

Eightmile River Watershed Outstanding Resource Value: Unique Species and Natural Communities

1/4/03 (authored by William H. Moorhead III)

Summary Report of Eightmile River Watershed Rare Plant and Community Survey - 19 Jun – 27 Oct 2003

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Introduction.

The report presents a condensed summary and interpretation of a survey of the Eightmile River watershed for rare plant and significant natural community occurrences, conducted by me from 19 June – 27 October 2003. A more detailed summary has been prepared, in the form of a digital Microsoft EXCEL spreadsheet entitled “Site Survey Summary – 8mile River Watershed 2003.xls”, which includes a summary of individual site survey results broken down into 17 parameters. These cover different classes of significant species and natural communities looked for and not found as well as those found at the site, an invasive species control urgency rank subjectively assigned to the site, together with explanatory comments, and comments on other site management concerns and issues. An explanation of the invasive control urgency ranks is appended to the Site Survey Summary EXCEL spreadsheet.

Results of the rare plant survey.

The total of new¹ locations/occurrences of State-listed rare plants documented by the survey was 27 occurrences (29, including occurrences of species to be delisted in 2004), which approximately doubles the number of extant occurrences known in the Eightmile watershed. These new occurrences include 5 State-Endangered, 1 State-Threatened, and 12 State-Special Concern plant species (using proposed new species listing statuses to go into effect in 2004). A breakdown by species is presented below in Table 1. Eleven of these species are also New England regional rare species², and several of these occurrences are of regional significance (see Comments column of table 1). The Eightmile River watershed can now be said to host:

- most of the plants still known to exist in New England of *Scutellaria integrifolia*;
- the most robust occurrences of *Aristolochia serpentaria*, perhaps also the majority of plants known in New England;
- the majority of the known CT occurrences of *Xyris smalliana*.

¹ i.e., new to the CT-DEP-Natural Diversity Data Base (CT-DEP-NDDB)

² Brumback W. E., L. J. Mehrhoff, R. W. Enser, S. C. Gawler, R. G. Popp, P. Somers, D. D. Sperduto, W. D. Countryman, and C. B. Hellquist. 1996. *Flora Conservanda: New England*. The New England Plant Conservation Program (NEPCoP) list of plants in need of conservation. *Rhodora* 98: 233-361.

In other words, the Eightmile River watershed is a New England regional stronghold for these three plants of regional conservation concern.

There are no known previous records from the study area towns for 7 of the State-listed plants documented by this survey: *Acalypha virginica*, *Arsitida longespica*, *Carex hirsutella*, *Desmodium glabellum*, *Lespedeza repens*, *Salix petiolaris*, and *Vitis novae-angliae*. Four species documented in the study area were known only historically from the 5-town area: *Asclepias purpurascens* (last documented 1917), *Scleria triglomerata* (1907), and *Carex bushii* (1926), and *Silene stellata* (1895).

As of June 2003, the Connecticut Natural Diversity Data Base (CT-DEP-NDDB) had 26 extant State-listed plant occurrences mapped in the Eightmile watershed. This survey has added to that at least 27 new locations/occurrences. **This brings the total of known extant State-listed plant occurrences in the watershed to about 54 occurrences** (including one historic occurrence of State-Special Concern *Oxalis violacea* rediscovered earlier this year by NEPCoP staff and volunteers; there may be additional discoveries by other botanists in the watershed this past year of which I am unaware). I suspect that this ratio of extant rare plant occurrences to unit area ranks the Eightmile River watershed among the highest in Connecticut³.

This survey also revisited/updated 7 of the 26 previously documented rare plant occurrences in the watershed. Seven occurrences of 7 State-listed plants, including **2 occurrences of 2 globally rare plant species**, were confirmed to still be extant in 2003. Thus this survey documented the existence of 34 out of the 54 total rare plant occurrences currently believed to be extant in the Eightmile watershed.

In my best professional judgment, it is reasonable to estimate that based on this survey's ratio of effort (a relatively modest 21 field days) to the number of new discoveries (27 rare plant occurrences), the real number of State-listed and regionally rare plant occurrences in the study area is probably at least 50% higher than the current total now known for the watershed. In considering the implications of this, it is important to realize that the majority of the occurrences discovered by this survey will likely not persist without some form of habitat management/disturbance/manipulation by man. Several of these occurrences (e.g., those of *Scleria triglomerata*, *Asclepias pupurascens*, *Lespedeza repens*, *Liparis liliifolia*, *Xyris smalliana*) may be viewed as having been discovered just in the nick to time to prevent their imminent loss. Likewise, several priority natural communities were identified which are still intact and of high quality but threatened by one or more of the following: invasives, beaver activity, deer over-browse, lack of management or less-than-optimal management, and in some cases lack of protection. The timely recognition of these community occurrences' management and protection needs makes their continued existence more likely.

³ a precise ranking of the watershed with respect to htis parameter may be available from the CT-DEP-NDDB

Table 1. Summary of State-listed plant occurrences documented by this survey in the Eightmile River watershed (19 Jun – 27 Oct 2003).

Taxon	Common Name	Number of new occurrences <small>(i.e., previously unknown to CT-DEP-NDDDB)</small>	Current CT State-listing Status (per 1998 list revision)	Proposed new CT State-listing status (to go into effect in 2004)	Comments/significance of occurrences⁴
<i>Acalypha virginica</i>	Virginia Copperleaf	1	Special Concern (historic)	Special Concern	Four other extant occurrences known in CT.
<i>Aristida longespica</i>	Needlegrass	1	Special Concern	Special Concern	
<i>Aristolochia serpentaria</i>	Virginia Snakeroot	1 ³	Threatened	Special Concern	New England regional rarity: at est. several hundred plants, this Lyme occurrence is largest known in N.E. Most other known occurrences have only a handful of individuals.
<i>Asclepias purpurascens</i>	Purple Milkweed	2	Special Concern (historic)	Special Concern	New England regional rarity. These 2 occurrences bring total known extant New England occurrences to ~8.
<i>Asplenium montanum</i>	Mountain Spleenwort	2	Threatened	Threatened	New England regional rarity. The addition of these new discoveries to the previously documented one creates a meta-occurrence associated with the “escarpment” ecological landscape unit, and there are likely additional suboccurrences, perhaps throughout the “escarpment” unit. This is therefore arguably a New England stronghold for this species.

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<i>Carex bushii</i>	Bush's sedge	4 ²	Special Concern	Special Concern	New England regional rarity and tracked as a rare species in most of the eastern U.S. ⁵ ; at several hundred plants each, two of the new Salem populations are apparently the largest known in CT. Most other known occurrences have no more than a few several tens of individuals.
<i>Carex hirsutella</i>	a sedge	2	Special Concern	Proposed to be delisted	
<i>Desmodium glabellum</i>	Dillen's Tick-trefoil	2	Special Concern (historic)	Special Concern	New England regional rarity. One of these new occurrences is large/exemplary.
<i>Hydrocotyle umbellata</i>		1	Endangered	Endangered	Robust population
<i>Lespedeza repens</i>	Creeping Bush-clover	1	Special Concern	Special Concern	New England regional rarity; only one other population known extant in CT and New England. This species is probably the rarest plant on this list, in terms of numbers of known occurrences in New England.
<i>Liparis liliifolia</i>	Lily-leaved Twayblade	1	Endangered	Endangered	New England regional rarity. This find brings total known extant CT occurrences to ~4.

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<i>Lycopus amplexans</i>	Clasping-leaved Water-horehound	2	Special Concern	Special Concern	Both are robust populations
<i>Mimulus alatus</i>	Winged Monkey-flower	1	Special Concern	Special Concern	New England regional rarity
<i>Podostemum ceratophyllum</i>	Threadfoot	1	Special Concern	Special Concern	
<i>Salix petiolaris</i>	Slender Willow	1	Special Concern (historic) ¹	Special Concern (historic) ¹	
<i>Scleria triglomerata</i>	Nutrush	1	Endangered	Endangered	One of ~3 known extant occurrences in CT
<i>Scutellaria integrifolia</i>	Hyssop Skullcap	1	Endangered	Endangered	New England regional rarity: this find makes total for New England ~3 known extant occurrences. Two of these occurrences are in the Eightmile River watershed.

Table 1. Summary of State-listed plant occurrences documented by this survey in the Eightmile River watershed (19 Jun – 27 Oct 2003).

Taxon	Common Name	Number of new occurrences (i.e., previously unknown to CT-DEP-NDDB)	Current CT State-listing Status (per 1998 list revision)	Proposed new CT State-listing status (to go into effect in 2004)	Comments/significance of occurrences⁴
<i>Silene stellata</i>	Starry campion	1	Special Concern	Special Concern	New England regional rarity. Ca. 4 other extant occurrences known in CT and New England.
<i>Vitis novae-angliae</i>	New England Grape	1	Special Concern	Special Concern	
<i>Xyris smallianana</i>	Small's Yellow-eyed Grass	1	Endangered	Endangered	New England regional rarity; Eightmile watershed hosts 3 of the ~5 known occurrences in CT
TOTAL NEW STATE-LISTED PLANT OCCURRENCES		29 (27, minus occurrences of a species proposed for delisting)			

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<p>¹ this/these tentatively identified <i>Salix petiolaris</i> discoveries in the Eightmile watershed do not represent the first recent CT records for this species, as the proposed continued “historic” status for this species implies; several other CT occurrences were reported in 2002 and 2003; it is unclear why the species is still listed as “historic”.</p> <p>² one of these occurrences was discovered and reported to me by Casper Ultee, Connecticut Botanical Society</p> <p>³ site originally found by Lepidopterists</p> <p>⁴ information presented here on species’ total numbers of occurrences in CT, New England, and U.S. is for the most part not more current than the beginning of 2003; <i>before using/quoting these statements in other documents state heritage programs and NatureServe should be consulted for the most up-to-date information</i></p> <p>⁵ NatureServe. 2003. NatureServe Explorer. An online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: Jan. 3, 2004)</p>					

Significant natural community occurrences.

Approximately 100 occurrences of natural communities in the watershed were identified as “significant” and documented by this survey (summarized in Table 2). Communities were deemed significant on the basis of rarity, uncommonness or restricted occurrence (factoring in threats, and rate and magnitude of decline over last century), high native-species-richness (often including multiple rare and uncommon plant species), and/or exemplary character and/or condition (especially with respect to relative prominence of exotic and/or invasive species). Each natural community occurrence was assigned a biodiversity significance rank on a scale of 1 (Very High) to 4 (Moderate) or 5 (Exemplary) or 6 (Arguable). The following is a breakdown of the 100 natural communities by biodiversity rank:

1. Very High	7 occurrences
2. High	11 occurrences
3. Moderate-High	10 occurrences
4. Moderate	34 occurrences
5. Exemplary	18 occurrences
6. Arguable	20 occurrences

All significant natural community occurrences were classified using Metzler and Barrett’s “Vegetation classification of Connecticut”⁴.

Among what I believe must be considered the potentially most important biodiversity features of Eightmile River watershed is the extensive meta-occurrence of so-called “warm-season” grasslands, which include, more frequently, little bluestem (*Schizachyrium scoparium*)- and/or *Carex pensylvanica*-dominated grasslands, and, less frequently, big bluestem (*Andropogon gerardii*)-dominated “prairies”. These dry to seasonally wet/dry grasslands, which require periodic anthropogenic disturbance (fire or mowing) to persist as open-canopy communities, represent among other things an important reservoir of native genotypes of grass species whose seeds of non-local origin are purchased and planted at considerable expense by land managers in efforts to create warm-season grassland habitat by around New England. There appears to be a strong correlation between the occurrence and prominence of the tall-grass prairie species (i.e., *Andropogon gerardii*, *Sorghastrum nutans*, *Tridens flavus*, etc.) and the occurrence of rare and uncommon herbaceous species, and a similar, but somewhat weaker, correlation between little bluestem (*Schizachyrium scoparium*)-dominated grasslands and the occurrence of rare and uncommon herbaceous species.

⁴ Metzler, K. J., and J. P. Barrett. 2003. Vegetation classification for Connecticut. Draft 07/11/03. State Geological and Natural History Survey of Connecticut, Department of Environmental Protection. Hartford, CT. 135 pp.

Table 2. Summary of significant natural communities documented by this survey in the Eightmile River watershed (19 June – 27 October 2003).					
Natural Community/Natural Community group/other designation	No. Occurrences	Biodiversity Significance Rank[s] (1=highest, 6 lowest)	Rationale for Assigning Significance	Rare Plant Habitat (Actual/Potential/Negligible)	
Freshwater Intertidal Flats	2	1-2	Recognized globally rare (G2) vegetation alliance	Actual (including 2 globally rare species [G2, G3]) and potential	
Freshwater Tidal Marsh	3	1-4	Uncommon/restricted to rare community (one or more may be globally rare)	Actual (including 1 globally rare species [G2]) and potential	
Dry rich cedar-dogwood forb/Carex pensylvanica savannas	1 meta-occurrence	1	Rare or uncommon community; host concentrations of rare and uncommon plants with robust populations	Actual and potential	
Floating seasonally flooded peat flat community	1 meta-occurrence	1	Rare (possibly globally rare) community; hosts multiple rare plants with robust populations	Actual and potential	
Fresh-spring-tidal wet meadow/acidic, sandy seasonally saturated meadow	1	1	Rare (possibly globally rare) community; hosts two regionally rare plants and several uncommon species	Actual	
Big bluestem prairies	3	2	Uncommon or rare community	Actual and Potential	
Sandy, acidic, seasonally saturated and/or inundated meadowmeadows	7	2-4	Rare or uncommon community, threatened without management	Potential	

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Wet meadows and scrubby seasonally wet meadows of Thick Till landscape in Salem	2	2	High native plant diversity including multiple rare and uncommon species; rarity?	Actual
Sand Barrens, dry grasslands, dry acid cedar savannas, and acid oak woodlands	34	2-6 (ave: 4)	Uncommon community, at least as large meta-occurrence, threatened without management	Actual and potential (global rarities among potentials)
Medium and Poor Fens	6	3-6	Rare or uncommon community	Actual and potential
Ice talus forest	1	3	Rare or uncommon community	Potential
Acidic cliffs	1 large meta-occurrence	3	Exemplary meta-occurrence	Actual and potential
Open and semi-open Acidic Rocky Summit/Outcrop communities	2	3-4	Rare or uncommon community	Potential
Acidic Atlantic White Cedar Basin Swamp	1	4	Uncommon/restricted community	Actual and potential

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Acidic Spring Fen	3	4	Uncommon/restricted community	Potential
Subacidic Rocky Summit/Outcrop communities	1	4	Rare or uncommon community	Potential (global rarities among potentials)
Dry Subacidic Forests	4	3-4	Rare or uncommon community	Actual and potential (global rarities among potentials)
Old-age ravine hemlock forest	1	5	Exemplary	Probably negligible
Mature swamp white oak forest swamp	1	5	Arguably exemplary (large, with many large oaks)	Potential
Vernal pool communities and related draw-down swamp forests and woodlands	9	5	Exemplary	Potential for some, negligible in others
Basin Marsh	2	5	Exemplary	Potential
Riverside Seep/Riverbank Beach/Shore Community	1 meta-occurrence	5	Exemplary	Potential
Acidic Seepage Forests and Swamps	3	5-6	Exemplary	Potential

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Assorted other common types of wet/seasonally wet meadows, fens, marshes and shrub swamps	7	5-6	Exemplary	Actual and potential
Acer-Fraxinus-Hepatica forests	2	2-4	Host rare and uncommon plants; may be uncommon or rare community	Actual and potential

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