RHODORA, Vol. 104, No. 920, pp. 422–428, 2002

NEW ENGLAND NOTE

NEW RECORDS FOR *CHENOPODIUM FOGGII* IN NEW ENGLAND

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Chenopodium foggii Wahl is a rare annual herb native to eastern North America. It currently possesses a global rank of G3Q (fewer than 100 world occurrences, questionable taxonomy; Pennsylvania Natural Diversity Inventory 2001). Unlike many familiar species of goosefoots, such as *C. album* L., it occurs in non-anthropogenic habitats. *Chenopodium foggii* is frequently located on rock outcrops, at cliff bases, and along sparsely wooded slopes (Wahl 1954). It is closely related to, and sometimes included in, western *C. pratericola* Rydb. (Clemants 1992; Gleason and Cronquist 1991). *Chenopodium pratericola*, however, is adventive in the east where it is found in open, disturbed, often saline soil (e.g., coastal beaches, salted roadsides; Seymour 1982). Although Basset and Crompton (1982) recognized *C. foggii* in their review of the genus in Canada, they apparently confused important morphological characters, as suggested also by Clemants (1992). *Chenopodium foggii* will be recognized as a distinct species in the upcoming *Flora of North America* contribution (Clemants and Mosyakin, in prep.). This paper presents results of recent field and herbarium surveys for *C. foggii* in New England.

Chenopodium foggii is a relatively recent addition to the flora of North America. It was described by Wahl (1954) during a North American revision of the genus. *Chenopodium foggii* is typically a short, sparingly branched plant with moderately farinose surfaces, keeled sepals, horizontally oriented fruits, and a loose or irregularly rupturing, minutely echinate pericarp that detaches from the body of the lustrous black seed. It shares these

character states with *C. pratericola*. *Chenopodium pratericola*, however, has thicker, less often toothed, and narrower leaves than *C. foggii*.

Historic New England occurrences. Along with his description, Wahl (1954) documented nine occurrences of *Chenopodium foggii* in New England (summarized in Table 1 and discussed below). Sites were identified by herbarium specimen review and not by field survey. Since its description, *C. foggii* has not been reported from New England.

Both of the specimens Wahl cited from Maine are old records (i.e., prior to 1900) and were found in areas of the state that have been heavily developed since. Furthermore, the herbarium label data are vague and no detailed location information was recorded.

Historic New Hampshire stations of *Chenopodium foggii* were mainly in open, rocky woods and cliff bases. Three of the sites reported by Wahl are in the northern half of the state, and one collection (Walpole, Chesire County) is from extreme southwestern New Hampshire. The most recent collection reported by Wahl was from 1920. Examination of specimens at NHA by the first author yielded three additional collections of *C. foggii* from Mount Stanton, in Bartlett (6 Jul 1965, *Hodgdon et al. 14504*; 2 Aug 1960, *Steele s.n.*; 26 Aug 1954, *Steele 1531*). All three collections had been misidentified as *C. boscianum* Moq., a frequently used and inappropriate name for the eastern *C. standleyanum* Aellen. No extant sites of *C. foggii* are known from the state, and recent surveys of the Harts Ledge have not re-located the species (Bill Nichols and Dan Sperduto, New Hampshire Natural Heritage Inventory, pers. comm.).

Wahl cited a single record from Vermont, and no other occurrences are known (Bob Popp, Vermont Nongame and Natural Heritage Program, pers. comm.). Vermont is currently the only state in New England to list this plant as a species of conservation concern (Vermont Nongame and Natural Heritage Program 2000), though it is listed incorrectly under the name of *Chenopodium desiccatum* A. Nelson.

Wahl listed only two sites for Massachusetts, though a third site is known from Hampden County by a 1916 collection annotated by Wahl in 1963 (Karen Searcy, University of Massachusetts Herbarium, pers. comm.). Weatherbee (1996) considered *Chenopodium foggii* to be uncommon in Berkshire County. Bruce

Table 1. Collections of *Chenopodium foggii* attributed to New England by Wahl (1954). Collection numbers are not provided in the table as they were not cited by Wahl and Harvard University Herbaria collections were not available during research for this manuscript.

County	Town	Location	Date	Collector and Herbarium
Massachusetts				
Berkshire	New Marlboro		28 Aug 1920	*Hoffman* (NEBC)
Berkshire	Mount Washington	Bash Bish Falls	9 Sep 1919	*Hoffman* (NEBC)
Maine				
Androscoggin	Auburn		21 Jun 1896	*Merrill* (NEBC)
York	South Berwick		3 Sep 1898	*Parlin* (GH, NEBC)
New Hampshire				
Carroll	Bartlett	Whites Ledge	8 Sep 1915	*Pease* (NEBC)
Cheshire	Walpole	Fall Mountain	31 Jul 1900	*Fernald* (GH)
Coos	Hadleys Purchase	Harts Ledge	9 Sep 1915	*Pease* (NEBC)
Grafton	Haverhill		18 Aug 1917	*Fernald* (NEBC)
Vermont				
Orange	Fairlee		4 Aug 1928	*Pease* (NEBC)

Sorrie (formerly of the Massachusetts Natural Heritage and Endangered Species Program, pers. comm.) considered this species to be very rare in Massachusetts and did not encounter it during floristic work in the state.

It is surprising to note that given the lack of current records for this species in New England, *Chenopodium foggii* has received very little conservation focus and has been formally listed by only one of the six states. Confusion with the adventive *C. pratericola* has likely contributed to its being overlooked in the northeast.

Field observations. On 3 October 1999, the primary author visited Bartholomew's Cobble in Sheffield, Berkshire County, Massachusetts. This well-known feature adjacent to the Housatonic River comprises low outcrops of dolomitic marble (DeLorme 1998). Both mesic and xeric substrates occur, supporting a large number of calciphilic plants. A relatively small *Chenopodium* was observed on a dry, open terrace with southwest aspect. Morphology, in particular keeled, moderately farinose sepals, small leaves (less than 4 cm long) with few or no teeth, and horizontally oriented fruits in the calyx, suggested the population could be *C. foggii*. Examination of the fruits at 20× confirmed this, and the identification was verified by Steven Clemants (Brooklyn Botanic Garden). The site was characterized by exposed bedrock and sparse, stunted *Juniperus virginiana* L. Associated species included *Aquilegia canadensis* L., *Rubus occidentalis* L., *Schizachyrium scoparium* (Michx.) Nash, *Carex cephaloidea* (Dewey) Dewey, *Woodsia obtusa* (Spreng.) Torr., *Hypericum perforatum* L., and *Achillea millefolium* L. The location was approximately 195 m above mean sea level. This is the only known extant site in Massachusetts.

Bartholomew's Cobble is owned by the Commonwealth of Massachusetts and managed by the Trustees of Reservations. State employees have been made aware of the occurrence of *Chenopodium foggii* and its rarity in New England. The specimen, which includes a color image of the plants *in situ*, has been deposited at the New England Botanical Club Herbarium.

VOUCHER SPECIMEN: Massachusetts: Berkshire Co., Sheffield, Bartholomew's Cobble, 3 Oct 1999, *Haines s.n.* (NEBC).

On 21 July 2000, we visited a *Polygonum douglasii* Greene

station on Cedar Mountain in Parsonfield, York County, Maine. The site occurs on a small, open bald of Devonian-Silurian limestone (Osberg et al. 1985). We observed a relatively small *Chenopodium* in flower that did not appear to match any species known to be extant in the state. The plants were generally shorter than 30 cm with moderately farinose surfaces. The leaf blades did not exceed 4 cm in length and were essentially entire. Though characteristics of the sepals could be observed, such as a well-formed keel, fruit size and details of the pericarp were not assessable. The flowering morphology and associated natural community suggested this plant could be *C. foggii*. As this species had not been seen in Maine for 102 years, a return trip was made by the second author to collect a fruiting stem and confirm the identification.

The specimen collected from Cedar Mountain demonstrated the pericarp morphology for *Chenopodium foggii* (e.g., minutely echinate texture, non-adherant). *Chenopodium foggii* is similar, in regard to the freely separable pericarp, to another uncommon eastern forest species that is historically known to occur in Maine, *C. standleyanum*. The keeled sepals and farinose habit, however, distinguished the Cedar Mountain plants from *C. standleyanum*, which has unkeeled sepals and nearly glabrous herbage. The identification was confirmed by Steven Clemants.

The Cedar Mountain site is the only known extant station of *Chenopodium foggii* in Maine. Associated species include *Polygonum douglasii*, *Carex backii* Boott, *Poa compressa* L., *Rumex acetosella* L., *Aquilegia canadensis*, *Corydalis sempervirens* (L.) Pers., *Saxifraga virginiensis* Michx., *Stellaria graminea* L., and *Dryopteris marginalis* (L.) A. Gray. The station occurs at ca. 260 m elevation and has southern aspect. The property owners are aware of the plant and plan to conserve the area. The specimen has been deposited in the University of Maine Herbarium.

VOUCHER SPECIMEN: Maine: York Co., Parsonfield, Cedar Mtn., 18 Sep 2000, *Newcomer s.n.* (MAINE).

Herbarium survey. An herbarium survey was initiated by the New England Wild Flower Society to collect information on rare and poorly known native species. The goal of this research, called the Herbarium Recovery Project, is to verify the accuracy of collections in regional museums and gather label information

for 532 species in New England. *Chenopodium foggii* is a target species of this project. While examining material at the Harvard University Herbaria, the primary author annotated three specimens as *C. foggii*. The New Hampshire specimen was collected while in flower, and although the morphology and habitat matches that of *C. foggii*, it cannot be identified with certainty. However, the specimen is an apparent duplicate of one cited by Wahl (1954). Steven Clemants has also reviewed these sheets and concurred with the determinations. This represents the first report of *C. foggii* from Connecticut.

SPECIMENS EXAMINED: Connecticut: New Haven Co., New Haven, East Rock, dry rocky wooded waste, 14 Sep 1932, *Eames 11488* (GH). New Hampshire: Cheshire Co., Walpole, Fall Mountain, rocky woods, 31 Jul 1900, *Fernald 423* (GH). Vermont: Rutland Co., West Rutland, Twin Mountains, 15 Aug 1900, *Williams 2077* (GH).

Chenopodium foggii is a poorly known and overlooked species in New England. The premature inclusion of this species in the synonomy of *C. pratericola* has likely reduced the intensity of field efforts that may have resulted in its earlier rediscovery. *Chenopodium foggii* fits criteria for a Division 1 species in New England (globally rare with fewer than 100 world occurrences; Brumback and Mehrhoff et al. 1996). Field surveys should be directed toward locating new and historic populations, particularly in high pH bedrock regions.

ACKNOWLEDGMENTS. The following people contributed to this note and are thanked: Steven Clemants; Bill Nichols, Dan Sperduto, Bob Popp, Karen Searcy, Bruce Sorrie, Thomas Vining, and Pamela Weatherbee. The New England Wild Flower Society is also thanked for permission to use data collected during the Herbarium Recovery Project.

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