GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Acer ginnala***

Acer ginnala 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Sapindales	Aceraceae

Common name Siberian maple (English), Mangolian vaahtera (English), Feuer-Ahorn (German, Germany), érable ginnala (French, Canada), ginnala maple (English, United States), Amur maple (English, United States), Amur-Ahorn (German, Germany), érable du fleuve Amour (French, Canada)

Synonym
Acer ginnala , subsp. *theiferum* (Fang)
Acer theiferum , (Fang)
Acer tataricum
Acer tataricum , subsp. *aidzuense*
Acer tataricum , subsp. *semenovii*
Acer tataricum , subsp. *tataricum*
Acer tataricum , subsp. *tataricum* var. *torminaloides*
Acer tataricum , var. *laciniatum* (Regel)
Acer ginnala , var. *euginnala* (Pax)

Similar species *Acer rubrum*

Summary Acer ginnala, commonly known as Amur maple, is a decidous tree, native to Russia and northern China. It was introduced into the United States as an ornamental, due to its vibrant colours in autumn. It has since escaped from cultivation and has the potential of becoming naturalised. The Amur maple is tolerant of a wide range of environmental factors including temperature, drought, soil, pH and light.

view this species on IUCN Red List

Species Description

Acer ginnala is a small ornamental tree that at maturity reaches a height of 4.5-6 metres (Mehrhoff *et al*. 2003). The trunk is multi-stemmed with smooth gray bark that becomes furrowed with age (VTFD, 2006). The leaves are opposite, simple, three lobed with doubly serrate margins (VTFD, 2006). The terminal lobe is noticeably much longer than either adjacent lobe, with a leaf length between 2.5-7.5cm (Mehrhoff *et al*, 2003). The twig is slender, reddish-brown, glabrous, with pale lenticels and short vegetative buds (VTFD, 2006).

Lifecycle Stages

Acer ginnala is a perennial tree that flowers from May-June. The fruits that develop are reddish-brown, nearly parallel samaras about 2cm long. The samaras can persist through the winter and are dispersed by the wind (Mehrhoff *et al*. 2003).

Uses
The Amur maple is used mainly for ornamental purposes, having bright red leaves in the fall, red seed pods in winter, fragrant flower clusters, and a spreading crown which makes it ideal for screenings and hedges (Gilman, 1993). This species also has some potential value as habitat for wildlife, providing food and shelter (Bernheim, undated). Traditionally in its native range, the leaves were dried and used as a preservative for food storage, or made into a dye (Morris, 2004). The young leaves could also be subtstituted for tea and contains an antioxidant, anti-inflammatory, and anti-tumor compound called quercetin (Morris, 2004).

Habitat Description
The Amur maple can grow in a wide range of habitats, from open to distrubed forests, early successional forests, streamsides, swamps, urban areas, roadsides, edges, and gardens (Mehrhoff *et al*. 2004). This species of maple can establish in a variety of soils, from sandy loam to heavy clays (Gilman, 1993) and acidic and alkaline pH ranges of 6.1-7.5 (FS, 2005). The Amur maple can withstand prolonged periods of dryness, but grows optimally in moist, well-drained soils (FS, 2005). It is salt tolerant (FS, 2005) and is temperature hardy to Zone 3 (-40°C to -34°C) through Zone 9 (-6°C to 0°C) with maximum and minimum winter temperatures limiting its southern and northern range respectively (Tree Link, undated). It prefers full sun, but can tolerate partial shade (Bernheim, undated).

Reproduction
The Amur maple develops hemaphroditic flowers (Morris, 2004). The flowers are white, to creamy pale yellow, fragrant infloresences (VTDF, 2006) on peduncled panicles (Mehrhoff *et al*. 2003).

Nutrition
Acer ginnala requires moist, well-drained soils for optimal growth. The use of fertilisers and irrigation can cause this species to grow rapidly (Gilman, 1993).

General Impacts
Acer ginnala has the potential to displace native vegetation, including native maple species, due to its tolerance of partial shade and its ability to shade out other species (FS, 2005). The Amur maple also has the potential to outcompete native flora with its ability to establish in a wide range of habitats and environmental conditions (Mehrhoff *et al*. 2003). Maples can also release compounds that can inhibit the growth of nearby plants (Morris, 2004). In the United States this species is currently listed only as an invasive in Wisconsin and as a noxious weed in Conneticut (USDA, 2007), however the Forest Service lists the species as invasive in the states of Illinois, Massachusetts, Missouri, New York, Vermont, Conneticut, and Wisconsin (FS, 2005).

Management Info
Preventative measures: For invasive species that are considered ornamental one management option is to restrict the planting of such plants in a cultivated landscape (Barton,*et al*. 2004). Other preventive measures can arise from legislation and policy establishing the restriction of sale and possession of potentially aggressive and invasive plant species (Li *et al*. 2004). A survey (Peters *et al*. 2006), showed that some regulation and codes of conduct in the horticulture industry was acceptable to businesses and professionals. Other preventitive actions are education on the retail and consumer level, as well as education in the forms of newsletters and conferences for professionals in the industry (Peters *et al*. 2006).
Physical: Some mechanical means of control are through pulling or cutting the tree back as close to the ground as possible (FS, 2005), since this species can tolerate heavy pruning (Bernheim, undated). Another physical control option is through prescribed burning (FS, 2005), however this will not eradicate it (Minnesota DNR, 2007).
Chemical: General herbicides can be used as an effective control option following labeled guidelines for application (FS, 2005). Glyphosate and triclopyr applied at the base of the stump after an initial cutting are recommended (Minnesota DNR, 2007).
Biological: New areas of genetic research and plant breeding technology are now available for some forms of control of ornamental plants that could be a threat as invasive species. Plant gene technology for producing male and female sterility cultivars, as well as seed sterility, and parthenocarpy through the use of hormones and gene mediated vectors are all new possibilities to allow the cultivated use of ornamentals without the risk of them reproducing in the wild (Li *et al*. 2004). However this type of genetic engineering is relatively new and not entirely without risk. Some of the species tested can cross and reproduce with similar species of the same genus that are wild type (Li *et al*. 2004). This type of management would also only function in preventing new introductions into the wild and would not be applicable for already established populations(Li *et al*. 2004). Another drawback to sterile breeds of ornamentals is that it is not an effecttive management strategy for plants that mainly spread by vegetative means (Li *et al*. 2004). Several native species of fungi, arthropods, and diseases exist that could be used as potential biological controls, but no known species are being tested as a control agent for release at this time.
Integrated management: Very little research and monitoring has been performed on the status and distribution of the Amur maple (Mehrhoff *et al*. 2003), making it difficult to determine its occurrence and the effect it has on native populations.

Pathway
Introduced to New England in 1860 for use as an ornamental tree in the landscape due to its brilliant red autumn colors (Mehrhoff *et al*. 2003).

Principal source: Mehrhoff, L.J., Silander, Jr., J.A., Leicht, S.A., Mosher, E.S., & Tabak, N.M., 2003, IPANE: Invasive Plant Atlas of New England, Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, CT.
Forest Service (FA)., May 9, 2005. Forest Health Staff, USDA, Weed of the Week, Amur Maple *Acer ginnala*, Newton Square, PA.

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

Review:

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ALIEN RANGE
[17] UNITED STATES

BIBLIOGRAPHY

20 references found for **Acer ginnala**

Managment information

Barton, A.M., Brewster, L.B., Cox, A.N., & Prentiss, N.K., 2004, Non-indigenous woody invasive plants in a rural New England town, *Biological Invasions*, Vol. 6, pp. 205-211.
Summary: A scientific article relating the extent of certain invasive woody plants into rural portions of Maine. Relevant information includes the discussion of ornamental plant s role as invasive species and local dispersal and relative consequences to the ecoregion.
Li, Y., Cheng, Z., Smith, W.A., Ellis, D.R., Chen, Y., Zheng, X., Pei, Y., Luo, K., Zhao, D., Yao, Q., Duan, H., & Li, Q., 2004, Invasive Ornamental Plants: Problems, Challenges, and Molecular Tools to Neutralize Their Invasiveness, *Critical Reviews in Plant Sciences*, Vol. 23, no. 5, pp. 381-389
Summary: This article discusses in brevity the impacts of the green industry on the spread of invasive species. It focuses on genetic engineering techniques to develop sterile cultivars of invasive ornamentals for retail sale. It also mentions drawbacks and challenges to develop said cultivars through genetic engineering techniques.
Mehrhoff, L.J., Silander, Jr., J.A., Leicht, S.A., Mosher, E.S., & Tabak, N.M., 2003, IPANE: Invasive Plant Atlas of New England, Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, CT.
Summary: Very informative source on some of the possible ecological impacts *A. ginnala* may have in the New England region. It also gives decription information in metric and a brief history of introduction into the United States.
Available from: http://www.lib.uconn.edu/webapps/ipane/browsing.cfm?descriptionid=31 [Accessed on 5 February 2007].
Minnesota Department of Natural Resources, 2007, Amur Maple(*Acer ginnala*), The Minnesota Department of Natural Resources Web Site [online].
Summary: This site gives general description, ecology and management options for amur maple.
Available from: http://www.dnr.state.mn.us/invasives/terrestrialplants/woody/amurmaple.html [Accessed on 23 February 2007].
Peters, W.L., Meyer, M.H. & Anderson, N.O., 2006, Minnesota horticulture industry survey on invasive plants, *Euphytica*, Vol. 148, pp. 75-86.
Summary: A published survey relating the findings of the opinions of the green industry on the dispersal and retail of invasive ornamental plants. It also discusses what professionals think of regulations and restrictions, and how they should be enforced and at what government level.
USDA, Forest Service, Forest Health Staff, May 9, 2005, Weed of the Week, Amur Maple *Acer ginnala*, Newton Square, PA.
Summary: A factsheet describing the physical appearance of *A. ginnala*, the states in which the species has been reported in and several management options on how to control and eradicate the species.
Available from: http://www.na.fs.fed.us/fhp/invasive_plants/weeds/armur-maple.pdf [Accessed on 5 February 2007].

General information

Bernheim Arboretum and Research Forest, undated, Clermont, KY.
Summary: Basic information on cultivation, habitat, and physical description.
Available from: http://www.bernheim.org/acer_ginnala.htm [Accessed on 5 February 2007].
Canadian Forest Service, 2006, Ottawa, Onatrio, Canada.
Fewless, G., 2006, *Acer ginnala*, UW-Madison Herbarium, Cofrin Center for Biodiversity, Univeristy of Wisconsin, Green Bay, WI.
Summary: Gives detailed information on the counties in Wisconsin where *A. ginnala* has been reported.
Available from: http://www.uwgb.edu/biodiversity/herbarium/trees/acegin01.htm [Accessed on 5 February, 2007].
Gilman, E.F., & Watson, D.G., November 1993, *Acer ginnala*, Amur maple, Fact Sheet ST-14, Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, Univerisity of Florida.
Summary: This fact sheet details the description, habitat requirements, reproduction, cultivation, and pest management of *A. ginnala*.
Available from: http://hort.ufl.edu/trees/ACEGINA.pdf [Accessed on 5 February 2007].
ITIS (Integrated Taxonomic Information System), 2004. Online Database *Acer ginnala*
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.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=28741 [Accessed on 5 February 2007].
Menashe, E., 2004, Some Invasive Non-native Plants to Avoid Using in Landscape and Restoration Projects, a Partial List for the Puget Sound Area, Greenbelt Consulting, Coastal Training Program, Washington.
Summary: This site was used as a distribution reference for Washington state only. It did not list the status of the species other than it was potentially invasive and present in the state.
Available from: http://www.greenbeltconsulting.com/ctp/someinvasive.html [Accessed on 23 February 2007].
Morris, R., 1996-2004, *Acer ginnala*, Plants For A Future Database, non-profit company, Wales & England.
Summary: This webpage described the cultural uses of the Amur maple besides the common use as an ornamental tree. It also gave some brief details on habitat requirements.
Available from: http://www.pfaf.org/database/plants.php?Acer+ginnala [Accessed on 5 February 2007].
SysTax- A Database System for Systematics and Taxonomy, 2006, Hoppe, J.R., Boos, E., Ludwig, T., & Wiedemann, M., Dept. of Systematic Botany and Ecology, University of Ulm, Ulm, Germany, St&#65533;tzel, T., Systematic Botany, Ruhr-University of Bochum, Bochum, Germany.
Summary: Information on German common names, synonyms, and general native distribution.
Available from: http://www.biologie.uni-ulm.de/cgi-bin/query_all/details.pl?id=9063&stufe=A&typ=PFL [Accessed on 5 February 2007].
Thomas, P.A., December 2001, The Global Compendium of Weeds, Hawaiian Ecosystems at Risk Project (HEAR).
Summary: Available from: http://www.hear.org/gcw/html/index.html [Accessed on 5 February 2007].
USDA, ARS, National Genetic Resources Program, Feb. 04, 2007 Germplasm Resources Information Network - (GRIN) [Online Database], National Germplasm Resources Laboratory, Beltsville, Maryland.
Summary: Information on common names, synonyms, and native distribution. Type in common or scientific name to generate search engine.
Available from: http://www.ars-grin.gov/cgi-bin/npgs/html/splist.pl?18427 [Accessed on 5 February 2007].

USDA-NRCS (Natural Resource Conservation Service). 2007. *Acer ginnala*. The PLANTS Database Version 3.5 [Online Database] National Plant Data Center, Baton Rouge, LA.
Summary: Good information on taxonomy and distribution by state, as well as the status of the species for Wisconsin and Conneticut.
Available from: http://plants.usda.gov/java/nameSearch?keywordquery=acer+ginnala&mode=sciname [Accessed on 5 February 2007].
Virginia Tech Forestry Department, 2005-2006, Blacksburg, Virginia
Summary: Physical description and reproductive structure information.
Available from: http://www.cnr.vt.edu/dendro/dendrology/syllabus/factsheet.cfm?ID=331 [Accessed on 5 February 2007].
Wisconsin Botanical Information System, 2005, Wisconsin State Herbarium, University of Wisconsin, Madison.
Summary: This site gave detailed locations where *A. ginnala* has been reported and established.
Available from: http://www.botany.wisc.edu/wisflora/scripts/detail.asp?SpCode=ACEGIN [Accessed on 5 February 2007].
Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W., & Reardon, R., Sept. 2004, Invasive Plants of Asian Orgin Established in the United States and Their Natural Enemies Vol. 1, USDA Forest Service, FHTET-2004-05, Invasive Species Organization website [online].
Summary: This site was used as a source of a list of natural enemies of *Acer ginnala* that could be used as potential biological controls.
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