New England Plant Conservation Program
Conservation and Research Plan

Hypericum adpressum Barton
Creeping St. John's-wort

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SUMMARY

Creeping St. John's-wort, *Hypericum adpressum* Barton (Clusiaceae) is a rare plant species that is currently distributed throughout the eastern United States in less than 50 discrete populations. Approximately 27% of these populations occur in southeastern New England, in Massachusetts and Rhode Island, the northern edge of the plant's distribution.

Hypericum adpressum is a wetland species that generally occurs along the shores and in shallow water zones of freshwater ponds. Two relatively distinct forms of the plant have been identified. The first is a robust form that can dominate permanent emergent plant communities of the littoral zones of ponds that maintain relatively stable water levels. The second is a more diminutive form associated with relatively ephemeral plant communities that develop on pond shores that are exposed intermittently depending on annual, highly-fluctuating water levels. As such, the conservation of individual populations of *H. adpressum* is dependent on the specific site conditions (stable *versus* annually fluctuating water levels).

Pond shore habitats, and the plant communities they sustain, have been identified as particular conservation concerns in the Northeast because of the significant number of rare plant species they support. These communities have historically suffered from the degrading impacts of residential development and recreational use, and losses inflicted on some plant species have been well-documented. For example, of the 26 documented occurrences of *H. adpressum* in New England, approximately 12 (46%) are no longer extant. The last recorded occurrence in Connecticut was 1914.

Despite an apparent historical decline in populations, *H. adpressum* appears to be secure in New England, based on several factors. First, at least seven extant populations are owned and managed by state and local conservation organizations, and some of these are considered to be the most exemplary populations within the range of the species. For example, the population in Richmond, Rhode Island has been acquired by the state of Rhode Island Department of Environmental Management, as part of the Carolina Management Area. A NEPCoP survey of this population in 1993 estimated 10,000 individual plants of *H. adpressum*. Secondly, *H. adpressum* typically occurs in a community (the coastal plain pond shore) that is occupied by a significant number of other rare plant species that are also targets of conservation work in New England. Based on the level of protection that has already occurred, *H. adpressum* may to be secure in New England; however, several opportunities to acquire and protect additional populations may still exist in Massachusetts, on Nantucket Island.

Conservation action is principally needed at the one mainland Massachusetts population. Several impacts have been identified at this site, including recreational use of a nearby public beach, and road run-off that may be exacerbating the invasive growth of *Phragmites australis.* Management is currently being undertaken at this site to control the spread of *Phragmites*, but other issues need to be addressed concerning recreational impacts.

PREFACE

This document is an excerpt of a New England Plant Conservation Program (NEPCoP) Conservation and Research Plan. Full plans with complete and sensitive information are made available to conservation organizations, government agencies and individuals with responsibility for rare plant conservation. This excerpt contains general information on the species biology, ecology, and distribution of rare plant species in New England.

NEPCoP is a voluntary association of private organizations and government agencies in each of the six states of New England, interested in working together to protect from extirpation, and promote the recovery of the endangered flora of the region.

In 1996, NEPCoP published *Flora Conservanda*: New England, which listed the plants in need of conservation in the region. NEPCoP regional plant Conservation Plans recommend actions that should lead to the conservation of Flora Conservanda species. These recommendations derive from a voluntary collaboration of planning partners, and their implementation is contingent on the commitment of federal, state, local, and private conservation organizations.

NEPCoP Conservation Plans do not necessarily represent the official position or approval of all state task forces or NEPCoP member organizations; they do, however, represent a consensus of NEPCoP's Regional Advisory Council. NEPCoP Conservation Plans are subject to modification as dictated by new findings, changes in species status, and the accomplishment of conservation actions.

Completion of the NEPCoP Conservation and Research Plans was made possible by generous funding from an anonymous source, and data were provided by state Natural Heritage Programs. NEPCoP gratefully acknowledges the permission and cooperation of many private and public landowners who granted access to their land for plant monitoring and data collection. If you require additional information on the distribution of this rare plant species in your town, please contact your state's Natural Heritage Program.

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I. BACKGROUND

INTRODUCTION

Creeping St. John's-wort (*Hypericum adpressum* Barton) is a rare plant that has been specifically identified in *Flora Conservanda*: New England (Brumback and Mehrhoff *et al.* 1996) as a Division 1 species. This designation indicates that *H. adpressum* is considered to be a globally rare species as defined in the ranking system employed by The Nature Conservancy to identify species of particular conservation concern. Within this system, *H. adpressum* ranked as a G2G3 taxon, namely, a species probably rare or uncommon globally (with less than 100 occurrences), and imperiled or potentially subject to extinction in the wild. In addition, this species has been considered for designation as a Federally listed species under the provisions of the U. S. Endangered Species Act.

Approximately 27% of the total current populations of *H. adpressum* are found in New England (including some of the more vigorous within the species' range). As such, it is imperative for the New England Plant Conservation Program (NEPCoP) to identify conservation and management objectives to protect this species. The Conservation and Research Plan presented in this document provides an initial assessment of New England populations and the level of effort necessary to sustain them. This review provides information of value for conservation of the species beyond the borders of this region.

DESCRIPTION

Hypericum adpressum is generally described as a rhizomatous herb 3-8 dm in height (up to 1 m in form *spongiosum*; see below). It has linear-lanceolate to oblong ascending leaves, 3-6 cm long by 5-10 mm wide, tapering to the base. The leaves are arranged in whorls of 2 or 3, which support smaller leaves in axillary fascicles. The inflorescence is a multi-flowered cyme that is leafy toward the base (Fernald 1950), with minute and subulate bracts (Gleason and Cronquist 1991). The fruit is an ovoid capsule 3-6 mm in length, 2-2.5 mm broad, gradually narrowing towards the beak, unilocular or partially 3-locular with intruded placentas (Gleason and Cronquist 1991). Plants bloom from late July to early September.

In New England, *H. adpressum* is most likely to be confused with *Hypericum ellipticum* (Pale St. John's-wort). For example, Sorrie (1987) reported that two collections at the New England Botanical Club Herbarium -- from Worcester County and Plymouth County, Massachusetts -- are misidentified, with both referable to *H. ellipticum*. Based on information in regional treatments, including Fernald (1950), Gleason and Cronquist (1991), and Adams (1973), the principle characteristics for distinguishing between these two species are outlined in

Table 1.

Table 1. Distinguishing characteristics of *Hypericum adpressum* and *Hypericum ellipticum*.		
CHARACTER	***Hypericum adpressum***	***Hypericum ellipticum***
Plant height	3 dm to 1 m	2-5 dm
Leaf surface	revolute	planar
Leaf shape	oval: 4-6 times as long as wide	elliptic: 2-3 times as long as wide
Length of largest leaves	3.5-7.5 cm	1.5-3.5 cm

Form *spongiosum*

Some populations of *Hypericum adpressum* are characterized by robust plants with spongy stems and thickened bases. These plants were originally recognized by Robinson (1902) as variety *spongiosum*, based on specimens collected in Bourne, Massachusetts. Although Robinson found no differences in floral organs, fruit, or seeds from typical *H. adpressum* plants, he considered the two forms to be ecological varieties, each responding to different environmental conditions. However, Fernald (1949) subsequently downgraded the varietal name *spongiosum* to the level of a form.

Form *spongiosum* is typified by a heavily spongy lower half or third of the stem (2.5-4 or more decimeters high), with the total height of the flowering stem attaining heights of up to 1 m, and the leaves being exceptionally broad and flat. According to Fernald, these characteristics were considered 'strikingly unlike' the more slender and narrow-leaved form of *H. adpressum*, the difference attributed to deeper immersion in water. MacKeever (1968) concurred with this taxonomic decision, citing evidence from ponds on Nantucket Island, Massachusetts, that where both forms were present in the same population, the form *spongiosum* was characteristic of plants that remained partially submerged.

In Rhode Island, two populations of the spongiose form exemplify the most vigorous growth of *H. adpressum* in New England, and probably throughout its range. It is important to consider, as described later in this report, that the ecological conditions characterizing the ponds that support populations of the spongiose form appear significantly different from those habitats supporting the typical form. These habitat variables dictate the subsistence and health of *H. adpressum* populations, and consequently govern the level of conservation and management activity needed to sustain particular populations.

In general, typical *H. adpressum* appears like an annual plant, with population numbers fluctuating from year to year based on the depth of water and consequent degree of pond shore exposure at particular sites. In contrast, the spongiose form of *H. adpressum* occurs as one

component of relatively persistent emergent plant communities that develop in the littoral zone of ponds that do not undergo significant annual water level fluctuations. In the first situation (typical *H. adpressum*), populations are dependent on unpredictable and highly fluctuating water levels that result in ephemeral shoreline exposure. In the second case (form *spongiosum*), populations persist and remain relatively unchanged over the course of many years. Thus, conservation strategies must be adapted to the particular ecology of the subject habitat.

TAXONOMIC RELATIONSHIPS, HISTORY, AND SYNONYMY

Hypericum adpressum Barton (Creeping St. John's-wort) is a member of the Family Clusiaceae (formerly Guttiferae, as used by Fernald [1950]), the St. John's-wort Family. In New England, the Family Clusiaceae is represented by two genera, *Hypericum* and *Triadenum*. Fernald (1950) previously ascribed the one New England species of *Triadenum (virginicum)* to the genus *Hypericum*. However, Gleason and Cronquist (1991) separate the genera, as formerly described in the second edition of Britton and Brown (1913). According to Gleason and Cronquist (1991), a total of ten native species of *Hypericum* inhabit New England, along with one additional naturalized species, *Hypericum perforatum*, which is an abundant weed along roadsides and in waste areas.

HABITAT/ECOLOGY

Hypericum adpressum is an aquatic/semi-aquatic species that is typically found growing in damp sands, gravels, and peats on the exposed shores and inundated margins of freshwater ponds in New England. Atypical habitats reported in Massachusetts include a sandy-peaty seasonally-wet roadbed and the margin of a cranberry bog (Sorrie 1987). In Connecticut, a specimen collected in 1904 was identified from a "boggy meadow." South of New England, the typical habitat definition is mirrored by such descriptions as: 'coastal plain vernal ponds' in New Jersey (Olson 1992); 'seasonally ponded upland depressions' in Georgia (T. Patrick, Georgia Natural Heritage Program, *personal communication*), and 'groundwater-driven depressional wetlands' in the mid-Atlantic states (The Nature Conservancy and Association for Biodiversity Information 1999).

Throughout its range, *H. adpressum* is associated generally with small ponds and shores of larger bodies of water with highly fluctuating water levels. Population vigor in a given year may be extremely variable depending on depth of water during the growing season. For example, element occurrence records maintained by the Massachusetts Natural Heritage Program for a population on Nantucket Island indicates that 1000+ plants were present in 1990, but less than 300 in 1980. Annual fluctuation in water levels, and consequent high variability in plant numbers are features usually ascribed to the 'coastal pain pond shore community' that typifies many kettle hole ponds and other depressions in southeastern

Massachusetts and southern Rhode Island. In these communities, where *H. adpressum* is present, associated species include: *Sagittaria teres, Cyperus dentatus, Gratiola aurea, Rhynchospora capitellata, Eriocaulon septangulare, Rhexia virginica, Scleria reticularis,* and *Coreopsis rosea.* Many plants of this community remain vegetative or dormant in years of high water, reproducing from the seed bank and flourishing in years of low water. In these ephemeral habitats, *H. adpressum* tends toward its typical form: slender plants rarely more than 30 cm tall and without the spongy, thickened base of the stem.

The spongiose form of *H. adpressum* occupies the shores and shallow coves of ponds that do not typically exhibit highly fluctuating water levels. In such cases, *H. adpressum* occurs as a dominant member of a relatively permanent emergent plant community that develops in the littoral zone where water depths range up to 0.5 m (Silvestre 1968). Associated species in these situations include *Hydrocotyle umbellata, Juncus militaris, Cladium mariscoides,* and *Lobelia dortmanna.* As previously described, in these habitats, *H. adpressum* attains a more robust appearance of up to 1 m in height and possesses the thickened, spongy stem.

THREATS TO TAXON

Hypericum adpressum has declined in New England since the early 1900's. As stated above, 14 populations (of 26 documented) have apparently disappeared. Although this figure represents slightly more than a 50% decline, most of these populations disappeared early in the 20th century. Since 1980, when botanical surveys were implemented through the work of state Natural Heritage Programs, there has been only one documented loss of an *H. adpressum* population. This population was located in an atypical habitat of a sandy-peaty border of a cranberry bog, and was destroyed when the bog was rebuilt.

The coastal plain pond shore community has been subject generally to a number of impacts in New England, including recreational use (foot and vehicular traffic), nutrient influx from surrounding residential developments, roadside mowing, and invasive plant competition. However, most of the *H. adpressum* populations documented in this report occur on sites that have not been heavily impacted by these factors, the one exception being a pond in Bourne, Massachusetts, which is described in below.

DISTRIBUTION AND STATUS

General status

Hypericum adpressum is a species of eastern United States, distributed primarily along the Atlantic coastal pain from southeastern Massachusetts to Georgia, with a disjunct Midwestern complex of populations in Illinois, Indiana, Kentucky, and Tennessee (see Figure 1). It has been suggested that inland populations are the result of dispersal by water birds

(Adams 1973). However, it is also possible that Midwestern populations resulted from post-glacial dispersal within the embayed section of the Mississippi coastal plain, as exemplified by other species such as *Eleocharis equisitoides, Rhynchospora macrostachya*, and *Hemicarpha micrantha.*

Based on information collected by The Nature Conservancy and Association for Biodiversity Information, approximately 44 populations of *H. adpressum* are currently extant in the United States (see Figure 1 and Table 2). This distribution is primarily centered in the northeastern corner of the species' range in the six-state area from Massachusetts to Maryland, with 27% (12) of the populations located in southern New England.

In New England, a total of 26 occurrences (12 extant and 14 historic) of *H. adpressum* have been verified by the Natural Heritage Programs in Massachusetts, Rhode Island, and Connecticut (see Table 3 and Figures 2 and 3). According to The Nature Conservancy, there are also unverified records from Vermont and New Hampshire. However, these remain unsubstantiated, and are unlikely given the species' recorded distribution. Without specimen evidence, it is impossible to accept such reports. For example, Sorrie (1987) reviewed putative specimens of *H. adpressum* from Worcester and Plymouth Counties in Massachusetts and determined that they were not this species, but referable instead to *Hypericum ellipticum.*

Table 2. Occurrence and status of *Hypericum adpressum* in the United States and Canada based on information from Natural Heritage Programs.

OCCURS & LISTED (AS S1, S2, OR T &E)	HISTORIC (LIKELY EXTIRPATED)
Massachusetts (S2): 8 current and 5 historic occurrences	Connecticut (SH): 1 historic occurrence
Rhode Island (S2): 4 current and 6 historic	Pennsylvania (SH): 3 historic
New York (S2): 8 current and 20 historic	North Carolina (SH): 5 historic
New Jersey (S1): 5 current and 17 historic	Kentucky (SH): 1 historic
Delaware (S2): 6 current and unknown number of historic	Missouri (SH): 1 historic
Maryland (S1): 3 current and 2 historic	
Virginia (S1): 1 current and 1 historic	
South Carolina (S1): 2+ current and unknown number of historic	
Georgia (S2?): 1 current and 3 historic	
Tennessee (S1): 1 current	
Indiana (S1) 4 current and 3 historic	
Illinois (S1): 1+ current and unknown number of historic	

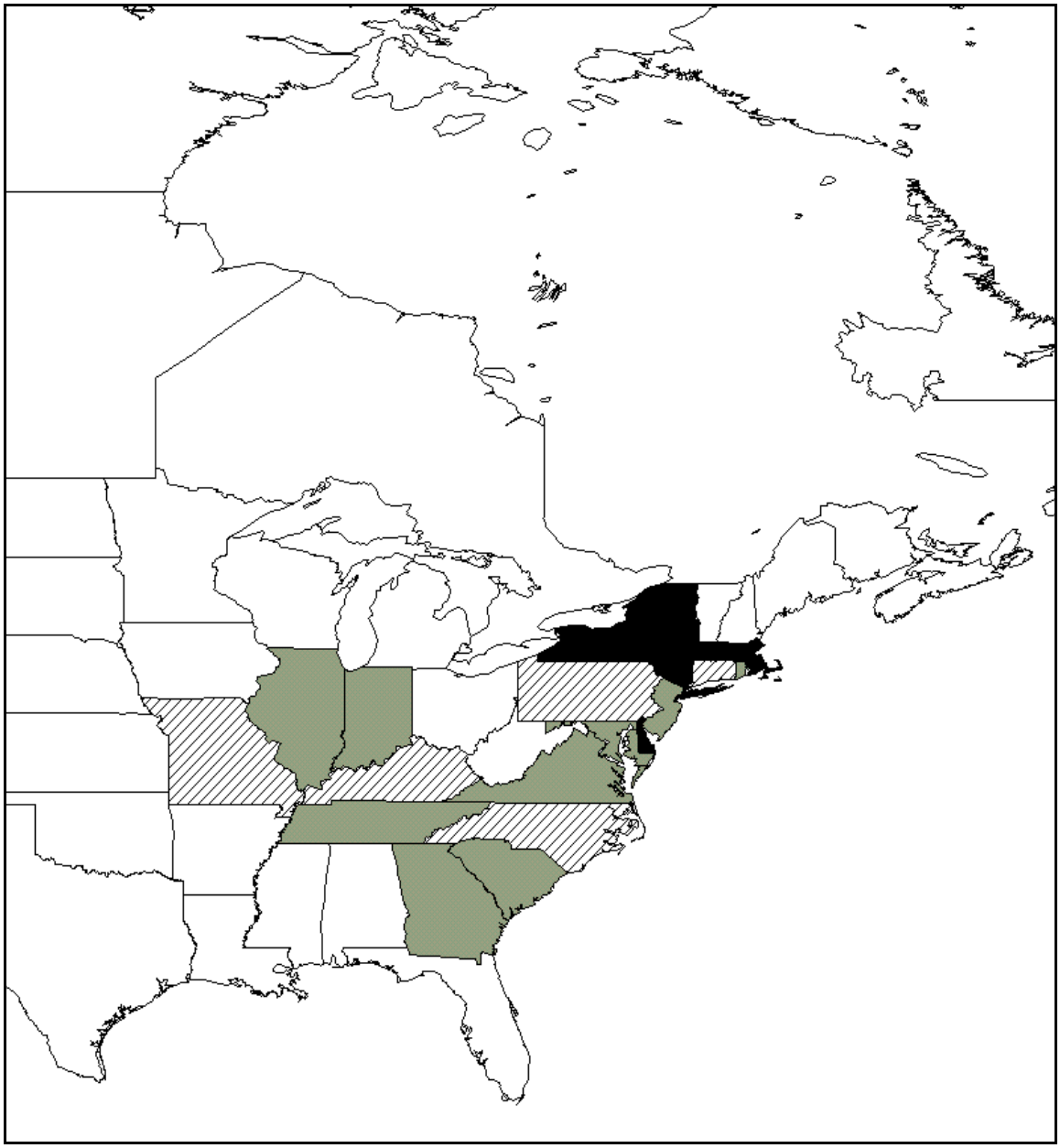

Figure 1. Occurrences of *Hypericum adpressum* in North America. Shaded states and provinces have 1-5 extant occurrences, while those shaded in black have more than 5 occurrences. States and provinces with diagonal hatching are designated "historic" or "presumed extirpated" (see Table 2), where *Hypericum adpressum* no longer occurs.

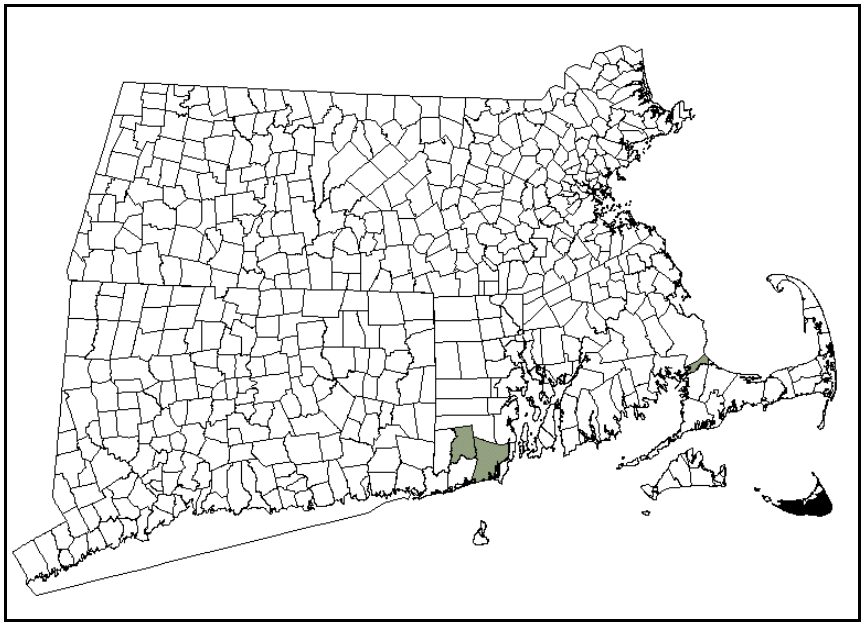

Figure 2. Extant occurrences of *Hypericum adpressum* in New England. Town boundaries for Rhode Island, Connecticut, and eastern Massachusetts (the only New England states with occurrences) are shown. Shaded towns have 1-5 extant occurrences. Towns shaded in black have more than 5 occurrences.

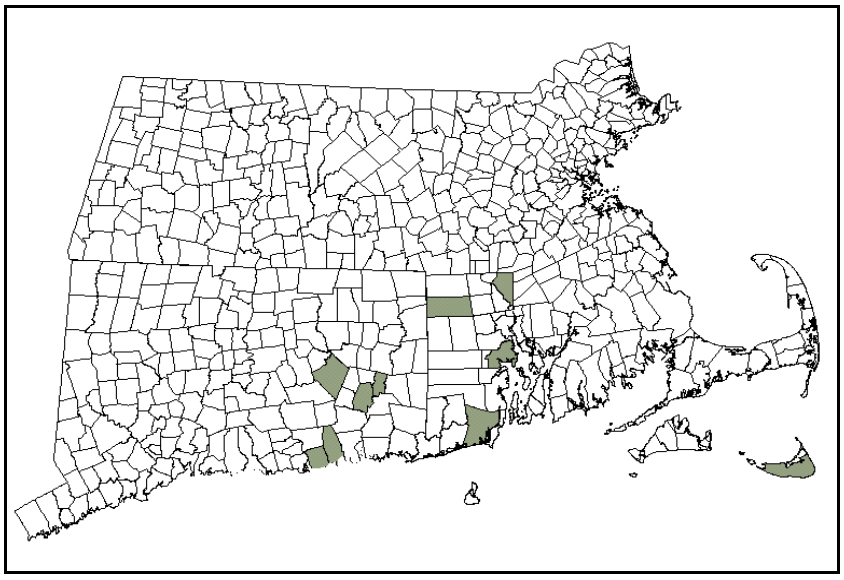

Figure 3. Historic occurrences of *Hypericum adpressum* in New England. Town boundaries for Rhode Island, Connecticut, and eastern Massachusetts (the only New England states with occurrences) are shown. Shaded towns have 1-5 historic occurrences.

Table 3. New England Occurrence Records for *Hypericum adpressum* based on data from State Natural Heritage Programs. Shaded occurrences are considered extant.

State	EO #	County	Town
MA	**.001**	**Nantucket**	**Nantucket**
MA	**.002**	**Nantucket**	**Nantucket**
MA	**.003**	**Nantucket**	**Nantucket**
MA	**.004**	**Nantucket**	**Nantucket**
MA	**.005**	**Plymouth**	**Bourne**
MA	.006	Nantucket	Nantucket
MA	**.007**	**Nantucket**	**Nantucket**
MA	**.008**	**Nantucket**	**Nantucket**
MA	.009	Nantucket	Nantucket
MA	.010	Nantucket	Nantucket
MA	**.011**	**Nantucket**	**Nantucket**
MA	**.012**	**Nantucket**	**Nantucket**
MA	**.013**	**Nantucket**	**Nantucket**
RI	.001	Washington	South Kingstown
RI	**.002**	**Washington**	**South Kingstown**
RI	**.003**	**Washington**	**South Kingstown**
RI	.004	Providence	Cumberland
RI	**.005**	**Washington**	**Richmond**
RI	.006	Providence	Glocester
RI	.007	Kent	Warwick
RI	**.008**	**Washington**	**South Kingstown**
CT	.001	New London	Norwich
CT	.002	New London	Old Lyme
CT	.003	New London	Lebanon
CT	.004	New London	East Lyme
CT	.005	New London	Lisbon

II. CONSERVATION

CONSERVATION OBJECTIVES FOR TAXON IN NEW ENGLAND

In general, *Hypericum adpressum* is considered to be secure in New England. The conservation objective for this species is to maintain all populations at their current locations and at their current number of individuals. This objective can be attained at all known occurrences, except for the one mainland Massachusetts site in Bourne (see below). Currently, *H. adpressum* occurs at a total of 11 sites (7 in Massachusetts and 4 in Rhode Island), and may still be present at several additional sites in both states. To determine whether *H. adpressum* is present, surveys must be conducted during years of low water level. At least six populations are characterized by estimates of more than 1000 plants, based on surveys conducted within the last ten years; one Rhode Island population maintains over 10,000 plants. In addition, at least seven populations are currently considered to be protected by private conservation organizations (Nantucket Conservation Foundation, Massachusetts Audubon Society, and The Nature Conservancy Rhode Island Field Office) and the State of Rhode Island.

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Appendix I: An explanation of conservation ranks used by The Nature Conservancy and the Association for Biodiversity Information

The conservation rank of an element known or assumed to exist within a jurisdiction is designated by a whole number from 1 to 5, preceded by a G (Global), N (National), or S (Subnational) as appropriate. The numbers have the following meaning:

1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure.

G1, for example, indicates critical imperilment on a range-wide basis—that is, a great risk of extinction. S1 indicates critical imperilment within a particular state, province, or other subnational jurisdiction—i.e., a great risk of extirpation of the element from that subnation, regardless of its status elsewhere. Species known in an area only from historical records are ranked as either H (possibly extirpated/possibly extinct) or X (presumed extirpated/presumed extinct). Certain other codes, rank variants, and qualifiers are also allowed in order to add information about the element or indicate uncertainty.

Elements that are imperiled or vulnerable everywhere they occur will have a global rank of G1, G2, or G3 and equally high or higher national and subnational ranks. (The lower the number, the "higher" the rank, and therefore the conservation priority.) On the other hand, it is possible for an element to be rarer or more vulnerable in a given nation or subnation than it is range-wide. In that case, it might be ranked N1, N2, or N3, or S1, S2, or S3 even though its global rank is G4 or G5. The three levels of the ranking system give a more complete picture of the conservation status of a species or community than either a range-wide or local rank by itself. They also make it easier to set appropriate conservation priorities in different places and at different geographic levels. In an effort to balance global and local conservation concerns, global as well as national and subnational (provincial or state) ranks are used to select the elements that should receive priority for research and conservation in a jurisdiction.

Use of standard ranking criteria and definitions makes Natural Heritage ranks comparable across element groups—thus G1 has the same basic meaning whether applied to a salamander, a moss, or a forest community. Standardization also makes ranks comparable across jurisdictions, which in turn allows scientists to use the national and subnational ranks assigned by local data centers to determine and refine or reaffirm global ranks.

Ranking is a qualitative process: it takes into account several factors, including total number, range, and condition of element occurrences, population size, range extent and area of occupancy, short- and long-term trends in the foregoing factors, threats, environmental specificity, and fragility. These factors function as guidelines rather than arithmetic rules, and the relative weight given to the factors may differ among taxa. In some states, the taxon may receive a rank of SR (where the element is reported but has not yet been reviewed locally) or SRF (where a false, erroneous report exists and persists in the literature). A rank of S? denotes an uncertain or inexact numeric rank for the taxon at the state level.

Within states, individual occurrences of a taxon are sometimes assigned element occurrence ranks. Element occurrence (EO) ranks, which are an average of four separate evaluations of quality (size and productivity), condition, viability, and defensibility, are included in site descriptions to provide a general indication of site quality. Ranks range from: A (excellent) to D (poor); a rank of E is provided for element occurrences that are extant, but for which information is inadequate to provide a qualitative score. An EO rank of H is provided for sites for which no observations have made for more than 20 years. An X rank is utilized for sites that known to be extirpated. Not all EO's have received such ranks in all states, and ranks +are not necessarily consistent among states as yet.