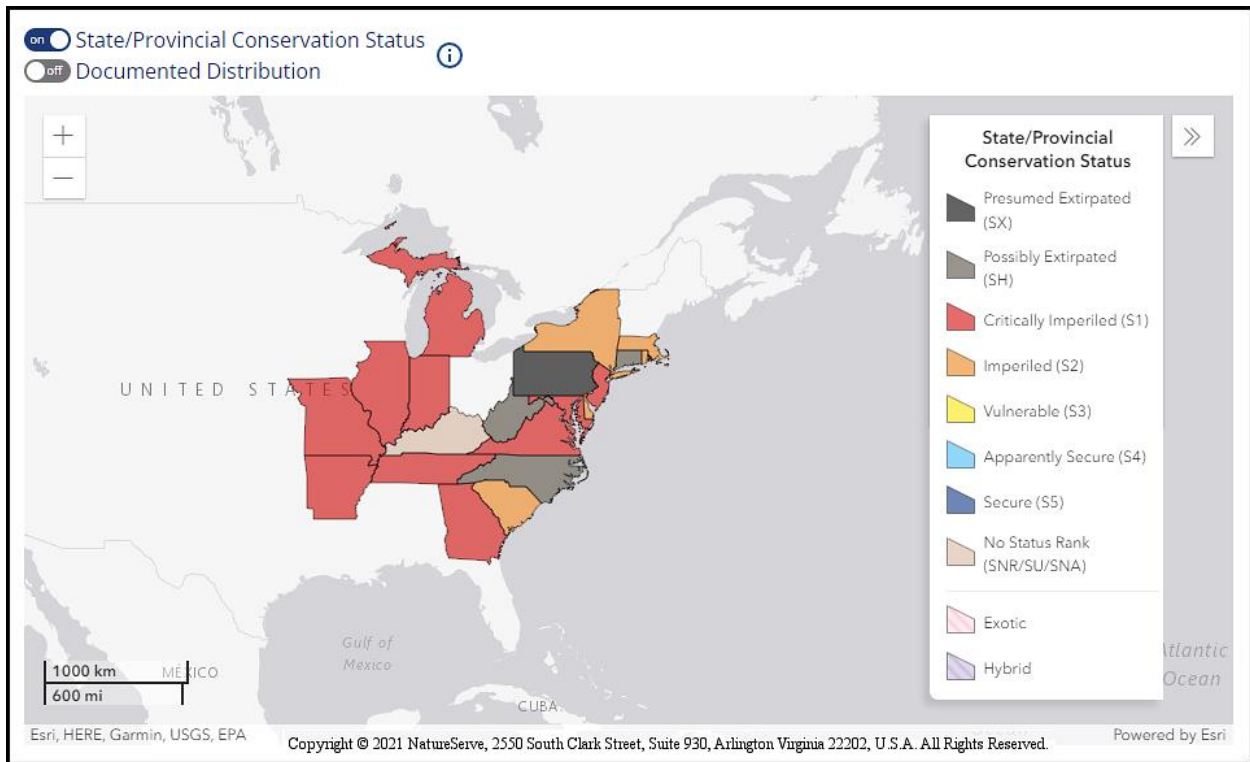


Figure 3. Conservation status of *H. adpressum* in North America (NatureServe 2023).

Hypericum adpressum is critically imperiled (S1) in New Jersey (NJNHP 2022). 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. *H. adpressum* is also listed as an endangered species (E) in New Jersey, meaning that without intervention it has a high likelihood of extinction in the state. Although the presence of endangered flora may restrict development in certain communities such as wetlands or coastal habitats, being listed does not currently provide broad statewide protection for the plants. Additional regional status codes assigned to Barton's St. John's-wort signify that the species is eligible for protection under the jurisdictions of the Highlands Preservation Area (HL) and the New Jersey Pinelands (LP) (NJNHP 2010).

The earliest New Jersey records of *Hypericum adpressum* were from Monmouth County (Willis 1874) and from Bergen County where it was considered rare (Britton 1889). Harshberger (1902) reported it in Cape May County. *H. adpressum* continued to be found at more locations throughout the state, primarily in the southern counties, although it was absent from the Pine Barrens (Keller and Brown 1905, Stone 1911, Taylor 1915). Hough (1983) cited current

observations from the state's four southernmost counties and noted that all of the records from farther north (Atlantic, Bergen, Burlington and Monmouth) pre-dated 1930. Breden et al. (2006) showed six extant populations in three counties. *H. adpressum* was originally listed as S2 (imperiled) but its status was upgraded to S1 within the past decade (NJNHP 2016, 2022). Nine of the 21 verified occurrences currently tracked in the Natural Heritage Database are likely extirpated, seven are listed as historical, and five are thought to be extant (NJNHP 2022).

Threats

The distinctive characteristics of coastal plain ponds allow them to support unique floral communities of rare plants like *Hypericum adpressum* that can thrive in the constantly changing environments but are rarely found in other habitats (McAvoy and Bowman 2002, Tiner 2003, Ballantine 2012). However, plant community composition can vary considerably from one coastal plain pond to the next. Harshberger (1925) observed that "the margin of one pond will have an association of *Hypericum adpressum* and another a thicket of button bush" and Sorrie (1987) noted that *H. adpressum* was inexplicably absent from many seemingly suitable sites. As coastal plain ponds are generally small and isolated, species like *H. adpressum* probably have a limited ability to disperse to new locations.

Numerous coastal plain ponds have been destroyed by anthropogenic activities. They have historically been replaced with golf courses, polo fields, and residential properties; destroyed by timbering and mining operations; and drained or flooded for various types of agriculture (Harper 1918, McAvoy and Bowman 2002, Johnson and Walz 2013). Even today, the small and isolated ponds do not have the legal safeguards available to larger wetlands (Kirkman et al. 1999) and threats from development persist (Tiner 2003, Ballantine 2012, Enser et al 2020). Ponds that are situated on protected property can be altered or degraded by offsite activities that change local hydrologic patterns or introduce pollutants in runoff from adjacent properties. The suppression of natural fire regimes that normally keep succession in check can also eliminate the fragile communities. *Hypericum adpressum* habitats that occur in utility right-of-ways can be subject to threats from maintenance practices (eg. mowing, herbicides) and some sites have been destroyed by off-road vehicles and dumping (Sorrie 1987, Tiner 2003, Belden et al. 2004, Johnson and Walz 2013, Edgin and Mankowski 2013). New Jersey's populations of Barton's St. John's-wort have experienced an assortment of threats: One population was recently destroyed when the pond was illegally filled with dirt and trash, one occurrence is currently threatened by natural succession, one site may be impacted by agricultural activities on adjacent land, and at one location the plants were mowed during late summer before they had completed their reproductive cycle (NJNHP 2022).

Farnsworth (2004) examined the impacts of invasive flora on rare plant species in New England and did not report any particular threat to *Hypericum adpressum* populations. However, there is some potential for the species to be affected by non-native fauna that were recently introduced to control an invasive plant. Winston et al. (2012) reported that five insects (three beetles, one fly, and one moth) had been approved for release in the United States as biological control agents for *Hypericum perforatum*. Three of the insects are leaf or flower defoliators, one is a leaf galler, and one is a stem and root miner. Although potential agents are carefully screened for host-

specificity in order to avoid non-target impacts, there have already been a few documented cases of crossover to a native plant (*Hypericum coccinium*).

Threats to New Jersey's populations of *Hypericum adpressum* are likely to be exacerbated by climate change. In addition to rising temperatures, shifting precipitation patterns in New Jersey are resulting in more extreme episodes of both heavy rainfall and drought (Hill et al. 2020). An evaluation by Ring et al. (2013) concluded that *H. adpressum* is moderately vulnerable to climate change, meaning that its abundance and/or range extent in the state is likely to decrease by 2050. The intermittently ponded sites favored by Barton's St. John's-wort are inherently susceptible to hydrologic changes, and there is some evidence that southeastern populations of *H. adpressum* are beginning to decline as their habitats are increasingly affected by droughts (Enser et al. 2020). When local conditions become unfavorable for extant populations of *H. adpressum* the species has a limited capacity to reach and colonize new sites that are well-suited to its needs.

Management Summary and Recommendations

Hypericum adpressum is globally rare and critically imperiled in New Jersey, where three-quarters of the documented populations have been lost. Because the threats facing occurrences in the state are so varied, individual management planning is recommended for the remaining populations. More frequent monitoring of extant occurrences would be advisable: Some populations have been observed in recent years but others have not been viewed for decades. Updated site visits can be used to assess population status, evaluate current threats, and prioritize management activities. The likelihood of rediscovering historical occurrences is low because most of the sites for which there is sufficient information regarding location have already been searched (NJNHP 2022).

Throughout the range of the species, conservation planning is needed to protect its rare and fragile habitats. Effective management may require land acquisition, an understanding of impacts from adjacent properties or elsewhere in the watersheds, active interventions to slow down woody succession, or limitation of human activities that directly damage plants. Recent conservation efforts in Illinois have included reestablishment of natural hydrology at sites that had been drained for agriculture, removal of exotic species, and prescribed burning (ILDNR 2022).

Additional research on *Hypericum adpressum* could provide valuable information that would aid in the preservation of the species. A detailed understanding of its germination and establishment requirements would be useful. It would be advantageous to know whether *H. adpressum* is self-compatible because clonal plants often receive closely related pollen as a result of their proximity, and understanding genetic variability can also help to predict resilience. Fire appears to be an effective tool for managing succession in coastal plain ponds but more detailed information is needed regarding the burn intensity and timing that will produce the best results for Barton's St. John's-wort.

Synonyms

The accepted botanical name of the species is *Hypericum adpressum* W. P. C. Barton. Orthographic variants, synonyms, and common names are listed below (ITIS 2021, POWO 2023, USDA NRCS 2023b).

Botanical Synonyms

Brathydium fastigiatum (Elliott) K. Koch
Hypericum adpressum var. *fastigiatum* (Elliott) Torr. & A. Gray
Hypericum adpressum f. *spongiosum* (B. L. Rob.) Fernald
Hypericum adpressum var. *spongiosum* B. L. Rob.
Hypericum fastigiatum Elliott
Myriandra adpressa (W. P. C. Barton) K. Koch
Sarothra fastigiata (Elliott) Raf.

Common Names

Barton's St. John's-wort
Creeping St. Johnswort
Shore St. John's-wort

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