

Persicaria perfoliata [简体中文](#) [正體中文](#)

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Polygonales	Polygonaceae

Common name	Asiatic tearthumb (English), minuteweed (English), tearthumb (English), mile-a-minute-weed (English), mile-a-minute-vine (English), ishimikawa (Japanese), devil's-tail tearthumb (English)
Synonym	<i>Ampelgynum perfoliatum</i> , (L.) Roberty & Vautier <i>Polygonum perfoliatum</i> , L.
Similar species	<i>Polygonum arifolium</i> , <i>Polygonum sagittatum</i> , <i>Polygonum scandens</i>
Summary	<i>Persicaria perfoliata</i> is a herbaceous, annual, trailing vine of the buckwheat family (Polygonaceae) that is native to Asia. It generally colonises open and disturbed areas, along the edges of woods, wetlands, stream banks and roadsides. It also occurs in environments that are extremely wet with poor soil structure. Available light and soil moisture are both integral to the successful colonisation of <i>P. perfoliata</i> . Birds are probably the primary long-distance dispersal agents, but water is also an important mode of dispersal, especially during storm events when high water may spread the plant throughout watersheds. <i>P. perfoliata</i> is also spread by the transporting of nursery stock.



[view this species on IUCN Red List](#)

Species Description

Persicaria perfoliata has a reddish stem that is armed with downward pointing hooks or barbs, which are also present on the underside of the leaf blades. The light green coloured leaves are shaped like an equilateral (equal-sided) triangle and alternate along the narrow, delicate stems. Distinctive, circular, cup-shaped leafy structures, called ocreas, surround the stem at intervals. Flower buds, and later flowers and fruits, emerge from within the ocreas. Flowers are small, white and generally inconspicuous. The fruits are attractive, metallic blue, and segmented; each segment contains a single glossy, black or reddish-black seed (Okay, 1999).

Lifecycle Stages

Okay (1999) states that a temperature of 10 degrees C or below must be sustained for an eight-week period to stimulate germination.

Habitat Description

Persicaria perfoliata invades a wide range of habitats. It has been found on stream banks, moist thickets, roadsides, nurseries, wood-piles, clearings and ditches in the U.S.A. It thrives where forests are clear-cut (Oliver, 1996). 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. Weak growth can occur in low light (16% of ambient) under greenhouse conditions (Van Clef, 2001). It can reach areas of higher light intensity by attaching to and climbing over other plants with its recurved barbs. It can survive in areas with relatively low soil moisture, but demonstrates a preference for high soil moisture. *P. perfoliatum* generally grows in areas with an abundance of leaf litter on the soil surface (Okay, 1999).

Reproduction

The weed is primarily a self-pollinating plant (supported by its inconspicuous, closed flowers and lack of a detectable scent), with occasional outcrossing. Fruits and viable seeds are produced without assistance from pollinators. Vegetative propagation from roots has not been successful for this plant. It is a very tender annual, reproducing successfully from July until the first frost, after which it withers. Stahl (2002) states that until frost, the plant can grow up to 6mtrs (20 feet) long (15cms (6 inches) per day), bearing about 50-100 seeds. The species may exhibit a bet-hedging strategy by producing a small peak of production in July (which may safeguard production in years of severe drought) and a large peak of production in September (which coincides with major bird migration). Seed production can reach 66 per square metre on the date of peak production. Seed germination after 1, 2, and 3 years buried in forest soils was 96%, 25%, and 33%, respectively, which indicates that the species forms a long-term seed bank (Van Clef and Stiles, 2001).

General Impacts

Persicaria perfoliata is known to grow 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. If left unchecked, the shaded plants are killed, and large infestations eventually reduce native plant species in natural areas. It is commonly called mile-a-minute. Small populations of extremely rare plants may be eliminated entirely. Because it can smother tree seedlings, this 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. IPANE (2001) state that trees and other native plants could suffer mechanical damage due to the weight of this plant. Mile-a-minute weed is a threat to ecosystems as it has the ability to outgrow other species (Oliver, 1996).

Management Info

Persicaria perfoliata can form a long-term seed bank, which must be considered regardless of the chosen management technique (Van Clef, pers.comm., 2004).

Preventative measures: Considering the potential of invasiveness and the very limited distribution of *Persicaria perfoliata* (= *Polygonum perfoliatum*) in the EPPO region, the EPPO Secretariat considered that this species could be added to the EPPO Alert List. *P. perfoliata* was included in the EPPO A2 List (pests locally present in the EPPO region). As of September 2009, nine species including *P. perfoliata* (*Crassula helmsii*, *Eichhornia crassipes*, *Heracleum sosnowskyi*, *H. persicum*, *Hydrocotyle ranunculoides*, *Lysichiton americanus*, *Pueraria lobata*, *Solanum elaeagnifolium*) have been subject to Pest Risk Assessments (PRAs) and are now recommended for regulation to the 50 EPPO countries. All these species have a limited distribution within the EPPO. *P. perfoliata*, *H. sosnowskyi*, *H. persicum*, *S. elaeagnifolium* fall into a category of species that have been unintentionally introduced as contaminants associated with international movement of various commodities and articles, including soil and vehicles (EPPO, Archives, 2007; Brunel & Petter, 2010)

In the USA, *P. perfoliata* has been classified as a 'Class A noxious weed' in the states of Alabama and North Carolina; as a 'invasive banned weed' in the state of Connecticut; as 'prohibited' in Massachusetts; as a 'Prohibited noxious weed' in Ohio; as a 'noxious weed' in Pennsylvania and a 'plant pest' in South Carolina (USDA, NRCS, 2011)

Physical: 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. Removal of vines by hand may be conducted throughout the summer, if tough gloves and protective clothing (coveralls) are worn to avoid the skin shredding ability of the recurved hooks. The delicate vines can be reeled in fairly easily and balled up in piles that can be left to dehydrate for several days before disposal. The site must be rechecked at frequent intervals, and removal of new plants should continue until the seed germination period is complete, roughly early April until early July in the mid-Atlantic region of the United States. Physical removal is not recommended after fruit production begins in July (in the mid-Atlantic region of the U.S.) because it will aid dispersal of the species (Van Clef, pers.comm 2004). Repeated mowing or trimming of plants will prevent the plants from flowering and thus reduce or eliminate fruit and seed production. Cultural methods can be utilized to discourage the introduction of *P. perfoliatum* 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 this weed. This will also help to reduce the dispersal of fruits by water.

Mechanical: Mechanical control is ineffective as seeds are often left behind (Oliver, 1996).

Chemical: Studies have shown that pre-emergence applications of herbicide are most effective in controlling mile-a-minute weed, with the herbicides Oust, Velpar L, Arsenal, Aatrex, Pursuit and Pursuit Plus being the most effective. Roundup and Arsenal are best for post-emergence control (McCormick and Hartwig, 1995). Herbicidal soap, helps burn back foliage of *P. perfoliatum*. Because these products do not have the systemic (i.e., travels to the roots) ability of herbicides like glyphosate, they must be reapplied all season long to any regrowth. Glyphosate (e.g., Roundup for upland areas and Rodeo for wetland applications), applied at a low rate will probably be effective in killing the weed.

Biological: A number of potential biological control agents for *P. perfoliatum* have been identified in China. The weevil *Rhinoncomimus latipes* (Coleoptera: Curculionidae) was regarded as the most promising agent (Ding et al. 2004). This study concluded that *R. latipes* is a host specialist for *P. perfoliatum* and would have minimal potential non-target effects if released in the U.S.A (Colpetzer et al. 2004). Other possibilities included the oligophagous leaf beetles *Smaragdina nigrifrons* (Coleoptera: Eumolpidae), *Gallerucida bifasciata* (Coleoptera: Chrysomelidae) and *Galerucella placida* (Coleoptera: Chrysomelidae), and the geometrid moth *Timandra griseata* (Lepidoptera: Geometridiae). These all impacted the growth and reproduction of *P. perfoliatum*. The bug *Cletus schmidtii* (Hemiptera: Coreidae) and the sawfly *Allantus nigrocaeruleus* (Hymenoptera: Tenthredinidae) were recommended for further trials of host specificity (Ding et al. 2004). *Timandra griseata* was found to have too broad a host range to be considered for release in the U.S.A., as it also fed on common buckwheat (*Fagopyrum esculentum*) and tartary buckwheat (*Fagopyrum tartaricum*). *Homorosoma chinensis* (Coleoptera: Curculionidae) is possibly host-specific to *P. perfoliatum*, but further trials are needed with other potential host plants before its release in the U.S.A. could be recommended (Price et al.. 2004).

Pathway

Moul (1948) states that the introduction of *P. perfoliatum* in the late 1930s to a nursery site in York County, Pennsylvania produced a successful population of this plant. It is speculated that the seed was spread with *Rhododendron* stock.

Principal source: [Mile - A - Minute weed: *Polygonum perfoliatum* L. \(Okay, 1999\)](#)

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Michael Van Clef, The Nature Conservancy. USA

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ALIEN RANGE

[1] CANADA

[1] TURKEY

[1] UNITED STATES

BIBLIOGRAPHY

32 references found for *Persicaria perfoliata*

Management information

- Brundu, G.; Aksoy, N.; Brunel, S.; Elias, P.; Fried, G., 2011. Rapid surveys for inventorying alien plants in the Black Sea region of Turkey. *Bulletin OEPP*. 41(2). AUG 2011. 208-216.
- Brunel, Sarah; Petter, Françoise, 2010. The EPPO decision-support scheme for pest risk analysis and invasive alien plants. *Plant Protection Quarterly*. 25(2). 2010. 42-48
- Colpetzer, Keith; Hough-Goldstein, Judith; Ding, Jianqing; Fu, Weidong, 2004. Host specificity of the Asian weevil, *Rhinoncomimus latipes* Korotyaev (Coleoptera: Curculionidae), a potential biological control agent of mile-a-minute weed, *Polygonum perfoliatum* L. (Polygonales: Polygonaceae). *Biological Control*. 30(2). June 2004. 511-522.
- Colpetzer, K.; Hough-Goldstein, J., 2004. A rapid germination protocol for mile-a-minute weed, *Polygonum perfoliatum* L. *Seed Science & Technology*. 32(3). 2004. 749-757.
- Colpetzer, K., Hough-Goldstein, J., Ding, J. and Fu, W. 2004. Host specificity of the Asian weevil, *Rhinoncomimus latipes* Korotyaev (Coleoptera: Curculionidae), a potential biological control agent of mile-a-minute weed, *Polygonum perfoliatum*. *Biological Control*. 30 (2): 511-522.
- Colpetzer, K.; Hough-Goldstein, J.; Harkins, K. R.; Smith, M. T., 2004. Feeding and oviposition behavior of *Rhinoncomimus latipes* Korotyaev (Coleoptera: Curculionidae) and its predicted effectiveness as a biological control agent for *Polygonum perfoliatum* L. (Polygonales: Polygonaceae). *Environmental Entomology*. 33(4). August 2004. 990-996.
- Ding, J., Fu, W., Reardon, R., Wu, Y. and Zhang, G. 2004. Exploratory survey in China for potential insect biocontrol agents of mile-a-minute weed, *Polygonum perfoliatum* L., in Eastern USA. *Biological Control*. 30 (2): 487-495.
- Ding, Jianqing; Fu, Weidong; Reardon, Richard; Wu, Yun; Zhang, Guoliang, 2004. Exploratory survey in China for potential insect biocontrol agents of mile-a-minute weed, *Polygonum perfoliatum* L., in Eastern USA. *Biological Control*. 30(2). June 2004. 487-495.
- Ding, Jianqing; Reardon, Richard; Wu, Yun; Zheng, Hao; Fu, Weidong, 2006. Biological control of invasive plants through collaboration between China and the United States of America: a perspective. *Biological Invasions*. 8(7). OCT 2006. 1439-1450
- Frye, Matthew J.; Lake, Ellen C.; Hough-Goldstein, Judith, 2010. Field host-specificity of the mile-a-minute weevil, *Rhinoncomimus latipes* Korotyaev (Coleoptera: Curculionidae). *Biological Control*. 55(3). DEC 2010. 234-240.
- Guo, Wenfeng; Li, Xiaojiong; Guo, Xiaohui; Ding, Jianqing, 2010. Effects of *Rhinoncomimus latipes* on the growth and reproduction of *Persicaria perfoliata*, an invasive plant in North America. *Biocontrol Science & Technology*. 21(1). 2010. 35-45.
- Hough-Goldstein, J., E. Lake & R. Reardon, 2011. Status of an ongoing biological control program for the invasive vine, *Persicaria perfoliata* in eastern North America. *BioControl* DOI 10.1007/s10526-011-9417-z
- Hough-Goldstein, Judith; Lake, Ellen, 2008. New developments in biological control of mile-a-minute weed. *Northern Journal of Applied Forestry*. 25(3). SEP 2008. 164-165.
- Hough-Goldstein, Judith; Mayer, Mark A.; Hudson, Wayne; Robbins, George; Morrison, Patricia; Reardon, Richard, 2009. Monitored releases of *Rhinoncomimus latipes* (Coleoptera: Curculionidae), a biological control agent of mile-a-minute weed (*Persicaria perfoliata*), 2004-2008. *Biological Control*. 51(3). DEC 2009. 450-457.
- Hough-Goldstein, Judith; Schiff, Megan; Lake, Ellen; Butterworth, Brian, 2008. Impact of the biological control agent *Rhinoncomimus latipes* (Coleoptera : Curculionidae) on mile-a-minute weed, *Persicaria perfoliata*, in field cages. *Biological Control*. 46(3). SEP 2008. 417-423
- Hyatt, Laura A.; Araki, Sachiko, 2006. Comparative population dynamics of an invading species in its native and novel ranges. *Biological Invasions*. 8(2). MAR 2006. 261-275.
- Kumar, Virender & Antonio Ditommaso, 2005. Mile-a-Minute (*Polygonum perfoliatum*): An Increasingly Problematic Invasive Species. *Weed Technology* Oct 2005 : Vol. 19, Issue 4, pg(s) 1071-1077 doi: 10.1614/WT-04-177R.1

Lake, Ellen C.; Hough-Goldstein, Judith; Shropshire, Kimberley J.; D Amico, Vincent, 2011. Establishment and dispersal of the biological control weevil *Rhinoncomimus latipes* on mile-a-minute weed, *Persicaria perfoliata*. *Biological Control*. 58(3). SEP 2011. 294-301.

McCormick, L.H. and Hartwig, N.L. 1995. Control of the noxious weed mile-a-minute (*Polygonum perfoliatum*) in reforestation. *Northern Journal of Applied Forestry*. 12 (3): 127-132.

Miura, Kazumi; Iida, Hiroyuki; Imai, Kensuke; Lyon, Suzanne; Reardon, Richard; Fujisaki, Kenji, 2008. Herbivorous insect fauna of mile-a-minute weed, *Persicaria perfoliata* (Polygonaceae), in Japan. *Florida Entomologist*. 91(2). JUN 2008. 319-323.

[Okay, J. A. G. 1999. Mile - A - Minute Weed: *Polygonum perfoliatum* L. . National Park Service, Plant Conservation Alliance, Alien Plant Working Group.](#)

Summary: Detailed report on description, distribution, habitat, reproduction methods and management.
Available from: <http://www.nps.gov/plants/alien/fact/pope1.htm> [Accessed 13 June 2003]

Oliver, J. Douglas, 1996. Mile-a-minute weed (*Polygonum perfoliatum* L.), an invasive vine in natural and disturbed sites. *Castanea*. 61(3). 1996. 244-251.

Price, D.L., Hough-Goldstein, J. and Smith, M.T. 2003. Biology, rearing and preliminary evaluation of host range of two potential biological control agents for mile-a-minute weed, *Polygonum perfoliatum* L. *Environmental Entomology*. 32 (1): 229-236.

[USDA, NRCS 2011. *Polygonum perfoliatum* L. Asiatic tearthumb. The PLANTS Database. National Plant Data Team, Greensboro, NC 27401-4901 USA.](#)

Summary: Available from: <http://plants.usda.gov/java/profile?symbol=POPE10> [Accessed 10 November 2011]

Van Clef, M. 2001. Early life stage performance of native and non-native congeners of *Polygonum*, *Celastrus*, and *Parthenocissus*: assessing methods of screening new plant introductions for invasive potential. Ph.D. Dissertation. Rutgers University, New Brunswick, NJ. 166 pages.

Van Clef, M. and Stiles, E.W. 2001. Seed longevity in three pairs of native and non-native congeners: Assessing invasive potential. *Northeastern Naturalist*. 8 (3): 301-310.

General information

Hickman, J. C. & Hickman C. S., 1978. *Polygonum perfoliatum* A recent Asiatic adventure. *Bartonia*.(45). 1978. 18-23.

[IPANE \(Invasive Plant Atlas Of New England\), 2001 *Polygonum perfoliatum* \(Mile-a-Minute Vine , Mile-a Minute Knotweed\).](#)

Summary: Summary of description, similar species, distribution, method of reproduction, habitat and threats.
Available from: <http://webapps.lib.uconn.edu/ipane/browsing.cfm?descriptionid=13#> [Accessed 13 June 2003]

[ITIS \(Integrated Taxonomic Information System\), 2005. Online Database *Polygonum perfoliatum*](#)

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from:
http://www.cbif.gc.ca/pls/itiscat/taxastep?king=every&p_action=containing&taxa=Polygonum+perfoliatum&p_format=&p_ifx=plgt&p_lang=
[Accessed March 2005]

Moul, E.T. 1948. A dangerous weedy *Polygonum* in Pennsylvania. *Bartonia*. 50:64-66.

Oliver, J.D. 1996. Mile-a-minute weed (*Polygonum perfoliatum* L.), an invasive vine in natural and disturbed sites. *Castanea*. 61 (3): 244-251.

[Stahl C. 2002 *Introduced Species Summary Project: Mile-a-Minute Weed, Devil s Tail Tearthumb \(Polygonum perfoliatum\) Columbia University.*](#)

Summary: Details on description, original distribution, current distribution, date and modes of introduction and ecological role.
Available from: http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Polygonum_perfoliatum.htm [Accessed 13 June 2003]