NOTEWORTHY COLLECTIONS

MINNESOTA

*Allium hollandicum* Fritsch (Liliaceae, treated as Alliaceae by some). An ornamental onion.

Previous knowledge. *Allium hollandicum* is a non-rhizomatous, bulbous herbaceous perennial that most resembles the central Asian native *A. jesdianum* Boiss. and Buhse, but seems to be of European horticultural origin and was first described by Fritsch (1993). These plants, cultivated for their showy inflorescences, have sometimes been misidentified as *A. aflatunense* B. Fedtsch. (Fritsch 1993). Although the name *A. ×hollandicum* has occasionally been used in horticulture, Friesen et al. (1997) found no evidence that the popular *A. hollandicum* cultivar ‘Purple Sensation’ contains genomes from more than one species. McNeal and Jacobsen (2002) did not include *A. hollandicum* among the alien species escaped in North America; it has escaped from cultivation in Germany, but has not become naturalized there (Reinhard Fritsch, personal communication).

Significance. A population of *A. hollandicum* in Duluth, Minnesota seems to be the first to be reported growing outside of cultivation in North America. It was found at a sunny site within a dense growth of taller herbaceous perennials such as *Alopecurus pratensis* L., *Bromus inermis* Leysser, and *Tanacetum vulgare* L. on well-drained medium-textured soil. The onion plants developed early, and their leaves withered before the other species overgrew them enough to produce considerable shading. Abundant seed production was observed. There were eight plants in flower in 2001, 14 in 2005, and 26 in 2006, despite some being removed for specimens over this interval, as well as others that did not flower. Spatial spreading of this colony has been limited to within a few m². Many plants were pulled out by an unknown person after the count was made in 2006. The population is in a residential neighborhood, but does not border cultivated ground.

Diagnostic characters. Among tall onions with violet anthers, deep purple perianths in fairly large and dense umbels, and strap-shaped basal leaves, *A. hollandicum* may be distinguished by the combination of equal-length pedicels and typically only two ovules per locule. Frequently just one of these two ovules matures as a seed. The dimensions given by Fritsch (1993) are from cultivated material, and plants grown with sparser resources may be less robust (Reinhard Fritsch, personal communication). The Duluth plants had smaller measurements than those of the type (Fritsch 1993), except for height, and thus trend toward *A. jesdianum* dimensionally.

Specimen citations. Minnesota. St. Louis Co.: E side of Brainerd Ave. below Lyons St., Duluth, SE 1/4 NE 1/4 Sec. 15, T50N R14W, (all this location), in flower, 3 Jun 2001, Schimpf 305 (DUL); in flower, 13 Jun 2004, Schimpf 356 (DUL); in
flower, 10 Jun 2005, Schimpf 395 (DUL); in fruit, 21 Jun 2005, Schimpf 404 (DUL, MIN).

*Centaurea phrygia* L. (Asteraceae). Wig Knapweed.

Previous knowledge. *Centaurea phrygia* is a herbaceous perennial that is native to Europe and established as a weed in the east-central United States (Keil and Ochsmann 2006).

Significance. Populations of *C. phrygia* from two locations in rural northeastern Minnesota are apparently the first known from the upper Great Lakes region. Both were growing with *C. ×moncktonii* Britton, which was much more abundant. Keil and Ochsmann (2006) noted that some individuals that are determined as *C. phrygia* may represent extreme variants within the *C. jacea* L. complex, which includes *C. ×moncktonii*. Both of the *C. phrygia* populations produced abundant seed. The roadside population was subjected to control actions after these collections were made.

Specimen citations. Minnesota. St. Louis Co.: occasional across a few ha of inactive hayfield on fine-textured soil, Angora Township, NE¼ Sec. 8, T61N R18W, in fruit, 11 Sep 2005, Schimpf 424 (DUL, MIN), 1 Oct 2005, Pomroy, Schimpf and Barnes 2368 (DUL, MIN); same location, in flower, 15 Jul 2006, Pomroy, Schimpf and Barnes 2420 (DUL, MIN); uncommon in narrow strip on both sides of highway 73, Linden Grove Township, NW¼ Sec. 2, T62N R20W, in fruit, 11 Sep 2005, Schimpf 425 (DUL, MIN), 1 Oct 2005, Pomroy, Schimpf and Barnes 2369, 2370 (DUL, MIN).

*Verbena officinalis* L. (Verbenaceae). European Vervain.

Previous knowledge. *Verbena officinalis* is an annual that is native to Europe; introduced to North America as a medicinal herb, it is naturalized in southeastern and Atlantic coastal states (Gleason and Cronquist 1991). It has also been reported from western states (USDA 2006). It was collected in the 1890s in Detroit, Michigan, but not known from that state since then (Voss 1996). Although USDA (2006) indicated that it is known outside of cultivation in Wisconsin, the Wisconsin State Herbarium did not report it from the state (Wisflora 2006). Scoggan (1979) did not include it in the flora of Canada.

Significance. A population of *V. officinalis* in rural northeastern Minnesota appears to be the first known outside of cultivation in Minnesota, and perhaps also in the upper Great Lakes region. The site is a rock garden for flowers, with sandy soil. This species, never deliberately grown there, was first noticed in 2004 and seen again in 2005 and 2006. Approximately two dozen plants were pulled out each year. This indicates that this vervain is capable of persisting, and potentially spreading, in the region.

Specimen citation. Minnesota. St. Louis Co.: North Star Township, NE¼ Sec. 5, T53N R13W, in flower and fruit, 14 Sep 2005, Pomroy 2311 (DUL, MIN), determined by David Schimpf and Deborah Pomroy.
**Sedum aizoon** L. (Crassulaceae). Aizoon Stonecrop.

Previous knowledge. *Sedum aizoon* is a succulent herbaceous perennial that is native to northern Asia and grown ornamentally in North America (Clausen 1975). It was reported as escaped in the United States only for Massachusetts (USDA 2006). Scoggan (1978) listed it as escaped in just a few locations in Canada, near settlements in Alberta and Saskatchewan. Clausen (1975) did not include it among the 13 alien species of *Sedum* that he regarded as naturalized in North America. Webb et al. (1993) reported it as locally naturalized in northern and central Europe.

Significance. This is apparently the first report of *S. aizoon* from outside of cultivation in Minnesota and a large surrounding region. The plants were very common over about 700 m$^2$, the total area split about equally by a road. On one side of the road these plants were on residential lots, mostly exposed to the sun, and on the other side they grew in the partial shade of a pine plantation on church grounds. Bedrock near the surface makes the soil shallow on much of the occupied area, but the species was also succeeding in soil deep enough to use for normal gardens. The population appeared to be vigorous, as control efforts on the residential side have met with little success. These stonecrop plants grew to heights of 4 dm, and thrived in tall, non-managed herbaceous cover; they also persisted in a non-flowering condition where regular mowing kept them short.

Specimen citation. Minnesota. St. Louis Co.: both sides of Morris Thomas Rd. just W of Piedmont Ave., Duluth, SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 30, T50N R14W, in flower, 25 Jun 2006, Pomroy, Hansen, and Barnes 2321 (DUL).

**Cardamine flexuosa** Withering (Brassicaceae). Woodland Bittercress.

Previous knowledge. Rollins (1993) described *Cardamine flexuosa* as a biennial to short-lived perennial that is native to Europe and introduced to North America. The reported collection sites closest to Minnesota (USDA 2006) include older ones in upper Michigan (Voss 1985). In 2002 and 2003 the apparently first collections from Wisconsin were made, all from horticultural settings in four counties in the southeastern half of the state (Vincent and Lammers 2005, Wisflora 2006).

Significance. *C. flexuosa* was found in the Twin Cities metropolitan area, the apparent first report for Minnesota. These plants were growing in decorative (golden/tan color) crushed limestone pavement in partial sun at a suburban residence. They seemed to be growing as annuals, with fibrous roots and a height of less than 10 cm; such variants have sometimes been given taxon status: *C. debilis* D. Don or *C. flexuosa* subsp. *debilis* O. E. Schulz (Rollins 1993). *C. debilis* has been reported from Iowa (USDA 2006). These weedy (Rollins 1993) inconspicuous plants are easily overlooked and may be more widespread in Minnesota, especially if the seeds were introduced with the crushed rock.

Silene csereii Baumgarten (Caryophyllaceae). Biennial Campion.

Previous knowledge. Silene csereii is an annual or biennial native to Europe and naturalized as a weed in northern United States and southern Canada (Morton 2005). Major North American treatments (e.g., Hitchcock and Cronquist 1973; Larson 1986; Morton 2005) described the leaf blades as ranging up to 8.5 cm long × 4 cm wide.

Significance. A few S. csereii plants with blades up to 15 × 8 cm were found in an industrial area of Duluth, Minnesota. The well-drained soil was evidently highly fertile, because members of other weedy species growing on it were likewise robust. Measurement of the S. csereii specimens held by MIN revealed several from Minnesota (Holzinger s.n., Galatowitsch 268), Wisconsin (Swanson 647), and North Dakota (Brenckle 1236) with blades 10 × 4 cm to 12 × 5 cm, well above the published upper size range. Whether this larger size has a genetic basis or is geographically limited would require further investigation.


Malus baccata (L.) Borkhausen var. baccata (Rosaceae). Siberian Crab-apple.

Previous knowledge. Malus baccata is a small tree that is native to much of Asia (Cuizhi and Spongberg 2003). It is cultivated in North America (Bailey 1949) for its white floral display. The fruits are small and not of culinary use. M. baccata has been reported growing outside of cultivation in many states in the northeastern United States, as well as Minnesota (USDA 2006) and eastern Canada (Scoggan 1978).

Significance. The two previously known Minnesota collections appear not to be of M. baccata; a Goodhue Co. specimen in flower, 1977, Clemants 634 (MIN), has very tomentose pedicels, and a St. Louis Co. specimen, 1998, Walton 3377 (DUL) has fruits that are far too large, some of which retain some calyx lobes. Both may represent the results of hybridizations with domestic apple, M. pumila Miller, in a recent generation. Newer collections from St. Louis Co. appear to be the first M. baccata known outside of cultivation from Minnesota. Three trees were found rooted within 1 m of each other on a steep, shaded south-facing ledge of a large outcrop of mafic igneous rock. This spot is surrounded by a mosaic of brushy woodland and herbaceous vegetation across approximately 1 km² of bedrock exposures and shallow soils. The trees’ location is remote, separated from the nearest settlement, current or historical, by about 1 km (much farther in almost all directions), and not near any road or trail. A concentration of other alien plants with small fleshy fruits (Rhamnus cathartica L., Lonicera spp.) in the same habitat suggests that birds frequently move seeds to this outcrop, the vegetation of which was otherwise strongly dominated by native species. Avian dispersal from a cultivated source is the most likely explanation for this occurrence of M. baccata, which Harris et al. (2002) described as a bird-dispersed species. One tree was 7 cm diameter, one was 2.5 cm diameter, and a non-flowering one was 1 cm diameter. The fruits were lustrous, with one lateral
hemisphere red and the other yellow, up to 9 mm diameter, and devoid of remnant calyx lobes. Some of the largest fruits contained one maturing seed.

Specimen citations. Minnesota. St. Louis Co.: Midway Township, NE\frac{1}{4} SW\frac{1}{4} Sec. 33, T49N R15W, in flower, 10 Jun 2004, Schimpf 354 (DUL, MIN); same location, fruit ripe, 20 Aug 2005, Schimpf 411 (DUL, MIN).

MICHIGAN

*Malus sieboldii* (Regel) Rehder (Rosaceae). Toringo Crab-apple.

Previous knowledge. *Malus sieboldii* is a tall shrub or short tree native to China, Korea, and Japan (Cuizhi and Spongberg 2003). It is cultivated in North America for its ornamental fruit and pinkish white floral display (Bailey 1949). It has been reported from outside of cultivation in Illinois, several northeastern states (USDA 2006), and southern Wisconsin (Wisflora 2006).

Significance. This is apparently the first reported occurrence of *M. sieboldii* outside of cultivation in Michigan. The population inhabited a band near the bottom of a south-facing hill, between a long-established *Pinus resinosa* Aiton plantation above and a wetland below. It consisted of at least 20 mature trees, along with hundreds of saplings and thousands of seedlings. The site was still dominated by native vegetation, although *Elaeagnus umbellata* Thunb. was also established and spreading there. The location of the former logging town of Barclay is about 200 meters to the west.

Specimen citations. Michigan. Ontonagon Co.: Barclay Pond, NW\frac{1}{4} NW\frac{1}{4} Sec. 13, T46N R39W, immature fruit, 22 Jul 2006, Garske 557 (DUL, MICH); same location, ripe fruit, 16 Sep 2006, Garske 588 (DUL, MICH).


Previous knowledge. *Carduus crispus* is a weedy Eurasian biennial reported from many central and northeastern United States and eastern provinces of Canada (Keil 2006), but not Michigan, Wisconsin, or Minnesota.

Significance. A population of *C. crispus* apparently represents the first known occurrence of this species in Michigan. It consisted of numerous plants, scattered along both sides of an approximately 260 m length of gravel road. The site is surrounded by National Forest land. Marenisco, the nearest town, lies 9 km away. The population has been able to persist and apparently expand on moist clay-gravel soil, in significant shade from northern hardwoods. Several small clearings adjacent to this road may facilitate this plant’s further spread. The population was reported to the Ottawa National Forest in fall 2003, and may be controlled or eradicated in the future.

Specimen citation. Michigan. Gogebic Co.: forest road 8170, Marenisco Township, NW\frac{1}{4} NE\frac{1}{4} Sec. 28, T46N R44W, in flower, 1 Aug 2003, Garske 413 (DUL, MICH).
Mimulus moschatus Douglas (Scrophulariaceae, treated as Phrymaceae by some). Muskflower.

Previous knowledge. *Mimulus moschatus* is native to western North America, where it is part of a complex of 13 very closely related species (Whittall et al. 2006). It also has scattered occurrences in eastern North America, some of which are thought to be escapes from cultivation (Gleason and Cronquist 1991). Some earlier authors considered at least the upper Michigan, Quebec and Newfoundland occurrences to be native (Marquis and Voss 1981), and this species is classified as endangered by the states of Massachusetts and New Hampshire (Natural Heritage and Endangered Species Program 2006; New Hampshire Natural Heritage Bureau 2006). In Michigan it inhabits “Muddy or wet ditches, creeks, springy banks, borders of swamps and ponds; moist openings, trails, and roadsides in woods.” (Voss 1996).

Significance. This is apparently the first report of *M. moschatus* outside of cultivation in Wisconsin. At this site it was occasional to abundant in ditches and woods edges along a highway and several gravel side roads. This highway cuts through small seeps and intermittent stream beds; seasonal and permanent residences are fairly frequent along it. Given that this species has long been in cultivation (Pennell 1935) and that the area in which it was found has long been settled, it seems more likely that this *M. moschatus* population is introduced, rather than native but just recently discovered.

Specimen citations. Wisconsin. Bayfield Co.: along state highway 13 ca. 1 km N of Whiting Rd., Bayview Township, SE\(\frac{1}{4}\) NE\(\frac{1}{4}\) Sec. 33, T50N R4W, in flower, 3 Jul 2001, Garske 253 (OSH, WIS); same location, 6 Jul 2001, Garske 266 (DUL).

LITERATURE CITED


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