GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Acacia mearnsii***

Acacia mearnsii 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Fabales	Fabaceae

Common name Australische akazie (German), uwatela (Zulu), Australian acacia (English), swartwattel (Afrikaans), black wattle (English), acácia-negra (Portuguese)

Synonym *Acacia mollissima*
A. decurrens , var. *mollis*

Similar species *Acacia dealbata*

Summary Acacia mearnsii is a fast growing leguminous (nitrogen fixing) tree. Native to Australia, it is often used as a commercial source of tannin or a source of fire wood for local communities. It threatens native habitats by competing with indigenous vegetation, replacing grass communities, reducing native biodiversity and increasing water loss from riparian zones.

view this species on IUCN Red List

Species Description
Unarmed, evergreen tree, 6 - 20m high. Branchlets shallowly ridged; all parts finely hairy; growth tips golden-hairy. Leaves are dark olive-green, finely hairy, bipinnate; leaflets short (1.5 - 4mm) and crowded; raised glands occur at and between the junctions of pinnae pairs. Flowers are pale yellow or cream, globular flower heads in large, fragrant sprays. Fruits are dark brown pods, finely hairy, usually markedly constricted (Henderson, 1995; PIER, 2010; de Wit, Crookes and van Wilgen, 2001).

Lifecycle Stages
Seeds may remain viable for up to 50 years (Wessa, 2002).

Uses
The list of the uses for *Acacia mearnsii* is long and varied, hence it is grown commercially in many areas of the world, including Africa, South America and Europe. The tannin compounds extracted from the bark of *Acacia mearnsii* are commonly used in the production of soft leather. A range of other products, such as resins, thinners and adhesives, can also be made from bark extracts. The timber is used for building materials, the charcoal is used for fuel and the pulp and wood chips are used to produce paper. *Acacia mearnsii* has some known medical applications, such as its use as a styptic or astringent. The planting of wattles has also been used as a soil stabiliser to decrease erosion (preferably far from river courses to minimise the water loss caused by the tree's high rate of transpiration). The agroforestry industry promotes the use of *Acacia mearnsii* (among other similar species) as a potential \"soil improver\". (Duke, 1983; Franco, 1971; Paiva, 1999; Tutin *et al*., 1992; de Wit, Crookes and van Wilgen, 2001; Young, 2002).

Habitat Description
Grows in disturbed, mesic habitats (at an altitude of between 600 - 1700m). Grows in a range of climates, including warm temperate dry climates and moist tropical climates. *Acacia mearnsii* is reported to tolerate an annual precipitation of between 6.6 – 22.8 dm (mean of 6 cases = 12.6), an annual mean temperature of 14.7 – 27.8°C (mean of 6 cases = 2.6°C), and a pH of 5.0 – 7.2 (mean of 5 cases = 0.5) (Duke, 1983). *Acacia mearnsii* does not grow well on very dry or poor soils (Franco, 1943).

Reproduction
Acacia mearnsii produces copious numbers of small seeds that are not dispersed actively. The species may resprout from basal shoots following a fire (PIER, 2010). It also generates numerous suckers that result in monotypic thickets (Wagner *et al*., 1999, in PIER, 2010).

General Impacts
The invasiveness of this species is partly due to its ability to produce large amounts of long-lived seeds (which may be triggered to germinate *en masse* following bush fires) and the development of a large crown (which shades other vegetation). Its leaves and branches may have allelopathic properties. *Acacia mearnsii* competes with, and replaces, indigenous vegetation. It may replace grass communities, reducing the carrying capacity of the land. By causing an increase in the height and biomass of vegetation *Acacia mearnsii* infestations increase rainfall interception and transpiration, which causes a decrease in streamflow. Soil under *Acacia mearnsii* becomes dessicated more quickly (than it does under grass). *Acacia mearnsii* stands also destabilise stream banks and support a lower diversity of species (Adair, 2002; Sankaran, 2002; Le Maitre *et al.* 1999; Samways *et al* 1996).
Commercial plantations and invasive stands of *A .mearnsii* in South Africa reduce surface runoff and decrease water ability, causing an estimated annual economic loss of $US 2.8 million. According to KwaZulu-Natal Wildlife (the governmental agency responsible for managing protected areas in KwaZulu-Natal Province, South Africa) the advance of \nalien plants (particularly *Chromolaena odorata*, *Lantana camara*, *Acacia dealbata*, and *Acacia mearnsii*) is the most significant past and future threat to conservation in these areas (De Wit, Crookes and Van Wilgen, 2001; Goodman, 2003)

Management Info
Preventative measures: A Risk Assessment of *Acacia mearnsii* for Hawaii and other Pacific islands was prepared by Dr. Curtis Daehler (UH Botany) with funding from the Kaulunani Urban Forestry Program and US Forest Service. The alien plant screening system is derived from Pheloung *et al*. (1999) with minor modifications for use in Pacific islands (Daehler *et al*. 2004). The result is a score of 15 and a recommendation of: \"Likely to cause significant ecological or economic harm in Hawai'i and on other Pacific Islands as determined by a high WRA score, which is based on published sources describing species biology and behaviour in Hawai'i and/or other parts of the world.\"
Integrated management: The Working for Water programme implemented by the South African Government is a collaborative program that aims to ameliorate the problems caused by *Acacia* species and other invasive plants. The program consists of more than 30 sub-projects in eight provinces in the country and consists of the clearing of weeds from water courses (by mechanical and chemical methods). Between 1995 and 2000 over $100 million of poverty-relief funds on the program which was labour intensive and provided job opportunities for local communities. After seven years of implementation of the project it became clear that rehabilitation of sites (following the removal of alien plant species) would sometimes be needed in order to prevent or reduce the soil erosion stimulated by the clearing of plants (Van Wilgen *et al*., 2002, Milton, Dean and Richardson, 2003). Richardson & Kluge (2008) observe that preventing the accumulation of seed banks by reducing seed production is critical to all successful management programmes and that biological control is the most effective and practical option.
Please follow this link for more details on Chemical and Biological control options that have been found promising and effective.

Pathway
A. mearnsii is a popular source of timber and tannins and is planted globally by the forestry industry. One example of a commercial company that funds research on and establishment of wattle plantations is the South African Wattle Growers Union (DuUsed as an ornamental (Paiva, 1999)

Principal source: Pacific Island Ecosystems At Risk (PIER), 2010. *Acacia mearnsii*

Compiler: IUCN SSC Invasive Species Specialist Group
Updates with support from the Overseas Territories Environmental Programme (OTEP) project XOT603, a joint project with the Cayman Islands Government - Department of Environment

Review: Dr. Hélia Marchante. Escola Superior Agrária de Coimbra Departamento de Ciências Exactas e Ambiente Sector de Biologia e Ecologia, Bencanta. 3040-316 Coimbra Portugal.

Pubblication date: 2010-10-04

ALIEN RANGE

[1] ALGERIA
[1] COOK ISLANDS
[2] INDIA
[1] ITALY
[1] MADAGASCAR
[12] PORTUGAL
[1] SAINT HELENA
[10] SOUTH AFRICA
[1] SWAZILAND
[1] TANZANIA, UNITED REPUBLIC OF
[1] UNITED STATES
[1] CHINA
[1] FRANCE
[1] ISRAEL
[1] JAPAN
[2] NEW ZEALAND
[1] REUNION
[1] SEYCHELLES
[1] SPAIN
[1] TAIWAN
[1] UGANDA
[1] ZIMBABWE

Red List assessed species 45: EN = 2; VU = 2; NT = 1; LC = 40;

Aeshna subpupillata **LC**
Anax imperator mauritianus **LC**
Anthoxanthum borii **NT**
Aphloia theiformis **LC**
Carissa edulis **LC**
Ceriagrion glabrum **LC**
Chlorolestes umbratus **LC**
Crocothemis sanguinolenta **LC**
Diospyros lycioides **LC**
Elattoneura frenulata **LC**
Euclea natalensis **LC**
Metacnemis angusta **VU**
Nuxia floribunda **LC**
Orthetrum julia capicola **LC**
Paragomphus cognatus **LC**
Platycypha fitzsimonsi **LC**
Pseudagrion furcigerum **LC**
Rhus pentheri **LC**
Tramea limbata **LC**
Trithemis dorsalis **LC**
Trithemis stictica **LC**
Zanthoxylum capense **LC**
Allocnemis leucosticta **LC**
Anax speratus **LC**
Antirhea borbonica **LC**
Brachylaena discolor **LC**
Ceratogomphus pictus **LC**
Chlorolestes apricans **EN**
Combretum kraussii **LC**
Cyperus rotundus **LC**
Dombeya rotundifolia **LC**
Elattoneura glauca **LC**
Heteromirafra ruddi **VU**
Metacnemis valida **EN**
Olea lancea **LC**
Palpopleura jucunda **LC**
Pittosporum senacia **LC**
Pseudagrion draconis **LC**
Pseudagrion kersteni **LC**
Setaria sphacelata **LC**
Trithemis arteriosa **LC**
Trithemis furva **LC**
Vachellia karroo **LC**
Ziziphus mucronata **LC**

Zygonyx natalensis **LC**

BIBLIOGRAPHY

39 references found for **Acacia mearnsii**

Managment information

Adair, R. J., Neser, S., Kolesik, P. 2000. Australian seed-preventing gall midges (Diptera: Cecidomyiidae) as potential biological control agents for inavsive *Acacia* spp. on South Africa. *Proceedings of the X International Symposium on Biological Control of Weeds*. 4-14 July, Montana State University, Bozemann, Montana, USA.
Summary: Information on the effects of *A. mearnsii* in South Africa and possible biological control agents.

Champion, P. D., S. M. Beadel, and T. M. Dugdale. 2001. Turf communities of Lake Whangape and some potential management techniques. Department of Conservation: Wellington, New Zealand. Science for Conservation 186.

Daehler, C.C; Denslow, J.S; Ansari, S and Huang-Chi, K., 2004. A Risk-Assessment System for Screening Out Invasive Pest Plants from Hawaii and Other Pacific Islands. Conservation Biology Volume 18 Issue 2 Page 360.
Summary: A study on the use of a screening system to assess proposed plant introductions to Hawaii or other Pacific Islands and to identify high-risk species used in horticulture and forestry which would greatly reduce future pest-plant problems and allow entry of most nonpests.

De Wit, M.P., Crookes, D.J. and Van Wilgen, B.W. 2001. Conflicts of Interest in Environmental Management: Estimating the Costs and Benefits of a Tree Invasion, *Biological Invasions*: 3 167 - 178.
Summary: A good overview of the associated uses and negative impacts of *A. mearnsii* in South Africa, as well

Dye, P. and Jarmain, C. 2004. Water use by Black Wattle (*Acacia mearnsii*): Implications for the Link Between Removal of Invading Trees and Catchment Streamflow Response, *South African Journal of Science*: 100 40 - 44.
Summary: A study on the evaporation rates from areas infested with *A. mearnsii* in Western Cape and KwaZulu-Natal in South Africa.

European and Mediterranean Plant Protection Organization (EPPO), 2006. Guidelines for the management of invasive alien plants or potentially invasive alien plants which are intended for import or have been intentionally imported. EPPO Bulletin 36 (3), 417-418.

Goodman, P.S. 2003. Assessing Management Effectiveness and Setting Priorities in Protected Areas in KwaZulu-Natal, *BioScience*53 (9): 843 - 850.
Summary: The threats to conservation faced in the KwaZulu-Natal province of South Africa.

Hill, R.L., Gordon, A.J. and Neser, S. 1999. The Potential Role of *Bruchophagus acaciae* (Cameron) (Hymenoptern: Eurytomidae) in the Integrated Control of *Acacia* Species in South Africa. In Spencer, N.R. (ed.) *Proceedings of the X International Symposium on Biological Control of Weeds*. Montana State University: Montana. 919 - 929.
Summary: The paper discusses the appropriateness of the wasp *Bruchophagus acaciae* for use as a biological control agent for Australian *Acacia* species.

Impson, F. A. C.; Kleinjan, C. A.; Hoffmann, J. H.; Post, J. A., 2008. *Dasineura rubiformis* (Diptera: Cecidomyiidae), a new biological control agent for *Acacia mearnsii* in South Africa. South African Journal of Science. 104(7-8). JUL-AUG 2008. 247-249.

IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

Motooka, P. 2000. Summaries of herbicide trials for pasture, range, and non-cropland weed control-1999. College of Tropical Agriculture and Human Resources of the University of Hawaii at Manoa.
Summary: Data published to assist applicators experimenting with herbicides for weed control.

PIER (Pacific Island Ecosystems at Risk), 2003. *Acacia mearnsii*
Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information
Available from: http://www.hear.org/pier/species/acacia_mearnsii.htm [Accessed 17 June 2003]

Richardson, David M.; Kluge, Robert L., 2008. Seed banks of invasive Australian *Acacia* species in South Africa: Role in invasiveness and options for management. Perspectives in Plant Ecology Evolution & Systematics. 10(3). 2008. 161-177.

Swaziland s Alien Plants Database., Undated. *Acacia mearnsii*
Summary: A database of Swaziland s alien plant species.

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.
Summary: This database compiles information on alien species from British Overseas Territories.
Available from: http://www.jncc.gov.uk/page-3660 [Accessed 10 November 2009]

Viljoen, B. D.; Stoltsz, C. W. Control of black wattle (*Acacia mearnsii* De Wild.) seedlings with Garlon herbicide applied by backpack mistblower. South African Journal of Plant & Soil. 25(4). 2008. 242-244

General information

Balent, G. Tassin, J. 1999. Landscape level to assess *Acacia mearnsii* invasion in the Reunion Island (Indian Ocean). pg. 12 In *Proceedings of the 5th International Conference on the Ecology of Invasive Alien Plants*. 13-16 October, 1999, La Maddalena, Sardinia, Italy.
Summary: Information on the distribution and effects of *A. mearnsii* on Reunion Island.

Bellingham, P. J., Duncan, R. P., Lee, W. G., Buxton, R. P. 2004. Seedling growth and survival do not predict invasiveness in naturalised woody plants in New Zealand. *Oikos* 106: 308-316.
Summary: Rates *A. mearnsii* as a scattered, or local, weed.

Carr, G. D. *Acacia mearnsii* University of Hawaii, Botany Department.
Summary: Brief information on *Acacia mearnsii* in Hawaii.
Available from: http://www.botany.hawaii.edu/faculty/carr/aca_mea.htm [Accessed 18 June 2003]

Conservatoire Botanique National De Mascarin (BOULLET V. coord.) 2007. - *Acacia mearnsii* Index de la flore vasculaire de la Réunion (Tracheophytes) : statuts, menaces et protections. - Version 2007.1
Summary: Base de données sur la flore de la Réunion. De nombreuses informations tres utiles.
Available from: http://flore.cbnm.org/index2.php?page=taxon&num=a684eceee76fc522773286a895bc8436 [Accessed 28 March 2008]
Duke, J. A. 1983. *Acacia mearnsii*. Handbook of Energy Crops. Unpublished.
Summary: Brief summary of features of *Acacia mearnsii* primarily with an African perspective.
Available from: http://www.hort.purdue.edu/newcrop/duke_energy/Acacia_mearnsii.html [Accessed 17 June 2003]
Franco, J.A. 1943. Dendrologia Florestal. Lisboa.
Summary: Dendrology book of species present in Portugal
Franco, J.A. 1971. Nova Flora de Portugal (Continente e Azores). Vol. 1. Franco, J.A. (Ed.). Lisboa.
Summary: Portuguese Flora
Henderson, L. 1995. Plant invaders of Southern Africa. Agriculture Research Council, ARC/LNR, Pretoria, South Africa. 55 pp.
Summary: Plant Protection Research Institute Handbook No. 5
ITIS (Integrated Taxonomic Information System), 2004. Online Database *Acacia mearnsii*
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=182081 [Accessed December 31 2004]
Kueffer, C. & Lavergne, C. 2004. Case studies on the status of invasive woody plant species in the Western Indian Ocean. Réunion. FAO. 36 p
Summary: Available from: http://www.fao.org/forestry/webview/media?mediaId=6842&langId=2 [Accessed 26 March 2008]
Lejju, J.B. 2004. Ecological Recovery of an Afromontane Forest in South-Western Uganda, *African Journal of Ecology* 42 (s1): abstract.
Summary: A study on the regeneration levels in areas invaded by exotic plants in the Mgahinga Gorilla National Park (MGNP), Uganda.
Le Maitre, D. C., Scott, D.F. and Colvin, C. (1999). A review of information on interactions between vegetation and groundwater. *Water SA* 25 (2): 137-152.
Summary: Interactions between vegetation and groundwater including interception, root uptake, transpiration and other factors.
MacDonald, I. A. W.,Thebaud, C.,Strahm, W. A.,Strasberg, D. 1991. Effects of alien plant invasions on native vegetation remnants on La Reunion (Mascarenes Islands, Indian Ocean). Environmental Conservation 18 (1):51-61.
Summary: Cet article est le premier à proposer une hiérarchisation des plantes les plus envahissantes de La Réunion. 33 plantes ont été ainsi classées en utilisant une méthode développée en Afrique du Sud. Les bases d une stratégie de lutte contre les plantes exotiques envahissantes sont également formulées.
Meyer, J.-Y. 2000. Invasive plants in the Pacific Islands. In: The Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy. Sherley, G. (tech. ed). Published in June 2000 by the South Pacific Regional Environment Programme (SPREP).
Summary: Resource that includes the distribution of invasive species throughout the Pacific Islands.
Milton, S.J., Dean W.R.J. and Richardson, D.M. 2003. Economic Incentives for Restoring Natural Capital in Southern African Rangelands, *Front Ecol Environ*+C26 1 (5): 247 254.
Summary: Proposed benefits of some land use strategies in South Africa (including game hunting).
Paiva, J. 1999. Acacia. In Talavera, S. Aedo, C, Castroviejo, S, Romero Zarco, C, Sáez, L, Salgueiro, F.J & Velayos, (ed). Flora Iberica - Plantas Vasculares de la Peninsula Iberica e Islas Baleares. Vol.VII(I). Leguminosae. Real Jardín Botánico, CSIS. Madrid. ISBN 84-00-06221-3. pp. 11-25.
Summary: Flora of Iberian Peninsula
Samways, M. J., Caldwell, P. M., Osborn, R. 1996. Ground-living invertebrate assemblages in native, planted and invasive vegetation in South Africa. *Agriculture, Ecosystems and Environment* 59: 19-32.
Summary: Mentions that invertebrate species richness and diversity are affected by *A. mearnsii*.
Tassin, J. 2002. Dynamiques et consequences de l invasion des paysages agricoles des hauts de La Réunion par Acacia mearnsii de Wild. Thèse de Doctorat, Université de Toulouse III, France. 215 p.
Tassin Jacques,Lavergne Christophe,Muller Serge,Blanfort Vincent,Baret Stéphane,Le Bourgeois Thomas,Triolo Julien,Rivière Jean-Noël Éric. Bilan des connaissances sur les conséquences écologiques des invasions de plantes à l'île de la réunion (archipel des Mascareignes, océan Indien). In: Revue d'Écologie (La Terre et La Vie), tome 61, n°1, 2006. pp. 35-52.
Summary: Cet article propose un bilan des methodes et des resultats relatifs aux etudes traitant de la connaissance des consequences ecologiques des invasions de plantes exotiques.
TASSIN, J & Rivière, J.-N & CAZANOVE, M & BRUZZESE, E. (2006). Ranking of invasive woody plant species for management on Réunion Island. Weed Research. 46. 388 - 403. 10.1111/j.1365-3180.2006.00522.x.
Summary: L'inventaire de 318 especes de plantes ligneuses introduites à la Réunion, permet d en identifier 132 comme naturalisees dans les ecosystemes naturels. 26 de ces especes choisies parmi les plus envahissantes ont été classees en fonction de leur impact biologique sur les ecosystemes indigenes.
Tickner, D.P., Angold, P.G., Gurnell, A.M. and Mountford, J.O. 2001. Riparian Plant Invasions: Hydrogeomorphological Control and Ecological Impacts, *Progress in Physical Geography*25 (1): 22 - 52.
Summary: Discussion about some physical processes that are disrupted by alien plant species.
Tutin, T. G., Heywood, V.H., Burges, N.A., Moore, D.M., Valentine, D.H., Walters, S.M. & Webb, D.A. 1992. Flora Europaea. Vol.2 Rosaceae to Umbelliferae. (reprint). Cambridge University Press. Cambridge. ISBN. 0 521 06662 X pp. 84-85
Summary: European Flora
Young, A. 2002. Effects of Trees on Soils, *The Natural Farmer* (Special Supplement on AgroForestry Soil Fertility and Land Degradation).
Summary: An overview of the soil improving properties of some trees and a list of soil improving species.
Available from: http://www.nofa.org/tnf/sp02/supplement/effects.pdf [Accessed 23 December 2004]