

## *Morus alba*

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Urticales	Moraceae

**Common name** Russian mulberry (English), chin sang (English), mulberry (English), common mulberry (English), Chinese white mulberry (English), white mulberry (English), silkworm mulberry (English), chi sang (English), moral blanco (English)

**Synonym** *Morus alba* , var. *tatarica* Ser.  
*Morus tatarica* , L.  
*Morus alba* , L. var. *multicaulis* (Perr.) Loudon

**Similar species** *Morus rubra*

**Summary** *Morus alba*, or white mulberry, is native to China and has become invasive in the United States, Canada, South America, and South Africa. It hybridizes with and replaces red mulberry (*Morus rubra*) in Ontario where it is endangered, and in the United States. *M. alba* is also known to displace native vegetation and problematic in urban and disturbed environments.



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

## Species Description

*Morus alba* is a small to medium sized shrub or tree which may grow to about 15 m. It has a rounded crown, short trunk, and dense canopy with spreading branches. Its leaves are alternate, simple, broadly ovate, polymorphic, and have 3 main veins running from the rounded or notched base. They are shiny green on top, paler and slightly hairy underneath, coarsely-toothed, and measure 6-18 cm long and 5-13 cm wide. Its bark is light brown to gray and fairly smooth but becomes furrowed at the edges. *M. alba* is dioecious with male inflorescences being green and very tiny, occurring in long catkins, while female flowers are inconspicuous and crowded in short spikes. Its fruits are cylindrical aggregate "mulberries" which are white, purple, or pinkish; 10-19 mm long (Little, 1980; Invasive.org, 2010; USDA-NRCS, 2010; Pensker *et al*, 2009).

## Notes

*Morus alba* is cultivated for use as a biofuel. Some of its invasive populations are believed to be the result of their escape from such cultivation (GISP, 2008).

*Morus alba* may occur as a tree or a shrub (Boyce, 2010).

## Uses

*Morus alba* is the food source of silkworms. It was introduced to North America and locations throughout the world in attempts to start silk manufacturing. *Morus alba* escaped cultivation and established throughout the northeastern North America in the late 1800s. There is also an ornamental variety of *M. alba* that is commonly planted (Haber, 1998). *M. alba* has been cultivated extensively in East, Central, and South Asia for papermaking, silk and timber production, and medical materials (Wu *et al*, 2009). Its fruits may be eaten raw or made into jellies, jams, pies, and other foods (USDA-NRCS, 2010).

## Habitat Description

*Morus alba* commonly invades old fields, roadsides, forest edges, urban environments, and other disturbed areas. It prefers a warm, moist, well-drained loamy soil in a sunny position. However it is adapted to coarse, medium, and fine soils and is described as having intermediate shade tolerance and medium drought tolerance. It may tolerate a pH range of 5.0-7.0 and rainfall between 30-60 in/yr. It can survive temperatures down to -27 °C and is quite salt tolerant once established (USDA-NRCS, 2010; Invasive.org, 2010; Burgess & Husband, 2004; Pensker, 2009).

## Reproduction

*Morus alba* blooms in the early spring. Fruits are abundantly produced from the spring to the summer. Its seeds are vigorous and germinate readily (USDA-NRCS, 2010).

## General Impacts

*Morus alba* hybridizes with native species red mulberry, (*Morus rubra*), and displaces other native plants in introduced environments. *M. alba* is reported to rapidly replace and hybridize with the *M. rubra* in Ontario (see [Species at risk in Ontario](#)), where it is currently endangered, and in the United States (*M. rubra* is listed as 'Endangered' in the states of Connecticut and Massachusetts and 'Threatened' in the states of Vermont and Michigan (USDA-NRCS 2010). *M. alba* and hybrids were evaluated to be consistently more fit than the native *M. rubra* in a laboratory study. *M. alba* can also transmit root disease to native *M. rubra* (Swearingen et al., 2004 in Boyce, 2009).

*M. alba* also outcompetes and displaces other native plant plants in the United States and South Africa because of its high growth rate and great adaptability to adverse environments which allow it to establish and spread quickly. It has been documented as being particularly problematic in urban and disturbed environments (Ayala et al, 2007; Burgess & Husband, 2006; Wu et al, 2009; Invasive.org)

For the status of *Morus rubra* see [USDA-NRCS, 2010b](#).

## Management Info

Preventative measures: *Morus alba* was determined to be a category 4 invasive in the Great Lakes States ([Falck & Garske, 2003](#)).

*Morus alba* is a Category 3 plant invader in South Africa and is not be allowed to occur anywhere except in biological control reserves ([ARC-PPRI, 2006](#))

A risk assessment of *Morus albas* concerning its threat to Europe yielded a score of 25, which designates it as an intermediate risk (Weber & Gut, 2004).

Mechanical control: *Morus alba* can be pulled by hand. Other options include cutting the tree and grinding the stump, or the plant can be girdled (Swearingen et al., 2002).

Chemical control: The cut tree stump may also be painted with a systemic herbicide such as glyphosate to prevent resprouting (Swearingen et al., 2002).

## Pathway

*Morus alba* serves as the natural food of silk moths and has been introduced to many locations for use in the production of silk (Haber, 1998). *Morus alba* is cultivated for use as a biofuel. Some of its invasive populations are believed to be the result of their escape from such cultivation (GISP, 2008).

## Principal source:

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

**Review:** Richard L. Boyce, Department of Biological Sciences, Northern Kentucky University

**Publication date:** 2011-01-20

## ALIEN RANGE

[1] ARGENTINA  
[3] CANADA  
[1] HUNGARY  
[1] JAPAN  
[1] SOUTH AFRICA

[1] BRAZIL  
[1] ECUADOR  
[1] ITALY  
[1] ROMANIA  
[3] UNITED STATES

## BIBLIOGRAPHY

37 references found for *Morus alba*

### Management information

[Agricultural Research Council-Plant Protection Research Institute \(ARC-PPRI\)., 2006. Legislation on weeds and invasive plants in South Africa](#)

**Summary:** Available from: <http://www.arc.agric.za/home.asp?pid=1031> [Accessed 16 November 2009]

Boyce, R.L. 2009. Invasive shrubs and forest tree regeneration. *Journal of Sustainable Forestry* 28: 152-217.

Boyce, R.L. 2010. Invasive shrubs in Kentucky. *Northeastern Naturalist* 17(Monograph 7): 1-32.

[Falck, Miles and Garske, S. 2003. Invasive Non-native Plant Management - 2002. Administrative Report 02-12 February 10, 2003 Great Lakes Indian Fish & Wildlife Commission Biological Services Division](#)

**Summary:** Available from: <http://www.glifwc.org/invasives/assets/pdf/Administrative%20Report%2002-12.pdf> [Accessed 20 Januar 2011]

[Global Invasive Species Programme \(GISP\), 2008. Biofuels run the risk of becoming Invasive Species. Biofuel Crops and the Use of Non-Native Species: Mitigating the Risks of Invasion.](#)

**Summary:** Available from: <http://www.gisp.org/publications/reports/BiofuelsReport.pdf.pdf> [Accessed 16 November 2009]

[Myburgh, W. J. & G. J. Bredenkamp., 2005. The distribution and extent of declared weeds and invader plants in the macro channel of the Olifants River System, Mpumalanga. Koedoe - African Protected Area Conservation and Science, Vol 48, No 1 \(2005\)](#)

**Summary:** Available from: <http://www.koedoe.co.za/index.php/koedoe/article/viewArticle/166> [Accessed 16 November 2009]

[Nel, J.L., D.M. Richardson, M. Rouget, T.N. Mgidi, N. Mdzeke, D.C. Le Maitre, B.W. van Wilgen, L.Schonegevel, L. Henderson and S. Naser., 2004. A proposed classification of invasive alien plant species in South Africa: towards prioritizing species and areas for management action. South African Journal of Science 100, January/February 2004](#)

**Summary:** Available from: <http://www.dwaf.gov.za/WFW/Docs/Papers/SAJSFeb2004nel.pdf> [Accessed 16 November 2009]

[Swearingen, J., Reshetiloff, K., Slattery, B. and Zwicker, S. 2002. Plant Invaders of Mid-Atlantic Natural Areas: Giant Salvinia - Salvinia molesta. National Park Service and U.S. Fish & Wildlife Service](#)

**Summary:** Online book that includes information on origin, spread, distribution, description, methods of disposal, and look-alikes.

Weber, Ewald & Daniel Gut., 2004. Assessing the risk of potentially invasive plant species in central Europe. *Journal for Nature Conservation* 12 (2004) 171-179

Young, C.C., Cribbs, J.T., Haack, J.K., Etheridge, H.J. 2006. Invasive Exotic Plant Monitoring at Homestead National Monument of America: Year 1 (2006). Natural Resource Program Center Fort Collins, Colorado.

### General information

Anastasiu, Paulina & Gavril Negrean., 2006. Alien vascular plants in Dobrogea (Romania) and their impact on different types of habitats. Plant, fungal and habitat diversity investigation & conservation & Proceedings of IV BBC & Sofia 2006

Botton, Alessandro; Barcaccia, Gianni; Cappellozza, Silvia; Da Tos, Riccardo; Bonghi, Claudio; Ramina, Angelo., 2005. DNA fingerprinting sheds light on the origin of introduced mulberry (*Morus* spp.) accessions in Italy. *Genetic Resources & Crop Evolution*. 52(2). MAR 05. 181-192.

Burgess, Kevin S.; Husband, Brian C., 2004. Maternal and paternal contributions to the fitness of hybrids between red and white mulberry (*Morus* Moraceae). *American Journal of Botany*. 91(11). November 2004. 1802-1808

Burgess, Kevin S., Husband, Brian C. 2006. Habitat differentiation and the ecological costs of hybridization: the effects of introduced mulberry (*Morus alba*) on a native congener (*M. rubra*). *Journal of Ecology*. 94(6). NOV 2006. 1061-1069.

Burgess, Kevin S.; Morgan, Martin; Husband, Brian C., 2008. Interspecific seed discounting and the fertility cost of hybridization in an endangered species. *New Phytologist*. 177(1). 2008. 276-283.

Burgess, K. S.; Morgan, M.; Deverno, L.; Husband, B. C., 2005. Asymmetrical introgression between two *Morus* species (*M. alba*, *M. rubra*) that differ in abundance. *Molecular Ecology*. 14(11). OCT 2005. 3471-3483.

[Canadian Wildlife Service \(CWS\), 2003. Invasive plants of natural habitats in Canada](#)

**Summary:** Available from: [http://www.cws-scf.ec.gc.ca/PUBLICATIONS/INV/14\\_e.cfm#targ38](http://www.cws-scf.ec.gc.ca/PUBLICATIONS/INV/14_e.cfm#targ38) [Accessed 16 November 2009]

[Csiszar, Agnes., 2009. Allelopathic Effects of Invasive Woody Plant Species in Hungary. Acta Silv. Lign. Hung., Vol. 5 \(2009\) 9-17](#)

**Summary:** Available from: [http://www.nyme.hu/fileadmin/dokumentumok/fmk/acta\\_silvatica/cikkek/Vol05-2009/01\\_csiszar\\_p.pdf](http://www.nyme.hu/fileadmin/dokumentumok/fmk/acta_silvatica/cikkek/Vol05-2009/01_csiszar_p.pdf) [Accessed 16 November 2009]

[Food and Agriculture Organisation \(FAO\)., 2003. The status of invasiveness of forest tree species outside their natural habitat: a global review and discussion paper Series title: Forest Health and Biosecurity Working Paper - 003](#)

**Summary:** Available from: <http://www.fao.org/docrep/006/j1583E/j1583E10.htm> [Accessed 16 November 2009]

Ghersa, C.M., de la Fuente, E., Suarez, S., Leon, R.J.C. 2002. Woody species invasion in the Rolling Pampa grasslands, Argentina. *Agriculture, Ecosystems and Environment* 88 (2002) 271-278.

[Global Compendium of Weeds \(GCW\), 2007. Morus alba \(Moraceae\)](#)

**Summary:** Available from: [http://www.hear.org/gcw/species/morus\\_alba/](http://www.hear.org/gcw/species/morus_alba/) [Accessed 16 November 2009]

Global Invasive Species Database (GISD) 2025. Species profile *Morus alba*. Available from:

<https://www.iucngisd.org/gisd/species.php?sc=1559> [Accessed 16 December 2025]

- Grau, H.R., M.F. Arturi, A .D. Brown, P.G. Acefiofaza., 1997. Floristic and structural patterns along a chronosequence of secondary forest succession in Argentinean subtropical montane forests. *Forest Ecology and Management* 95 (1997) 161-171
- Haber, Erich. 1998. Impacts of plants on species and habitats at risk in Canada. National Botanical Services, Ottawa.
- Henderson, L., 2007. *Invasive, naturalized and casual alien plants in southern Africa: a summary based on the Southern African Plant Invaders Atlas (SAPIA)*. *Bothalia* 37.2: 215-248 (2007)
- Summary:** Available from: <http://www.dwaf.gov.za/wfw/docs/Henderson,2007.pdf> [Accessed 16 November 2009]
- [Integrated Taxonomy Information System \(ITIS\), 2010. \*Morus alba\* L.](#)
- Summary:** Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=19066](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=19066) [Accessed 16 November 2009]
- [Invasives.org., 2010. White mulberry \*Morus alba\* L. Center for Invasive Species and Ecosystem Health](#)
- Summary:** Available from: <http://www.invasive.org/species/subject.cfm?sub=6050> [Accessed 16 November 2009]
- Little, Elbert. 1980. National Audobon Society Field Guide to North American Trees-Eastern Region. Chanticleer Press, Inc. New York. 430-431.
- Macdonald, I.A.W., J.K. Reaser, C. Bright, L.E. Neville, G.W. Howard, S.J. Murphy & G. Preston (eds.). 2003. Invasive alien species in southern Africa: national reports & directory of resources. Global Invasive Species Programme, Cape Town, South Africa.
- Norris, William R.; Widrechner, Mark P.; Lewis, Deborah Q.; Thompson, Jimmie D.; Pope, Richard O., 2001. More than a century of change in the Ames, Iowa Flora (1859-2000) *Journal of the Iowa Academy of Science*. 108(4). December, 2001. 124-141.
- [Penskar, M.R. 2009. Special Plant Abstract for \*Morus rubra\* \(red mulberry\). Michigan Natural Features Inventory, Lansing, MI. 3 pp.](#)
- Summary:** Available from: [http://web4.canr.msu.edu/mnfi/abstracts/botany/Morus\\_rubra.pdf](http://web4.canr.msu.edu/mnfi/abstracts/botany/Morus_rubra.pdf) [Accessed 16 November 2009]
- [Starr, Kim and Forest Starr, 2008. Plants of Hawaii: Images Moraceae \*Morus alba\* White mulberry](#)
- Summary:** Available from: <http://www.hear.org/starr/plants/images/species/?q=morus+alba> [Accessed 16 November 2009]
- Taylor, P.E., Card, G., House, J., Dickinson, M.H., Flagan, R.C. 2006. High-speed pollen release in the white mulberry tree, *Morus alba* L. *Sex Plant Reprod* (2006) 19: 19-24.
- [USDA-ARS, 2004. Taxon: \*Morus alba\* L. National Genetic Resources Program. Germplasm Resources Information Network - \(GRIN\) \[Online Database\]. National Germplasm Resources Laboratory, Beltsville, Maryland.](#)
- Summary:** Available from: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?24607> [Accessed 16 November 2009]
- [USDA, NRCS. 2010. \*Morus alba\* L. white mulberry. The PLANTS Database \(<http://plants.usda.gov>, 21 February 2010\). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.](#)
- Summary:** Available from: <http://plants.usda.gov/java/profile?symbol=MOAL> [Accessed 16 November 2009]
- [USDA, NRCS. 2010. \*Morus rubra\* L. red mulberry. The PLANTS Database \(<http://plants.usda.gov>, 21 February 2010\). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.](#)
- Summary:** Available from: <http://plants.usda.gov/java/profile?symbol=MORU2> [Accessed 16 November 2009]
- Wu, Y., Liu, C.Q., Li, P.P., Wang, J.Z., Xing, D., Wang, B.L. 2009. Photosynthetic characteristics involved in adaptability to Karst soil and alien invasion of paper mulberry (*Broussonetia papyrifera* (L.) Vent.) in comparison with mulberry (*Morus alba* L.). *Photosynthetica* 47 (1): 155-160, 2009.
- [Zheng, H., Wu, Y., Ding, J., Binion, D., Fu, W. & Reardon, R. 2004. Invasive Plants of Asian Origin Established in the United States and their Natural Enemies. Volume 1. USDA Forest Service FHTET-2004-05. 147 pp.](#)
- Summary:** Available from: <http://www.invasive.org/weeds/asian/> [Accessed 20 January 2011]