

Invasive Plant Series

FACT SHEETS

This is a high priority species.
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Mile-a-Minute Vine

Persicaria perfoliata (L.) H. Gross

EXPERT
REVIEWED

Other Names: *Polygonum perfoliatum* L., Asiatic tearthumb

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Figure 1. Mile-a-minute vine grows more than 25 feet in height in one growing season, overtopping shrubs, small trees and growing up forest edges

USDA APHIS PPQ Archive, USDA APHIS PPQ, Bugwood.org



Figure 2. Leaves are simple, alternate and a near perfect equilateral triangle shape

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Description: Mile-a-minute vine is native to East Asia. It likely was accidentally introduced to North America on imported nursery stock through a landscaping nursery in central Pennsylvania in the mid- to late 1930s. Mile-a-minute is a member of the buckwheat family, Polygonaceae. Although its common name exaggerates its growth potential, this annual vine can grow as much as 6 inches a day and can reach heights of more than 25 feet within the growing season. It forms very dense, tangled mats, growing over shrubs, small trees and up the sides of forest edges (Fig. 1). In its invaded range in North America it commonly is found growing along roadsides, forest edges, utility rights-of-way, stream banks and in recently logged forests¹. It prefers moist, rich soil in full sun, but can tolerate partial shade and drier and wetter soils. Mile-a-minute seeds germinate in early spring (March-April). Flowering begins in early June and first seeds begin to ripen by early July. Flowering and fruiting continues through first frost (usually by late October) when the entire plant dies. Roots are shallow and fibrous. The leaves are simple, alternate, light green and a nearly perfect triangle shape (Fig. 2). The delicately narrow, green to red-tinted stems, and the petiole (leaf stem) and midrib on the underside of the leaves are armed with small, stiff, recurved barbs (Fig. 3). Small, cup- or saucer-shaped leaf structures, called ocreae, encircle the stem at each node (Fig. 4). Clusters of small white, rather inconspicuous, flowers emerge from the ocreae. Flowers develop into clusters of deep, iridescent blue berry-like fruits, approximately 5 mm in diameter (Fig. 4), each fruit containing a single black or reddish-black hard seed, called an achene. Seeds are dispersed by birds and mammals, including chipmunks, squirrels and deer, which eat the fruit. Floodwaters facilitate long distance dispersal of seed. Because mile-a-minute vine flowers are self-fertile, a single seed can start a whole new colony. Seeds may remain viable in the soil for at least five years. Mile-a-minute vine may be confused with the native arrow-leaved tearthumb (Fig. 5) or halberd-leaved tearthumb (Fig. 6), each of which is similarly armed with recurved barbs along their stems. Arrow-leaved tearthumb leaves are more narrow than mile-a-minute. Halberd-leaved tearthumb leaves are, as the name suggests, in the shape of a medieval halberd. Neither of these native tearthumbs have ocreae. Other possible look-a-likes include the bindweeds and climbing false buckwheat (Fig.7), neither of which have recurved barbs along the stems.



There are no known populations of mile-a-minute vine in Indiana. However, the plant has infested southeast Ohio counties bordering the Ohio River and could spread into Indiana.

Distribution: No known populations of mile-a-minute vine occur in Indiana. The nearest documented infestations to Indiana occur in southeast Ohio counties bordering the Ohio River. Because it has not yet arrived in Indiana, and because of the very real threat of its spreading down the Ohio River or being inadvertently introduced into the state by human activity, this invasive vine is listed as a high-priority species for prevention, early detection and rapid response efforts.

Impact: Mile-a-minute's rapid growth and dense infestations, along with its very early spring germination, gives this species a very substantial competitive advantage over most native plant species. It easily overwhelms, shades out and displaces many native



Figure 3. Stems, petioles and leaf midribs are all lined with small recurved barbs

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



Figure 4. Cup- or saucer-shaped leaf structures, called ocreae, encircle the stem at each node; clusters of deep, iridescent blue berry-like fruits are eaten by birds, chipmunks, squirrels and deer, which then spread the seed

Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Look-a-likes:



Figure 5. The native **arrow-leaved tearthumb** (*Persicaria sagittata* (L.) Gross ex Nakai; formerly *Polygonum sagittatum* L.)

Glenn Galau, Plant Biology, Univ. of Georgia



Figure 6. The native **halberd-leaved tearthumb** (*Persicaria arifolia* (L.) Haraldson; formerly *Polygonum arifolium* L.)

Glen Mittlehauser



Figure 7. The native **climbing false buckwheat** (*Fallopia scandens* (L.) Holub; formerly *Polygonum scandens* L.)

Sally Weeks, Purdue University

plant herbaceous species. It can overtop, shade out, weigh down, and even break taller herbaceous plants, woody shrubs, and tree seedlings and saplings. Mile-a-minute infestations reduce plant species diversity and disrupt wildlife habitat. Where timber harvesting occurs, mile-a-minute destroys tree seedlings and saplings, resulting in forest regeneration failures.² It quickly overruns utility rights-of-way where herbicides are used to control unwanted woody vegetation. Control and restoration costs of areas infested with mile-a-minute range from \$150 to \$1,240 per acre.³ The density of barbed stems and leaves makes movement very difficult for both animals and humans, negatively impacting wildlife use and human recreational use of infested areas. It is a pest in nurseries, orchards and landscape plantings. It is listed as a noxious weed in seven states, including Ohio.

Management: Efforts should be directed at preventing this pest from entering Indiana and to its early detection. Its movement through Ohio, particularly down the Ohio River, should be closely monitored. Early detection should focus on areas of likely entry, such as disturbed habitats in the Ohio River flood plain. Preparation for its first arrival should begin now so that an effective rapid response can be mounted to eradicate or contain it. Where it already occurs, control should be conducted before mile-a-minute begins producing seed in mid- to late June. Existing populations are most effectively controlled with application of pre-emergent herbicides in early spring, followed by application of a post-emergent herbicide to survivors before fruit set in midsummer. Control efforts and monitoring should continue in subsequent years until no mile-a-minute plants remain. Once mile-a-minute is well established in an area, then management efforts should integrate cultural, biological and chemical control measures, in conjunction with native plant restoration through seeding and planting.

Prevention: Avoid disturbing areas where mile-a-minute is present until it has been eradicated for several years. Mowing, road maintenance and agricultural equipment can inadvertently spread mile-a-minute seed. Mow infested areas along roadsides, ditch banks and field edges before seed begins maturing in mid- to late June. Mile-a-minute seed maturation dates may vary from year to year depending on weather patterns. Avoid working or recreating in or walking or driving through infested areas during seed dispersal periods. Clean clothing, shoes, ATVs or vehicles following activity in infested areas.

Control:

- Manual – Manual control is feasible only for the occasional plant, small infestations or sensitive areas

where herbicides cannot be used. Hand pulling is easy with protective gloves. If manual control occurs after fruit/seed production, plants containing fruits should be bagged and disposed of. Green fruit may still produce viable seed!

- Mechanical – Repeated mowing beginning before fruit set and through the growing season to first frost prevents seed production. Mowing should be done low to the ground, as the remaining stems will send up new sprouts and branches.
- Biological – A weevil, *Rhinoncomimus latipes*, found feeding on mile-a-minute vine in its native range in Asia has been tested as a biological control agent in northeastern North America. Although minor feeding by adult weevils has been observed on other members of the buckwheat (*Polygonaceae*) family, larvae are only known to feed on mile-a-minute. *R. latipes* has proved effective in reducing mile-a-minute infestations and seed production, particularly where competing vegetation is already established.⁴ It has been approved by USDA-APHIS for release and has been integrated into mile-a-minute management programs in 11 eastern states.
- Chemical – Large infestations should first be treated with a pre-emergent herbicide application. Effective pre-emergent herbicides include Pendulum Aquacap (pendimethalin) and Plateau (imazapic). When applied to the ground shortly before mile-a-minute seeds begin to germinate, they prevent the new germinants from growing and emerging from the soil. Application should occur by mid-March in southern Indiana, depending on weather patterns. Applied at the proper rates and time they also have some selectivity, meaning they will not harm all plants, particularly perennials that break dormancy later in the spring or annuals that germinate later on. Pre-emergent herbicide treatments should be followed up with a post-emergent herbicide application in later spring to early summer (by mid-June) to control the mile-a-minute plants missed or not otherwise killed by the pre-emergent herbicide application. Triclopyr (Garlon 3A, Garlon 4, Element 3, Element 4, others) and glyphosate (Roundup, Glyphomax, Glyphomate 41, Glypro, others) both are effective at controlling established mile-a-minute plants. Triclopyr is a broadleaf-specific herbicide, and applied at proper rates will not harm grasses and sedges. Glyphosate is a broad-spectrum herbicide and will damage all classes of plants. A non-ionic surfactant should be used to increase herbicide uptake. Mile-a-minute may grow on stream and riverbanks or near open water.

Caution must be used to follow label restrictions regarding overspray, drift or movement of herbicide into surface waters. Only herbicides and surfactants with an aquatic use label should be applied in these circumstances. Accord, Rodeo, Aquaneat (i.e., glyphosate products) and Garlon 3A and Element 3A (i.e., triclopyr products) are labeled for use in or near aquatic areas.

For vegetation management professionals: Hexazinone, imazethapyr, and sulfometuron-methyl have proved effective at controlling mile-a-minute in herbicide trials. Labels for aminocyclopyrachlor, aminopyralid, chlorsulfuron, dicamba, imazapyr, metsulfuron-methyl, pendimethalin, 2,4-D + triclopyr and 2,4-D + 2, 4-DP all list buckwheats (*Polygonaceae*) as susceptible weed species. While the listed herbicides may prove effective alone or in combination with other listed herbicides for mile-a-minute vine pre- and post-emergence control, they have not been tested.

Additional Information

- Invasive.org:
<http://www.invasive.org/browse/subinfo.cfm?sub=3065>
- National Invasive Species Information Center:
<http://www.invasivespeciesinfo.gov/plants/mileminute.shtml>
- Penn State Invasive Plant Species Management QuickSheets:
<http://plantscience.psu.edu/research/projects/vegetative-management/publications/state-parks-invasive-species-management-quick-sheets/7.-mile-a-minute-polygonum-perfoliatum/view>
- EDDMapS Mile-a-minute Distribution:
<http://www.eddmaps.org/distribution/uscounty.cfm?sub=3065>

Literature Cited:

- 1 Kumar, V. and A. DiTommaso. 2005. Mile-a-minute (*Polygonum perfoliatum*): an increasingly problematic invasive species. *Weed Technology* 19:1071-1077.
- 2 McCormick, L.H. and N.L. Hartwig. 1995. Control of noxious weed mile-a-minute (*Polygonum perfoliatum* L.) in reforestation. *Northern J. Appl. Forestry* 12:127-132.
- 3 Stanosz, G. and W. Jackson. 1991. Mile-a-minute weed. Pest Alert NA-PR-04-91. Morgantown, WV: U.S. Dept. of Agriculture, Forest Service, Northeastern Area.
- 4 Hough-Goldstein, J., E. Lake and R. Reardon. 2012. Status of an ongoing biological control program for the invasive vine *Persicaria perfoliata* in eastern North America. *BioControl* 57:181-189.

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