



Mile-A-Minute Weed

Persicaria perfoliata L.

Buckwheat family (Polygonaceae)

NATIVE RANGE

India to Eastern Asia, China and the Islands from Japan to the Phillipines, including Nepal, Burma, Manchuria, China, Korea, Taiwan and the Malay Peninsula.

DESCRIPTION

Mile-a-minute weed, or Asiatic tearthumb, is an herbaceous, annual, trailing vine. Stems are armed with recurved barbs which are also present on the underside of the leaf blades. The light green colored leaves are shaped like an equilateral (equal-sided) triangle and alternate along the narrow, delicate stems. Distinctive circular, cup-shaped leafy structures, called ocreae, surround the stem at nodes, thus the name 'perfoliatum.' Flower buds, and later flowers and fruits, emerge from within the ocreae. Flowers are small, white and generally inconspicuous. The fruits are attractive, deep blue and arranged in clusters at terminals. Each berry-like fruit contains a single glossy, black or reddish-black hard seed called an achene. The scientific name was recently changed from *Polygonum perfoliatum* as a result of extensive taxonomic research on the genus.



ECOLOGICAL THREAT

Mile-a-minute weed grows rapidly, scrambling over shrubs and other vegetation, blocking the foliage of covered plants from available light, and reducing their ability to photosynthesize, which stresses and weakens them. In addition, the weight and pressure of the vine causes distortion of stems and branches of covered plants. If left unchecked, reduced photosynthesis can kill a plant. Large infestations of mile-a-minute weed eventually reduce native plant species in natural areas. Small populations of extremely rare plants may be eliminated entirely. Because it can smother tree seedlings, mile-a-minute weed has a negative effect on Christmas tree farms, forestry operations on pine plantations and reforestation of natural areas. It has the potential to be a problem to nursery and horticulture crops that are not regularly tilled as a cultivation practice.



DISTRIBUTION IN THE UNITED STATES

Mile-a-minute is reported to be invasive in Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia, Washington, DC and in nine eastern national parks. This area comprises an estimated 20 percent of its likely potential range. It is considered to be a temperate species with subtropical tendencies and therefore has the potential to invade those portions of the contiguous United States that have the appropriate climate to provide a minimal eight week cold vernalization period. A temperature of 10°C or below must be sustained for an eight week period to stimulate germination.

HABITAT IN THE UNITED STATES

Mile-a-minute weed generally colonizes open and disturbed areas, along the edges of woods, wetlands, stream banks, and roadsides, and uncultivated open fields, resulting from both natural and human causes. Natural areas such as stream banks, parks, open space, road shoulders, forest edges and fence lines are all typical areas to find mile-a-minute. It also occurs in environments that are extremely wet with poor soil structure. Available light and soil moisture are both integral to the successful colonization of this species. It will tolerate shade for a part of the day, but needs a good percentage, 63-100% of the available light. The ability of mile-a-minute to attach to other plants with its recurved barbs and climb over the plants to reach an area of high light intensity is a key to its survival. It can survive in areas with relatively low soil moisture, but demonstrates a preference for high soil moisture.

BACKGROUND

The first records of mile-a-minute in North America are from Portland, Oregon (1890) and Beltsville, Maryland (1937). Both of these sites were eliminated or did not establish permanent populations of the species. However, the introduction of mile-a-minute in the late 1930's to a nursery site in York County, Pennsylvania did produce a successful population of this plant. The plant first appeared at this site when holly seeds from Japan were planted and mile-a-minute came up with the holly (Moul 1948). The owner of the nursery was interested in the plant and allowed it to reproduce; unfortunately, subsequent efforts to eradicate it were not successful. The distribution of mile-a-minute has radiated from the York County site into neighboring states. In the past 55 years, the range for this plant in the United States has extended as far as 300 miles in several directions from the York County, Pennsylvania site (Mountain 1995) and (Okay 1997).

BIOLOGY & SPREAD

Mile-a-minute weed is primarily a self-pollinating plant (supported by its inconspicuous, closed flowers and lack of a detectable scent), with occasional out-crossing. Fruits and viable seeds are produced without assistance from pollinators. Vines generally die with the first frost. Mile-a-minute is a prolific seeder, producing many seeds on a single plant over a long season, from June until October in Virginia, and a slightly shorter season in more northern geographic areas. Seed persists in the soil for as long as 7 years, with staggered germination over the years.

Birds are probably the primary long-distance dispersal agents of mile-a-minute weed. Transport of seeds short distances by native ant species has been observed. This activity is probably encouraged by the presence of a tiny white food body (elaiosome) on the tip of the seed that may be attractive to the ants. These seed-carrying ants may play an important role in the survival and germination of the seeds of mile-a-minute weed. Local bird populations are important for dispersal under utility lines, bird feeders, fence lines and other perching locations. Other animals observed eating mile-a-minute weed fruits are chipmunks, squirrels and deer.

Water is also an important mode of dispersal for mile-a-minute weed. Its fruits can remain buoyant for 7-9 days, an important advantage for dispersing seed long distances in stream and river environments. The long vines frequently hang over waterways, allowing fruits that detach to be carried away in the water current. During storm events the potential spread of this plant is greatly increased throughout watersheds.

MANAGEMENT OPTIONS

A variety of control measures can be used for management of mile-a-minute weed depending on the level of infestation and resources available.

Biological

A biological control program targeting mile-a-minute weed was initiated by the US Forest Service in 1996, with field surveys in China (Ding *et al.* 2004) and subsequent host specificity testing in quarantine in the US. A small weevil, *Rhinoncomimus latipes*, was found to be host-specific to mile-a-minute weed (Price *et al.* 2003, Colpetzer *et al.* 2004), and field release was approved by USDA-APHIS in 2004. Weevil adults feed on mile-a-minute foliage, and larvae feed within nodes and may cause sufficient damage to reduce seed production. The weevils are active from early spring through the fall, completing multiple generations. Weevils have been released in Delaware, Maryland, New Jersey, Pennsylvania and West Virginia, and have established at every release site. Substantial plant damage has been observed at some sites several years after release of the weevil. Weevils are being reared at the Phillip Alampi Beneficial Insects Lab in Trenton, NJ, but are not generally available. Studies are ongoing concerning the impact and best way to use these insects for control.

Chemical

The most effective herbicides to use are systemic (ie., active ingredient travels to the roots) products like glyphosate (e.g., Roundup Classic® for upland areas and Rodeo® for wetland applications), Glyphosate applied at a low rate (2-3%) will probably be effective in killing mile-a-minute weed. However, because this plant is not currently listed on the product labels for Roundup® or Rodeo®, use of these products is permissible only with prior approval of the Department of Agriculture in the state where the application will take place [FIFRA 1997, Section 2(z)(ee)].

Cultural

Cultural methods can be utilized to discourage the introduction of mile-a-minute to an area. It is important to maintain vegetative community stability and to avoid creating gaps or openings in existing vegetation. Maintaining broad vegetative buffers along streams and forest edges will help to shade out and prevent establishment of mile-a-minute weed. This will also help to reduce the dispersal of fruits by water.

Manual

Hand pulling of seedlings is best done before the recurved barbs on the stem and leaves harden, but may be done afterwards with the help of thick gloves. Long pants and a long-sleeved shirt will help prevent skin abrasion. Manual removal of vines may be conducted throughout the summer. The delicate vines can be reeled in fairly easily, balled up and placed in large piles that can be left to desiccate for several days or longer. Try to pull up the whole plant including its roots. Depending on the site and situation, piles can either be bagged and disposed of in a landfill or left until the following year and monitored for emergence of new seedlings. Previously infested sites need to be rechecked several times each year, and new plants removed until the seed germination period is complete (roughly early April until early July in the middle Atlantic states).

Mechanical

For low growing infestations that cover the ground, repeated mowing or weed whipping of vines will reduce the plants reserves and prevent or reduce flowering which in turn reduces fruit and seed production.

USE PESTICIDES WISELY: Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

NOTICE: mention of pesticide products on this page does not constitute endorsement of any material.

CONTACTS

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OTHER LINKS

- <http://www.invasive.org/search/action.cfm?q=Polygonum%20perfoliatum>
- <http://www.lib.uconn.edu/webapps/ipane/browsing.cfm?descriptionid=13>
- <http://ag.udel.edu/enwc/research/biocontrol/index.htm>
- http://www.dcnr.state.pa.us/FORESTRY/invasivetutorial/mile_a_minute.htm

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PHOTOGRAPHS

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