Invasive swallow-worts

Black swallow-wort and pale swallow-wort



Monarch caterpillars require milkweed to survive; their caterpillars cannot feed on any other plants. Female monarchs lay their eggs on milkweed to ensure that their offspring have adequate resources for development. Females find milkweed using a combination of visual and chemical cues, but an alien invader is jeopardizing this process by confounding female monarchs during the egg-laying process.

Black swallow-wort (*Cynanchum louisea*, formerly *C. nigrum* or *Vincetoxicum nigrum*) and pale swallow-wort (*Cynanchum rossicum*, formerly *Vincetoxicum rossicum*) are members of the milkweed family (Asclepiadacea) native to Europe. Studies have shown that female monarchs will lay eggs on black swallow-wort, even when it is growing in the same field as common milkweed (Casagrande and Dacey 2007). Laboratory tests show that monarch caterpillars cannot feed on black or pale swallow-wort plants. Caterpillars from eggs laid on these invasive plants will not survive, and are essentially wasted. Swallow-worts can also crowd out native milkweeds, which can eliminate appropriate food sources.

Black and pale swallow-worts should not be confused with *Cynanchum laeve* (common names sandvine, honeyvine, bluevine milkweed, and smooth swallow-wort), a similar plant that is native to the eastern and central United States and Ontario. *C. laeve* is an appropriate monarch host and is found in many of the same states as the invasive species. Sandvine has heart-shaped leaves and white flowers.

What's the problem with swallow-worts?

Swallow-wort species reduce local biodiversity of native plants, invertebrates, and vertebrates. Studies show a decrease in arthropod biodiversity in areas covered by swallow-wort, when compared to similar old fields vegetated by native plants (DiTommaso et. al. 2005). Swallow-worts can take over open areas, which in turn leads to reduced grassland bird breeding and nesting. Swallow-wort species release chemicals that hinder the growth of surrounding plants. Studies have shown a reduction in root size for butterflyweed (*A. tuberosa*) and common milkweed (*A. syriaca*) when grown alongside swallow-worts (Michigan DNR 2012).

Like other milkweeds, swallow-worts produce glycosides that are toxic to mammals, including grazers. Monarchs are particularly affected by the spread of swallow-worts. Studies in Rhode Island show that monarch butterflies lay eggs on this "dead-end" host, particularly in areas where common milkweed is relatively rare. A proportion of eggs are laid on swallow-worts even when the milkweed host plant is present in the field.

There is no evidence that monarchs are evolving an ability to survive on these invasive swallow-worts, despite over a hundred years of exposure.



Cynanchum louiseae
Black swallow-wort, invasive



Cynanchum laeve
Sandvine, native

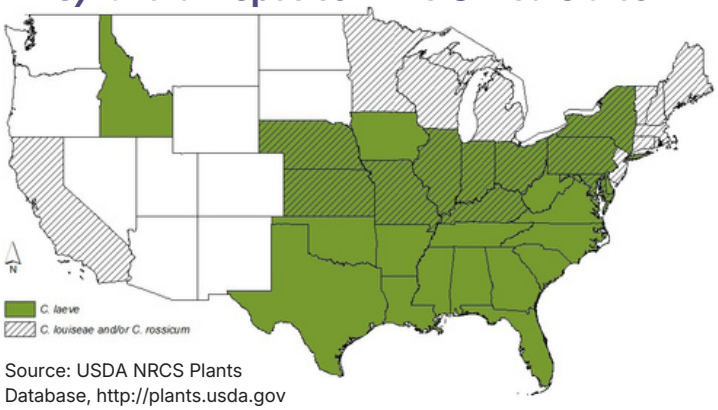


Cynanchum rossicum
Pale swallow-wort, invasive

Swallow-wort biology and range

Both black and pale swallow-worts are herbaceous twining vines. Plants can reach 3 to 6.5 feet in length and have clear, watery sap. The leaves are opposite, oval, and have smooth margins and pointed tips. Stems are covered with downy hairs. Flowers of the black swallow-wort look like milkweed flowers. They are star-shaped, dark purple in color, and have five triangular downy petals that are about as long as they are wide. Pale swallow-wort has flowers that vary from pink to burgundy in color. The green seed pods of both species are longer than those of common milkweed, but like Asclepias species, the pods split open in the fall when seeds are ready. The seeds look like milkweed seeds and are wind-dispersed. They are frequently found in open areas, such as old fields and pastures, fence rows, and roadside ditches; they have also been found in forested areas. Both species were accidentally introduced in the 1800s and have now spread to the Midwest, including parts of Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, and Missouri.

Distribution Map for Native and Invasive *Cynanchum* Species in the United States



Source: USDA NRCS Plants Database, http://plants.usda.gov

Controlling swallow-wort

Since seeds can persist in the soil for up to five years, swallow-wort control may require many years. The first step is identifying the plant. Swallow-worts are easiest to identify when they are flowering, or in late summer when plants begin to turn yellow in color. Eradicating plants in full sun should be prioritized to avoid seed dispersal since they develop fruits earlier than those in the shade. Once swallow-wort has been removed, replant the area quickly. Disturbed areas are vulnerable to recolonization by this and other invasive species.

Appropriate disposal of all root crowns, root fragments, and seed pods is essential, as they can produce new sprouts. Bag fragments and seeds then burn or dispose of them in a landfill. Do not compost plant parts.

- Mechanical methods, such as hand pulling or digging, cutting or mowing, and seed pod removal are most useful in the early stages of infestation, and are effective in controlling the spread of the infestation. It is difficult to remove the entire plant by hand digging and pulling, because seedlings often break. Cutting can lead to resprouting.

- Chemical controls (herbicides) may be effective for large infestations but must be used for years to ensure that young plants are eradicated. Options include Glyphosate, Garlon, and Tricolpyr.

- Prescribed burning alone will not control swallow-wort and may encourage vigorous resprouting. Burns can be used as a management tool in fire-adapted areas once swallow-worts are removed and natives have been reestablished.

- A leaf-eating moth species, *Hypena opulenta,* has been approved for use in Canada and the U.S. This moth feeds exclusively on swallow-wort, and has the potential to keep this plant in check in combination with other measures.

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