

Three Plant Species New to Canada on Pelee Island: *Triosteum angustifolium* L., *Valerianella umbilicata* (Sull.) Wood, and *Valerianella intermedia* Dyal

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Abstract. *Triosteum angustifolium*, *Valerianella umbilicata*, and *V. intermedia* were collected on Pelee Island, Essex County, Ontario, Canada. This is the first report of these species in Canada. Distribution maps for each species are included with comments concerning the phytogeography of these three range extensions. An unique assemblage of plants, found in association with these three species, for the Erie Islands, is listed and discussed.

During a research trip on Pelee Island, Essex County, Ontario, Canada on 28–30 May 1971, *Triosteum angustifolium* L., *Valerianella umbilicata* (Sull.) Wood, and *V. intermedia* Dyal were discovered. According to Boivin (1966a, 1966b, personal communication) and Soper (1949), these three species have never been reported for Canada.

Of the 21 islands in western Lake Erie, Pelee Island is the largest, with an area of 10,000 acres (Kindle 1937; Core 1948). Pelee and Middle Islands are the southernmost portions of Ontario and of Canada.

These three species were discovered west of Stone Road three-tenths of a mile south of East and West Road (Figure 1). Six plants of *T. angustifolium* were found in one small clump approximately 100 yards west of Stone Road. One specimen was taken (Duncan 1509, OS). The plants were growing in a dry open woods dominated by *Quercus bicolor* and *Fraxinus americana*. Other common associated woody species were *Celtis occidentalis*, *Carya ovata*, *Ptelea trifoliata*, and *Tilia americana*. Approximately 25 plants of *Valerianella umbilicata* and *V. intermedia* were found in an open thicket dominated by *Rhus aromatica*, *Cornus drummondii*, and *Crataegus mollis* farther to the west of Stone Road. A single voucher of *Valerianella intermedia* was collected (Duncan

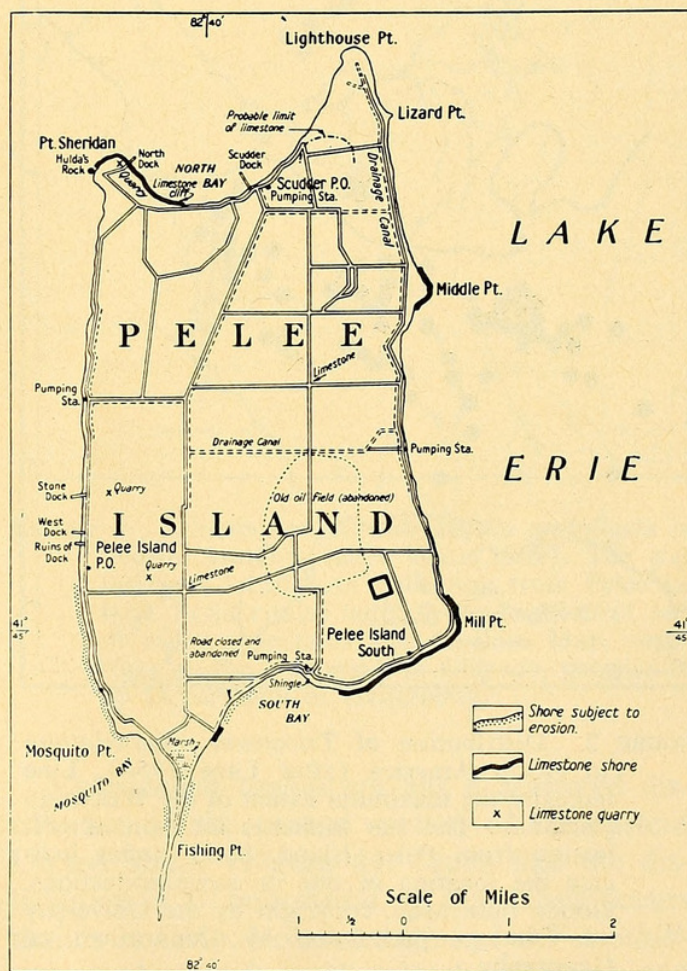


FIGURE 1. Map of Pelee Island (from Kindle 1937). Square located in the southwestern corner of the island indicates site of collection of *Triosteum angustifolium*, *Valerianella umbilicata*, and *V. intermedia*.

1504, OS). During a return trip on 17–18 June 1972, no trace of *Triosteum angustifolium* could be found. *Valerianella umbilicata* and *V. intermedia*, however, were more abundant than in 1971 with approximately 100 plants scattered throughout the thicket. Two vouchers each of *V. umbilicata* (Duncan 2015A, DAO, OS) and *V. intermedia* (Duncan 2015, DAO, WMU) were collected.

Triosteum angustifolium is the most southern species of its genus, which is widespread in the eastern United States (Lane 1954). *T. angustifolium* occurs from Connecticut to eastern Kansas and eastern Texas, and south to Alabama and North Carolina (Figure 2). Its dis-

The magnitude of the range extension for this species is not known. The distribution in Figure 2 would indicate a 150-mile disjunction north of the nearest known location in southern Ohio. Hauser (1965) mapped *T. angustifolium* from several locations north of the Wisconsin glacial boundary in Ohio. The Pelee Island location, according to this treatment, would then be approximately 50 miles north of the nearest known location. Problems exist, however, in Hauser's treatment of *Triosteum* in Ohio. The specimens he examined from several of these northern localities have character states not found in *T. angustifolium*. Hauser specifically mentioned that many of the specimens from these northern locations have more than one flower per leaf axil and that the stipules do not extend beyond the sepals. According to Lane (1954), these character states are diagnostic for *T. aurantiacum*. All the specimens at The Ohio State University Herbarium from the northern localities are *T. aurantiacum*. Until all other specimens have been checked, and the correct distribution of *T. angustifolium* in Ohio has been mapped, no final statement can be made concerning the distance involved in this disjunction. It is likely, however, that in Ohio *T. angustifolium* does not occur north of the Wisconsin glacial boundary.

Cain (1944) states that minor discontinuities of area probably result frequently from recent migrations. This appears to be true in the case of *T. angustifolium*. The moderating influence of Lake Erie on the climate of the islands in the western basin and also on the north shore of the lake, where many species reach their northern limit, could be a major factor causing this disjunction. The longer growing season and greater number of frost-free days give the islands in Lake Erie a more southern climate in comparison to areas in northern Ohio not bordering the lake (Verber 1955).

Triosteum angustifolium has probably invaded Pelee Island since settlement by European man. Before man's arrival, Pelee Island was primarily a marsh with swamp forests occupying the higher ground (Hooper 1967). Early settlers, realizing the high productivity of the soil, drained the marshes and farmed the

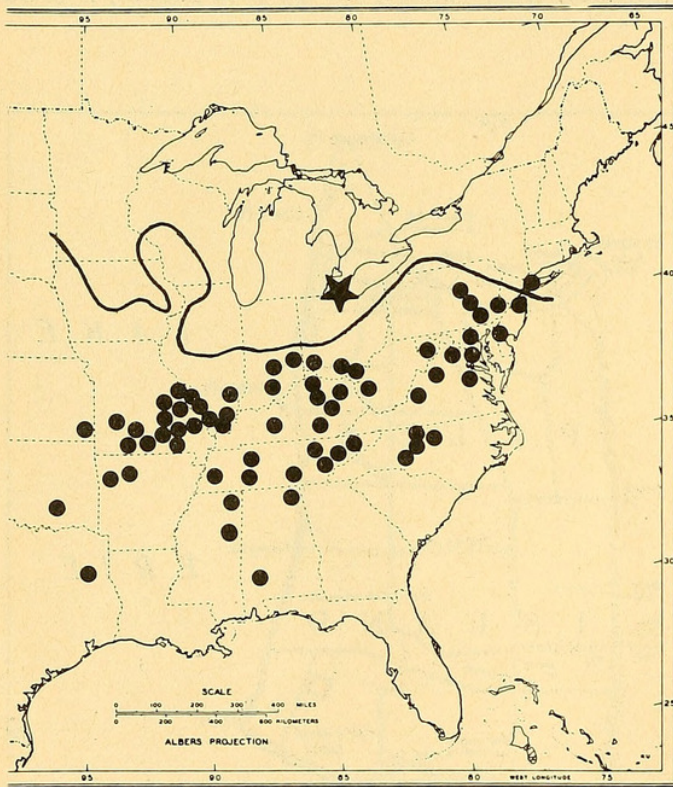


FIGURE 2. Distribution of *Triosteum angustifolium* in North America (after Lane 1954). Line indicates the maximum extent of the Wisconsin glacialiation. The star indicates location of collection from Pelee Island. Solid circles indicate the location of one or more collections. Goode Base Map, copyright by the University of Chicago, permission by Department of Geography.

tribution is almost exclusively south of the boundary of the maximum extent of the Wisconsin glacialiation.

island. An old plat map dated 1 November 1866, in the Essex County Registry Office in Windsor, Ontario, originally designated the area just to the west of where these species were discovered as swamp forest. The Stone Road location is at the edge of this former swamp forest. The drier conditions which exist now have come about during the last 100 years. Thus the vegetational history of the island, the draining of the marshes, and the use of the land for farming are conditions that have developed providing a habitat for *T. angustifolium*. The failure the following year to rediscover the population indicates that *T. angustifolium* was probably only an adventive invader of the island, and that it has probably migrated to Pelee Island very recently. It may, however, reinvade Ontario in similar dry, open, secondary successional woods.

Valerianella intermedia is more widespread in eastern North America than *T. angustifolium*.

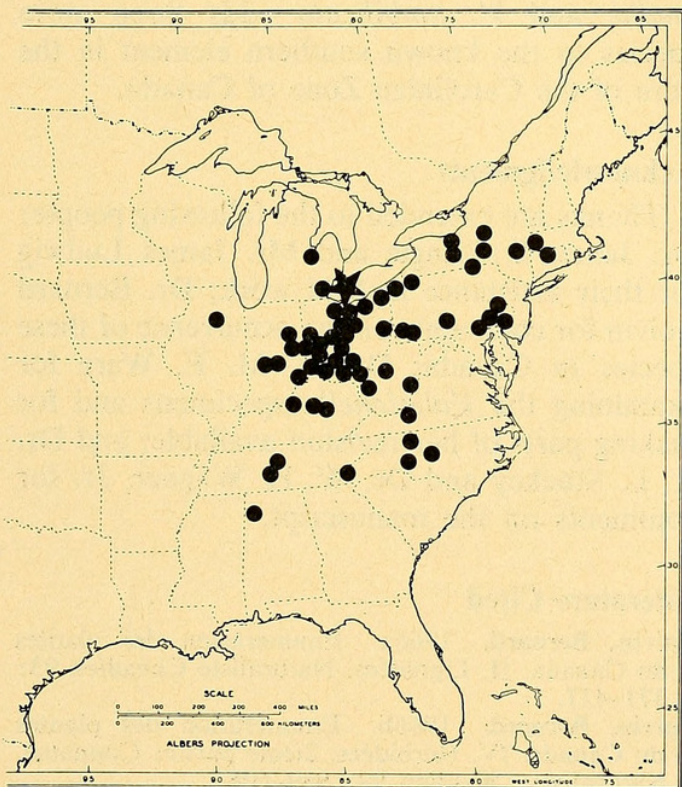


FIGURE 3. Distribution of *Valerianella intermedia* in North America (after Ware 1969). The star indicates location of collection from Pelee Island. Solid circles indicate the location of one or more collections. Goode Base Map, copyright by the University of Chicago, permission by Department of Geography.

The distribution of *V. intermedia* is mainly in Ohio, Pennsylvania, and New York, with scattered locations east into Massachusetts and south into North Carolina and Alabama, and west to Illinois (Figure 3). *V. intermedia* occurs in northern Ohio along the south shore of Lake Erie and into southwestern Michigan. Thus it is not surprising to find it now in the most southern area of Canada.

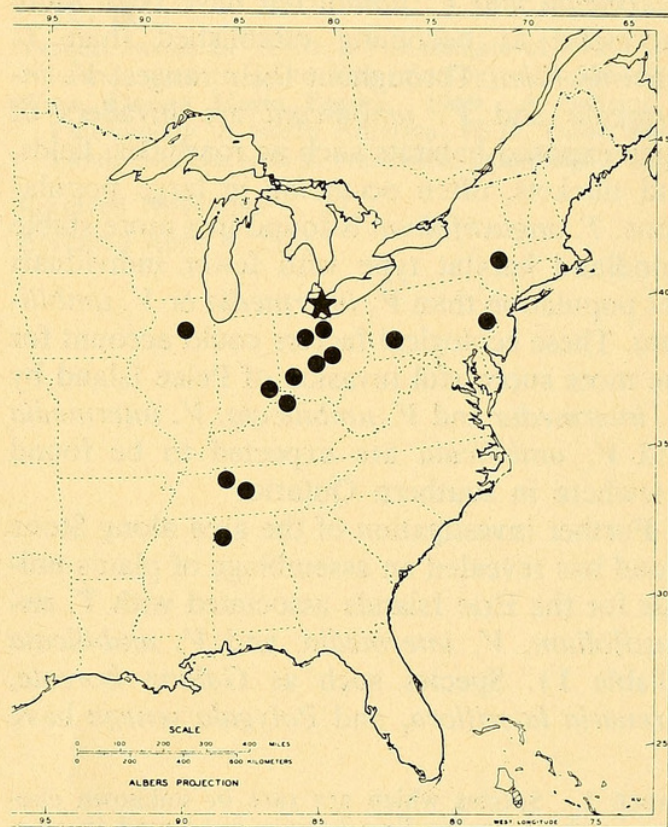


FIGURE 4. Distribution of *Valerianella umbilicata* in North America (after Ware 1969). The star indicates location of collection from Pelee Island. Solid circles indicate the location of one or more collections. Goode Base Map, copyright by the University of Chicago, permission by Department of Geography.

Valerianella umbilicata has a scattered distribution in the central section of the eastern United States (Figure 4). Much like the distribution of *V. intermedia*, *V. umbilicata* occurs mainly in Ohio. Isolated stations for *V. umbilicata* are known from New York to Illinois, and south to Alabama. At several localities both of these taxa have been found together (Ware 1969). The taxonomy of the genus *Valerianella* has been revised and D. M. E. Ware in her

forthcoming treatment will treat these two taxa as conspecific, but as separate intraspecific entities. However, for the purposes of this paper earlier treatments have been used. Both *V. umbilicata* and *V. intermedia* appear to be well established on Pelee Island.

According to the reasoning discussed earlier, *V. intermedia* and *V. umbilicata* appear to be recent invaders of Pelee Island. However, *V. intermedia* and *V. umbilicata* have been more successful at becoming established than *T. angustifolium*. Throughout their ranges, *V. intermedia* and *V. umbilicata* are invaders of open exposed habitats such as roadsides, fields, and thickets, often occurring in large populations. *T. angustifolium* is found in a more stable woodland habitat type with fewer individuals per population than *V. intermedia* or *V. umbilicata*. These ecological factors could account for the more successful invasion of Pelee Island by *V. intermedia* and *V. umbilicata*. *V. intermedia* and *V. umbilicata* are expected to be found elsewhere in southern Ontario.

Further investigation of the area along Stone Road has revealed an assemblage of plants unique for the Erie Islands associated with *T. angustifolium*, *V. intermedia*, and *V. umbilicata* (Table 1). Species such as *Galium boreale*, *Arenaria lateriflora*, and *Polygala senega* have

TABLE 1. Species which are rare or unknown elsewhere on the Erie Islands, but found in association with *Triosteum angustifolium*, *Valerianella umbilicata*, and *V. intermedia* along Stone Road, Pelee Island.*

Arenaria lateriflora
Carex muskingumensis
Circaea quadrisulcata
Comandra umbellata
Cynoglossum officinale
Galium boreale
Lobelia inflata
Polygala senega
Ptelea trifoliata
Pycnanthemum virginianum
Pyrus coronaria
Ratibida pinnata
Specularia perfoliata
Symphoricarpos albus
Thaspium barbinode
Viburnum lentago
Viburnum rafinesquianum
Zanthoxylum americanum

*Nomenclature according to Fernald (1950).

primarily northern distributions. Of all the species found on Pelee Island, those which have primarily a southern distribution and which reach their northern limit in the Carolinian Zone of Canada are the most thoroughly studied (Soper 1956, 1962; Fox and Soper 1952, 1954, 1955; Macoun and Malte 1917; Stuckey 1968). Of the species listed in Table 1, *Zanthoxylum americanum* and *Ptelea trifoliata* have this type of distribution. Other species with this distribution which are occasional to common on the Erie Islands and which are also found along Stone Road are, for example, *Dioscorea villosa*, *Hydrophyllum appendiculatum*, *Carya ovata*, and *Quercus muehlenbergii*. Many other species found on Pelee Island such as *Hibiscus palustris*, *Euonymus obovatus*, *Gymnocladus dioica*, *Cephalanthus occidentalis*, and *Cyperus engelmannii* also have this type of distribution. In many respects, then, the flora of Pelee Island is of a distinctly southern nature. The discovery of *Triosteum angustifolium*, *Valerianella intermedia*, and *V. umbilicata* adds three more species to the known southern element in the flora of the Carolinian Zone of Canada.

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