

# *Cinnamomum camphora* (L.) T. Nees & C. H. Eberm.

Native : East Asia

**Family** : Lauraceae

**Synonyms** : *Camphora camphora* (L.) H. Karst.  
*C. hahnemannii* Lukman.  
*Laurus camphora* L.

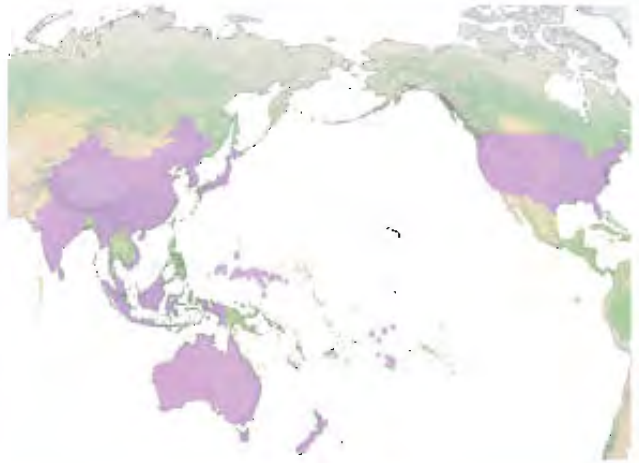
**Common names** : Camphor laurel, camphor tree

*Cinnamomum camphora* is a sturdy tree that can be used as a good windbreak. As it is hard to burn, it is valuable as a shade tree in areas that are prone to wildfires. The tree can be readily identified by the distinctive odour of the crushed leaves. The fruits, leaves and roots are toxic to humans in large doses. Major chemical compounds in wood and leaves of this tree are camphor, safrole, linalool, 1,8-cineole,  $\alpha$ -pinene and  $\alpha$ -terpineol. Seeds are easily spread by birds from cultivated areas to open forests. Spread to new locations is also aided by plant nursery sales.

**Description** : Large trees, to 30 m tall, evergreen, whole plant strongly camphor-scented, bark yellow-brown, irregularly and longitudinally fissured; branchlets brownish, terete, glabrous, terminal buds broadly ovoid, bud scales broadly ovate or suborbicular, sparsely sericeous outside. Leaves simple, alternate, blade yellow-green or pale-green, glaucous abaxially, shiny adaxially, ovate-elliptic, 6-12x2.5-5.5cm, subleathery, three-nerved or inconspicuously five-nerved, mid-rib conspicuous on both surfaces, base broadly cuneate or subrounded, apex acute, margin cartilaginous, entire or sometimes undulate; petiole slender, 2-3 cm, glabrous. Inflorescence an axillary panicle, 3.5 - 7 cm; peduncle 2.5-4.5 cm, peduncle and rachis glabrous or grey-yellow-brown puberulent especially on the node, pedicels 1 - 2 mm, glabrous. Flowers greenish-white or yellowish, approximately 3 mm long. Fruit a drupe, purple-black, ovoid or subglobose, 8 - 10 mm across.

**Habitat** : The tree prefers fertile, sandy soil. It will tolerate a pH anywhere in the range of 4.3 to 8, and will grow in full sun or partial shade. Established trees are tolerant of drought but growth is poor in wet soil. It is common in open wood lands, rain forest margins, riparian zones, near roadsides and fence rows. The tree has an excellent adaptation to disturbed sites and easily becomes naturalized where planted.

**Threat and damage** : Camphor in large doses is toxic to humans. It stimulates the central nervous system



**Distribution** : Australia, Bhutan, China, Cook Islands, Democratic People's Republic of Korea, Federated States of Micronesia, Fiji, Guam, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, New Caledonia, New Zealand, Republic of Korea, Singapore, Sri Lanka, United States, Viet Nam.



and may affect respiration or cause convulsions. In Chinese medicine, camphor is forbidden for pregnant women and those with a deficiency of vital energy. The tree is a prolific seed producer that apparently does not have serious predators or diseases outside its native range. Seedlings and root sprouts are abundant near mature trees, but individual trees occur far from seed sources. The tree grows like a weed, infesting forests and displacing native trees. It can form single-dominant stands that delay or preclude native rain forest regeneration.

**Uses :** Grown as a shade tree, screen or windbreak. Old leaves are dried and used as a spice. The wood

and leaves are analgesic, antispasmodic, odontalgic, rubefacient and stimulant. An infusion is used as an inhalant in the treatment of colds and diseases of the lungs. An oil extracted from the tree is anthelmintic and cardiotoxic. The sweetly-scented wood contains camphor.

**Management :** Small seedlings of the tree can be hand-pulled or grubbed out. It is important that the roots are removed otherwise the tree could regrow. Foliar spray with herbicides on young trees up to 3 metres tall is effective. Basal bark or cut stump herbicide treatments are effective for small trees with no multiple stems. Biological control is unknown.



## *Cirsium arvense* (L.) Scop.

Native : Europe and West Asia

**Family** : Asteraceae  
**Synonyms** : *Breaa arvensis* (L.) Less.  
*B. dioica* (Cass.) Less.  
*Cardus arvensis* (L.) Robson

**Common names** : Californian thistle, Canadian thistle, creeping thistle

*Cirsium arvense* is one of the most noxious and economically-destructive agricultural weeds in the world. It is distinguished from other thistles by creeping horizontal lateral roots, dense clonal growth and small dioecious flowers. It spreads primarily by vegetative means, and also by seed which is produced in huge numbers. The seeds spread as a contaminant in agricultural seeds, cattle and horse droppings and on farm machinery. They are also dispersed through wind and water. Vegetative spread is through horizontal growth of root system.

**Description** : Perennial subshrubs with deep-seated creeping roots, to 1 m tall, dioecious, stems one to many, erect, glabrous to appressed, grey-tomentose. Leaves oblong to elliptic, 3-30 × 1-6 cm, margins revolute, entire, spinulose, dentate, or shallowly pinnatifid, lobes well separated, main spines 1-7 mm, abaxial faces glabrous or densely grey-tomentose, adaxial green; petioles narrowly winged, bases tapered, principal larger cauline proximally winged-petiolate, distally sessile, well distributed, gradually reduced, not decurrent, distal cauline, bract-like, entire, toothed or lobed, spinulose. Inflorescence head, one to many, borne singly or in corymbiform or paniculiform arrays at tips of main stem and branches; peduncles 0.2-7 cm. Flowers white or pink, flask shaped, 1-1.5 cm in diameter, 1-2 cm long. Female flowers fragrant, male flowers smaller than female, not fragrant. Fruit an achene, 3-5 mm long, feathery basally.

**Habitat** : Common on roadsides, open fields, disturbed habitats, croplands and pastures, in deep, well-aerated, mesic soils. It occasionally occurs in relatively dry habitats, as well as on the edges of wet habitats. The plant can tolerate salty soils but cannot tolerate waterlogged and poorly aerated soils.

**Threat and damage** : *C. arvense* threatens natural communities by directly competing and displacing



**Distribution** : Australia, China, Democratic People's Republic of Korea, Hong Kong S.A.R., India, Japan, Mongolia, New Zealand, Pakistan, Republic of Korea, Russian Federation, United States.



them; it also decreases species diversity, and changes the structure and composition of some habitats. Infestation by the weed reduces crop yield through competition for water, nutrients and minerals, and through interference with harvests. The plant hosts various pests and pathogens.

**Uses :** The nectar of the flower is a good source of honey. The root is a tonic, diuretic, astringent, antiphlogistic and hepatic. American Indians use the roots of the plant for treating mouth diseases and the flowers for making honey. It is also used for treatment of tuberculosis and as a tonic for gastrointestinal ailments.

**Management :** Repeated mowing at three-week intervals will weaken the plant and prevent flowering and seed production. Repeated burning has shown some reduction in old, established stands of the weed. Spot application of the amine formulation of 2,4-D using a wick applicator or hand sprayer can control individual stems. Foliar application of glyphosate in spring is effective. Currently, there are no effective biological control organisms available. Sheep and cattle graze on this weed when young and tender, helping to deplete the root reserves.



## *Citharexylum spinosum* L.

Native : The Carribean

- Family** : Verbenaceae  
**Synonyms** : *Citharexylum bahamense* Millsp. ex Britton  
*C. broadwayi* O.E. Schulz ex. Urb.  
**Common names** : Fiddlewood, Florida fiddlewood,  
spiny fiddlewood

*Citharexylum spinosum* is widely grown for its attractive foliage, which turns orange in colour prior to dropping, and fragrant flowers. It can form dense thickets that choke out other vegetation. The roots are very aggressive in growth and cause damage to pipes and underground services. The plant is propagated by seeds or stem cuttings.

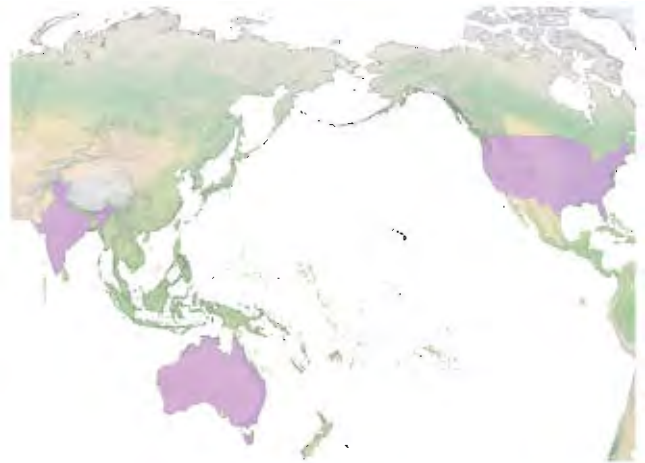
**Description** : Large shrub or small trees, deciduous, to 12 m tall. Leaves simple, opposite, decussate, estipulate, petiole 12 - 25 cm long, slender, grooved above, glabrous, orange-yellow in colour, lamina 10 - 18 x 4.5 - 7 cm, elliptic, elliptic-oblongate, elliptic-lanceolate or ovate, base acute or attenuate, apex acute or acuminate, margin entire, glabrous, coriaceous, six to nine pairs of lateral nerves, pinnate, prominent, intercostae reticulate. Flowers bisexual, white, in pendulous racemes, up to 20 cm long, bracts linear, 1.5 mm, cauducous; pedicel up to 3 mm. Fruit a drupe, to 8x6 mm, oblong, fleshy, reddish-black, often apiculate.

**Habitat** : The plant is common in coastland, disturbed sites and agricultural areas but prefers wet habitats for good growth. It also grows in dry habitats where it adapts by dropping its leaves during the dry season. The plant exhibits good growth in full sun but also tolerates some shade.

**Threat and damage** : It can form a dense canopy cutting sunlight to plants below, thus affecting their growth.

**Uses** : Cultivated as an ornamental in many tropical and subtropical regions. The wood is used to make stringed instruments such as fiddles and for making cabinets.

**Management** : If cut and left untreated, it will grow back. Herbicides are effective if applied on the cut end. A tree hopper viz., *Aconophora compressa* Walker, released in Australia in 1995, is effective as a biocontrol agent.



**Distribution** : Australia, Fiji, French Polynesia, India, New Caledonia, Singapore, United States.



## *Clematis vitalba* L.

Native : Africa and West Asia

- Family** : Ranunculaceae  
**Synonyms** : *Anemone vitalba* (L.) K. Krause  
*Clematis bannatica* Schur  
**Common names** : Old man's beard, travelers joy

*Clematis vitalba* is a perennial deciduous vine with climbing, woody stems. A variety of understorey trees and shrubs are reported to be severely diminished by infestation of this weedy vine. The flowers produce nectar which attracts insects. Seed dispersal is by wind, water, people and animals. Vegetative propagation is common.

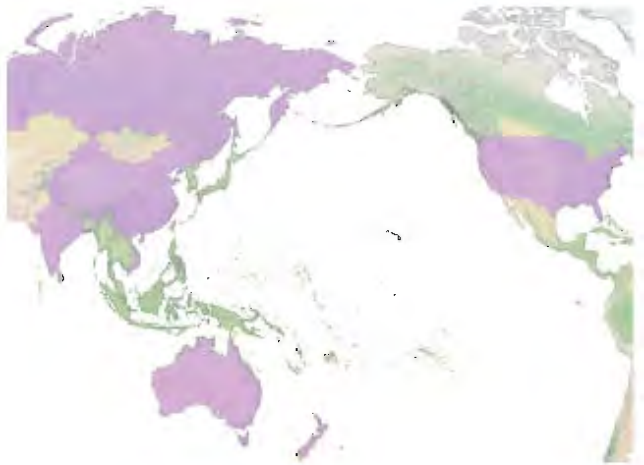
**Description** : Climbing shrubs, petiole and leaf-rachis tendrillate. Leaves pinnately 5-foliolate, leaflets cordiform, 4 - 8 × 3 - 5 cm, margins entire to regularly crenate or dentate, abaxially minutely pubescent on veins, adaxially glabrous. Inflorescences axillary and terminal cymes, 5-22 flowered. Flowers bisexual, creamy white; pedicel 1-1.5 cm, slender. Fruit an achene, nearly terete, densely pubescent, beak approximately 3.5 cm.

**Habitat** : *Clematis* is generally found in wastelands, coastal and lowland areas, disturbed lands, grass lands, urban areas and margins and openings of forested land. It requires highly fertile soils with good drainage for robust growth.

**Threat and damage** : The vine can climb up forest trees and smother them, forming a dense, light-absorbing canopy that suppresses all vegetation beneath it. The growth of the vine is so vigorous that the weight of foliage and stems can break the supporting trees, reducing once healthy forest to a low, long-lived thicket of vines scrambling over stumps and logs.

**Uses** : Usually grown as an ornamental plant. The leaves are analgesic, diuretic and rubefacient. The boiled roots and stems are used as a cure for pruritus.

**Management** : Mechanical control is effective if stem bases and roots are dug out in winter and seedlings are manually removed. Application of glyphosate is recommended for control of new growth. *Phytomyza vitalbae* Kaltenbach, an insect, was released in New Zealand for biocontrol of the weed but further information on its efficacy is not known.



**Distribution** : Australia, China, India, New Zealand, Russian Federation, Sri Lanka, United States, Viet Nam.



## *Clidemia hirta* (L.) D. Don

Native : Central and South America

**Family** : Melastomataceae

**Synonyms** : *Clidemia crenata* DC., *Melastoma hirtum* L.

**Common names** : Koster's curse, soap bush

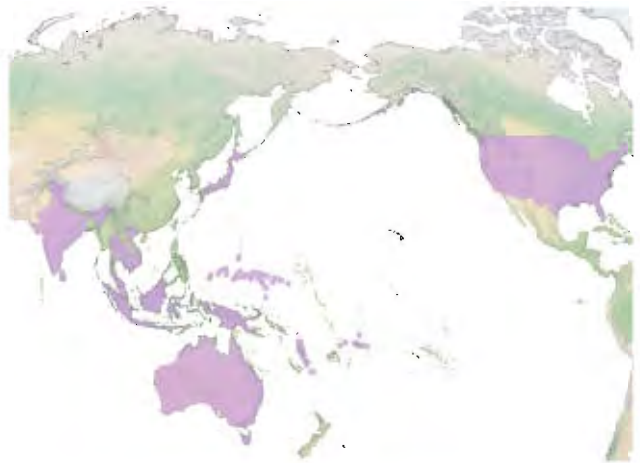
*Clidemia hirta*, a densely branching shrub, is an aggressive invader of forest gaps in disturbed and un-disturbed forests in the tropics impeding regeneration of native plants. The Global Invasive Species Database has ranked this species among the top 100 of the world's worst invaders. A single plant can produce more than 500 berries per year and each fruit contains over 100 seeds. Seeds remain dormant for up to four years in the soil.

**Description** : Perennial shrubs, branchlets rounded, covered with large reddish hairs. Leaves opposite, 5 - 16 x 3 - 8 cm, ovate to oblong-ovate, apex acute to short-acuminate, base rounded to subcordate, subentire to crenulate-denticulate basally, 5 - nerved, upper surface sparsely strigose, lower surface finely bristly, margins ciliate; petioles 0.5-3 cm long. Flowers white, arranged in axillary or terminal clusters, 8 - 11 x 4 - 5 mm, glabrous, hypanthium 3 - 3.5 mm long, sparsely or finely bristled, usually with a mixture of gland-tipped and stellulate hairs, receptacle with a conspicuous ring of fimbriate scales surrounding style. Pedicels 0.5 - 1 mm long in fruit. Fruit a berry, 6 - 9 mm across, dark blue, purplish or blackish in colour. Seeds light brown, 0.5 - 0.75 mm long, covered in stiff spreading hairs when young.

**Habitat** : The plant colonizes open areas disturbed by humans such as pastures, riversides, roadsides and forest margins. It prefers humid tropical climates and is capable of invading rain forests.

**Threat and damage** : The plant grows and spreads very quickly by producing many seeds, displacing native plants that grow in shaded habitats. It rapidly invades disturbed habitats, often foraged by feral pigs, altering natural regeneration by forming impenetrable thickets and developing monotypic stands. The plant also has the ability to invade undisturbed habitats, although population levels usually remain low in this case. It disrupts grazing land and the speedy growth of its thickets creates physical barrier to humans and animals.

**Uses** : Widely used as an ornamental.



**Distribution** : American Samoa, Australia, Bhutan, Brunei, Cambodia, Federated States of Micronesia, Fiji, Guam, India, Indonesia, Japan, Malaysia, Palau, Papua New Guinea, Samoa, Singapore, Solomon Islands, Sri Lanka, Thailand, United States, Vanuatu, Viet Nam, Wallis and Futuna Islands.

**Management** : Manual weeding is effective to control small populations. Cutting at the base and treating the cut end using water-based triclopyr immediately after cutting is effective. A thrip, *Liothrips urichi* Karny, works well as a biocontrol agent in open areas, but not in the shade of forests. A beetle, *Lius poseidon* Napp and the moths *Antiblemma acclinalis* Hübner, *Carposina bullata* Meyrick and *Mompha trithalama* Meyrick are being tested for efficacy as biocontrol agents. *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. isolated from diseased leaves of *C. hirta* in Panama was shown to be a highly aggressive pathogen.



# *Coccinia grandis* (L.) Voigt

Native : Tropical Africa and South and Southeast Asia

- Family** : Cucurbitaceae  
**Synonyms** : *Bryonia acerifolia* D. Dietr.  
*B. alceifolia* Willd., *B. grandis* L.  
**Common names** : Ivy gourd, scarlet-fruited gourd

*Coccinia grandis* is an aggressive vine that smothers native vegetation in the invaded areas forming a dense canopy. It acts as a host for melon fly and is a reservoir for other crop pests. Spread of the plant is through cuttings or bird-dispersed seeds.

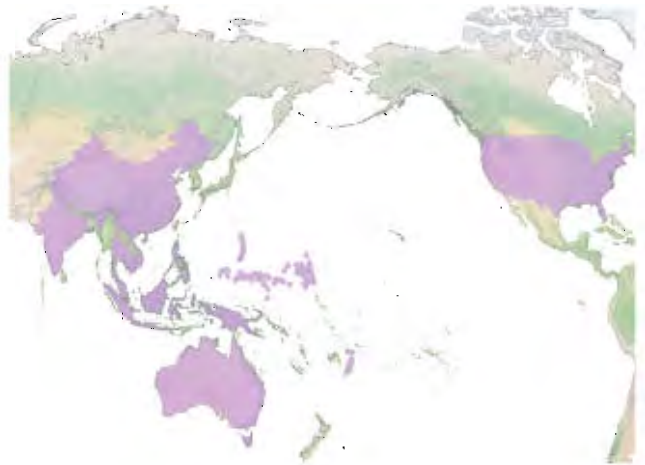
**Description** : Robust vines, stem many branched, cylindrical, glabrous or white scaly. Leaves simple, alternate, 5-10 x 3-7 cm, cordate, usually entire with a few glistening glands on both sides of the midrib towards the base; petiole slender, striate, 2-5 cm long. Flowers white, to 4 cm across, pedicellate, solitary, male and female on different plants. Fruit cylindrical or fusiform, 2.5-5 x 1.2-2.5 cm, bright scarlet when ripe, slightly beaked, many seeded. Seeds asymmetrically pyriform in outline, approximately 6 x 4 mm, compressed.

**Habitat** : Commonly seen in wastelands, cane fields and roadsides. It can invade dry rain forests of the monsoon zone, agricultural areas, natural forests, planted forests, ruderal/disturbed and riparian vegetation.

**Threat and damage** : An aggressive invader that can overgrow and prevent growth of indigenous vegetation. As it has an extensive tuberous root system, mechanical control is often difficult.

**Uses** : Young leaves and long slender stem tops are cooked and eaten or added to soups. The tender fruits are used raw in salads or cooked and added to curries. The juice of roots and leaves is considered effective in treating diabetes. The plant is a laxative. It is also used in a preparation for treating gonorrhoea.

**Management** : Cutting has little effect in controlling the weed. Glyphosate is only effective against young plants. Because of its climbing habit, use of foliar herbicides is difficult without causing damage to the underlying vegetation. The knockdown of foliage using herbicides followed by basal stem treatments when the plants begin to resprout may be successful. Three natural insect enemies of the weed, viz., a clearwing moth, *Melittia oedipus* Oberthur and two



**Distribution** : Australia, Cambodia, China, Federated States of Micronesia, Fiji, Guam, India, Indonesia, Malaysia, Marshall Islands, Northern Mariana Islands, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Thailand, Tonga, United States, Vanuatu, Viet Nam.

weevils, *Acythopeus cocciniae* O'Brien & Pakaluk and *A. burkhardtorum* O'Brien & Pakaluk, were introduced in to the Hawaiian Islands from East Africa to control *Coccinia*.





# *Cortaderia jubata* (Lem.) Stapf

Native : South America

**Family** : Poaceae

**Synonyms** : *Cortaderia atacamensis* (Phil.) Pilg.  
*Gynerium jubatum* Lemoine ex Carrière

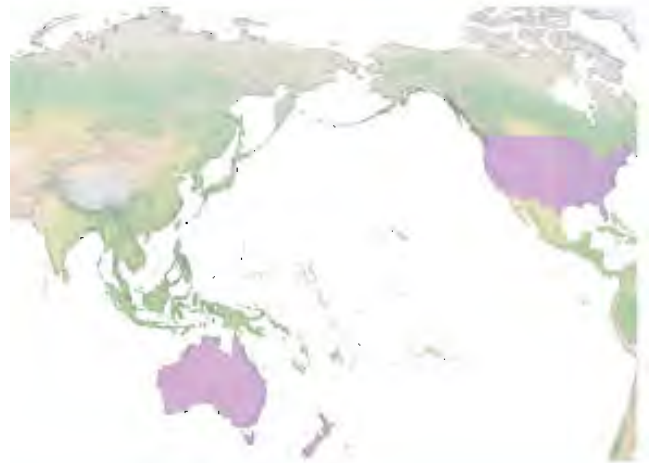
**Common names** : Andean pampas grass, cutty grass,  
jubata grass, pampas grass

Distinctive features of *C. jubata* are huge, nodding, pinkish or purplish flower plumes, and dark green, 1-cm-wide drooping leaves with razor-like margins. The plant's breeding system is termed agamosperous apomixis, which allows it to asexually produce seeds. Much of the invasive potential of the grass arises from its ability to produce thousands of wind-borne seeds annually. The normal life span of the plant is 10 to 15 years.

**Description** : Tussock grass, culms 2 - 7 m tall. Leaves bright green, sheath hairy, sometimes densely, ligules 1 - 2 mm, blade 150 - 200 x 2 - 10 cm, mostly flat, often horizontal, dark green, abaxial surfaces hairy near the base. Inflorescence of panicles, 30 - 100 cm, elevated well above the basal foliage, deep violet when young, spikelets 14-16 mm, pistillate; florets readily disarticulating, calluses about 0.6 mm, lemmas about 10 mm, long-attenuate. Fruit caryopsis, up to 2.5 mm.

**Habitat** : Prefers disturbed areas, clearings, sand dunes, roadsides, grasslands, pastures and alpine shrublands. However, its habitat requirements are broad and it will grow vigorously in nearly any soil, under low or high moisture regimes, and in full sun or dense shade. It flourishes in coastal areas and needs at least some summer moisture from fog and freedom from freezing temperatures.

**Threat and damage** : Being a highly competitive grass it is a major threat to the ecological quality of preserves, particularly in coastal and grassland sites. Its rapid growth and accumulation of above- and belowground biomass affect growth of other vegetation. The plant can be damaging to threatened habitats such as coastal sand dunes and inland sand hills that contain a number of rare and endangered plant species. It hampers visibility due to the dense growth of the thickets and its sharp leaves cause serious injury to humans. The plant is also a fire hazard because of the large amount of dry matter it produces. The thickets of the grass harbours pests such as rats, mice and rabbits. Additionally, the seeds



**Distribution** : Australia, New Zealand, United States.



stick to edible fruits, seriously degrading fruit quality.

**Uses :** A popular landscaping plant for its attractive plumes. It provides green forage during dry months.

**Management :** Physical removal of the plants is effective at the seedling stage but this type of control is

time consuming and labour-intensive. Prescribed burning has also been suggested as a method to control *Cortaderia*. The plant is sensitive to glyphosate when aerially applied to wet all plant surfaces. Cattle grazing is used in pine plantations in New Zealand to control the grass.



## *Cryptostegia grandiflora* Roxb. ex R. Br.

Native : Madagascar

**Family** : Apocynaceae

**Synonyms** : *Cryptostegia grandiflora* var. *tulearensis*  
Costantin & Gallaud

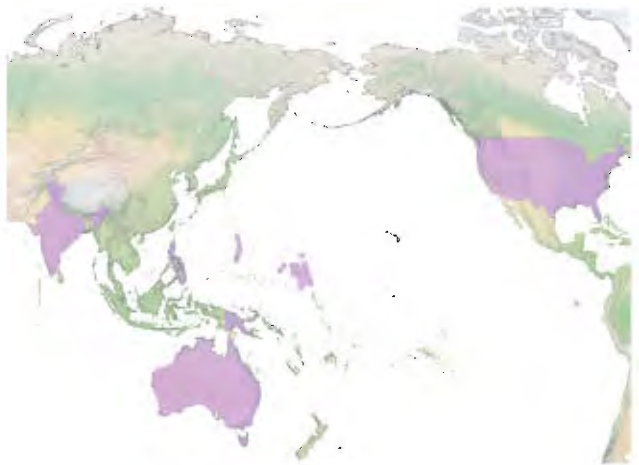
**Common names** : Indian rubber vine, palay rubber vine,  
purple allamanda, rubber vine

*Cryptostegia grandiflora* is a self-supporting, woody, perennial vine that is capable of growing over trees, smothering and pulling them down. It was introduced in several countries either for ornamental purposes or for its latex. A milky sap oozes from stems, leaves and seedpods of the plant when cut or broken. The plant can decrease water catchments due to increased transpiration resulting in lack of water for trees and native vines, which in turn leads to loss of biodiversity and habitat. It is grown as an ornamental plant in several parts of India but so far has not been found to invade and grow outside gardens. Seed dispersal is through wind and water.

**Description** : Evergreen suberect or climbing shrubs, branches terete, nodes sarmentose, lenticelled, warty. Leaves simple, opposite, 4 - 8 x 3 - 5 cm, exstipulate, subcoriaceous, elliptic, apex obtuse, base subacute, glabrous on both surfaces, dark green, glaucous above, pale beneath, ten to 12 pairs of lateral nerves; petioles 1-1.5 cm long, compressed, glabrous. Flowers 6-7 cm long, 50 mm in diameter, funnel-shaped, purple or whitish tinged with light purple, in few-flowered, terminal, dichotomous cymes; pedicels 1 - 1.5 cm long, stout, minutely pubescent, terete. Fruit a pod, 300 - 850 seeded, rigid, in pairs at the end of a short stalk, 10 - 12 x 3 - 4 cm. Seeds brown, 5.2 - 9.7 x 1.6 - 2.8 mm, ovate, glabrous, with silky-white crown of hairs.

**Habitat** : The plant can invade dry forests, agricultural areas, planted forests, grasslands, roadsides and openings of moist rain forests at low elevations. It is common in disturbed situations where there is temporary or permanent water, such as along gullies, rivers, creeks, waterholes and salt marsh areas.

**Threat and damage** : Indian rubber vine is poisonous to cattle, sheep, goats and horses if consumed and its rampant growth may restrict their access to water points. The plant is capable of smothering and pulling down riverside vegetation and choke waterways.



**Distribution** : Australia, Fiji, Guam, India, Marshall Islands, New Caledonia, Northern Mariana Islands, Papua New Guinea, Philippines, Singapore, United States.



Also, its impenetrable thickets reduce productivity of crops and pastures.

**Uses :** Grown as an ornamental and for its latex.

**Management :** Hand-pulling is practical only on a small scale. Burning is useful for short-term control. Herbicides like triclopyr, picloram and 2,4-D amine or mixtures of these herbicides are recommended either

as foliar and stem sprays or basal bark treatments. Stem injections with picloram or hexazinone also give good results. Biological control of the vine using the rust fungus *Maravalia cryptostegiae* (Cummins) Y. Ono has been successful in Australia. Larvae of the moth *Euclasta whalleyi* Popescu-Gorj & Constantinescu, which feeds on leaves of the vine, is also a potential biocontrol agent.



## *Cuscuta reflexa* Roxb.

Native : Asia

**Family** : Convolvulaceae

**Synonyms** : *Cuscuta elatior* Choisy  
*C. grandiflora* Wall.

**Common names** : Giant dodder, Indian dodder

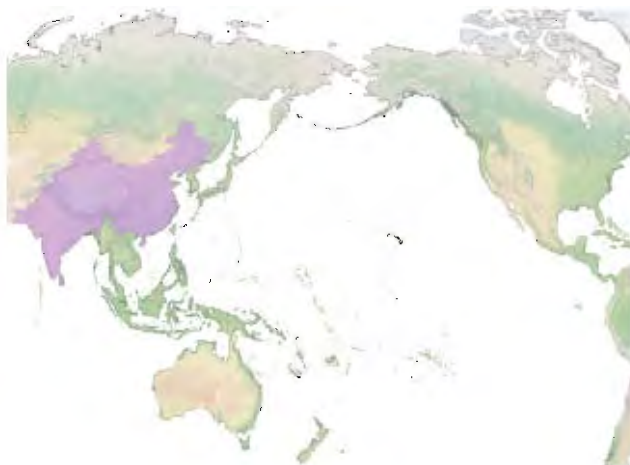
*Cuscuta reflexa* is a perennial, parasitic climber capable of persisting on its woody hosts for years. The leaves are reduced to scales and contain low levels of chlorophyll. It is considered a troublesome weed in many countries. The plant uses airborne chemical cues to locate its host plants. The seeds can survive in the soil for 5-10 years or more. Germination occurs without a host and the climber grows quickly towards a green plant.

**Description** : Leafless stem parasites, stem yellow or yellowish-green, stout, 0.2 - 0.3 cm in diameter, with brown spots. Leaves reduced to scales. Inflorescence lateral, few to many flowered, in racemes or panicles, 1.5 - 3 cm, branched. Flower white or creamy, fragrant, tubular, 5 - 9 mm, bracts and bracteoles scale-like; pedicel 2 - 4 mm, together with peduncle, brown-spotted. Fruit a capsule, conical-globose, subquadrate when mature, 5 - 10 mm in diameter, circumscissile. Seeds, 1 - 4, dark brown, oblong, ca. 4 mm.

**Habitat** : Common in open areas in a variety of soil types. However, it prefers moist soil for proliferation.

**Threat and damage** : The plant is an obligate holoparasite which utilizes the food reserve of the host plant and smothers it. It is a serious weed of many crops in several countries in the Asia-Pacific region. It smothers another invasive weed viz., *Sphagneticola trilobata*. *Cuscuta* wraps itself around the host species as soon as it reaches close proximity and produces a haustorium that is inserted into the vascular system of the host. It can grow continuously and may reach to the top of the canopy. It weakens the host plant by decreasing the resistance of the host against viral diseases. *Cuscuta* also spreads plant disease from one host to another if attached to more than one plant.

**Uses** : The stem of *Cuscuta* is used to treat bilious disorders. The whole plant is a purgative. It is also used in treating protracted fevers, body pain and itchy skin. The plant is utilized in traditional medicine like Ayurveda and Unani.



**Distribution** : Bangladesh, Bhutan, China, India, Nepal, Pakistan, Sri Lanka.

**Management** : Many countries have prohibited import of *Cuscuta* seeds. Use of pre-emergent herbicide like dacthal is effective in controlling the weed. Biological control is unknown.



# *Cyathea cooperi* (Hook. ex F. Muell.) Domin

Native : Australia

**Family** : Cyatheaceae

**Synonyms** : *Alsophila australis* R. Br. var. *cervicalis* F.M. Bailey  
*A. australis* R. Br. var. *excelsa* F.M. Bailey

**Common names** : Australian tree fern, lacy tree fern,  
scaly tree fern, straw tree fern

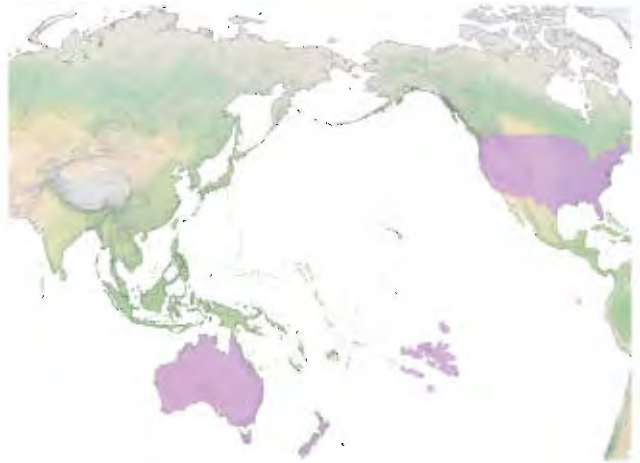
*Cyathea cooperi* is one of the most commonly grown tree ferns in gardens and commercial landscaping. It is quite distinctive from *C. australis* (R. Br.) Domin in that it has a more slender trunk with distinctive 'coin spots' where old fronds have broken off the trunk. The apex of the trunk and unfurling crosiers are very attractive as they are covered with conspicuous, long, silky, straw-coloured scales. This plant is a problem in Hawaii because it displaces native ferns. The spores are dispersed by wind.

**Description** : Tree fern, densely scaly, caudices slender, erect, to 6 m tall, 7 - 12 cm in diameter. Fronds to 4 m long, leaving oval scars on caudices after falling; stipes with scattered tubercles, scales at base, deciduous, older stipes naked, of two types: larger, to 40x2 mm, white, papery, with small dark red marginal spines, and smaller, ca. 10 x 0.1 mm, dark red or brown, margin minutely spiny with interrupted white line of aerophores along both sides of the stipes. Blades 2 or 3, pinnate at base, green or light green above, paler below; rachises with dark brown, obtuse tubercles; pinnae to 65 x 26 cm; pinnules stalked, tips acuminate, ultimate segments deeply pinnatifid to one-pinnate, segment lobes falcate, margins irregularly-toothed or, rarely, deeply-lobed, veins one-forked. Sori medial, round, 2-10 per segment, paraphyses abundant, hairs long, lacking indusia.

**Habitat** : Grows in tropical and subtropical rain forests to montane forests, in open areas, near streams, and in mountain gullies from sea level to 1 400 metres or above. It cannot withstand heavy frost, which may kill the fronds. The plant prefers protected, shady moist conditions but can grow in sunny areas as well.

**Threat and damage** : Being a fast-growing tree fern, *Cyathea* displaces native vegetation by forming dense stands.

**Uses** : Grown as an ornamental and for commercial landscaping.



**Distribution** : Australia, French Polynesia, New Zealand, Singapore, United States.

**Management** : Spraying of the herbicides dicamba and 2,4-D directly on the stem terminals is effective. Physical and bio-control methods are unknown.



## *Dalbergia sissoo* Roxb. ex DC.

Native : Bhutan, India, Myanmar, Nepal, Oman, Pakistan

**Family** : Fabaceae

**Synonyms** : *Amerimnon sissoo* (Roxb.) Kuntze

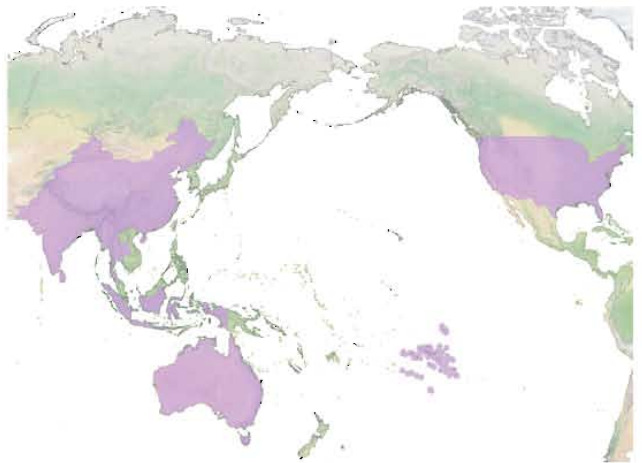
**Common names** : Bombay blackwood,  
Himalayan raintree, Indian dalbergia,  
Indian rosewood

*Dalbergia sissoo* is a premier timber species that is also used as fuelwood, for shade, shelter and fodder. This nitrogen fixing tree has been widely introduced and planted in several countries throughout world. However, it is regarded as a noxious weed in Australia and Florida, United States. Roots are dimorphous. Seeds are dispersed through wind and water. Seed viability is poor and germination occurs within three weeks in spring. Vegetative propagation is through suckers arising from the root system.

**Description** : Medium trees, deciduous, bark rough, longitudinally furrowed, young branches pubescent. Leaf imparipinnate, rachis 3.7 - 7.5 cm long, leaflets 3.5 - 6.5 cm long, broadly ovate or suborbicular, acuminate, glabrescent; petiolule 0.5 - 0.8 mm long, stipules 5 mm long. Inflorescence an axillary panicle, composed of several short spikes with sessile to subsessile flowers. Flowers yellowish-white, bract small, pubescent, caducous. Fruit a pod, 3.7 - 10 x 0.7 - 1.3 cm, strap-shaped, glabrous, 1-4 seeded. Seeds flattened, bean-shaped, pale brown, reniform, compressed, with papery testa and sometimes germinating readily in the pod.

**Habitat** : The tree is primarily found in agricultural areas, along riverbanks, in natural forests, planted forests and urban areas from sea level to 1,500 metres. It can tolerate various soil types ranging from pure sand and gravel to the rich alluvium of riverbanks. It can grow in slightly saline soils and can withstand light freezing temperatures. Seedlings are intolerant to shade but mature trees can withstand moderate shade. The average rainfall required by the tree is up to 2,000 mm and it will tolerate drought of three to four months.

**Threat and damage** : *D. sissoo* invades disturbed and undisturbed areas as well as hardwood forests and pine rockland habitats in Florida. It crowds out native plants and regenerates profusely in new areas.



**Distribution** : Australia, Bangladesh, Bhutan, China, French Polynesia, India, Indonesia, Myanmar, Nepal, New Caledonia, Pakistan, Sri Lanka, Thailand, United States.



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**Uses :** *D. sissoo* is a highly valuable timber and fuelwood. It is grown along field boundaries of agricultural crops, around fruit orchards and as windbreaks and shelterbelts. It is used as a stimulant in folk medicine and remedies. It reduces soil erosion, improves soil fertility and provides fodder. The leaf powder mixed with *Aegle marmelos* fruit powder is a good medicine for diarrhoea in calves. In Cameroon, some ethnic groups use young leaves as food. The root

suckers and runners make it useful for erosion control in gullies. An ethanolic extract of the fruits is a molluscicide effective against the eggs of the freshwater snail *Biomphalaria pfeifferi* Krauss.

**Management :** Fire is a good control option. Herbicidal applications to the base of the trunk, cut stem and by tree injection are effective. Biological control is unknown.





## *Delairea odorata* Lem.

Native : South Africa

**Family** : Asteraceae

**Synonyms** : *Delairea scandens* Lem.  
*Senecio mikanioides* Otto ex Walp.

**Common names** : African ivy, cape ivy, German ivy,  
Italian ivy, parlor ivy

*Delairea odorata* is an aggressive and smothering vine widely used in landscaping. It often escapes from cultivated areas and invades different habitats spreading both vegetatively and through seeds. The plant is very hard to control physically because the fragments of the stem can re-sprout. Propagation is through seeds and stem cuttings. Long-distance dispersal is aided by men. Seeds are wind-dispersed. Rhizomes grow to a depth of 90 cm.

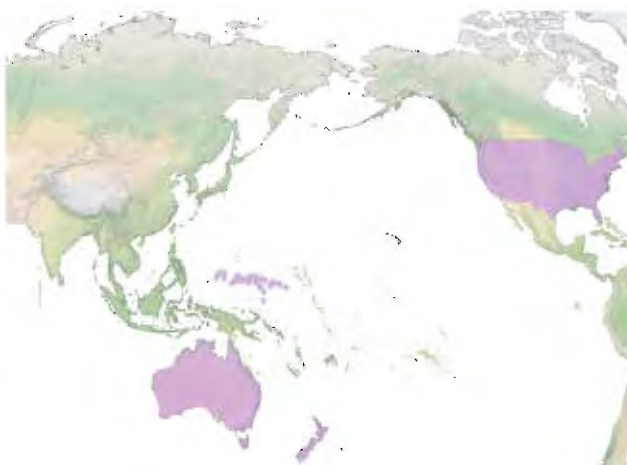
**Description** : Perennial climbing or creeping vines, to 6 m long, woody at base, rhizomatous. Leaves simple, alternate, lamina 5 - 10 x 3 - 6 cm, glabrous, broadly deltate, palmately-veined, semi-succulent, shallowly 3 - 10 lobed; petiole 1.5 - 7 cm long. Inflorescence a head. Flowers yellow, grouped on terminal and axillary cymes, ray florets absent, disk florets 4 - 5 mm long, arranged in clusters. Fruit an achene, ca. 2 mm long, reddish brown, often with a pappus or a crown of hairs.

**Habitat** : Common in natural moist forests, coastal areas, riparian zones and wetlands. It can grow in full sunlight or in shade and can establish in dry and moderately wet areas. The plant is tolerant to drought, freezing temperatures and high soil pH.

**Threat and damage** : The fast and dense growth of the vine smothers trees and shrubs and inhibits their growth. It can also cover the ground intensively over a wide area, thereby preventing seeds of native plants from germinating. The dense vegetation also displaces burrowing shorebirds by taking available space used for nesting. It increases soil erosion along watercourses due to its shallow root system, which cannot hold soil. *D. odorata* contains substances toxic to humans, mammals and fish.

**Uses** : Grown as an ornamental for its dense foliage.

**Management** : Hand-pulling small plants or digging out roots are useful. Foliar application of glyphosate plus triclopyr or a clopyralid herbicide are effective. A galling fly (*Parafreutreta regalis* Munro), a small leaf-



**Distribution** : Australia, Federated States of Micronesia, New Zealand, United States.

mining moth (*Acrolepia* sp.) and a defoliating moth (*Diota rostrata* Wallengren) are potential biocontrol agents.



## *Dipogon lignosus* (L.) Verdc.

Native : South Africa

**Family** : Fabaceae

**Synonyms** : *Dolichos capensis* Thunb.  
*D. gibbosus* Thunb., *D. lignosus* L.

**Common names** : Australian pea, dolichos pea,  
mile-a-minute, okie bean

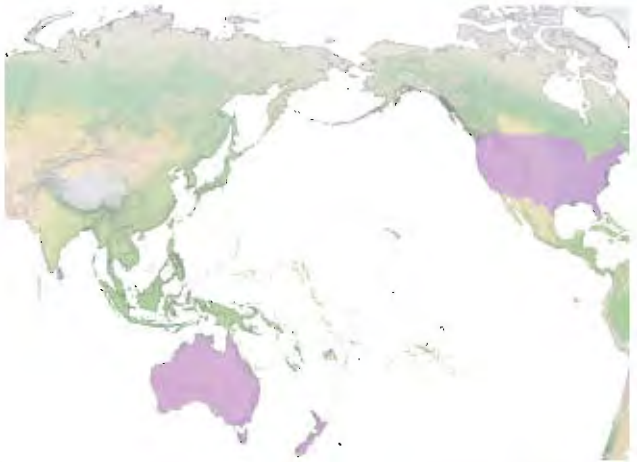
*Dipogon lignosus* is a beautiful climbing vine that can fix nitrogen in the soil. Due to its vigorous growth and ability to smother native flora, the plant is a great threat in the Australasia-Pacific region. It produces seeds in copious numbers that are dispersed by birds. Seeds are explosively ejected from pods over several metres and they lie dormant for a few years. Fire stimulates germination of seeds.

**Description** : Perennial woody climbers, stem twining, to 3 m long. Leaves compound, alternate, stipulate, composed of three rhomboid leaflets, 3-6 x 1.5-4 cm; petiole to 6 cm long. Flowers axillary racemes, bracts persistent, white or pale to pink, containing 3 - 6 pea-shaped flowers, 10 - 16 mm long. Fruit a pod, cylindrical, attenuate at both ends, brownish and stalked, glabrous, 2-5 x 0.5-0.1 cm, each with 3-6 seeds. Seeds brown or black with a conspicuous white spot, 3-4.5 x 2.5-3 mm.

**Habitat** : Grows on the perimeters of natural forests, disturbed areas and open forests. It grows best in sunny locations but seedlings can establish in shade.

**Threat and damage** : A serious threat to indigenous vegetation because the plant can smother native flora and break them down. It increases soil fertility, paving the way for other weeds to invade.

**Uses** : Used as an ornamental plant and as a vegetable.



**Distribution** : Australia, New Zealand, Sri Lanka, United States.

**Management** : Hand-pulling and digging out are generally practised. Cutting down and painting the stump with the herbicide metsulfuron-methyl is effective. Biological control is unknown.



# *Elaeagnus umbellata* Thunb.

Native : East Asia

**Family** : Elaeagnaceae

**Synonyms** : *Elaeagnus argyi* H. Lev.  
*E. crispa* var. *coreana* (H. Lev.) H. Lev.  
*E. crispa* var. *praematura* Koidz.

**Common names** : Autumn elaeagnus, autumn-olive, silverberry

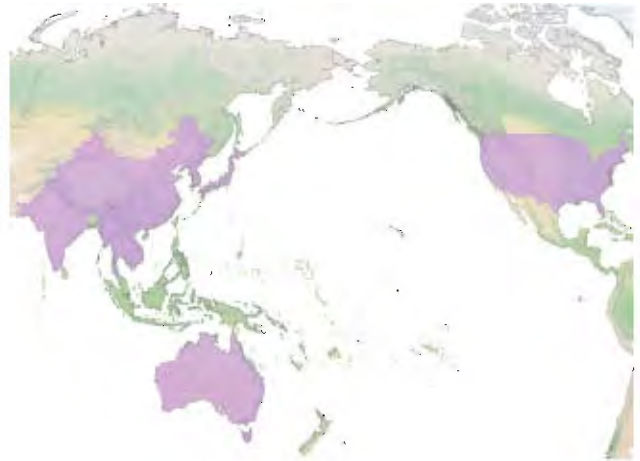
*Elaeagnus* is a deciduous shrub characterized by very attractive silvery scales on its shoot and young branches. It does very well on infertile soils because its root nodules can fix atmospheric nitrogen.

**Description** : Large shrubs or small trees, often spiny, shoots covered with peltate scales. Leaves simple, alternate, 2 - 9 x 0.8 - 3 cm, elliptic-oblong to oblong-lanceolate, obtuse or acute, dull green above, with peltate and stellate hairs, lower surface sometimes with ferruginous scales; petiole 2 - 6 mm long. Flowers in axillary clusters of 2-4, greyish-white or light yellow, fragrant, tubular; pedicel 3.5-6.5 mm long. Fruit a berry, red, 8 - 9 mm in diameter, elliptic-ovoid, succulent, covered with scales when young, 8 - ribbed, woolly within. Seeds 7 - 2 x 8 - 3 mm, saffron yellow.

**Habitat** : Common in natural forests, grasslands and disturbed areas. It grows well on a variety of soils with a pH range of 4.8-6.5 and can tolerate drought. Mature trees tolerate light shade but produce more fruits in full sunlight; seedlings may be shade-intolerant.

**Threat and damage** : The plant invades grasslands and disturbed areas adjacent to plantings. The invasion can be rapid because of fast and vigorous growth, prolific fruit and seed production and high germinability of seeds. Seeds are widely disseminated by birds and the seedlings can adapt to many sites. The nitrogen-fixing capability of the plant has adversely affected the nitrogen cycle of native communities that grow on infertile soils. The plant is highly competitive against native species and it can resprout quickly after fire damage or cutting.

**Uses** : Seeds and flowers of *E. umbellata* are used as expectorant in coughs. The flowers are also used as an astringent and in cardiac ailments. Fruits are rich in vitamins and are edible. They have a remarkable shelf-life and can be stored for up to 15 days at room temperature. The plant is commonly grown as a protective hedge around fields as well as around houses and gardens.



**Distribution** : Australia, Bhutan, Cambodia, China, Democratic People's Republic of Korea, Guam, India, Japan, Lao PDR, Myanmar, Nepal, Pakistan, Republic of Korea, Thailand, United States, Viet Nam.



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**Management :** Pulling, digging out, cutting down, girdling and burning or a mix of these techniques performed together are effective in controlling the weed. Cutting down the plant at the main stem and painting the stump with glyphosate is useful. Basal applications of triclopyr alone or in combination with

2,4-D provide excellent control at very low concentrations. Dicamba applied with a surfactant either killed or severely retarded growth of surviving stems the following year. Although not a viable option, the use of sheep and goats to browse the plants has been attempted.



UGA2188032

## *Eugenia uniflora* L.

Native : Tropical South America

**Family** : Myrtaceae

**Synonyms** : *Eugenia arechavaletae* Herter  
*E. costata* Cambess.

**Common names** : Barbados cherry, Brazilian cherry,  
French cherry, Surinam cherry

*Eugenia uniflora* is an evergreen shrub often used in gardens as a hedge or screen. It was grown predominantly for its edible fruits but it then escaped cultivation and became invasive in certain countries. The plant is a hardy species that can flourish in a variety of habitats.

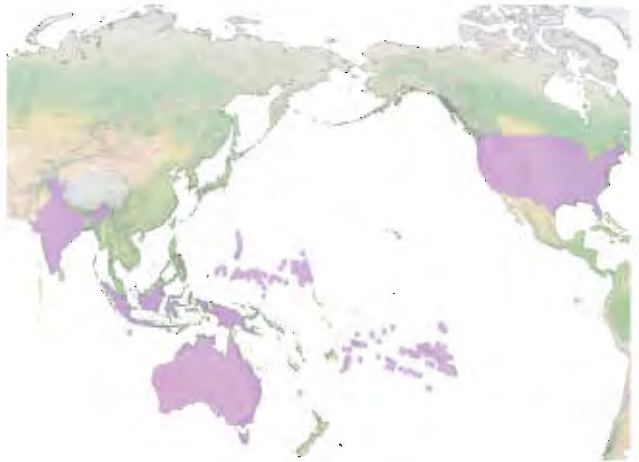
**Description** : Shrubs or small trees, bark scaly, peeling off. Leaves simple, opposite, lamina ovate to elliptic, 3.2 - 4.2 × 2.3 - 3 cm, papery, both surfaces dark green, glabrous, with numerous pellucid glands, secondary veins to five, slightly conspicuous, intramarginal veins ca. 2 mm from the margin, base rounded, slightly cordate, or cuneate, apex acuminate, mucronate or obtuse; petiole ca. 1.5 mm. Flowers white, fragrant. Fruit a berry, dark red when ripe, globose, 1-2 cm in diameter, 8-ridged, 1 or 2-seeded.

**Habitat** : *Eugenia* prefers fertile, moist soils and partial shade. It can grow in natural forests, planted forests and grasslands. The plant requires moderate rainfall and does not tolerate salty soil.

**Threat and damage** : The plant can invade a wide variety of habitats and form dense thickets preventing the regeneration of native plants. It also can change the micro-environment of an invaded habitat and host pests and pathogens.

**Uses** : Used to recover and manage disturbed and fragmented areas. The fruits are consumed fresh and are also used to make juice, wines, jams and jellies. It is also an ornamental tree that can be pruned as a hedge.

**Management** : Hand-pulling or digging out the seedlings. Garlon applied at the cut surface can be effective. Biological control is unknown.



**Distribution** : American Samoa, Australia, Christmas Island, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, India, Indonesia, Marshall Islands, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Papua New Guinea, Samoa, Tonga, United States.



# *Falcataria moluccana* (Miq.) Barneby & Grimes

Native : Moluccas, Papua New Guinea,  
New Britain, Solomon Islands

Family : Fabaceae

Synonyms : *Albizia falcataria* (L.) Fosberg  
*Paraserianthes falcataria* (L.) L. C. Nielsen

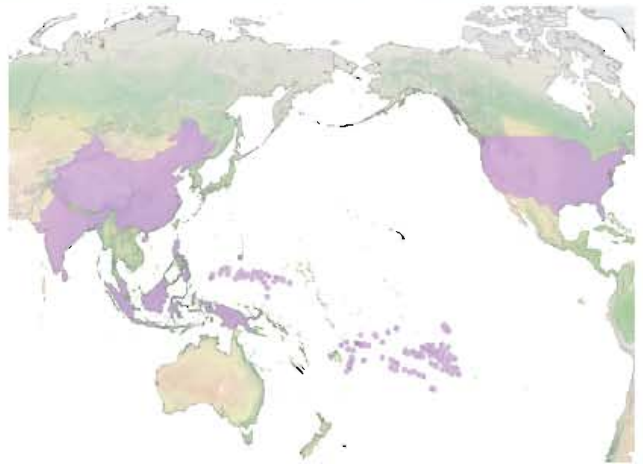
Common names : Batal, bataiwood, Moluccan sau

*Falcataria moluccana* is a multipurpose nitrogen-fixing tree widely introduced throughout the tropics as a fast-growing plantation species. It is also grown as an ornamental and shade tree. It escaped cultivation and became invasive threatening the native flora and fauna in several countries. This light-demanding tree regenerates when soil is exposed to sunlight and it can easily colonize forest gaps. The tree can produce abundant seeds that are dispersed mainly through wind and human transportation.

**Description :** Large trees, branchlets minutely pubescent with lenticels, stipules caducous, small. Leaves pinnately compound, rachis to 40 cm, usually with a large, oval, disk-shaped gland near the base; pinnae 6 - 20 pairs, densely rusty tomentose, to 10 cm, leaflets sessile, 10-40, opposite, slightly falcate, obliquely oblong, 1-2 x 0.3 - 0.6 mm, abaxially sparsely puberulent, adaxially glabrous, base obtuse-rounded or nearly cuneate, apex acute. Inflorescence a solitary, axillary, spike, or several arranged in a panicle. Flowers greenish-yellow to cream. Fruit a legume, straight, strap-shaped, flat, 10 -13 x 1.3 -2.3 cm, late dehiscent through both sutures. Seeds 10 - 15 per pod, compressed, ellipsoid, ca. 7 x 3 mm, testa brown, with a narrow U-shaped pleurogram.

**Habitat :** *F. moluccana* grows near or inside natural forests, open areas, planted forests and riparian zones. The plant is distributed from sea level to 1,500 metres. It can adapt to monsoon climates with annual rainfall of 2,000 to 4,000 mm and can withstand temperatures ranging from 22 to 34°C.

**Threat and damage :** The tree can shade out native plants and stimulate growth of non-native plants. It alters the composition and structure of forest plants, modifies nutrient regimes, increases competition, causes ecosystem change and also facilitates invasion by other exotic plants like *Psidium cattleianum*. In Hawaii, the tree leaf litter sheltered an invertebrate community that is entirely different from that of the leaf litter of the native plant, *Metrosideros polymorpha*.



**Distribution :** American Samoa, Bangladesh, China, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, India, Indonesia, Malaysia, New Caledonia, Niue, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Sri Lanka, Tonga, United States, Wallis and Futuna Islands.



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**Uses :** The tree is grown as an ornamental due to its attractive grey bark and feather-like flowers. The wood is used for canoe-building and furniture-making. It is also planted as a shade tree for cacao, coffee and tea plantations. In Hawaii, it is used as a biofuel for generating electricity. The leaves are used as feed for chicken and goats and also as a green manure. The bark produces 'Kino', which has some

tanning properties, and is also used as soap. The pods are edible.

**Management :** Girdling at the sapling stage is effective. Uprooting the plant followed by chemical treatment is also useful. Application of 2,4-D and glyphosate to the trunk after debarking injures the tree. However, treatment with dicamba and triclopyr can kill the trees. Biological control is unknown.



## *Gunnera tinctoria* (Molina) Mirbel

Native : South America

- Family** : Gunneraceae
- Synonyms** : *Gunnera chilensis* Lam.  
*G. chilensis* var. *meyeri* L.E. Moro
- Common names** : Chilean gunnera, Chilean rhubarb, giant rhubarb

*Gunnera tinctoria* is a large-leaved subshrub, introduced into various countries as an ornamental and edible plant. In alien ranges, it forms thickets that shade out and prevent growth of native vegetation. The plant is a prolific seed producer and birds facilitate its spread. *Gunnera* reproduces mainly via its rhizomes and intense effort is required to manage the weed. It is capable of symbiosis with cyanobacteria inside its cells.

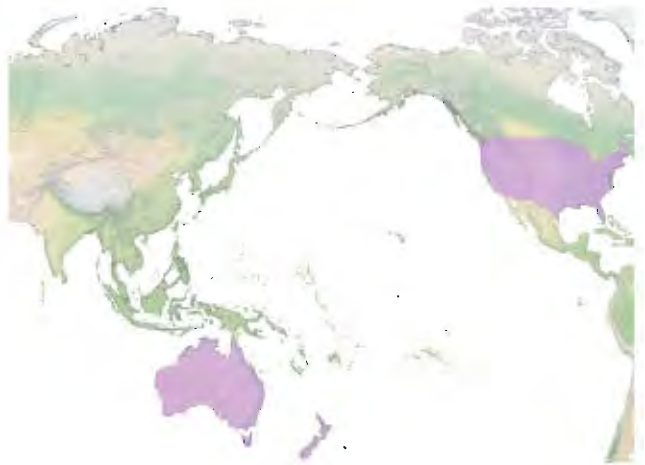
**Description** : Perennial clump-forming subshrub, stem with stout horizontal rhizomes, and massive umbrella-sized leaves on sturdy petioles. Leaves 1-2 m long, thick, rounded, lobed and irregularly toothed, covered with stiff prickles; petioles 1-1.5 m long. Inflorescence of spike, 50-75 x 10 cm, consisting of lateral branches, 2-5 cm long, bearing small flowers, red in colour. Fruit a drupe, reddish, oblong, 1.5 -2 mm long. Seeds numerous, 1-1.3 mm in diameter.

**Habitat** : It can invade and occupy a variety of habitats. The plant is of common occurrence in shrub lands, riparian zones, meadows, gardens and woodlands. It can tolerate seasonally waterlogged wet soils but cannot grow well on excessively-drained and drought-prone sandy or stony soil.

**Threat and damage** : *G. tinctoria* can shade out and suppress growth of rare and endangered indigenous flora and fauna. The areas that have been cleared of mature plants can become recolonized with numerous seedlings from the original plant, and the rhizome pieces can also regrow. The plant can block drains and streams and obstruct access to natural and recreational areas.

**Uses** : The young leaf stalks can be cooked as a vegetable or eaten raw. It is also used as an astringent. A black dye is extracted from the root. Roots are useful for roof covering.

**Management** : Physical control is ineffective due to heavy regrowth. Spraying with triclopyr plus any penetrant is effective. Biological control is unknown.



**Distribution** : Australia, New Zealand, United States.





## *Hedera helix* L.

Native : North Africa, West Asia and Europe

**Family** : Araliaceae

**Synonyms** : *Hedera chrysocarpa* Walsh  
*H. helix* var. *digitata* Bosse

**Common names** : Common ivy, English ivy

*Hedera helix* is an evergreen ornamental vine that can thrive under shade, climb on tree trunks and spread on the forest floor. It is popular as a house and pot plant, but is also planted as ground cover in shady areas. Blankets of ground cover formed by the plant prevent germination of other plants, cut light and harbour disease. Seeds are mainly dispersed by birds. Chemical control is difficult due to a waxy coating on the leaves.

**Description** : Woody perennial vines, creeping with adventitious roots; young shoot and petiole green to purplish or burgundy red, with few to numerous ray stellate or scale-like hairs. Leaves of sterile branches broadly ovate, 4 - 10 cm long, 3 - 5 lobed. Flowering branches ovate to rhombic and entire. Flowers in terminal umbels, petals yellowish-green, 3 - 5 mm long. Fruit a drupe, deep bluish-purple to black when ripe, 8-10 mm in diameter. Seeds 2 - 3 per drupe, black.

**Habitat** : Occurs in riparian zones, wetlands, closed forests, rocky and shady places and on forest margins and roadsides. It is also found in natural and planted forests and urban areas.

**Threat and damage** : It forms dense populations that inhibit the regeneration of native herbaceous species, trees and shrubs. As a climber, the plant is capable of smothering host trees. The vine is not useful to native wildlife in areas where it is introduced. The leaves cause severe contact dermatitis in some people.

**Uses** : Used as an ornamental for its attractive foliage. It is a bitter herb with a nauseating taste and is used in folk remedies especially in the treatment of rheumatism, skin eruptions, swollen tissue and burns. The leaves contain emetine and triterpene saponins, which are effective against liver flukes and fungal infections.

**Management** : Repeated cutting of the vines is effective for short term control. Herbicides are not very effective. Biological control is unknown.



**Distribution** : Australia, Bhutan, French Polynesia, Japan, New Caledonia, New Zealand, Russian Federation, Singapore, United States, Viet Nam.



# *Hedychium flavescens* Carey ex Roscoe

Native : Eastern Himalayas including Nepal and Northeast India

- Family** : Zingiberaceae  
**Synonyms** : *Gandasulium peregrinum* (N.E. Br.) Kuntze  
*Hedychium emeiense* Z.Y. Zhu  
**Common names** : Cream garland lily, cream ginger, cream ginger lily, wild ginger

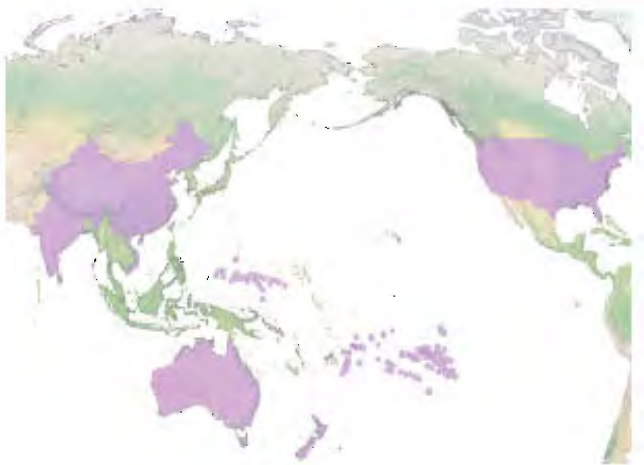
*Hedychium flavescens*, an aggressive ornamental herb, invades new ranges through rhizomes. It can form monospecific stands that can affect growth and establishment of native flora. Moist warm climates favour growth of the plant.

**Description** : Perennial rhizomatous erect herbs, to 2.5 m tall. Leaves sessile, elliptic-lanceolate or lanceolate, 20-50 × 4-10 cm, abaxially pubescent, base attenuate, margin membranous, apex caudate-acuminate; leaf sheath slightly pubescent, ligule 3-5 cm, membranous. Inflorescence a spike, terminal, oblong, 15-20 × 3-6 cm, bracts imbricate, oblong to ovate, 3-4.5 × 2-4 cm, concave, 4-5 flowered; bracteoles tubular, membranous. Flowers yellow or yellowish-white, lanceolate, 3-3.5 cm long, fragrant. Fruits globose, with three valves. Seeds numerous.

**Habitat** : Occurs in natural and planted forests, agricultural areas, along roadsides and in open habitats. In India, it is found at altitudes between 1, 200 and 2, 000 metres.

**Threat and damage** : The plant is an aggressive invader that prevents regeneration of native plant species. It is a major weed in many locations around the world. The spread is mainly through rhizomes.

**Uses** : Mainly used as an ornamental plant but parts of the plant are medicinal also.



**Distribution** : American Samoa, Australia, Bhutan, China, Cook Islands, Fiji, French Polynesia, Federated States of Micronesia, Guam, India, Nepal, New Caledonia, New Zealand, Niue, Samoa, Sri Lanka, Tonga, United States, Viet Nam.

**Management** : Mature plants are to be dug out and seedlings hand-pulled. Herbicides such as glyphosate and metasulfuron-methyl are effective in controlling spread. Biological control is unknown.

