The Strange Case of *Eupatorium serotinum* Michx. in the Buffalo-Niagara Area

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When the Niagara Falls Botanical Society (NFBS) was begun, and Clintonia, at first called the Newsletter of the Niagara Frontier Botanical Society, was initiated, its members came together to share their various interests in plants, whether it be tips on the identification of specimens, interesting ways of using them, or facts about their distributions among many other topics. But perhaps one of the most cherished interests was finding a species thought to have been extirpated but which had managed to survive to the present day, and especially adding a species to the catalogue of species in the Niagara Frontier Region begun by George W. Clinton, the first President of the then Buffalo Society of Natural Sciences, published in 1863. The checklist of the regional flora current with the founding of the Botanical Society was prepared by the last Curator of Botany, R.H. Zander and his colleague G.J. Pierce (1979) and any new discoveries were published in Clintonia by Society members, and voucher specimens were proudly incorporated into the Clinton Herbarium of the Buffalo Museum of Science.

*Eupatorium serotinum* Michx., Late Boneset, as far as I know, has not been reported as new to the Niagara Frontier Flora, at least on the American side of the boundary line with Canada, on the Niagara River. Perhaps this species has been overlooked due to its remarkable resemblance to *E. altissimun* L., Tall Boneset. In one of the early, pre-Clintonia issues of the BSNS newsletter, Robert Klips and Richard Zander (1985) published a number of species new to the Niagara Frontier flora. Among these novelties was *E. altissimum*, the first notice of the species on the American side. Both species had earlier been reported by botanists in Canada (McIntosh and Catling, 1979 for *E. altissimum*, and Oldham (2010) for *E. serotinum*).

The status of both species across the Niagara River in Canada is presently as follows (after Oldham 2010):  

The curious thing about these citations in Canada is that both species seem to have been collected in the Niagara Falls railway yard, and that perhaps both species grow or grew in this yard. “An introduction of *E. serotinum* in southeastern Ontario apparently is local and may not have persisted” (Siripun & Schilling 2006).

Among the species in the genus, *Eupatorium altissimum* and *E. serotinum* belong to the group with opposite (not whorled or opposite) leaves, and with white (not purple) flowers in heads. Both species are hoary-downy, pulverulent-pilose to cinereous-scarious, both with leaves that are long-lanceolate and glandular-punctate with three (not one) prominent nerves running lengthwise from the leaf base. The leaves of both subtend suppressed [i.e. small] axillary leaf fascicles or clusters.

Observations noted in the key below are from leaves in the mid-stem region:

A. Leaf blade tapered to a narrow sessile or subsessile base (petioles absent), sometimes the leaf base narrowed to the stem in the proximal third of the leaf, petioliform (i.e. with tissue on either side of the midrib); leaf margins entire or sharply serrate above the middle; principal leaves narrowly lanceolate: 5-12 cm long by 0.8 - 2 cm broad; florets fewer than 8 (usually 5) per head

B. Leaf blade with distinct, a long petiole (1-3 cm) the axis lacking leaf-blade tissue on either side of the rachis; [lance-elliptic 5-12 cm long, 8-30 mm wide; leaf margins entire in the basal 1/5 - 1/4, coarsely and sharply serrate to the apex; principal leaves more broadly lanceolate: 6-18 cm long by 1.5 - 4 cm wide; florets 9-15 (mostly 13) per head]

*E. altissimum*

*E. serotinum*

NOTE: some of the leaf measurements of these two species given in some major florals do not match one another, and seem improbable - I doubt normal mid-leaves of *E. serotina* are 2 cm long, and that the leaves usually exceed 9 cm; in some floras, the width is said to be up to 9 - 10 cm!]

According to some distribution maps, the present (not original) areas of widespread distribution in the eastern United States of these two species overlap. *Eupatorium serotinum* is said to tolerate both damp and dry situations, as also in *E. altissimum*, but the latter is exclusive to calcareous regions: both presently occupy the same habitats (wood edges, clearings, railroad sidings, roadsides). The two species are so close genetically that *Eupatorium serotinum* may hybridize with *E. altissimum* (Siripun & Schilling 2006). Both species originated south of New York, especially in Texas to Florida. Fernald (1950) mentioned that *E. serotina* is “somewhat aggressive and weedy.”

I originally had no idea that *Eupatorium serotinum* occurred in our region, mostly being familiar with *E. altissimum*, but while visiting a local herbarium in Buffalo, N.Y., I noticed a specimen of *Eupatorium* there that I thought was surely misidentified (as *E. serotinum*). The technical keys to the genus in some of our large eastern florals had given no hint as to the nearly identical nature of the two species. Having collected some specimens of what I took to be *E. altissimum*, I was surprised to find that I had in fact collected this other one - one not reported for the American side for our area. Far from correcting the identity of the specimen in the other herbarium,
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I found I needed to correct my own. I found it unusual that the new species had not been reported in Clintonia, nor has it been in the few years since I saw the specimen.

Meanwhile I had found Eupatorium serotinum (originally identified by myself as E. alissinum) along the Buffalo River:

**Eupatorium serotinum** Michx. USA, New York, Erie Co., City of Buffalo, north shore of Buffalo River (Big Buffalo Creek) downstream from the Erie RR bridge starting at the south end of Katharine St.; brown fields; specimens from mucky river bed (water low), vegetation dominated by Solidago canadensis var. canad. & scabra, Eupatorium maculatum, Lycopus spp., Alnus glutinosa. Federal's to Wheelbarrow Points; with Aster praealtus, Lycopus virginicus, L. americanus, L. europaeus. P. M. Eckel, October 23, 2001 (BUF).

The USDA Plants Database (2017) indicates *Eupatorium serotinum* is native throughout eastern North America, but only introduced in Ontario, although why the species is considered adventive south of the US border with Canada, and introduced just above the boundary is rather odd. “Adventive” describes a species that is not native and usually not established.

The species is also considered to be a native species in New York State, but is rare and absent from western New York (Weldy et al. 2010), being only known in eastern counties, in the extreme northeast in Clinton Co., south to Albany Co. and a cluster on Long Island and the New York City area (Weldy et al. 2016), and yet New York records for the species only start from 1987 (Bronx). It seems odd to list the species as ‘native,’ even though it may originate in a North American region far from that of Niagara. In The Plants of Pennsylvania (2007) by A.F. Rhoads and R.A. Block, the species is reported as “native farther west, apparently, adventive here.” Again, in Michigan, Voss (1996) reported *E. serotinum* as “presumably adventive from farther south,” and, although collected once in the State in 1930, “not until the 1960s and 1970s did it show up in other counties. Along railroads, disturbed roadsides and dooryards, thickets on old dunes” (Voss 1996).

*Eupatorium alissinum* is also a recent introduction, e.g. in Michigan: “Not collected in MI before 1965, suggesting that here, as in Ontario (Oldham 1988) and the Chicago area, it is largely if not entirely adventive from a little farther south along railroads and roadsides, including adjacent prairies and sedge meadows” (Voss 1996).

The Buffalo River site seemed “normal,” occurring along a weedy water course with a railroad bridge nearby and growing amid a suite of species mostly native to the Niagara region from the time when its flora was first investigated.

However, something seemed a little strange, when I happened to see a very dense stand of *Eupatorium serotinum* growing almost as a monoculture in a single station in a wet ditch peripherally choked with *Phragmites australis* beside an exit ramp from Interstate 290 to Niagara Falls Boulevard. It did not grow nearby in similar ‘brownfield’ like soil in the Interstate complex of on and off-ramps, nor in other stations along the (Youngman) expressway. I was fortunate to have stopped and collected a specimen, for the next day I stood and watched a mower from the either the New York Department of Transportation (DOT) or its federal, interstate counterpart, mow down the entire population together with its *Phragmites* associate.

**Eupatorium serotinum** Michx. USA. New York: Erie Co., City of Tonawanda north of Buffalo, exit ramp from Interstate 290 to Niagara Falls Boulevard, ditch near asphalt adjacent to a dense stand of *Phragmites australis*. Most of the original population mown down a year or so ago. Several plants flourishing here amid the *Phragmites*. Coll. P. M. Eckel, October 1, 2016 (MO).

The curious thing here was that although I had initially seen the species at this station in great profusion as a great river of white flowers on tall stems, in succeeding years very few plants grew there, making me wonder what conditions may have been present to generate such a dense population of such a species relatively unknown to our regional flora.

But I suppose the next time I encountered this plant was more unusual still. I had been experimenting with the removal of Pokeweed (*Phytolacca americana*) at various places in the Niagara River gorge as a study in the eradication of invasive species. The distribution of this species, as I attempted its eradication, led me to a suspicious feeling that the Pokeweed population was not exactly natural there. You can imagine my surprise when I came to the base of the gorge, just south of the great Railroad Suspension Bridge, and found a great patch of *Eupatorium serotinum*, as dense as that seen on the Youngman Expressway. The population boundary was crisply defined in an area within the arms of a new steel fence strategically placed for a magnificent view upstream in the river toward the cataracts. The area had and still receives attention by construction crews working on a path system in the gorge sponsored by the New York State Department of Parks, the Power Authority of New York and the local office of the US Dept. of the Interior. I anxiously looked down the rocky bank to the water’s edge for an expansion of this population, thinking it would cover the entire gorge if not eradicated, but it was confined to this one odd, dense population. This area below the bridge had also been receiving the planting of exotic species, not weeds, but more attractive plants, such as Tansy (*Tanacetum vulgare*), which I could ignore, but it was impossible to ignore the potential damaging spread of the *Eupatorium*. Having notified the authorities about this species, I was surprised and gratified to find that the very next year, the entire population had been eliminated (except for one or two stems which had the odd appearance of being protected by fencing).


The area of the gorge flora below the bridge is very clean and healthy with regard to the native species growing there. All weedy and invasive material is associated with disturbance caused by the implementation of a stair system from the gorge rim down to
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the path at the base of the gorge. The Eupatorium population occurred at the base of the stairs, and seemed more a part of the construction regime than a chance introduction - but why would such a population be put there in the first place?

One wonders whether the population of this species was adventive, or an introduction. To call the species 'native' by agencies tracking the flora of the State seems to obscure rather than clarify the occurrence and distribution of this plant.

In Klips and Zander's 1985 publication on the discovery of E. altissimum, they describe the population along a railway as "roughly 125 plants in a continuous stand measuring approx. 100 ft. x 50 ft." They also note "three separate stands of this species were observed along the Buffalo River and at the nearby Buffalo Central railway terminal." The authors note the easy comparison in certain similarity with the broad-leaved native Eupatorium rugosum (White Snakeroot), a species frequent in the Gorge station of E. serotina. How such a large and dense population of this new introduction could establish itself naturally into a shaded woodland in a sudden large and compact population lacking outliers along the river seems rather a mystery.

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Literature Cited


Yellow and White Trout Lilies (Erythronium americanum & Erythronium umbellatum)

Both plants were found along the banks of Buffalo Creek near Mineral Springs Rd, West Seneca NY. Photos by M. Siuta