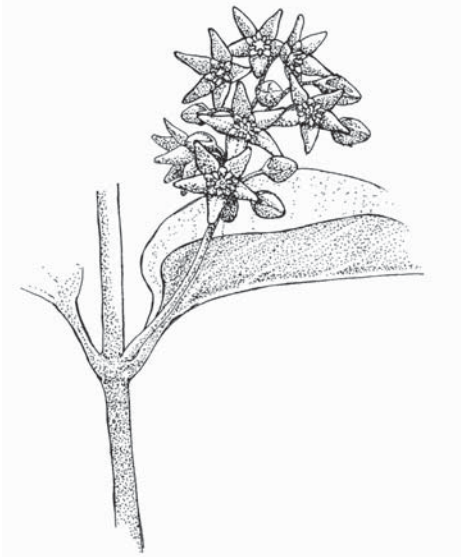
The Swallow Worts

European or pale swallow-wort and Black swallow-wort

FRAN LAWLOR

These twining vines of the milkweed family are herbaceous, non woody perennials that invade natural areas, forest lands and perennial crops such as Christmas trees. They have been attracting increasing attention in recent decades as aggressive invaders of these habitats. The swallow-worts tolerate a wide range of light and moisture conditions and they are capable of forming large, dense, tangled stands especially in drier soils. These two non native invasives are not as widely known as a number of other invasive plants such as purple loosestrife or buckthorn, but to those afflicted (see sidebar), swallow-worts are formidable management problems. Their North American ranges are steadily increasing.

Like other milkweeds, these species contain toxic substances, cardiac glycosides, that make them unsuitable for forage. Native herbivores such as deer do not browse them, preferring the native plants to which they are adapted. The lack of herbivore controls and of diseases contributes to the ability of the swallow-worts to dominate areas they invade. The preferential grazing of native species compounded with aggressive reproduction and growth of the swallow-worts seriously compromises the ability of the native plant communities to compete and to regenerate. Once swallow-wort establishes in an area the numerous wind born seeds readily spread the plant locally and over distances. This constant seed pressure helps both species dominate, even under a wooded canopy. Early research suggests that pale swallow-wort can manipulate native arbuscular micorrhizal fungus in the soil, changing the soil ecology. Also, monarch butterflies will lay eggs on swallow-wort, but the larvae do not survive.



Forest owners in susceptible areas of New York express concern that pale swallow-wort is affecting forest regeneration. The problem appears to be worst in shallow soils over limestone bedrock such as limestone quarries in Onondaga County or lime woods of Henderson Shores, Jefferson County, where hundreds of acres of forest floor are covered by pale swallow-wort which also climbs into young trees.

Pale swallow-wort, native to the Ukraine and southwestern Russia and first recorded in 1889 in Toronto Junction, Ontario, has spread throughout the lower Great Lakes basin, favoring lime derived soils (New York, Massachusetts, Pennsylvania, New Jersey, Indiana, Connecticut, New Hampshire, Michigan, Wisconsin, Missouri, Ontario and Quebec). Black swallow-wort is native in Europe in western parts of the Mediterranean. Black Swallow-wort, first recorded in 1854 in Cambridge, Massachusetts, has spread throughout lower New England and the lower Hudson Valley into New York, Michigan, Ohio, Rhode Island, Vermont, Pennsylvania, Illinois, Missouri, Connecticut, Maine, Maryland, New Jersey, New Hampshire, Indiana, Wisconsin, Kansas,

Kentucky, Nebraska, California, Minnesota, Ontario and Quebec. Black swallow-wort is associated with limestone soils and in acidic, granite based situations. These are not weeds of turf or annual row crops, although pale swallow-wort has been found in no-till corn fields in central New York.

The Plant

Swallow-worts twining viney growth habit is distinctive. Diminutive and slender (2-2.5 inches) milkweed pods are a useful, almost year round, identification characteristic. The smooth, glossy, opposite leaves (2 to 4 inches long by 2 to 2 ¾ inches wide) are ovate with pointed tips. The small, 5 lobed flowers are in loose clusters in the leaf axils. Pale swallow-wort has yellow-maroon to maroon flowers. Black swallow-wort has very dark, almost black flowers. In open areas, tangled growths of the plant grow one and a half to three feet tall. With the support of shrubs and young trees, the vines may reach 4-6, even 8 feet in thickets, young woods and forest edges, twining in ropes around each other and into branches of trees and shrubs (see picture). Vines and split pods persist throughout winter, sometimes for a few

years. New growth emerges around early May, flower buds appear mid to late May. Once flowering begins elongating vines begin twining around each other. In open areas the tangled mass of growth has earned pale swallow-wort the less flattering name dog-strangling vine in Canada. Flowering is through June into July. Pods of the swallow-worts are distinctive, often in pairs, and begin to form in late June to early July. Fruit production is directly related to light levels. Thick infestations in full sun can produce 2,000 seeds per square meter. These seeds are polyembryonic, 1 to 4 embryos per seed, greatly increasing each seed's establishment potential. Dispersal begins in late July to early August in open areas and continues throughout late summer and fall.

Control

Gardeners, farmers, wildlife managers, aand conservationists attest to the aggressiveness of the plants and their resistance to control efforts. Prevention is the very best control (see *One Man's Battle with Invasives* – New York Forest Owner, March/April 2003). The tenacious root system resists pulling and must be dug out. Buds on the root crown readily resprout after mowing, grazing or early frost damage, with several buds in reserve for future top destruction events. That these species are not weeds of annual crop systems indicate the level of effort necessary for control. A herbicide comparison study shows good control using foliar applications of Garlon 4 (triclopyr) and somewhat less, but good control using Roundup (glyphosate). Follow-up treatments will be necessary for several years to kill survivors and new seedlings. Where infestation history is short, recovery could be spontaneous. In old infestations a rehabilitation plan will be important.

What You Can Do To Help

Researchers in Canada and northeastern U.S. are studying why swallow-wors are so successful, as well as looking for biological control agents from Europe and Russia. Researchers need to know the extent of the infestation in North America to develop a base line to monitor spread and to measure control success.

Information from land owners and land managers is essential to understanding the scope of these invasions. If you know of an infestation, please help. Send information about the specific location (Lat/long or GPS points would be nice) including road or other landmark, town, county and state. The surface area covered (acres), habitat type, soil type, history of infestation, if known, all help to understand the nature and scope of the infestations. In order to verify the identity of the plant, send plant material. At the very least a mature pod with the fruit stem is needed. If possible, an entire pressed plant including (roots and) flowers and/or fruits would be best. Include information about the date of collection and the specific information requested above. Information without some plant material can not be used, so please take the time to put at least a pod in the envelope. Send the information to:

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Personal Experience with the Swallow Wort

My name is Andrew Fowler and I manage a Christmas tree farm and nursery to the southeast of Rochester, in Monroe County, NY. We have 62 acres, of which about half is in plantation, and the rest is in woods, pond, swamp and wooded pasture. I first noticed black swallowwort about 7 years ago, but paid little attention to it at that time; it was just another weed. It was when I was mowing a trail through a wooded slope one fall that I realized that this was no ordinary weed. We have several trails through the woods that are maintained by annual mowing. This particular trail runs upslope from a field of Douglasfir through a wood of black locust and white spruce to the top of a hill. When the time came to mow this trail, I noticed that the entire trail and surrounding woods was a mass of swallowwort 6 or 7 feet tall, clambering over the undergrowth and up the trees, forming a tangled monoculture, that quickly clogged the mower and sent clouds of seeds floating off into the surrounding woods. I was amazed at how fast this weed had become dominant.

I soon began to notice the plant in other areas. It was all over the Christmas tree plantation in the herbicide-controlled strips and in the grassy aisles between the trees. It was in the heavy grass along the edges of the plantation. It was forming dense stands in the shade of the woods, crowding out everything else. I began efforts at controlling it by spraying herbicides, but nothing seemed to kill it. In fact, I believe that the application of herbicides actually gave it a competitive edge by killing off competition, as I had noticed it growing in the cleared strips along the tree rows.

I don't know when the plant first arrived, but within 3 or 4 years of my noticing it, it has spread to every corner of the farm, in spite of my control efforts. It regularly shows up in my garden, where it is immediately dug out. While I have not been able to eradicate it, I have found that preventing flowering by mowing or herbicide treatment, will slow, but not stop, its spread. I now look for the plant whenever I visit parks and woods, and have found it thriving in every park and wood around Monroe County. I don't believe that any county efforts are underway to control it. In fact I don't think that many people are even aware of its existence. I believe that swallowwort is a very serious threat to ecosystem, more so than the showy purple loosestrife, which gets the publicity, because swallowwort can apparently thrive in just about any conditions.