GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Ulex europaeus***

Ulex europaeus 简体中文 正體中文 **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Fabales	Fabaceae

Common name jonc marin (French), gorse (English), vigneau (French), vIrish furze (English), Gaspeldoorn (Dutch), Ginestra spinosa (Italian), Tojo (Spanish), bois jonc (French), furze (English), whin (English), ajonc (French), Stechginster (German), kolcolist zachodni (English, Poland), chacay (English, Brazil), picapica (English, Brazil)

Synonym

Similar species *Ulex minor*

Summary Ulex europaeus is a spiny, perennial, evergreen shrub that grows in dense and impenetrable thickets which exclude grazing animals. It is common in disturbed areas, grasslands, shrublands, forest margins, coastal habitats and waste places. Ulex europaeus is a very successful and tenacious plant once it becomes established and is extremely competitive, displacing cultivated and native plants, and altering soil conditions by fixing nitrogen and acidifying the soil. It creates an extreme fire hazard due to abundant dead material and its oily, highly flammable foliage and seeds. Soil is often bare between individual plants, which increases erosion on steep slopes where Ulex europaeus has replaced grasses or forbs. Spiny and mostly unpalatable when mature, Ulex europaeus reduces pasture quality where it invades rangeland. Ulex europaeus understorey in cultivated forests interferes with operations; increasing pruning and thinning costs and can interfere with the growth of conifer seedlings.

view this species on IUCN Red List

Species Description
Many-branched shrubs to 6-20 dm tall; young branches usually terminating in a spine, younger parts somewhat glaucous, and hirsute to tomentose. Phyllodes 4-14mm long, usually spine-tipped. Calyx yellow, 12-16 (-20)mm long, densely villous, persistent; corolla yellow, 15-20mm long. Pods 11-20mm long, 6-8mm wide, slightly compressed, densely villous. Seeds 1-4, brownish green, reniform.\" (Wagner *et al.*, 1999. In PIER, 2002)

Notes
The geographical distribution of gorse depends primarily on temperature. It cannot survive in arid climates, or in continental regions where there are extremes of heat and cold. Day length may also affect its latitudinal distribution, as short-day conditions inhibit maturation and prevent thorn formation and flowering. (IPM, 2000)

Gorse is a successful invasive species because it can: (1) fix nitrogen; (2) acidify and (at least temporarily) impoverish soils by taking up bases; (3) survive on a variety of soil types; (4) produce copious amounts of heat-tolerant seeds with long-term viability; and (5) regenerate rapidly from seeds and stumps after disturbances such as brush clearing or fires. (Hoshovsky, 1989)

Lifecycle Stages
Seed viability varies from place to place. In one study, they remained dormant but viable in the soil for up to 30 years, with one report of 70 years of dormancy (Zabkiewicz 1976. In Hoshovsky, 1989). In New Zealand, experiments suggested that 90% of seed would be lost after 20 years in two sites, but after 200 years in a third (Hill *et al*., 1996)

Uses
Introduced from Western Europe as an ornamental or hedge shrub (CDFA). It has potential for land reclamation and has been used as a hedge plant and for binding soil on dry sandy banks. On marginal land it is a source of food for cattle and ponies and formerly, after removal of spines, it was used for fodder (Binggeli, 1997). It is used as an ornamental shrub, hedge plant, pollen (for New Zealand bees), medicinally, flowers for dye particularly for easter eggs, formerly as fuel, food for livestock and windbreaks (Blood, Kate. pers.comm. 12 January 2001). Lectins extracted from seeds will bind selectively to certain glycoproteins and glycoplipids, and are widely used in tissue typing (Audette *et al*., 2000). It sometimes acts as a nurse crop for native regeneration (Hackwell, 1980), but sometimes not (Lee *et al*., 1986).

Habitat Description
The ability of gorse to fix nitrogen enables this plant to colonize and dominate areas with poor soils. Gorse plants extract and retain plant nutrients such as calcium, magnesium, and sodium, which changes nutrient dynamics and can impoverish the soil (IPM, 2000). The geographical distribution of gorse depends primarily on temperature. It cannot survive in arid climates, or in continental regions where there are extremes of heat and cold. Day length may also affect its latitudinal distribution, as short-day conditions inhibit maturation and prevent thorn formation and flowering (IPM, 2000). Gorse will grow on most soil types, including acidic soils with less than 4% organic content (Zabkiewicz 1976; Hoshovsky 1986. In IPM, 2000).

Gorse grows well in shady slopes with high soil moisture and good drainage. Look for gorse in areas with degraded soils or disturbed sites such as roadsides, pasture lands, gravelly floodplains, cleared forests, or other areas following a disturbance (Cook 1987; Zielke *et al.* 1992. In IPM, 2000).

In Hawai‘i, naturalized in open areas and along roadsides, 760-2,000 m, forming dense, monotypic thickets. (PIER)

Reproduction
Gorse sets flower buds in mid to late summer. If conditions are warm enough, a high proportion of these buds mature to produce pods in late autumn. In cooler climates, few flowers are produced in autumn or winter, and most buds flower synchronously in spring (Hill *et al*., 1991). Most seeds fall beneath the bush, and only a small proportion fall beyond 4m (Hill *et al*., 1996). Seeds have a hard, water-impermeable seed coat that prevents immediate germination (MacCarter and Gaynor 1980. In Hoshovsky, 1989) in all but a small proportion (R. Hill, pers. comm.). The seeds produced are small, averaging 150,000 seeds/kg (Rudolf 1974. In Hoshovsky, 1989) and are produced at the rate of 500-600 seeds/square metre, with counts of up to 20,000 seeds/square metre (Zabkiewicz and Gaskin 1978a, Hartley *et al.* 1980) in the top 2.5cm of soil, (Hoshovsky, 1989).

Nutrition
Optimal growth is at soil pH of 4.5-5.0 (Meeklah 1979, in Hoshovsky, 1989). It will grow on most soil types (Meeklah 1979), from \"good silt soil to plain boulders\" (Birdling 1952, in Hoshovsky, 1989). It has been recorded as growing well on serpentine soils (Coombe and Frost 1956) and, though rarely, on highly calcareous soils (Chater 1931) in England. In New Zealand, gorse readily invades low fertility pastureland where the organic content of the soil is less than 4% (Matthews 1982, in Hoshovsky, 1989). It grows best where abundant soil moisture is available (Dancer *et al.* 1977) and does better on shady slopes than on sunny slopes (Birdling 1952, in Hoshovsky, 1989). According to Boyd (1984), gorse thrives where the water table is very high, although Zabkiewicz (1976) asserts that it does best where there is good drainage (Hoshovsky, 1989). Gorse has nitrogen-fixing bacteria located in nodules on its roots which thrive under aerobic conditions (Zabkiewicz 1976, in Hoshovsky, 1989). If the roots are flooded, bacterial metabolism slows down (Zabkiewicz 1976, in Hoshovsky, 1989).

General Impacts
Ulex europaeusis is a major weed in five countries (R. Hill, pers. Comm.). It is extremely competitive, displaces cultivated and native plants, and alters soil conditions by fixing nitrogen and acidifying the soil (Egunjobi, 1969; Grubb and Suter, 1970). It creates an extreme fire hazard due to its oily, highly flammable foliage and seeds, and abundant dead material. It not only increases the risk of fire, but also produces a hotter fire than most weeds (MacCarter and Gaynor 1980, In IPM, 2000). This fire risk increase threats on the margins of native vegetation (R. Hill, pers. Comm.).

Because of various characteristics of the plant, the soil is often bare between individual gorse plants, which increases erosion on steep slopes where gorse has replaced grasses or forbs. Spiny and mostly unpalatable when mature, gorse reduces pasture quality where it invades rangeland. Gorse understory in forests interferes with cultural operations, increasing pruning and thinning costs (Balneaves and Zabkiewicz 1981. In IPM, 2000), and can interfere with the growth of conifer seedlings (Clements *et al*., 2001). It excludes grazing animals from rangelands and pasture (Richardson and Hill, 1998; Tulang, 1992).

Management Info
Preventative measures: A Risk Assessment of *Ulex europaeus* for Hawai'I 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 20 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.\"\"
A Risk assessment of *Ulex europaeus* for Australia was prepared by Pacific Island Ecosystems at Risk (PIER) using the Australian risk assessment system (Pheloung, 1995). The result is a score \r\r\nof 26 and a recommendation of: reject the plant for import (Australia) or species likely to be a pest (Pacific).
Cultural: In Oregon, forest managers use fast-growing tree species to shade out gorse. This technique has also been used in New Zealand and Hawai'i. Planting acid-tolerant, fast-growing species in gorse thickets may eventually shade out gorse without further management efforts (IPM, 2000). McCarter and Gaynor (1980; in IPM, 2000) report that the combined effect of competition of white clover (*Trifolium repens*) and the symbiont *Rhizoctonia* fungi will prevent gorse establishment in situations of extreme competition among pasture species and defoliation caused by grazing stock. It has also been stated that a healthy, well-fertilised sward of pasture which is not overgrazed or pugged will be more resistant to gorse invasion than poorly managed pasture (BOPRC, undated).
Chemical: Many herbicides are not very effective on gorse because of the shape of the \"leaves\" and the thick cuticles on the spines which help prevent absorption of herbicides. Large, isolated gorse bushes can be killed by cutting and spraying the stumps with Grazon, Tordon or Escort. A motorised knapsack sprayer uses little herbicide and kills small, scattered gorse bushes. Herbicides registered for use on gorse are: activated amitrole, Answer, Escort, glyphosate, Grazon, Reglone, Tordon, Brushkiller, Touchdown, Trounce Gorsekiller and Versatill. \r\nHerbicide Ballistic Technology (HBT™) is a new technique designed to improve the efficiency of incipient weed management with accurate long-range delivery of effective herbicide doses. Dr. James Leary, CTAHR Invasive Weed Specialist, introduces Herbicide Ballistic Technology (HBT) to control invasive weeds in Hawaii. Trials have been carried out on banana poka (*Passiflora tarminiana*), Australian tree fern (*Sphaeropteris cooperi*), kahili ginger (*Hedychium gardnerianum*), including basal bark applications to strawberry guava (*Psidium cattleianum*).
Please watch this YouTube video on the use of Herbicide Ballistic Technology (HBT™) in the management of gorse.
Integrated management: Successful clearance of gorse requires a combination of methods: good pasture management, good grazing management and the appropriate follow-up herbicide application (AgResearch, 1999).
Click here for Information about physical, chemical and biological control

Pathway
Introduced from Western Europe as an ornamental or hedge shrub. (CDFA)Introduced as a hedge plant to contain livestock. (Coombs *et al.* 1995)

Principal source:

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 Richard Hill, Richard Hill Associates. Christchurch. New Zealand.

Pubblication date: 2010-10-04

ALIEN RANGE

[13] AUSTRALIA
[1] CHILE
[1] COSTA RICA
[1] INDIA
[1] IRAN, ISLAMIC REPUBLIC OF
[1] ITALY
[8] NEW ZEALAND
[1] POLAND
[2] SAINT HELENA
[1] SOUTH AMERICA
[1] SRI LANKA
[19] UNITED STATES
[5] CANADA
[1] CHINA
[1] FALKLAND ISLANDS (MALVINAS)
[1] INDONESIA
[1] IRELAND
[1] MAURITIUS
[1] PERU
[1] REUNION
[1] SOUTH AFRICA
[1] SPAIN
[1] UNITED KINGDOM
[1] URUGUAY

Red List assessed species 2: EW = 1; CR = 1;

Loxioides bailleui **CR**

Trochetiopsis erythroxylon **EW**

BIBLIOGRAPHY

65 references found for **Ulex europaeus**

Managment information
AgResearch. 1998. Goats for weed control. AgFACT no. 240.
Summary: Fact sheet discussing the use of goats in controlling weeds, including gorse.
AgResearch. 1999. Gorse: control methods. AgFACT no. 25.
Summary: Fact sheet outlining various methods of controlling gorse.
Alien Species in Poland 2006 *Ulex europaeus*
Summary: Available from: http://www.iop.krakow.pl/ias/Gatunek.aspx?spID=174 [Accessed 18 March 2010]
Australian Department of the Environment and Heritage, 2003. Gorse (*Ulex europaeus*). Weeds of National Significance: Weed Management Guide Department of the Environment and Heritage and the CRC for Australian Weed Management, 2003.
Summary: Available from: http://www.weeds.gov.au/publications/guidelines/wons/u-europaeus.html [Accessed 23 October 2008]
Balneaves, J.M. and Zabkiewicz, J.A. (1981). Gorse control: a review. In: Chavazze, 1981, pp. 92-105.
Blood, Kate. pers.comm. 12 January 2001. Environmental Weed Education Coordinator. Cooperative Research Centre for Weed Management Systems (Weeds CRC), Keith Turnbull Research Institute (KTRI) PO Box 48, Frankston, Victoria, Australia 3199
Summary: field guide on environmental weeds for south eastern Australia. The field guide is in production and may be available in July 2001. I am unable to include the ref list here. Please acknowledge appropriately. Cheers, Kate Blood
BOPRC. Undated. Plant Pest Control. *Ulex* spp. Fact Sheet.
Summary: Fact sheet giving information about gorse and outlining some control options from the Bay of Plenty Regional Council in New Zealand.
Broom and Gorse in British Columbia - A Forestry Perspective Problem Analysis.
Summary: Description, distribution, habitat, reproduction, pests, impacts, management, references.
Available from: http://www.for.gov.bc.ca/hfp/pubs/vegmngt/Broom-Gorse.pdf [Accessed 22 October 2002]
Cook, M.J. (1987). Gorse Control in California Parklands. California Department of Food and Agriculture Pest Management Analysis and Planning. Sacramento, CA. 37 pp.
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.
Environment Waikato. 2002. Gorse (*Ulex europaeus*).
Gaynor, D.L. and MacCarter, L.E., 1981. Biology, ecology, and control of gorse (*Ulex europaeus* L.): a bibliography. New Zealand J. Agricultural Res. 24: 123-137.
Hill RL, Gourlay AH, Fowler SV, 2000. The biological control programme against gorse in New Zealand. In: Spencer, Neal R, ed . Proceedings of the X International Symposium on Biological Control of Weeds, 4-14 July 1999, Bozeman, Montana, USA: Montana State University, 909-917.
Hill RL, Gourlay AH, Lee WG, Wilson JB, 1996. Dispersal of seeds under isolated gorse plants and the impact of biological control agents. Proceedings of the 49th New Zealand Plant Conference: 114-118.
Hill RL, Gourlay AH, Martin L, 1991. Seasonal and geographic variation in the predation of gorse seed, *Ulex europaeus* L., by the gorse seed weevil *Apion ulicis* Forst. in New Zealand. New Zealand Journal of Zoology, 18:37-43.
Hill RL, Sandrey RA, 1986. The costs and benefits of gorse. Proceedings of the 39th New Zealand Plant Protection Conference: 70-73.
Hivert, J. 2003. Plantes exotiques envahissantes - Etat des m�thodes de lutte mise en oeuvre par l Office National des For�ts � La R�union. ONF R�union.
Summary: Synth�se des m�thodes de lutte employ�es par l ONF � la R�union contre une vingtaine de plantes exotiques envahissantes.

Hoshovsky, Marc. 1989. Element Stewardship Abstract For *Ulex europaeus*. ﷺTHE NATURE CONSERVANCY.
Summary: Element stewardship Abstract for *Ulex europaeus*, including distribution, a description, habitat information and good control information.
Available from: http://tncweeds.ucdavis.edu/esadocs/documnts/ulexeur.pdf [Accessed 19 June 2003]
IPM, 2000. IVM Technical Bulletin - Gorse. Integrated Pest Management Information Service (IPM).
Summary: Description, impacts, distribution, lifecycle, management.
Available from: http://www.efn.org/~ipmpa/Noxgorse.html [Accessed 22 October 2002]
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.
Ivens GW, Mlowe F, 1980. A study of competition between seedlings of gorse (*Ulex europaeus* L.) and perennial ryegrass (*Lolium perenne* L.) by means of a replacement series experiment. Weed Research, 20:183-191.
Kueffer, C. and Mauremootoo, J., 2004. Case Studies on the Status of Invasive Woody Plant Species in the Western Indian Ocean. 3. Mauritius (Islands of Mauritius and Rodrigues). Forest Health & Biosecurity Working Papers FBS/4-3E. Forestry Department, Food and Agriculture Organization of the United Nations, Rome, Italy.
Lee WG, Allen RB, Johnson PN, 1986. Succession and dynamics of gorse (*Ulex europaeus* L.) communities in the Dunedin Ecological District South Island New Zealand. New Zealand Journal of Botany, 24:279-292.
MacCarter LE, Gaynor DL, 1981. Gorse: a subject for biological control in New Zealand. New Zealand Journal of Experimental Agriculture, 8:321-330.
Ministry of Forests, British Columbia. Gorse, the spiny competitor. Forest Practices branch.
Summary: Description, distribution, impacts, management.
Available from: http://www.for.gov.bc.ca/hfp/pubs/interest/gorse/gorse.htm [Accessed 22 October 2002]
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.
Murray, C. and C. Pinkham. 2002. Towards a Decision Support Tool to Address Invasive Species in Garry Oak & Associated Ecosystems in BC. Prepared by ESSA Technologies Ltd., Victoria, B.C. for the GOERT Invasive Species Steering Committee, Victoria, 96 pp.
Summary: Available from: http://www.goert.ca/documents/GOEDSTreport.pdf [Accessed 13 February 2008]
PIER (Pacific Island Ecosystems at Risk), 2002. *Ulex europaeus*
Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information..
Available from: http://www.hear.org/pier/species/ulex_europaeus.htm [Accessed 5 February 2003].
Pierre Binggeli, 1997. *Ulex europaeus* L. (Papilionaceae). Woody Plant Ecology.
Summary: Biology, uses, distribution, impacts, pests, control, references.
Available from: http://members.lycos.co.uk/WoodyPlantEcology/docs/web-sp18.htm [Accessed 22 October 2002]
Polster, David. Personal communication, 22 February 2002.
Summary: some management information.
Rees M, Hill RL, 2001. Large-scale disturbances, biological control and the dynamics of gorse populations. Journal of Applied Ecology, 38:364-377.
Richardson B, Vanner A, Ray J, Davenhill N, Coker G, 1996. Mechanisms of *Pinus radiata* growth suppression by some common forest weed species. New Zealand Journal of Forestry Science, 26:421-437.
Tasman District Council (TDC) 2001. Tasman-Nelson Regional Pest Management Strategy
Tassin J, Riviere JN, 1999. Invasive plants on Reunion. Courrier de la Nature, 177:28-33.
The Biocontrol of Gorse, *Ulex europaeus*, in Chile: A Progress Report.
Summary: Available from: http://www.invasive.org/publications/xsymposium/proceed/13pg955.pdf [Accessed 22 October 2002]
The Biological Control Program Against Gorse in New Zealand.
Summary: Available from: http://www.invasive.org/publications/xsymposium/proceed/13pg909.pdf [Accessed 22 October 2002]
The Garry Oak Ecosystems Recovery Team (GOERT)., 2003. Annotated Bibliographies on the Ecology and Management of *Ulex europaeus*
Summary: Available from: http://www.goert.ca/documents/Bib_ulexeuro.pdf [Accessed 13 February 2008]
The Garry Oak Ecosystems Recovery Team (GOERT)., 2003. Field manual of *Ulex europaeus*
Summary: Available from: http://www.goert.ca/documents/InvFS_ulexeuro.pdf [Accessed 13 February 2008]
Tulang M, 1992. The US Department of Agriculture's rural development approach to alien plant control in Hawai'i: a case study. In: Stone CP, Smith CW, Tunison JT. Eds. Alien Plant Invasions in Native Ecosystems of Hawai'i: Management and Research. Honolulu, Hawaii, USA: University of Hawai'i.
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]
Wilson, Colin, Wildlife Management Officer, Department of Infrastructure, Planning and Environment, Parks & Wildlife Service, Northern Territory, Australia.
Summary: Compilor of original GISD profile of *Chromoleana odorata*.
Wotherspoon and Wotherspoon, 2002. The evolution and execution of a plan for invasive weed eradication and control, Rangitoto Island, Hauraki Gulf, New Zealand. In *Turning the tide: the eradication of invasive species* : 381-388. Veitch, C.R. and Clout, M.N.(eds). IUCN SSC Invasive Species Specialist Group. IUCN. Gland. Switzerland and Cambridge. UK.
Summary: Eradication case study in Turning the tide: the eradication of invasive species.

Zielke, K., Boateng, J.O., Caldicott, N. and Williams, H. 1992. Broom and gorse in British Columbia: a forestry perspective problem analysis. Queen s Printer for British Columbia. Victoria, BC.

General information

Audette GF, van den Selaar M, Delbaere LTJ, 2000. The 2.2A resolution of the O(H) blood-group-specific lectin I from *Ulex europaeus*. Journal of Molecular Biology, 304:423-433.

Baret, S., Rouget, M., Richardson, D. M., Lavergne, C., Egoh, B., Dupont, J., & Strasberg, D. 2006. Current distribution and potential extent of the most invasive alien plant species on La R&#65533;union (Indian Ocean, Mascarene islands). Austral Ecology, 31, 747-758.

Summary: L objectif de ce papier est d identifier les zones prioritaires en mati&#65533;re de gestion des invasions biologiques &#65533; La R&#65533;union en mod&#65533;lisant la distribution actuelle et potentiellle d une s&#65533;lection de plantes parmi les plus envahissantes.

Clements DR, Peterson DJ, Prasad R, 2001. The biology of Canadian weeds, 112. *Ulex europaeus* L. Canadian Journal of Plant Science, 81:325-337.

CONABIO. 2008. Sistema de informaci&#65533;n sobre especies invasoras en M&#65533;xico. Especies invasoras - Plantas. Comisi&#65533;n Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.

Summary: English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.

Invasive species - Plants is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]

Spanish:

La lista de especies del Sistema de informaci&#65533;n sobre especies invasoras de m&#65533;xico cuenta actualmente con informaci&#65533;n aceca de nombre cient&#65533;fico, familia, grupo y nombre com&#65533;n, as&#65533; como h&#65533;bitat, estado de la invasi&#65533;n en M&#65533;xico, rutas de introducci&#65533;n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p&#65533;gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci&#65533;n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci&#65533;n novedades, para conocer los cambios.

Especies invasoras - Plantas is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]

Conservatoire Botanique National De Mascarin (BOULLET V. coord.) 2007. - *Ulex europaeus* Index de la flore vasculaire de la R&#65533;union (Trach&#65533;ophytes) : statuts, menaces et protections. - Version 2007.1 (mise &#65533; jour 12 juin 2007).

Summary: Base de donn&#65533;es sur la flore de la R&#65533;union. De nombreuses informations tr&#65533;s utiles.

Available from: http://flore.cbnm.org/index2.php?page=taxon&num=8860a4e27cbbe4c63821b429211684a3 [Accessed 9 April 2008]

Coombs, E.M., Markin, G.P., and Turner, C.E., 1995. Gorse - *Ulex europaeus*. Biological Control of Weeds in the West.

Summary: Biology, common names, habitat, impacts.

Available from: http://www.weedcenter.org/info/gorse.pdf [Accessed 22 October 2002]

Daehler, C. 2004. Australian/New Zealand risk assessment adapted for Hawaii. *Ulex europaeus*. University of Hawaii.

Summary: Risk assessment for *Ulex europaeus*.

Available from: http://www.botany.hawaii.edu/faculty/daehler/wra/wra_inputt.asp [Accessed 19 August 2005]

Egunjobi JK, 1969. Dry matter and nitrogen accumulation in secondary successions involving gorse (*Ulex europaeus* L.) and associated shrubs and trees. New Zealand Journal of Science, 12:175-193.

Grubb PJ, Suter MB, 1970. The mechanism of acidification of soil by *Calluna* and *Ulex* and the significance for conservation. In: Duffey E, Watt AS, eds. British Ecological Society Symposium 11. Oxford, UK: Blackwells, 115-133.

Hackwell K, 1980. Gorse: a helpful plant for regenerating native forest. Forest and Bird, 215:25-28.

Holm L, Doll J, Holm E, Pancho JV, Herberger JP, 1997. World weeds: natural history and distribution. New York, USA: John Wiley and Sons.

ILDIS, 2003. International Legume Database and Information service. www.ildis.org/legumeweb; http://biodiversity.soton.ac.ua/legumeweb;

ITIS (Integrated Taxonomic Information System), 2005. Online Database *Ulex europaeus*

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/itisca/taxastep?king=every&p_action=containing&taxa=Ulex+europaeus&p_format=&p_ifx=plglt&p_lang= [Accessed March 2005]

Kueffer, C. & Lavergne, C. 2004. Case studies on the status of invasive woody plant species in the Western Indian Ocean. R&#65533;union. FAO. 36 p

Summary: Available from: http://www.fao.org/forestry/webview/media?mediaId=6842&langId=2 [Accessed 26 March 2008]

Leary, J., pers. comm. 2005. University of Hawaii. Seminar at University of Auckland on 23 September 2005 entitled; &#65533;Major adaptive features of gorse (*Ulex europaeus*) infestations on volcanic landscapes in Hawai&#65533;i&#65533;.

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 &#65533; proposer une hi&#65533;rarchisation des plantes les plus envahissantes de La R&#65533;union. 33 plantes ont &#65533;t&#65533; ainsi class&#65533;es en utilisant une m&#65533;thode d&#65533;velopp&#65533;e en Afrique du Sud. Les bases d une strat&#65533;gie de lutte contre les plantes exotiques envahissantes sont &#65533;galement formul&#65533;es.

MacKee, H.S. 1994. Catalogue des plantes introduites et cultiv&#65533;es en Nouvelle-Cal&#65533;donie, 2nd edn. MNHN, Paris.

Summary: Cet ouvrage liste 1412 taxons (esp&#65533;ces, sous esp&#65533;ces et vari&#65533;t&#65533;s) introduits en Nouvelle-Cal&#65533;donie. L auteur pr&#65533;cise dans la majorit&#65533; des cas si l esp&#65533;ce est cultiv&#65533;e ou naturalis&#65533;e.

Richardson RG, Hill RL, 1998. *Ulex europaeus* L. In: Panetta FD, Groves RH, Shepherd RCH, eds. Biology of Australian Weeds, volume 2. Melbourne Australia: RG and FJ Richardson, 269-290.

Tassin, J., Lavergne, C., Muller, S., Blanfort, V., Baret, S., Le Bourgeois, T., Triolo, J., & Rivi&#65533;re, J.-N. 2006. Bilan des connaissances sur les cons&#65533;quences &#65533;cologiques des invasions de plantes &#65533; l&#65533;&#65533;le de La R&#65533;union (archipel des Mascareignes, oc&#65533;an Indien). Revue d&#65533;Ecologie (La Terre et la Vie). 61, 35-51.

Summary: Cet article propose un bilan des m&#65533;thodes et des r&#65533;sultats relatifs aux &#65533;tudes traitant de la connaissance des cons&#65533;quences &#65533;cologiques des invasions de plantes exotiques.

Tassin, J., Rivi&#65533;re, J.N., Cazanove, M., Bruzzeses, E. 2006. Ranking of invasive woody plant species for management on r&#65533;union Island. Weed research 46, 388-403

Summary: L inventaire de 318 esp&#65533;ces de plantes ligneuses introduites &#65533; la R&#65533;union, permet d en identifier 132 comme naturalis&#65533;es dans les &#65533;cosyst&#65533;mes naturels. 26 de ces esp&#65533;ces choisies parmi les plus envahissantes ont &#65533;t&#65533; class&#65533;es en fonction de leur impact biologique sur les &#65533;cosyst&#65533;mes indig&#65533;nes.

USDA-NRCS (Natural Resource Conservation Service) 2006. *Canna indica*. The PLANTS Database Version 3.5 [Online Database] National Plant Data Center, Baton Rouge, LA

Summary: Available from: http://plants.usda.gov/java/profile?symbol=CAIN19 [Accessed 24 March 2006]

Zabkiewicz, J.A. (1976). The ecology of gorse and its relevance to New Zealand forestry. In: Chavazze, 1976, pp. 63-70.