

VERBASCUM DENSIFLORUM AT THE UWM FIELD STATION

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ABSTRACT

Nine of 260 species of the Eurasian genus Verbascum have been reported from North America; only two (V. thapsus and V. blattaria) are common. Verbascum densiflorum is well established in the U.S. only in southeast Wisconsin in the area immediately surrounding the Field Station where it is an aggressive weed. It differs morphologically, phenologically and ecologically from either V. thapsus or V. phlomoides, the two more common species which it superficially resembles.

Verbascum is a Eurasian genus of over 260 species. Nine species (V. thapsus L., V. blattaria L., V. phlomoides L., V. lychnitis L., V. phoeniceum L., V. virgatum Stokes, V. nigrum L., V. sinuatum L. and V. densiflorum Bertoloni) have been reported from North America. These nine mullein species are among the most widespread of Verbascum species in Europe and Asia (Murbeck 1939). Two hundred species of Verbascum are confined to a relatively small area in Greece, southern Yugoslavia, Bulgaria, Rumania, Turkey, Syria, Jordan, Iraq and northwest Iran (Figure 1). Only V. thapsus and V. blattaria are common throughout North America. Verbascum sinuatum and V. densiflorum have previously been reported only as rare waifs on ballast along the east coast (Gleason 1952).

Reinartz (1984) reported a large, well established population of Verbascum densiflorum (syn V. thapsiforme¹ Schrader) in southeast Wisconsin. Within an area of about 30 square miles in Ozaukee and Washington Counties, Wisconsin (Figure 2) essentially 100% of the Verbascum is V. densiflorum. In three years I have never observed a V. thapsus growing in this zone. Surrounding this zone of exclusively V. densiflorum is an area of about 25 square miles in which both V. thapsus and V. densiflorum and some mixed populations are found. Outside of this area V. densiflorum is not found but V. thapsus is common.

In an average year, flowering individuals of Verbascum densiflorum in this area number in the thousands. The species has grown in this area for at least 17 years as documented by a 1967 specimen in the University of Wisconsin-Milwaukee Field Station herbarium. The species has probably been growing in this area for a long time.

Verbascum densiflorum is distinct morphologically, phenologically and ecologically from either V. thapsus or V. phlomoides, the two more common species which it superficially resembles. Verbascum densiflorum is very similar to V. phlomoides except that the upper cauline leaves are distinctly decurrent down the stem (leaf margins extend down the stem to the next lower leaf) in V. densiflorum

¹Verbascum thapsiforme Schrader, Monogr. gen. Verb., 1 (1813) is the name in more common usage, but V. densiflorum Bertoloni, Rar. it. Pl., (1810) is an older, and therefore, the valid species name (Ferguson 1972).

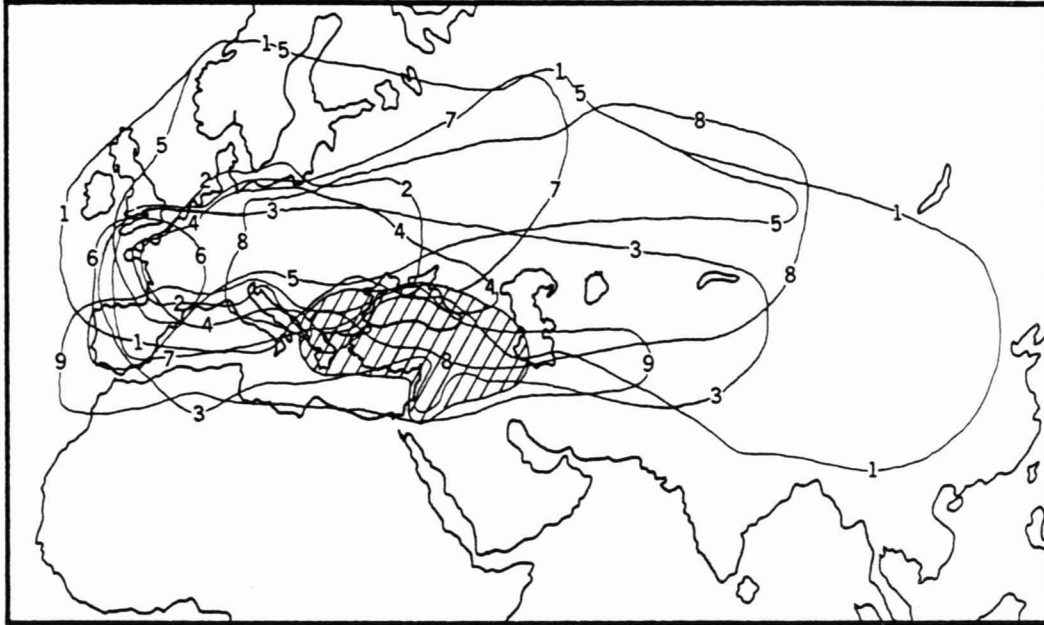


Figure 1. Distribution of *Verbascum* spp. in Europe and Asia. Hatching denotes the area in which 200 of the 263 species are confined. Ranges are shown for the nine species which have been found in North America: 1 - *V. thapsus*; 2 - *V. densiflorum*; 3 - *V. blattaria*; 4 - *V. phlomoides*; 5 - *V. nigrum*; 6 - *V. virgatum*; 7 - *V. lychnitis*; 8 - *V. phoeniceum*; 9 - *V. sinuatum*.

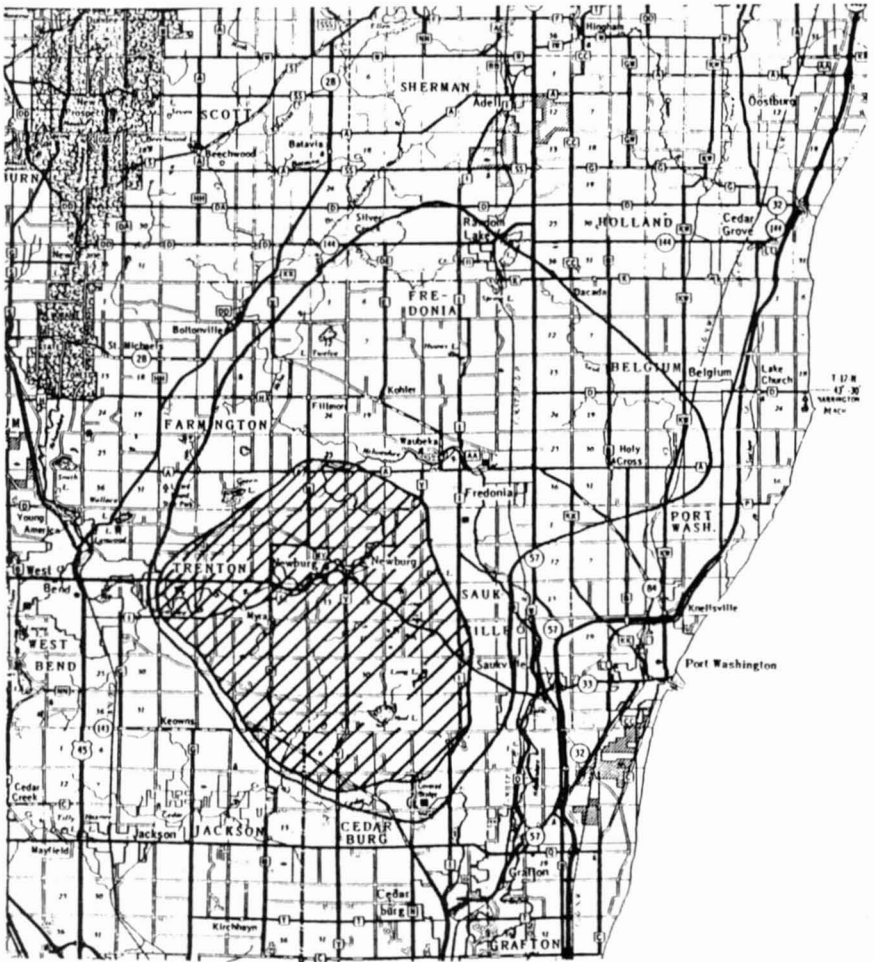


Figure 2. Distribution of *Verbascum densiflorum* in Ozaukee, Washington, Sheboygan and Fond du Lac Counties, Wisconsin. Central hatched area has only *V. densiflorum* populations; area indicated outside this zone has both *V. densiflorum* and *V. thapsus* populations. Outside of this zone only *V. thapsus* is found.

and are not at all decurrent in V. phlomoides. The inflorescence of V. phlomoides is somewhat more open with more stalk being exposed between capsules than that of V. densiflorum. Also, the inflorescence bracts and upper stem leaves of V. densiflorum tend to be longer acuminate (long tapering leaf tips) than those of V. phlomoides.

Anderson (1947) described an Iowa City, Iowa population of Verbascum phlomoides and concluded that V. phlomoides and V. densiflorum (thapsiforme) are not separate species. Verbascum phlomoides, V. thapsus and sterile hybrids between the two species were collected from the Iowa City population by the author during the summer of 1983. Hybrids form readily between V. thapsus and V. phlomoides (Wagner, Daniel & Hansen 1980) and are intermediate in the extent of leaf decurrence. Since Anderson (1947) described V. phlomoides as more or less decurrent and did not mention V. thapsus x V. phlomoides hybrids, I believe that Anderson may have been interpreting these hybrids as his V. densiflorum-like plants.

While Verbascum phlomoides and V. densiflorum are very similar they are unambiguously separated by the extreme leaf decurrence in V. densiflorum and complete lack of decurrence in V. phlomoides. Although hybrids can occur naturally between V. densiflorum and V. phlomoides (Murbeck 1933), the hybrids are always infertile, indicating that they are separate species.

Verbascum densiflorum differs morphologically from V. thapsus in having much larger flowers (25-45 mm diam.), a spatulate rather than capitate stigma, and a longer, less crowded inflorescence. Verbascum densiflorum tends to branch more freely producing many inflorescence spikes, and its leaves tend to be more dentate and more acuminate. Hybrids also occur naturally between V. densiflorum and V. thapsus, but are completely infertile (Murbeck 1933).

Verbascum densiflorum differs from V. thapsus in its flowering phenology. In southeast Wisconsin V. thapsus blooms from late June to late August, while V. densiflorum begins to bloom in early July and continues until the time of a hard frost (often mid- to late October).

Verbascum thapsus and V. densiflorum in Wisconsin also differ ecologically. V. thapsus can often be killed by cutting after it has bolted; however, V. densiflorum is able to withstand repeated cutting with plants branching from the base and growing many shorter inflorescence stalks. Repeated cutting can delay flowering but the plants usually survive to flowering even if mowing continues for 3 or 4 years. Because of its ability to withstand mowing, V. densiflorum is a much more aggressive weed in agricultural land near the Field Station than is V. thapsus. Populations are quite common even in regularly mowed hay fields or sparse, weedy lawns.

It is curious that this species, which occurs nowhere else in North America, here appears to be a more aggressive weed than Verbascum thapsus. Thousands of individuals grow in this 30 square mile area to the apparent exclusion of the generally more common V. thapsus.

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