

# TECHNICAL NOTE

USDA NATURAL RESOURCES CONSERVATION SERVICE PACIFIC ISLANDS AREA

## Grazing Technical Note - No. 3

### Invasive Plant Fact Sheets

This technical note conveys information on selected invasive plant species found within the Pacific Islands Area. Landowners and conservationists from Hawaii and the western Pacific Islands identified these plants as their key pest species in grazing lands, and requested specific information on them.

Each Fact Sheet was developed by Jeff Repp, Rangeland Management Specialist, West Region National Technical Support Center.

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# Invasive Species Fact Sheet

## Pacific Islands Area

### Joee (*Stachytarpheta cayennensis*)



<b>Scientific name &amp; Code:</b>	<b><i>Stachytarpheta cayennensis</i></b> (Rich.) Vahl, STCA8 <u>Synonyms</u> – <i>Stachytarpheta dichotoma</i> (Ruiz & Pav.) Vahl, <i>Valerianoides cayennensis</i> (Rich.) Kuntze
<b>Family:</b>	Verbenaceae (verbena family)
<b>Common names:</b>	<u>English</u> – Cayenne porterweed, dark blue snakeweed, joee, vervain; <u>Chuukese</u> – ouchung, sakura; <u>Fijian</u> – lavenia, se karakarawa, serakawa, tumbutumbu, turulakaka; <u>Hawaiian</u> – oi, <u>Palauan</u> – louch beluu; <u>Samoaan</u> – mautofu, mautofu fualanumoana, mautofu tai, mautofu tala, mautofu vao; <u>Tongan</u> – hiku 'l kuma, 'iku 'l kuma, iku 'ikuma
<b>Origin:</b>	Tropical America
<b>Description:</b>	Coarse perennial herb or subshrub 8-20 dm tall, woody at base; stems weakly erect and intricately branched. Leaves opposite, elliptic to ovoid, 4-8 cm long, 2-4.5 cm wide, upper surface wrinkled or creased (rugose). Leaf margins sharply and coarsely toothed (serrate). Flowering spikes slender, 14-40 cm long, about 2.5 mm in diameter. Flowers trumpet-like with petals about 7 mm long, the tube also about 7 mm long, dark purplish-blue to lavender. The fruits are nutlets enclosed in a persistent calyx.
<b>Propagation:</b>	Usually spread by animals or humans. Seeds are dispersed on vehicles and by run-off. Some evidence that it can reproduce by vegetative fragmentation.
<b>Distribution:</b>	Pantropical. Identified in Hawaii, Rota, Saipan, Tinian, and Guam.
<b>Habitat / Ecology:</b>	A common weed in pastures, plantations, roadsides, and waste areas. Grows best in deep, moist, fertile, disturbed soils. Can establish on infertile soils. Grows from sea level to over 2,000 m in elevation. Hybridizes naturally with <i>S. jamaicensis</i> (has darker color to flowers and leaves).
<b>Environmental impact:</b>	Invades disturbed areas forming dense stands in high rainfall areas; persists at lower densities in dry areas. Somewhat shade tolerant. Out competes vegetation by smothering other plants. Unpalatable to livestock (and presumably wildlife).
<b>Management:</b>	<u>Physical</u> – Controlled by chipping or cultivation; suppressed by slashing and competition from vigorous pasture species. <u>Chemical</u> – Sensitive to translocated herbicides, including 2,4-D, MCPA, and Glyphosate (spray or wick application). Less effective control with Triclopyr. <u>Biological</u> – No natural enemies identified.

**PIER Risk Assessment: High Risk, score: 20**

Joee - *Stachytarpheta cayennensis*



a) *Stachytarpheta* flower and spike



b) *Stachytarpheta* flower and spike



c) *Stachytarpheta* flower and leaves



d) *Stachytarpheta* infestation



e) *Stachytarpheta* plant

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Photo c: ©Lidia Perez de Molas, Missouri Botanical Garden (w3Tropicos)  
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# Invasive Species Fact Sheet

## Pacific Islands Area

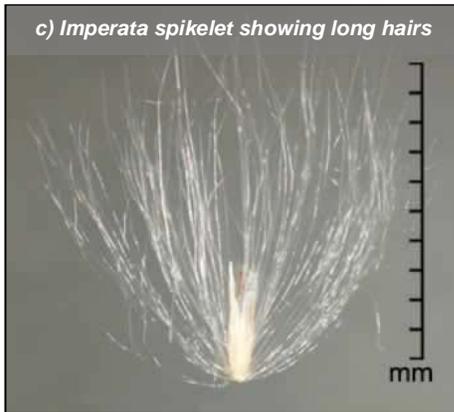
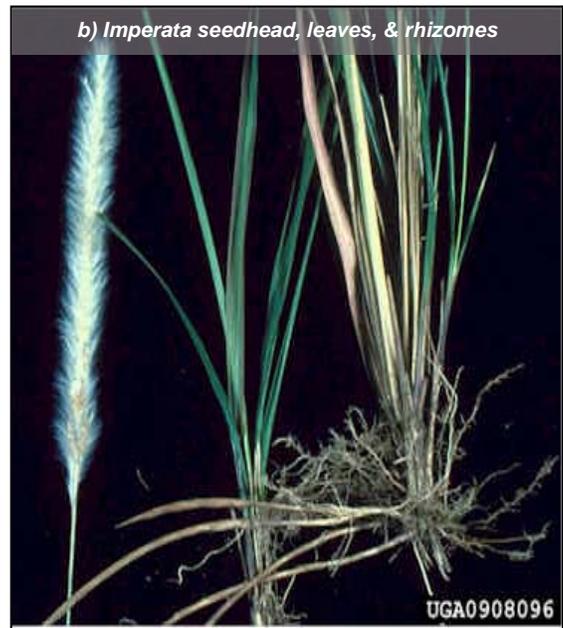
### **Cogongrass (*Imperata cylindrica*)**



<b>Scientific name &amp; Code:</b>	<b><i>Imperata cylindrica</i></b> (L.) P. Beauv., IMCY <u>Synonyms</u> – <i>Imperata arundacea</i> Cirillo., <i>Lagurus cylindricus</i> L.
<b>Family:</b>	Poaceae (grass family)
<b>Common names:</b>	<u>English</u> – Cogongrass, alang-alang, blady grass, Japanese blood grass, satintail; <u>Fijian</u> – gi; <u>Bontoc</u> – gaon, goon; <u>Bicolano</u> – gogon; <u>Ibatan</u> – buchid; <u>Ifugao</u> – bulum; <u>Ilocano</u> – kogon; <u>Japanese</u> – chi, chigaya, tsubana; <u>Palauan</u> – kasoring; <u>Pampangan</u> – ilib; <u>Tagalog</u> – kogon
<b>Origin:</b>	Southeast Asia
<b>Description:</b>	Perennial, sod-forming (rhizomatous), warm season (C4) grass. Very long (1+m), erect leaf blades arising from the base, the mid-rib offset from center. Inflorescence (seedhead) a compact panicle, cylindrical in cross section (30 cm x 2 cm). Spikelets paired or solitary with a few long fine hairs near the top and many fine spreading white hairs on the base.
<b>Propagation:</b>	Reproduces by seed and rhizomes. Stress (burning, cutting, or drought) initiates flowering. Prolific seed producer (3,000+ per plant). Seeds dispersed by wind (aided by hairs on spikelets). Within a week of harvest, 95% of seeds can germinate. Seeds can remain viable for at least one year.
<b>Distribution:</b>	Common weed in tropical and subtropical areas of the world. Identified (introduced) in Saipan, Tinian, and Guam. An additional species <i>I. conferta</i> occurs in Rota, Saipan, Tinian, and Guam.
<b>Habitat / Ecology:</b>	Invades a wide variety of habitats including wetlands, riparian areas, savannahs, and forests. Rapidly invades abandoned farmlands and disturbed areas. Can withstand long dry spells on light soils and waterlogging on heavier soils. Not shade-tolerant. Can grow at elevations up to 2,000 m.
<b>Environmental impact:</b>	Out competes other plants and forms a pure stand on favorable soils (deep & moist). Less likely to invade on poorer soils. Favored by repeated burning where it responds by rapidly growing and producing numerous flowers. Prone to top burning in the dry season: the underground plant parts remain undamaged. Unsuitable forage for domestic or wild animals.
<b>Management:</b>	<u>Physical</u> – Digging and removing plants and underground roots and rhizomes is effective in small areas. Flattening foliage with rollers or boards in combination with a legume crop can suppress growth. <u>Chemical</u> – Repeated applications of Glyphosate to actively growing foliage will translocate to roots and rhizomes, killing the plant in 2-4 weeks. Chemical should be applied at least 6-8 hours before rainfall to avoid washing off of the plants. Burning several months before chemical treatment can enhance uptake of the herbicide. <u>Biological</u> – None known

**PIER Risk Assessment: High Risk, score: 19**

Cogongrass - *Imperata cylindrica*



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[www.lucidcentral.org/keys/FNW/FNW%20Disseminules%20Key/html/index.htm](http://www.lucidcentral.org/keys/FNW/FNW%20Disseminules%20Key/html/index.htm)  
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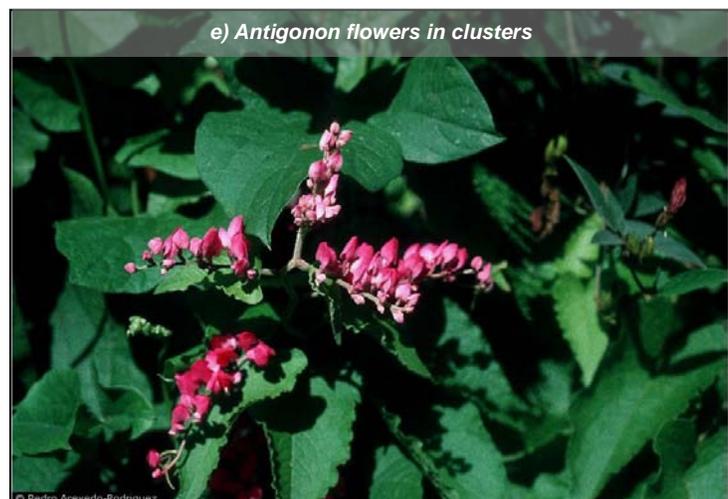
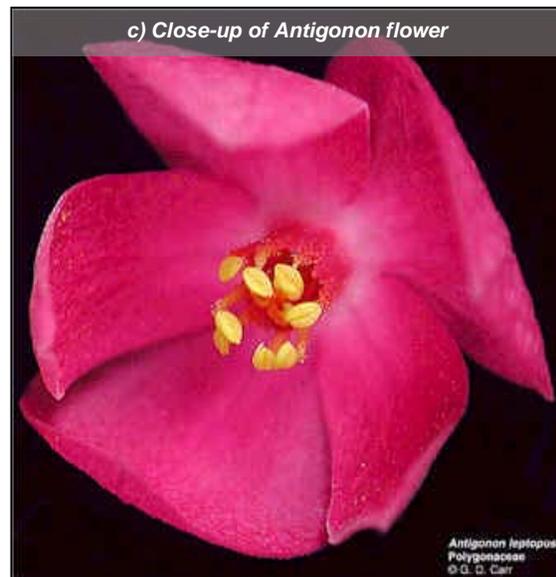
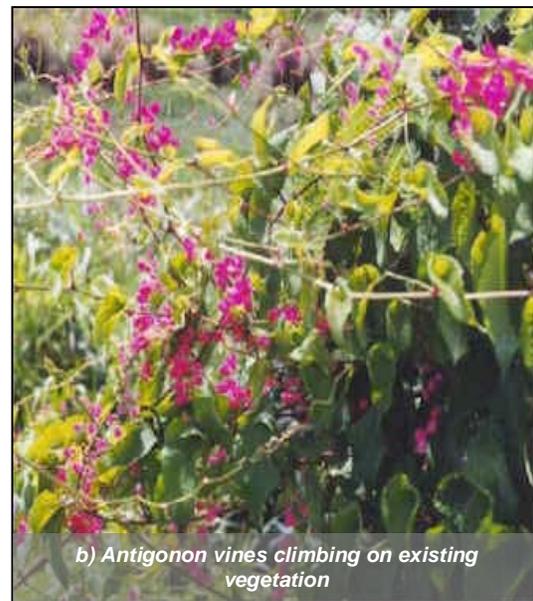
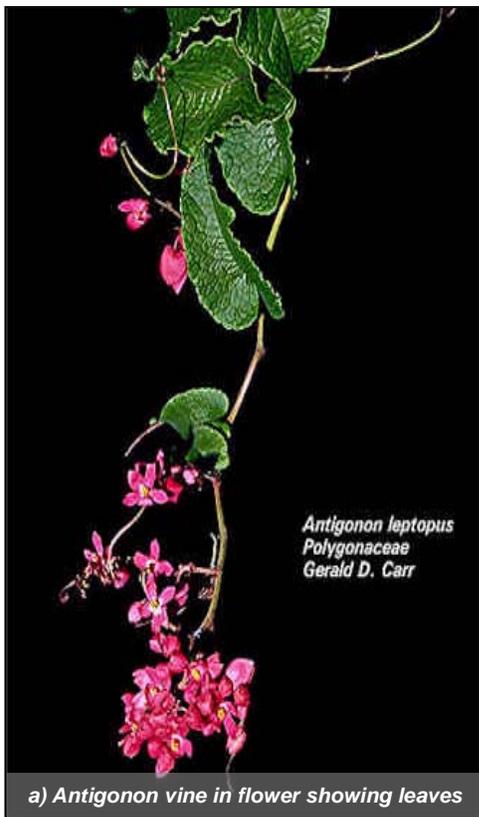
## Pacific Islands Area

### *Coral vine (Antigonon leptopus)*



- Scientific name & Code:** *Antigonon leptopus* Hook. & Arn., ANLE4  
**Synonyms** - *Corculum leptopum* (Hook. & Arn.) Stuntz
- Family:** Polygonaceae (buckwheat family)
- Common names:** English – Coral vine, bride’s tears, chain-of-love, Confederate vine, hearts on a chain, Mexican creeper; Chamorro – cadena de amor, flores kadena; Palauan – dilngau; Pohnpeian - rohsapoak
- Origin:** Mexico
- Description:** Robust perennial vine, 10m long or longer. Leaves alternate, spiral, acute, heart-shaped to triangular, 3-9 cm long, the lower ones larger than the upper ones. Flowers in clusters along the terminal stem with tendrils at the end, 5 petals, bright pink or white, 1-4 cm long.
- Propagation:** Reproduces vegetatively (stems and tubers) and by seed. Buried stem pieces root at the nodes, aerial stems develop tangled masses of linked plants. Rarely produces seed but prolific when it does. Seed may remain viable for several years. Seeds float on water and can be transported to new locations. Fruits and seeds are eaten by wild and domestic animals (birds, pigs).
- Distribution:** Common in tropical countries. Identified in Agrigan, Pagan, Rota, Saipan, Tinian, and Guam
- Habitat / Ecology:** Grows well in disturbed areas, forest edges, dry to moist lowland areas, and is adapted to dry coral cliffs (and coral-derived soils – also favors high pH limestone soils). Tolerates drought well by shedding leaves and regrowing strongly after rain.
- Environmental impact:** Completely smothers other plants in the wet season, out-competing understory plants. Leaves dry and drop in the dry season providing fuel for wildfires.
- Management:** Physical – Cutting is ineffective, tubers must be removed or plants will re-sprout.  
Chemical – Inconclusive effects of spraying when actively growing with Glyphosate mixed with a penetrant (surfactant).  
Biological – No agents known at this time; some caterpillars may chew holes in leaves.

**PIER Risk Assessment: High Risk, score: 19**



Header: University of Florida Cooperative Extension Service  
Photos a, b & c: Pacific Island Ecosystems at Risk (PIER):  
[www.hear.org/Pier/index.html](http://www.hear.org/Pier/index.html)  
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### **Creeping ox-eye (*Sphagneticola trilobata*)**

- Scientific name & Code:** *Sphagneticola trilobata* (L.) Pruski, SPTR6  
**Synonyms** – *Wedelia trilobata* (L.) Hitch., *Complaya trilobata* (L.) Strother, *Silphium trilobatum* L., *Thelechitonía trilobata* (L.) H. Rob. & Cuatrec.
- Family:** Asteraceae (sunflower family)
- Common names:** **English** – Creeping ox-eye, bay Biscayne creeping ox-eye, wedelia, Singapore daisy; **Chuukese** – atiat; **Kosraean** – rosrangrang; **Marshallese** – ut mokadkad, ut telia; **Palauan** – ngesil ra ngebard; **Pohnpeian** – dihpw onghng, tuhke onghng; **Tongan** - ate
- Origin:** Central America
- Description:** Creeping, matted, perennial herb. Stems to 1-4 dm long, rooting at the nodes. Flowering portions ascending, slightly hairy or not. Leaves fleshy, 4-9 cm long, 2-5 cm wide, irregularly toothed or serrate, usually with lateral lobes. Yellow to pale orange flowers above chaffy, rigid, lanceolate bracts about 1 cm long. Ray flowers 8-13 per head, 6-15 mm long; disk flowers numerous, 4-5 mm long with a pappus of short scales.
- Propagation:** Usually reproduces from vegetative parts. Stems and plant pieces form new plants where they touch the ground. Some mature seed development noted in some areas. Commonly spread by dumping garden waste.
- Distribution:** Tropical America. Identified in Hawaii, Rota, Saipan, and Guam.
- Habitat / Ecology:** Thrives in open areas with well-drained, moist to wet soils, but can tolerate dry periods. Grows from sea level to 700 m in elevation. Can grow in partial shade but will produce fewer blooms.
- Environmental impact:** A noxious weed in agricultural areas, roadsides, waste areas, and disturbed sites. Invasive in riparian areas, along the borders of mangroves and rainforests, and in coastal strand vegetation. Forms a dense ground cover, crowding out other species. Toxic to some farm animals, causing spontaneous abortions.
- Management:** **Physical** – Not effective: plant parts can root easily in soil.  
**Chemical** – Sensitive to Dicamba, 2,4-D and Triclopyr. In Australia, a Metsulfuron methyl herbicide has been registered for the weed. Usually needs re-treatment and the removal of underground stems.  
**Biological** – No natural enemies known at this time.

**PIER Risk Assessment: High Risk, score: 13**

Creeping ox-eye - *Sphagneticola trilobata*



Photo a: P. Acevedo, Plant Image Collection - Department of Botany, Smithsonian Institution

Photos b & e: R.A. Howard. ©Smithsonian Institution. Courtesy of Smithsonian Institution, Richard A. Howard Photograph Collection.

Photos c & d: Pacific Ecosystems at Risk (PIER): [www.hear.org/Pier/index.html](http://www.hear.org/Pier/index.html)

Photo f: Steve Hurst. Provided by ARS Systematic Botany and Mycology Laboratory. Suriname.

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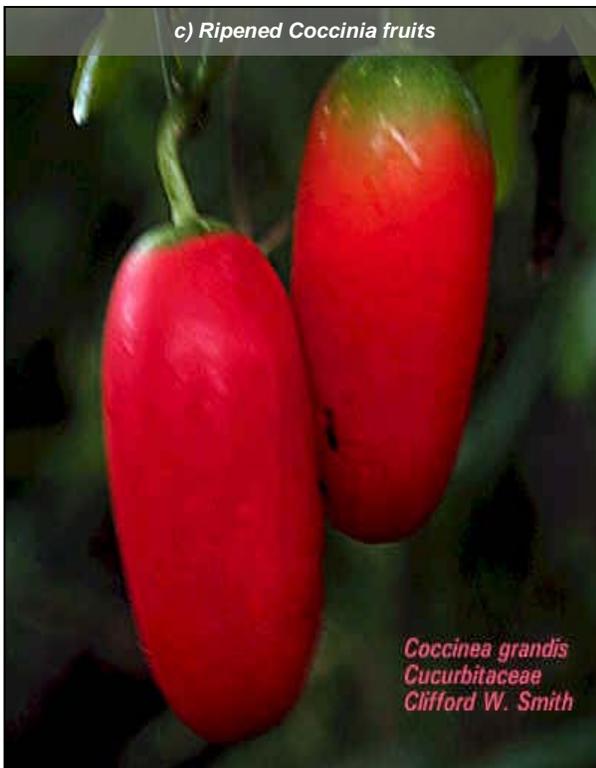
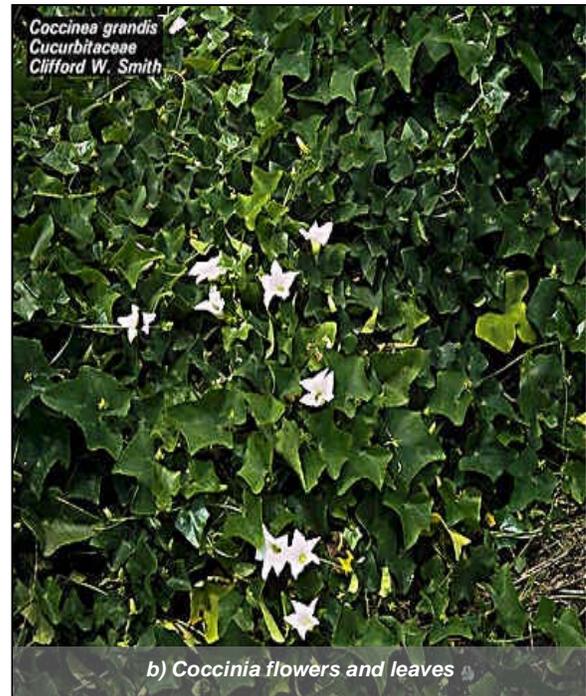
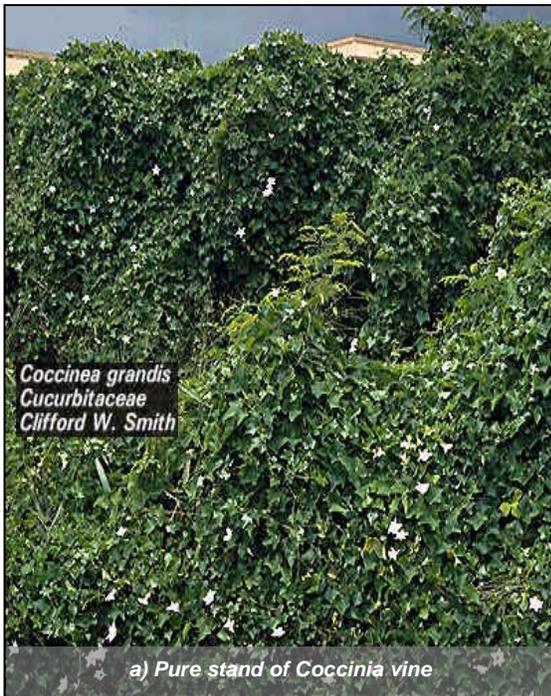
## Pacific Islands Area

### Ivy Gourd (*Coccinia grandis*)



- Scientific name & Code:** *Coccinia grandis* (L.) Voigt, COGR9  
**Synonyms** – *Bryonia grandis* L., *Coccinia Cordifolia* auct. non (L.) Cogn., *Coccinia indica* Wright & Arn.
- Family:** Cucurbitaceae (cucumber family)
- Common names:** English – Ivy gourd, scarlet gourd, scarlet-fruited gourd; Hindi - kundru  
Marshallese – kiuri, awia; Pohnpeian - aipikohr
- Origin:** Africa, India, and Asia
- Description:** Dioecious (male and female on separate plants), perennial, herbaceous vine from a tuberous rootstock. Leaves alternate, simple, acute, 5-lobed, heart-shaped, hairless or scaly, with 3-8 glands near the base. Flowers usually solitary, in axils, trumpet-shaped, white, 3-5 cm long, with 5 recurved bracts below and deeply 5-lobed at end. Fruits are a smooth, bright red, ovoid berry, 2.5-6 cm long.
- Propagation:** Pieces of roots, stems, and vines can root and grow. Seeds are dispersed by birds and possibly feral pigs. The shoot tips are used in Asian cooking so human distribution is common.
- Distribution:** Introduced to many Pacific islands and Pacific Rim countries in the tropics. Identified in Hawaii, Saipan (intro from Thailand) and Guam where it is an aggressive invader.
- Habitat / Ecology:** Aggressive vine with an extensive tuberous root system. Invades disturbed ground, roadsides, tropical rainforests, and riparian areas. Infestation in Guam is only male plants, so it spreads by rooting of plant parts (no seed developed). Hawaii and Saipan have both male and female plants established.
- Environmental impact:** Very aggressive, smothering vine that overcomes shrubs and grows on trees. Forms a dense, sun-blocking canopy. Prolific seed producer (>1000/m<sup>2</sup>). Tolerates or benefits from mutilation, cultivation, or fire.
- Management:** Physical – Cutting has little effect. Collecting the fruits, drying and burning is marginally effective (used with chemical control on Maui – Triclopyr). Chemical – Repeated applications of Triclopyr on mature vines and Glyphosate on young plants is necessary. Basal bark applications of 2,4-D and/or Triclopyr are effective but basal stems are hard to treat. Biological – Control may be achieved with the use of three natural enemies, *Melittia oedipus* (Sessidae - moths), *Acythopeus cocciniae* (Curculionidae – true weevils), and *Acythopeus burkhartorum* (Curculionidae – true weevils). These natural enemies have been introduced to Hawaii from East Africa and are being cultured at the Quarantine Laboratory in Guam.

**PIER Risk Assessment: High Risk, score: 21**



Header: Societe Francaise d'Ethnopharmacologie : <http://www.ethnopharmacologia.org/>  
Photos a, b & c: Pacific Island Ecosystems At Risk (PIER): [www.hear.org/Pier/index.htm](http://www.hear.org/Pier/index.htm)  
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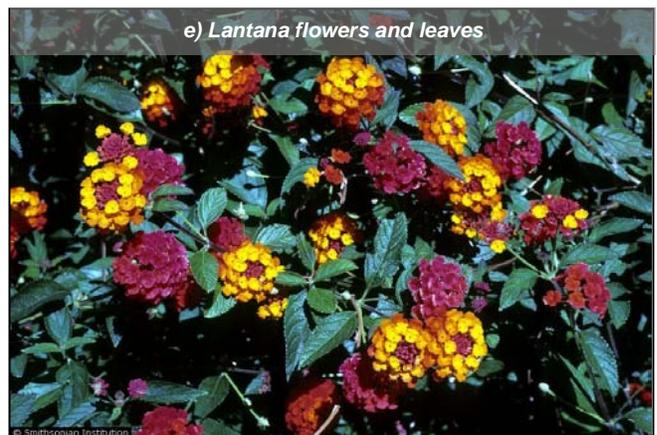
## Pacific Islands Area

### **Lantana (*Lantana camara*)**



<b>Scientific name &amp; Code:</b>	<b><i>Lantana camara</i></b> (L.), LACA2 <u>Synonyms</u> – <i>Lantana aculeata</i> L., <i>Lantana tilliaefolia</i> auct. non Cham.
<b>Family:</b>	Verbenaceae (Verbena family)
<b>Common names:</b>	<u>English</u> – Lantana, red sage, shrub verbena, yellow sage, wild sage <u>Fijian</u> – kauboica, kaumboitha, lanitana, mbona ra mbulumakau, tokalau, waiwai; <u>Kosraean</u> – ros fonacni; <u>Marshallese</u> – lantona; <u>Pohnpeian</u> – landana, rahndana, takasuweh; <u>Samoan</u> – lantana; <u>Tongan</u> – talatala
<b>Origin:</b>	West Indies, Central America
<b>Description:</b>	Erect, perennial shrub with rambling branches (may be prickly). Leaves oval-shaped (ovate), stiff, toothed (serrate) with stiff bristles, 4-8 cm long, 2-5.5 cm wide, spicy-pungent when rubbed. Flowering spikes head-like. Tube-like flowers crowded, youngest ones central and pale, older flowers orange, oldest ones red (or white). Fruits are dark blue to black at maturity.
<b>Propagation:</b>	The fruits are dispersed by birds and rodents. Basal shoots sprout from crown of plant following fire.
<b>Distribution:</b>	Tropical and subtropical regions of the world. Identified in Hawaii, Rota, Saipan, Tinian, and Guam.
<b>Habitat / Ecology:</b>	Weedy shrub of cultivated land, fencelines, pastures, rangelands, and waste areas. Thrives in dry or wet places in valleys, mountains, and coastal areas. Somewhat shade tolerant so it can become established in savannahs and tree plantations. Can survive all but the hottest of fires and resprouts from basal shoots.
<b>Environmental impact:</b>	The thorny shrub forms a dense impenetrable understory that crowds out and inhibits establishment of other species. Shoots and roots produce chemicals toxic to other plants (allelopathic). Can form pure stands that can render the land useless for other purposes. Contains the toxic chemical <u>Lantadene</u> that causes photosensitivity in animals forced to graze it.
<b>Management:</b>	<u>Physical</u> – Small plants and infestations can be pulled, older plants must be dug out. Burning without follow-up treatments is ineffective. Some evidence that trampling during intensive grazing is effective. <u>Chemical</u> – Susceptible to translocated herbicides, including 2,4-D, Glyphosate, Fosamine, Dichlorprop, and Triclopyr. Probably susceptible to residual herbicides such as Hexazinone and Bromacil. <u>Biological</u> – Several control agents are available and are often very effective. <i>Epinota lantana</i> (Tortricidae – Tortrix moths), <i>Lantanophaga pusillidactyla</i> (Pterophoridae – Plume moths), <i>Ophiomyia lantanae</i> (Agromyzidae – leaf-miner flies), and <i>Uroplata girardi</i> (Chrysomelidae – leaf-mining beetle) have all been released with some success in Guam and the CNMI. Treatments, monitoring, and evaluation of these and a dozen other species is in progress.

**PIER Risk Assessment: High Risk, score: 21**



Header: Food And Agriculture Organization Of The United Nations  
Photos a, b & c: Pacific Ecosystems at Risk (PIER):  
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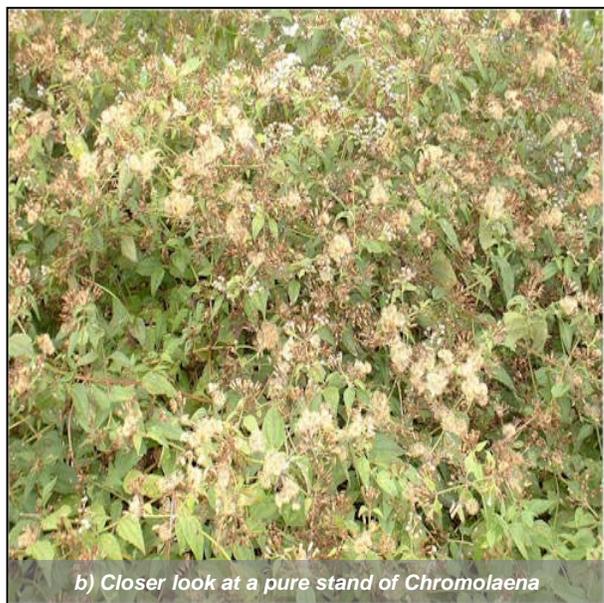
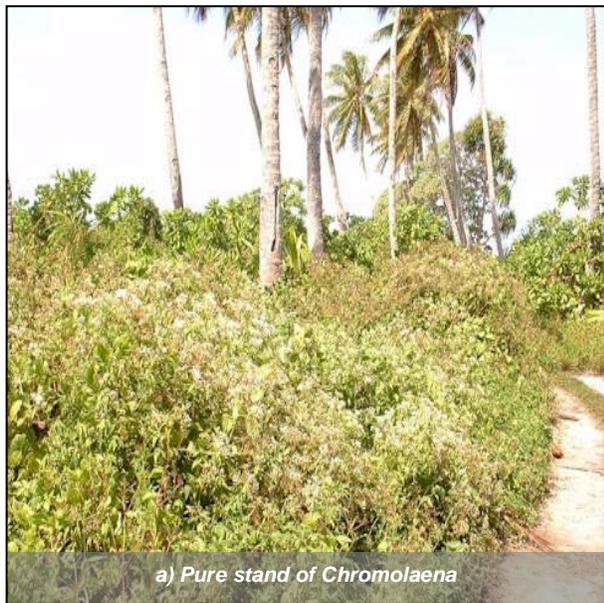
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### **Siam weed (*Chromolaena odorata*)**

- Scientific name & Code:** *Chromolaena odorata* (L.) R.M. King & H. Robinson, CHOD  
Synonyms - *Eupatorium odoratum* L.
- Family:** Asteraceae (sunflower family)
- Common names:** English – Siam weed, Jack in the bush, Chromolaena, bitter bush, Christmasbush, devil weed; Chamorro – masigsig; Chuukese – otuot; Filipino – agonoi, huluhagonoi; Kosraean – mahsrihsrihk; Palauan – kesengesil, ngesngesil; Pohnpeian – masigsig, wisolmatenrehwei
- Origin:** Tropical America
- Description:** Perennial herb, subshrub, or shrub with long rambling branches. Leaves opposite, velvety to slightly hairy, sharp-tipped, delta to oval shaped with 3 nerves, and 1-5 coarse teeth along leaf edges. Flowers in many heads at the end of stalks, trumpet-shaped pale purple to off-white flowers above pale bracts with green nerves, 20-30 or more to a group. Flowers in the winter at the start of the dry season. Seeds (achenes) have dull white hairs (5 mm long).
- Propagation:** Primarily wind-dispersal of seeds, but can propagate vegetatively from stems and root fragments. Seeds can cling to hair, clothing, and shoes. The tiny seeds occur as contaminant in imported seed. Seed production is prolific but seed longevity in the soil is little more than 3 weeks.
- Distribution:** Common in many tropical areas as a weed. Identified in Agrigan, Aguijan, Pagan, Rota, Saipan, Tinian, and Guam.
- Habitat / Ecology:** Grows on many soil types but prefers well-drained soils, does not tolerate shade and thrives in open areas. Grows in croplands, pastures, forest margins, river flats, and disturbed rainforests.
- Environmental impact:** Forms dense stands that prevent establishment of other species. It is a strong competitor and had a toxic effect to other plant species (allelopathic). Establishes in disturbed areas and is a dry flashy fuel when dry, which promotes wildfires.
- Management:** Physical – Manual slashing, mechanical cutting (brush cutter or tractor-drawn implements). Concerns are limited access for mechanical equipment and labor costs of manual treatment. Slashing causes rapid regeneration unless followed by other methods; needs to be suppressed over an extended period.  
Chemical – Herbicide application with Triclopyr at the seedling stage or on early regrowth. Concerns are high cost of chemicals, ecological concerns, and non-compatibility with cropping.  
Biological – The biological control agent *Pareuchaetes pseudoinsulata* (Arctiidae – tiger moths) has been introduced into Guam and Saipan with encouraging results (defoliates pure stands). The insect *Cecidochares connexa* (Tephritidae – fruit flies) is a natural enemy and has been established in Guam.

**PIER Risk Assessment: High Risk, score: 34**



Photos a, b & c and header: Pacific Island Ecosystems at Risk (PIER): [www.hear.org/Pier/index.html](http://www.hear.org/Pier/index.html)  
Photos d & e: R.A. Howard. ©Smithsonian Institution.  
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# Invasive Species Fact Sheet

## Pacific Islands Area

### **Swordgrass (*Miscanthus floridulus*)**



<b>Scientific name &amp; Code:</b>	<b><i>Miscanthus floridulus</i></b> (Labil.) Warb. Ex K. Schum. & Lauterb., MIFL3
	<u>Synonyms</u> – n/a
	Poaceae (grass family)
<b>Family:</b>	<u>English</u> – Swordgrass, Pacific island silvergrass, giant Miscanthus,
<b>Common names:</b>	Chinese silver grass; <u>Chamorro</u> – neti, netti Japan and some Pacific islands.
<b>Origin:</b>	Tall, erect, broad-leaved, perennial bunchgrass (with short, inconspicuous
<b>Description:</b>	rhizomes), 1.5-4 m high. Culms are 8-16 mm thick at the base. Leaves smooth, 30-80 cm long and 15-40 mm wide, crowded at the base, green to yellow, to purplish with a white mid-rib. Flowers 30-50 cm long and 10-20 cm wide in large, showy, whitish panicles.
<b>Propagation:</b>	Propagates by seed only. The spikelets have many fine hairs from the base that aid in wind dispersion. Seed production can be prolific, barring drought, but seed remains viable for only six months.
<b>Distribution:</b>	Tropical and subtropical areas of the world. Introduced as a ornamental plant in more northern climates. Identified in Guam (and CNMI?).
<b>Habitat / Ecology:</b>	Prefers a deep, loamy, fertile soil that does not dry out, but has a wide range of soil adaptation. Does not tolerate heavy clay soils. Establishes on degraded or deforested lands or steep, eroded areas. It is tolerant of wind and salt spray. May grow from sea level to over 1,500 m elevation. Forms dense thickets that out-competes other plants. Very effective in self-seeding. The lower leaf blades tend to fall off in late summer, adding fuel to wildfire hazard. Burning does not kill the plants, it quickly regenerates from underground parts. Plants produce chemicals (leaf leachates) that inhibit growth of other plants (allelopathic). Silica accumulates in the leaf margins making edges sharp and capable of cutting animals or humans. Palatable to cattle but little or no use by deer and other wildlife.
<b>Environmental impact:</b>	
<b>Management:</b>	<u>Physical</u> – Can be grazed heavily to remove plants and may be cut for roughage. Small infestations can be cut but the underground parts must be dug out and removed. Burning alone is <b>not recommended</b> , it will increase growth, vigor, and seed production. Repeated mowing (2 times) during active growth will eventually kill the plants, usually in two seasons. <u>Chemical</u> – Glyphosate is effective if applied to previously burned or cut plants that have regrown to 0.3 m. May need to be repeated annually until control is achieved. <u>Biological</u> – No known natural enemies. Heavy grazing with cattle, horses, sheep, or goats can help control the spread of the plant.

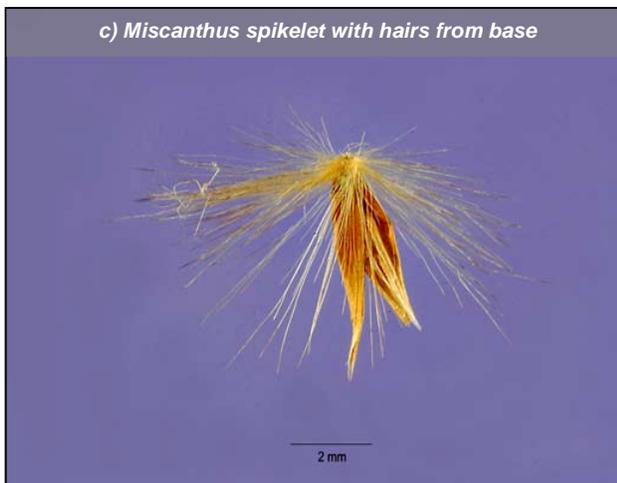
**PIER Risk Assessment: High Risk, score: 13**



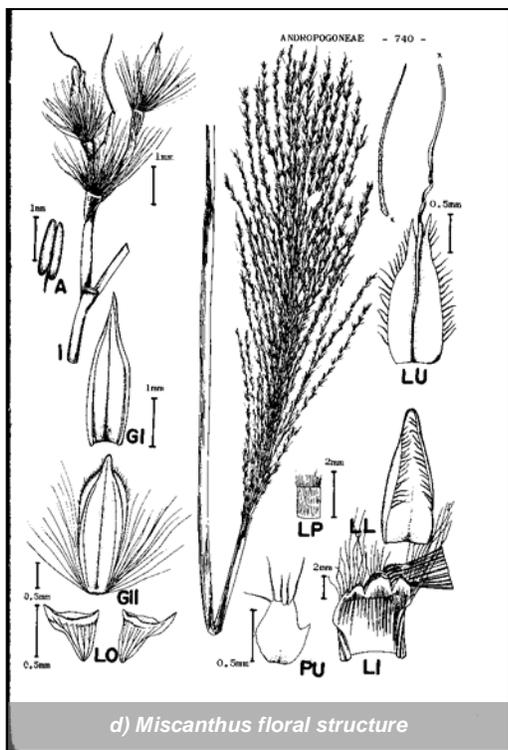
a) *Miscanthus* leaves showing white mid-rib



b) Mature height of *Miscanthus*



c) *Miscanthus* spikelet with hairs from base



d) *Miscanthus* floral structure



e) Grazed *Miscanthus* pasture in Japan

Header & photo e: University of Minnesota:

<http://horticulture.cfans.umn.edu/>

Photo a: © Missouri Botanical Garden, 2001-2008

Photo b: North Dakota State University Extension Service

Photo c: *Tau olonga*, Plants of Tonga

Photo d: CC Hsu, 1975 Taiwan Grasses

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# Invasive Species Fact Sheet

## Pacific Islands Area

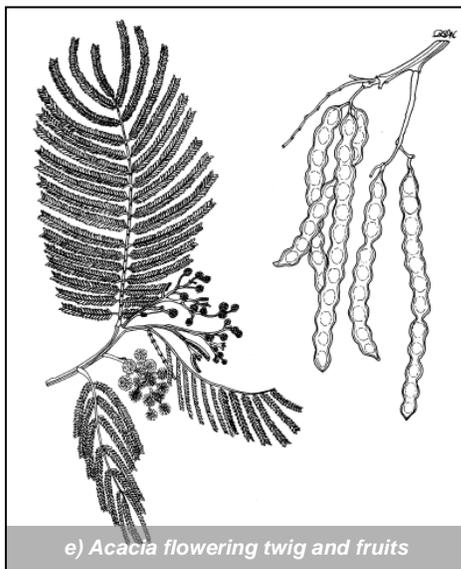
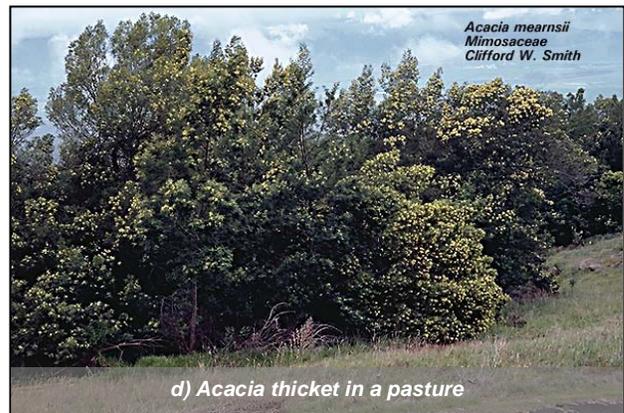
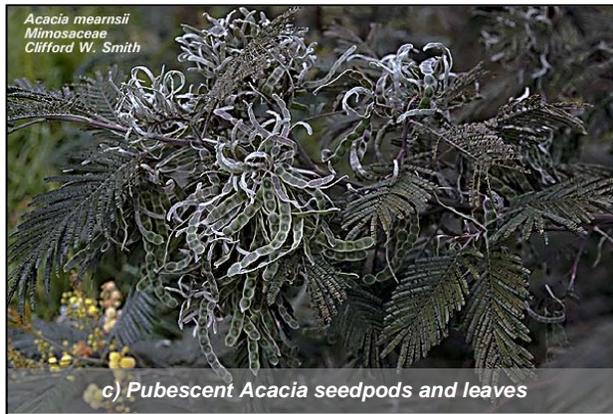
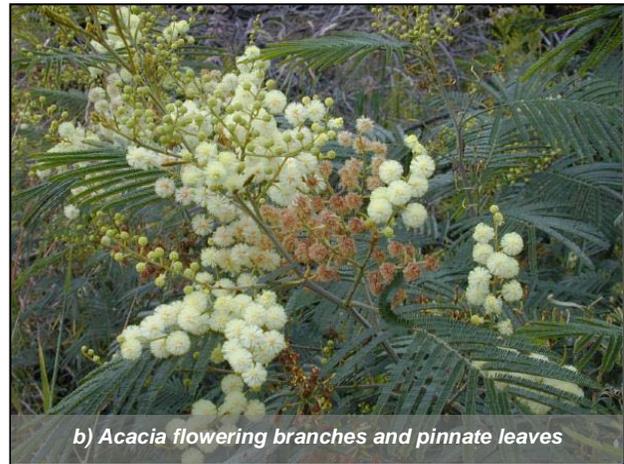
### **Black wattle (*Acacia mearnsii*)**



- Scientific name & Code:** *Acacia mearnsii*, De Wild., **ACME80**  
Synonyms – *Acacia decurrens* (Wendl. F.) Willd. var. *mollis* Lindl.
- Family:** Fabaceae – Pea Family
- Duration/Growth Habit:** Perennial Tree/Shrub
- Common names:** English – black wattle, tan wattle, green wattle
- Origin:** Australia Introduced to Lana'i from California.
- Description:** Trees, 9-15 m tall. Branchlets are angular with fine gray-white hairs (tomentose). Leaves are gray pubescent, pinnate (6-30 pairs), 0.5-5.5 cm long. Leaflets 10-68 pairs, dense, linear, 0.7-6 x 0.4-0.8 mm. Raised glands occur at and between the junction of the leaflet pairs. Heads globe shaped, 6-7 mm diameter arranged in axillary racemes or terminal panicles. Flowers yellowish to white. Legume black, oblong, flat, 5-10 cm x 4-5 mm, pubescent, flattened between seeds. Seeds black, shiny, ovoid.
- Propagation:** Produces numerous viable seeds, resprouts by basal shoots following fire. Aggressive suckering spreads infestations.
- Distribution:** Identified in Hawaii (Hawai'i, Kaho'olawe, Kaua'i, Lana'i, Maui, Moloka'i, O'ahu).
- Habitat/Ecology:** Grows in disturbed dry to mesic (moist) habitats up to 4000 feet elevation including riparian areas, coastal scrub, forests, and grasslands. Generates numerous suckers resulting in monotypic thickets.
- Environmental impact:** Highly invasive; aggressive colonizer, canopy closes-in pastures and displaces natives in natural areas. Considered a noxious weed in Hawaii.
- Management:** Physical – Cutting ineffective unless suckers and/or basal bark are treated.  
Chemical – Saplings sensitive to triclopyr, dicamba, glyphosate, and picloram applied to cut surfaces. Sensitive to basal bark treatments and to girdling (stripping the bark) combined with chemical applications.  
Biological – None known. Unpalatable to grazing animals.

**PIER Risk Assessment: High Risk, score: 15**

Black wattle - *Acacia mearnsii*



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Photo f: © Steve Hurst @ USDA-NRCS PLANTS Database

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# Invasive Species Fact Sheet

## Pacific Islands Area

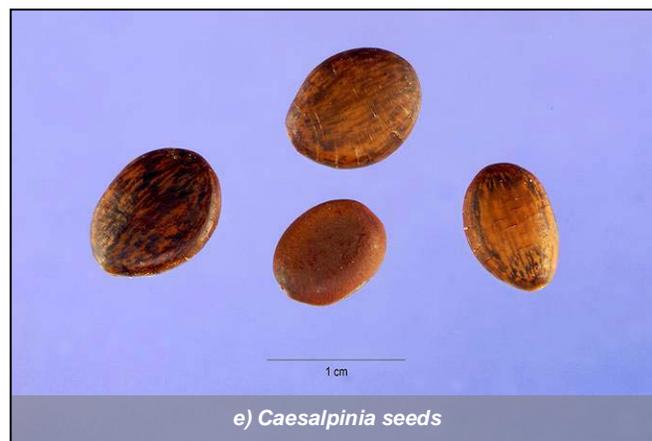
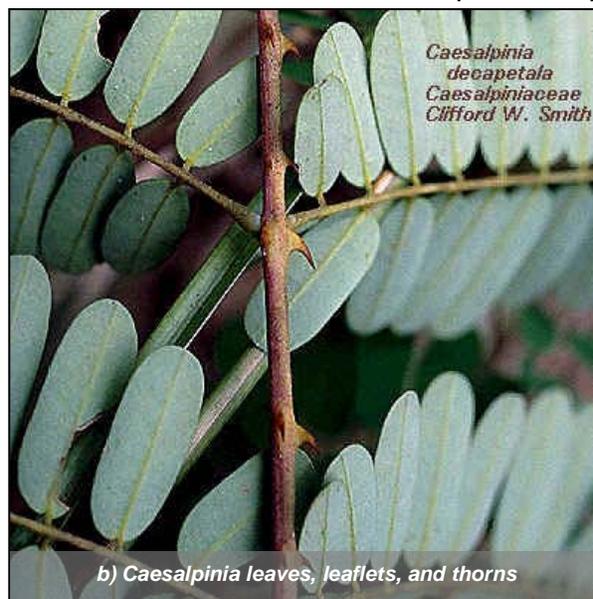
### Cat's claw (*Caesalpinia decapetala*)



- Scientific name & Code:** *Caesalpinia decapetala* (Roth) Alston., **CADE15**  
Synonyms – *Biancaea seiparia* (Roxb.) Todaro, *Caesalpinia seiparia* Roxb.
- Family:** Fabaceae – Pea Family
- Duration/Growth Habit:** Perennial Vine/Shrub
- Common names:** English – cat's claw, shoofly, wait-a-bit, Mysore thorn, Mauritius thorn  
Hawaiian – popoki, puakelekino
- Origin:** Temperate and tropical eastern Asia. Introduced into Hawai'i as a natural fence. Collected on O'ahu in 1910
- Description:** Deciduous, sprawling, climbing shrub (up to 10 m) with numerous spines. Bark is dull red, stems minutely golden-hairy. Branches and rachis of leaves and flowers with recurved prickles and pubescent. Leaves pinnate, 20-30 cm long with 3-10 pairs of leaflets, opposite with prickles in pairs at base; leaflets 8-12 pairs, oblong, 1-2.4 cm x 6-12 mm, membranous. Flowers in terminal racemes, 15-30 cm; 5-merous yellow, orbicular or obovate 1-1.2 cm. Legume chestnut-brown, shiny, oblong-ligulate 6-12 x 2.4-3 cm, with a sharp beak. Seeds 6-9, brown, elliptic about 11 x 6 mm.
- Propagation:** Produces numerous seeds, medium sized seeds are dispersed by rodents, grain eating birds, and humans. Seeds sprout in 40-50 days after sowing.
- Distribution:** Identified in Hawaii (O'ahu, Ni'ihau, Kaua'i, Maui, Moloka'i, and Hawai'i)
- Habitat/Ecology:** Confined to dry to mesic lowland habitats, moist forests, pastures, along roadsides, abandoned lands, and disturbed areas. Not shade-tolerant.
- Environmental impact:** Forms impenetrable thickets, climbs high up trees. Closes off pastures to animals, impedes passage in forests. A hazard to animals, which can become trapped in thickets.
- Management:** Physical – Cutting may be effective. It is extremely prickly, and attempts at physical control must be done carefully.  
Chemical – Sensitive to foliar applications of glyphosate and triclopyr, and to soil applications of tebuthiuron. Repeated applications (3-9 months) stresses the plant, opens the canopy, and controls newly germinated seedlings. Basal bark treatments with very low volume triclopyr ester in diesel oil are also effective.  
Biological – The potential for biological control has not been evaluated. Unpalatable to grazing animals.

**PIER Risk Assessment: High Risk, score: 20**

Cat's claw - *Caesalpinia decapetala*



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# Invasive Species Fact Sheet

## Pacific Islands Area



### **Mile-a-minute weed (*Mikania micrantha*)**

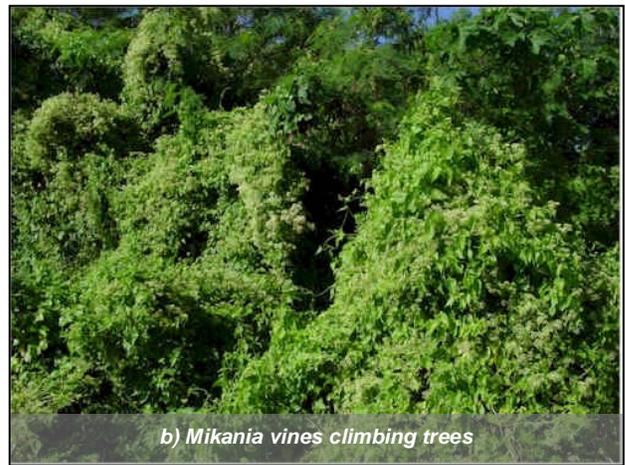
- Scientific name & Code:** *Mikania micrantha* Knuth., MIMI5  
Synonyms - none
- Family:** Asteraceae – Aster Family
- Duration/Growth Habit:** Perennial Vine
- Common names:** English – mile-a-minute weed, bittervine, American rope, Chinese creeper, climbing hempweed, Mikania vine
- Origin:** Central and South America
- Description:** A branched, slender-stemmed vine. Leaves arranged in opposite pairs, heart-shaped or triangular 4-13cm long. Flowers 3-5 mm long, arranged in dense terminal or axillary corymbose panicles, white to greenish white. Seeds are black, 5-angled, 2 mm long with a pappus of white bristles.
- Propagation:** Prolific seed producer. Seeds dispersed by wind or in clothing or hair of animals. Reproduces vegetatively from broken stem fragments. Each node of the stem can produce roots.
- Distribution:** Identified in Hawaii, American Samoa, CNMI (Rota), Guam, Kosrae, Yap, Marshall Islands (Ralik Chain), Palau (main island group).
- Habitat/Ecology:** A fast growing creeping or twining plant found at elevations up to 2500 feet elevation. Invades disturbed forest, stream banks, roadsides, pastures, plantations, and cultivated crops. Grows best where fertility, organic matter, and soil and air humidities are high. Tolerates some shade.
- Environmental impact:** A scrambling or climbing vine capable of producing a dense tangled mat of trailing stems that can smother shrubs and small trees. Very rapidly invades and overgrows abandoned areas. Plant litter has an allelopathic effect that inhibits the growth of vegetation.
- Management:** Physical – Susceptible to chipping or cultivation in dry weather but vines root readily when left in contact with moist soil. Can be used as fodder for grazing animals.  
Chemical – Probably susceptible to translocated herbicides including triclopyr, glyphosate, and 2,4-D applied before flowering, and contact herbicides including paraquat applied to seedlings. Established plants will probably recover from the base.  
Biological – A rust fungus from South America (*Puccinia spegazzinii*) is being tested in India. A thrips (*Liothrips mikaniae*) has been released in Malaysia and the Solomon Islands but predation is believed to have prevented its establishment.

**PIER Risk Assessment: High Risk, score: 25**

Mile-a-minute weed - *Mikania macrantha*



a) *Mikania* flowers and leaves



b) *Mikania* vines climbing trees



c) Close-up of *Mikania* flowers



d) *Mikania* flowers and seeds



e) *Mikania* seeds (achenes) with bristles

Header: CSIRO-Australia Tropical Rainforest Plants

Photos a, b, c & d: © Konrad Englberger, Secretariat of the Pacific Community

Photo e: © Scher, J. L. and D. S. Walters. 2010, Federal Noxious Weed Disseminules of the U.S.

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# Invasive Species Fact Sheet

## Pacific Islands Area



### **Fireweed (*Senecio madagascariensis*)**

**Scientific name & Code:** *Senecio madagascariensis* Poir., SEMA15

Synonyms - none

**Family:** Asteraceae – Aster Family

**Duration/Growth Habit:** Annual/Biennial Forb

**Common names:** English – Madagascar ragwort, fireweed, Madagascar fireweed, variable groundsel

**Origin:** South Africa

**Description:** An erect hairless forb 10-70 cm high. Stems erect, slender, 10-70 arising from the crown, 10-50 cm high, branching above. Leaves bright green, alternate, variable shape (may be lobed or serrate), narrow and fleshy, 2-6 cm long, broader leaf bases clasped around the stem. Flowers bright yellow with 13 ray flowers oblong to obovate, 10 mm long and numerous tubular disc flowers grouped into heads of 15-20 mm diameter, each with a green involucre of 20-21 bracts. Seeds (achenes) brownish, cylindrical, 1.5-3 mm long covered with lines of short hairs crowned by a pappus of silky hairs.

**Propagation:** Seed us spread by wind, birds, animals, humans, and transfer of cinder or soil. Spreads locally by rooting from nodes.

**Distribution:** Identified in Hawaii (Hawai'i, Kaho'olawe, Kaua'i, Lana'i, Maui, O'ahu)

**Habitat/Ecology:** Grows on subhumid to humid tropical woodlands, pastures, roadsides, and disturbed sites on a wide range of soils. Spreads rapidly and readily colonizes burnt-out areas.

**Environmental impact:** Toxic to cattle and horses. Displaces grasses and retains toxins even after drying. Can cause spontaneous combustion in alfalfa hay.

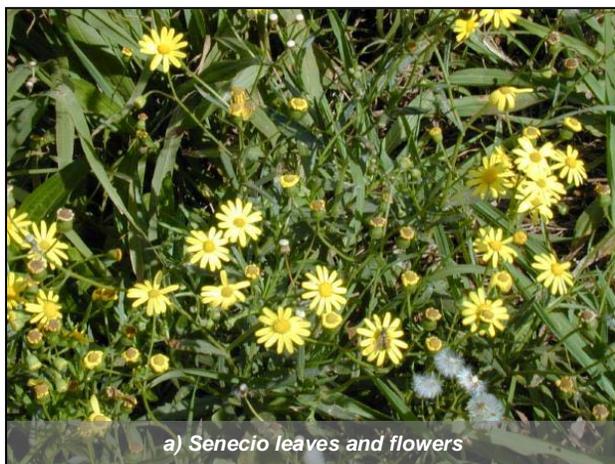
**Management:** Physical – Resting pastures can reduce infestations. Hand-pulling may be ineffective due to rooting capability of nodes. Can be killed by fire but recruits abundantly in burnt areas after rain.

Chemical – Very susceptible to 2,4-D, dicamba, MCPA, metsulfuron, and triclopyr when young and succulent. Susceptible to glyphosate with wipe-on applicators (to avoid injury to pasture grasses). Mature ragwort is susceptible to foliar applications of MCPA and tebuthiuron.

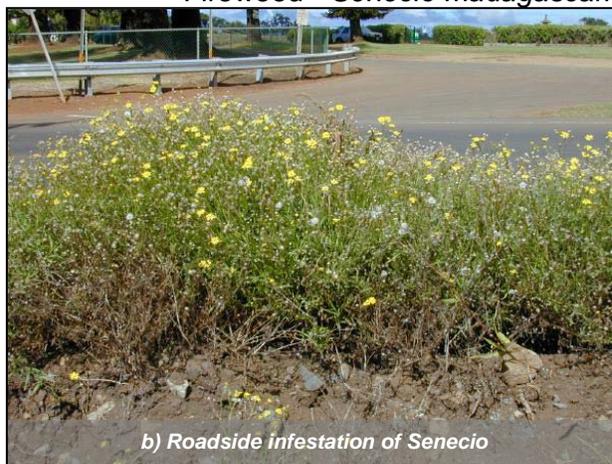
Biological – Can be controlled with targeted grazing by sheep and goats but too much in the diet causes illness and death. A Madagascar moth (*Secusio extensa*) appears to be a highly specific and a voracious feeder of ragwort.

**PIER Risk Assessment: High Risk, score: 23**

Fireweed - *Senecio madagascariensis*



a) *Senecio* leaves and flowers



b) Roadside infestation of *Senecio*



c) Close-up of *Senecio* flower heads



d) Pasture infested by *Senecio*



e) *Senecio* seeds on the flower head

Header: © International Environmental Weed Foundation  
Photos a, b, c, & d, e: © Forest & Kim Starr  
Photo e: © Royal Botanic Garden & Domain Trust, NSW, Australia

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### **Strawberry guava (*Psidium cattleianum*)**

- Scientific name & Code:** *Psidium cattleianum* Sabine., **PSCA**  
Synonyms – *Psidium cattleianum* var. *littorale* (Raddi) Mattos, *Psidium littorale* Raddi var. *longipes* (O. Berg) Fosb.
- Family:** Myrtaceae – Myrtle Family
- Duration/Growth Habit:** Perennial Tree/Shrub
- Common names:** English – strawberry guava, Cattley guava, cherry guava, Chinese guava, purple guava, small guava  
Hawaiian – waiawi ‘ula ‘ula
- Origin:** South America
- Description:** Evergreen shrub or slender tree, 1-3 (8) m high, Branchlets cylindrical, smooth. Leaves aromatic, leathery, hairless, obovate to elliptic-ovate 3.5-13.5 cm long, 2.5-6 cm wide, both surfaces with raised lateral veins. Flowers usually solitary in leaf axils, sepals 4-5 mm long, persistent in fruit, petals white, obovate, 5-7 mm long. Berries red to purplish red (occasionally yellow), globose to ellipsoid, glossy and smooth 2-3 cm diameter with whitish pulp. Seeds about 5 mm long, smooth.
- Propagation:** Prolific seed producer. Suckers readily. Seeds spread by birds, pigs, and cattle.
- Distribution:** Identified in Hawaii (Hawai‘i, Kaua‘i, Lana‘i, Maui, Moloka‘i O‘ahu), Pohnpei, Palau (main island group)
- Habitat/Ecology:** Thicket forming, shade tolerant tree in forests, forest openings, and mountain slopes. Favors moist or wet rainforest slopes between 500 and 4500 feet elevation (occasionally a small shrub in beach thickets).
- Environmental impact:** Able to invade intact and undisturbed rainforest. Fast growing and produces dense populations of root suckers and seedlings. Density of stands and allelopathic characteristics inhibit other species. Serious pest in pastures and rainforests.
- Management:** Physical – Pull or dig out small plants. Leave on site to rot down.  
Chemical – Sensitive to foliar, frill, and cut-surface applications of triclopyr, dicamba, and 2,4-D (in descending order of efficacy). Sensitive to basal bark applications of 2,4-D, picloram, and triclopyr. Responses to soil applications of tebuthiuron and hexazinone were erratic.  
Biological – Four insect species have been found to create deleterious effects: a leaf gall produced by *Tectococcus ovatus*, bud galls produced by *Dasineura gigantea*, a seed gall produced by *Eurytoma psidii*, and a shoot gall produced by *Eurytoma cattleianii* or *Eurytoma desantisi*. Other insects may be effective but can attack other plant species as well.

**PIER Risk Assessment: High Risk, score: 18**

Strawberry guava - *Psidium cattleianum*



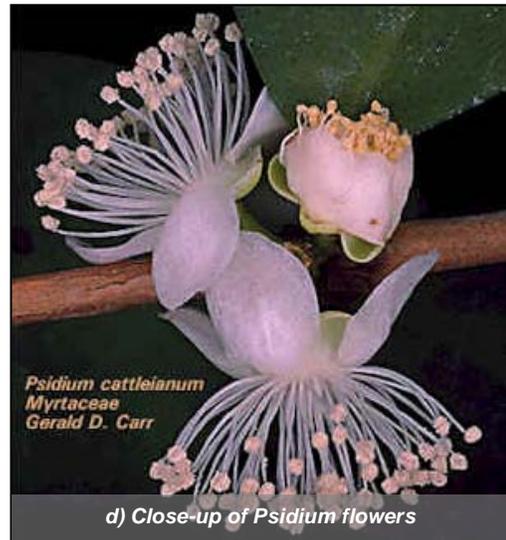
a) *Psidium* flowers and leaves



b) *Psidium* leaves and berries

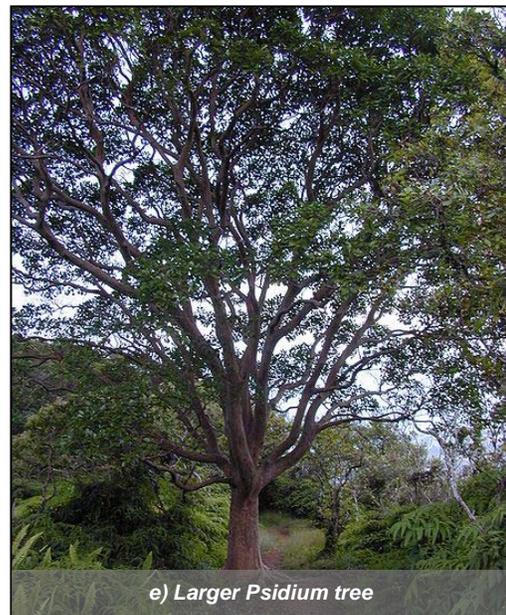


c) *Psidium* thicket



*Psidium cattleianum*  
Myrtaceae  
Gerald D. Carr

d) Close-up of *Psidium* flowers



e) Larger *Psidium* tree

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Photo b: © B. Navez

Photo d: © Gerald D. Carr, University of Hawaii Botany Department

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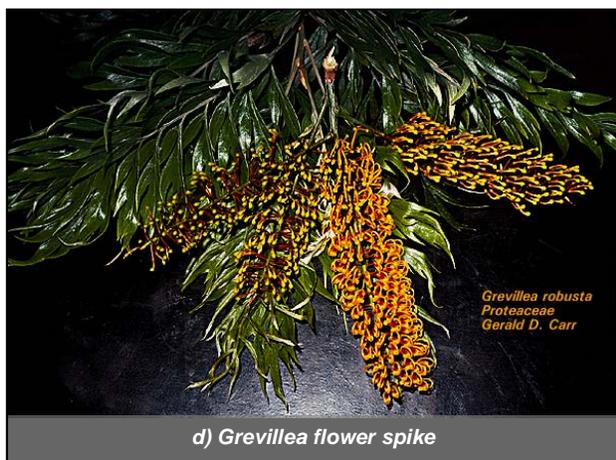
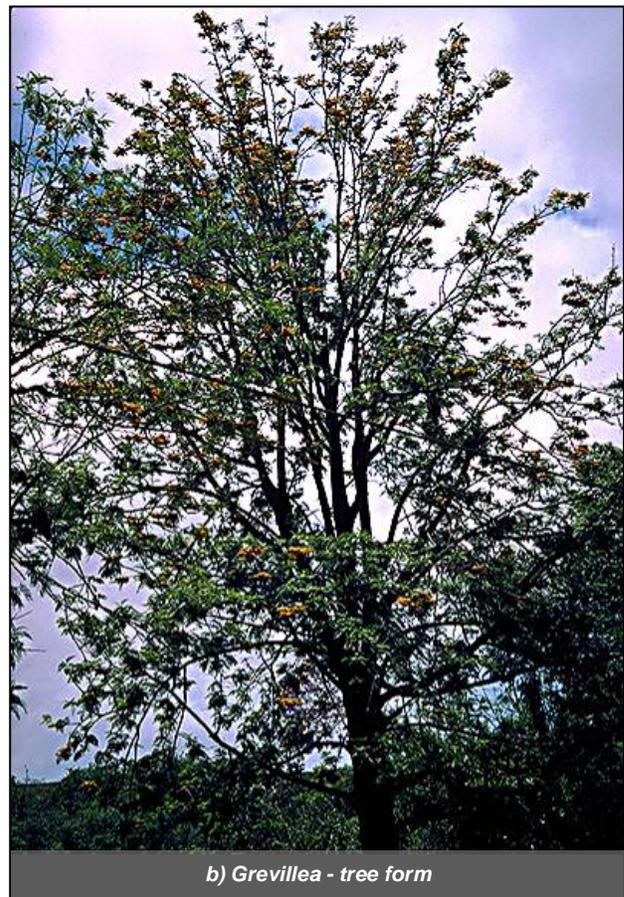
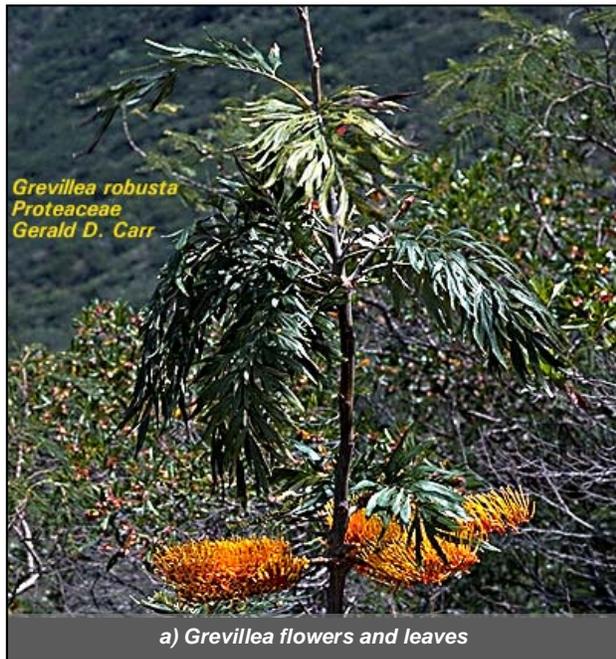
## Pacific Islands Area

### **Silk oak (*Grevillea robusta*)**



- Scientific name & Code:** *Grevillia robusta* A. Cunn. ex R. Br., **GRRO**  
Synonyms - *Stylurus robusta* (A. Cunn.) Deg.
- Family:** Proteaceae – Protea Family
- Duration/Growth Habit:** Perennial Tree
- Common names:** English – silk oak, silky oak, he oak, she oak, silver oak  
Hawaiian – ha'iku ke'oke'o, 'oka kilika
- Origin:** Eastern Australia. Introduced into Hawaii about 1880.
- Description:** Large evergreen tree 18-30 m high. Young branches hairy, rusty. Leaves simple, alternate, smooth, deeply and narrowly lobed, to 1 ft long; upper surface of leaves dark green, lower surface of leaves rusty turning to whitish, margins curling under. Flowers in clusters, 7 inches long, orange to golden brown, peak blooming May–June. Fruits are dry, dark capsules (follicles), with a long hair-like appendage at the end containing one or two flat, winged seeds.
- Propagation:** Abundant viable seed producer. Wind and water dispersed seeds.
- Distribution:** Identified in Hawaii (Hawai'i, Kaho'olawe, Kaua'i, Lana'i, Maui, Moloka'i, Ni'ihau, O'ahu), and Guam.
- Habitat/Ecology:** Fast growing, drought tolerant but grows well in moist areas (60-80 inches/year) from 1000 to 5200 feet elevation. Not shade tolerant. Tolerates, or benefits from, mutilation, cultivation, or fire.
- Environmental impact:** An abundant seed producer, it is a weedy tree that grows well in drier mesic forests and pastures. May have some allelopathic effect on other plants and its own seedlings. Pollen may trigger hay fever.
- Management:** Physical – Cutting can be effective. Has value for timber.  
Chemical – Sensitive to triclopyr ester applied to frill cuts and/or basal bark. Susceptible to cut-surface and continuous frill applications of picloram and glyphosate and tolerant of 2,4-D and dicamba. Applications of glyphosate and triclopyr to drilled holes may be very effective.  
Biological – Goats are effective at control. Foliage can be used as livestock fodder. Propagules do not survive passage through the gut of grazing animals.

**PIER Risk Assessment: Evaluate, score: 5**



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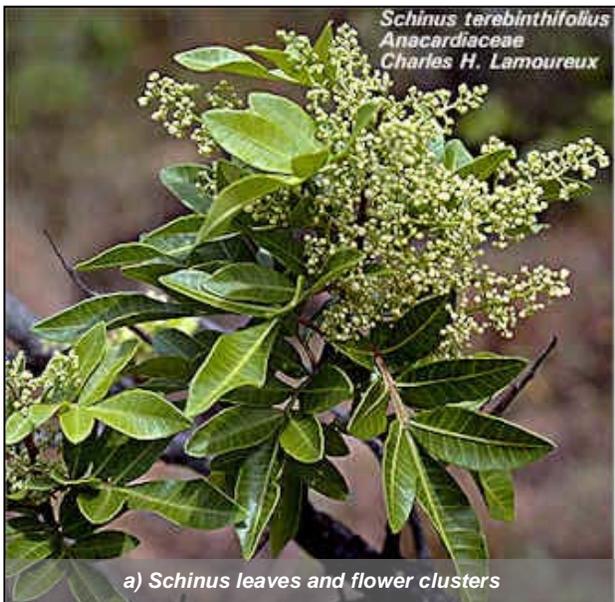


### Christmas berry (*Schinus terebinthifolius*)

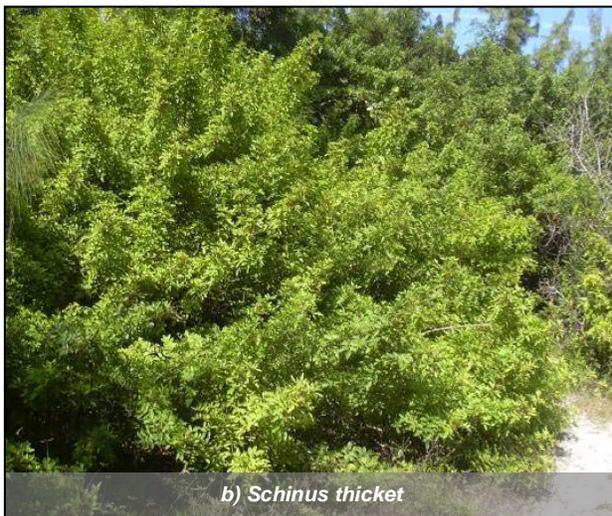
- Scientific name & Code:** *Schinus terebinthifolius* Raddi., SCTE  
Synonyms - none
- Family:** Anacardiaceae – Sumac Family
- Duration/Growth Habit:** Perennial Tree/Shrub
- Common names:** English – Brazilian pepper, Christmas berry, Florida holly  
Hawaiian – naniohilo, wilelaki
- Origin:** South America, probably eastern and southern Brazil.
- Description:** Multiple stemmed evergreen shrub or small tree 2-6 m high with smooth grey bark. Stem and twigs exude a resinous sap that turns black on exposure to air. Leaves compound often winged, with 5-9 leaflets 1.5-7.5 cm long, lanceolate to elliptic, pointed at each end. The leaflet midrib, rachis, and petiole are often reddish. Crushed foliage smells like turpentine. Inflorescences are mostly in the leaf axils and contain many small white flowers. Fruits are bright red, fleshy drupes 4-6.5 mm in diameter with an aromatic brown pulp and an elliptic light brown seed (stone).
- Propagation:** Seeds are spread mostly by fruit-eating birds but also by mammals.
- Distribution:** Identified in Hawaii (Hawai'i, Kaua'i, Lana'i, Maui, Moloka'i, O'ahu), Guam, American Samoa, Marshall Islands (Ralik Chain)
- Habitat/Ecology:** Low-growing evergreen invades most mesic to wet lowland environments. It is very drought resistant and survives fire well (crown-sprouting); it can also withstand high winds. Aggressive pioneer species that quickly colonizes disturbed areas. It has an intermediate tolerance of shade and can survive and grow slowly under forest canopies until disturbance releases it. Large plants can survive up to 6 months of flooding.
- Environmental impact:** Shades out other plants as well as preventing establishment by the release of allelopathic substances. Forms dense thickets. Invades degraded sites, especially low successional stages of wetland and riparian vegetation.
- Management:** Physical –Seedlings and saplings can be hand-pulled.  
Chemical – Sensitive to foliar applications of imazapyr and to foliar and cut surface applications of triclopyr, dicamba, and glyphosate, and to basal bark applications of triclopyr. Sensitive to soil applications of tebuthiuron and hexazinone.  
Biological – A seed-feeding wasp (*Megastigmus transvaalensis*) can cause up to 80% mortality to the seeds. Targeted grazing with goats can control infestations. The sawfly (*Heteroperreyia hubrichi*) is a potential bio control agent that requires more testing.

**PIER Risk Assessment: High Risk, score: 19**

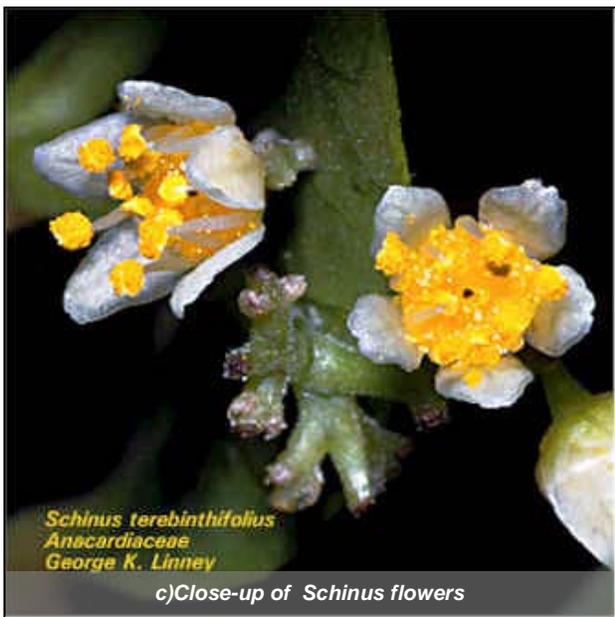
Christmas berry - *Schinus terebinthifolius*



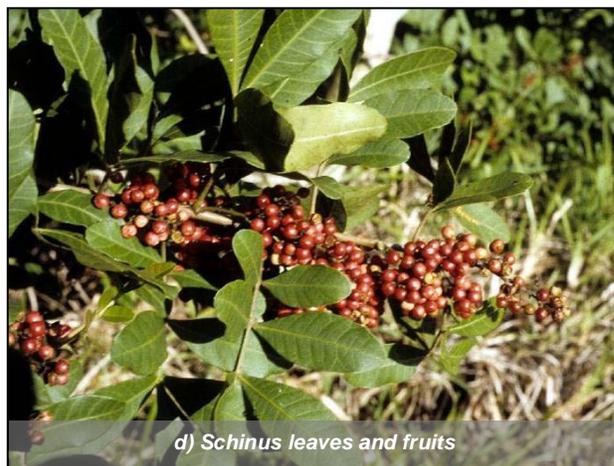
a) *Schinus* leaves and flower clusters



b) *Schinus* thicket



c) Close-up of *Schinus* flowers



d) *Schinus* leaves and fruits



e) *Schinus* seeds

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### Poison devil's-pepper (*Rauvolfia vomitoria*)

- Scientific name & Code:** *Rauvolfia vomitoria* Afzelius., **RAVO**  
Synonyms - none
- Family:** Apocynaceae – Dogbane Family
- Duration/Growth Habit:** Perennial Shrub/Tree
- Common names:** English – poison devil's-pepper, swizzle stick
- Origin:** Africa
- Description:** Shrub or tree 0.5-20 (40) m high, bark smooth, striate or fissured grey-brown or dark brown. Branchlets in whorls of 3-5, pale to greenish brown. Leaves in whorls of 3-5, blade elliptic 3.5-27 cm long, 2-9 cm wide, glabrous. Inflorescence in whorls of 1-4, dense, 15-450 flowered. Flowers fragrant, sepals ovate, 1-2.2 mm long, 0.9-2.1 mm wide, corolla greenish white to yellow, tube 5.8-12 mm long, hairy inside with 3 small belts. Fruits bright orange or red, globose, ovoid, or ellipsoid 8-14 mm long, up to 9 mm in diameter. Seeds ellipsoid 6-8 mm long.
- Propagation:** Abundant seed producer. Seed dispersal by fruit eating birds.
- Distribution:** Identified in Hawaii (Hawai'i, O'ahu).
- Habitat/Ecology:** Extremely fast growing tree (1-1.5 foot diameter in 5 years). Occurs in gallery forests but is mostly found in forest regrowth where fallow periods are prolonged. Extremely shade tolerant. Tolerates, or benefits from mutilation, cultivation, or fire. Grows from sea level to 5500 feet elevation.
- Environmental impact:** Forms dense thickets rapidly, invading roadsides, forests, gulches, and pastures. Can form an essentially closed canopy in a few years. Plant parts contain medicinal alkaloids that may be poisonous.
- Management:** Physical – Reduction of fallow periods to 2-4 years will reduce number of individuals. Cutting is ineffective. Trees respond vigorously after cutting; new stems arise from stumps.  
Chemical – Broadcast application/spraying on juvenile plants, frill and squirt on more mature trees using glyphosate or imazapyr (both are non-selective herbicides, glyphosate may be more effective).  
Biological – The potential for biological control has not been evaluated.

**PIER Risk Assessment: High Risk, score: 21**

Poison devil's pepper - *Rauvolfia vomitoria*



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### **African tulip tree (*Spathodea campanulata*)**

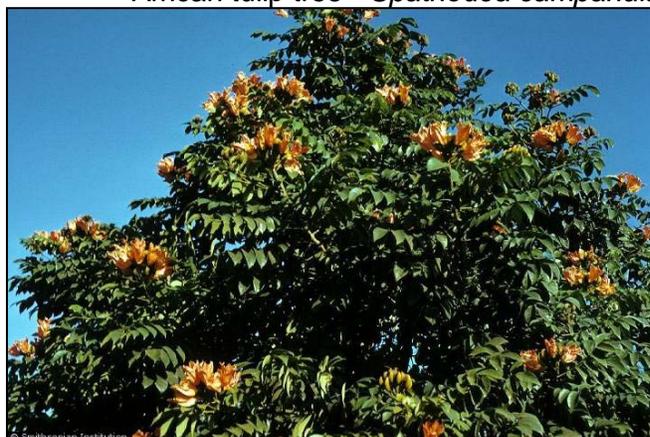
- Scientific name & Code:** *Spathodea campanulata* P. Beauv., **SPCA2**  
Synonyms - *Spathodea nilotica* Seem.
- Family:** Bignoniaceae – Trumpet-creeper Family
- Duration/Growth Habit:** Perennial Tree
- Common names:** English – African tulip tree, fireball, fountain tree, flame of the forest
- Origin:** West Africa
- Description:** Large tree (up to 25 m) with stout, tapering trunk, branches marked with small white lenticels. Leaves pinnately compound, opposite (rarely 3/node), widely diverging to 50 cm long, 3-19 leaflets elliptic or ovate, entire up to 15 x 7.5 cm with 7-8 principal veins, puberulent and reddish brown beneath. Calyx a leathery sack filled with watery sap, in clusters, from which blooms a showy scarlet-orange flower, year-round (heaviest in winter-spring). Fruits clusters of upright, canoe-shaped capsules 17-25 x 3.5-7 cm. Seeds with membranous halos which aid in wind distribution.
- Propagation:** Prolific seed producer. Seeds dispersed by wind. Also propagates from root suckers and cuttings.
- Distribution:** Identified in Hawaii (Hawai'i, Kaua'i, Lana'i, Maui, Moloka'i O'ahu), Guam, CNMI (Tinian), American Samoa (Tutuila), Chuuk, Pohnpei, Yap, Marshall Islands (Ralik Chain), Palau (main island group).
- Habitat/Ecology:** Invades both abandoned agricultural lands, pastures, and forestlands. Relatively shade tolerant but requires nearly full light for rapid growth. Spreads rapidly in mesic to wet areas from sea level to 4000 feet elevation.
- Environmental impact:** Forms dense thickets and shades out other plants. Reduces species richness under its canopy. Trunks are easily broken in high winds and tends to drop large limbs when it becomes older.
- Management:** Physical – Hand pull or dig out seedlings and young plants.  
Chemical – Sensitive to cut-surface applications of dicamba and glyphosate; saplings sensitive to basal bark applications of 2,4-D and triclopyr.  
Biological – The potential for biological control has not been evaluated.

**PIER Risk Assessment: High Risk, score: 14**

African tulip tree - *Spathodea campanulata*



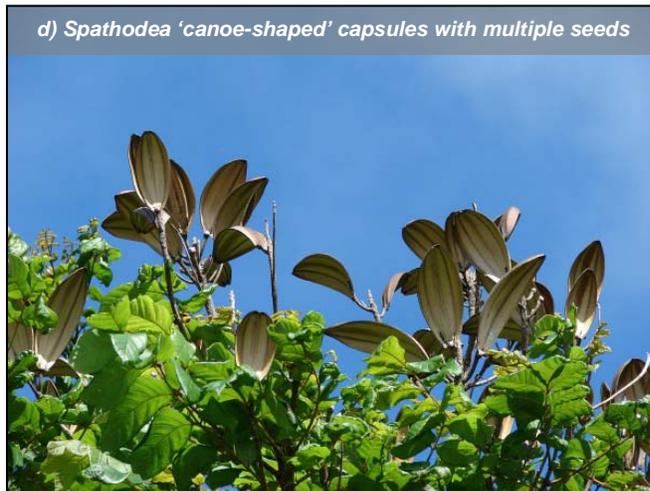
a) *Spathodea* flowers and leaves



b) *Spathodea* tree crown with flowers



c) Smaller *Spathodea* tree



d) *Spathodea* 'canoe-shaped' capsules with multiple seeds



e) *Spathodea* seeds with membranous 'halos'

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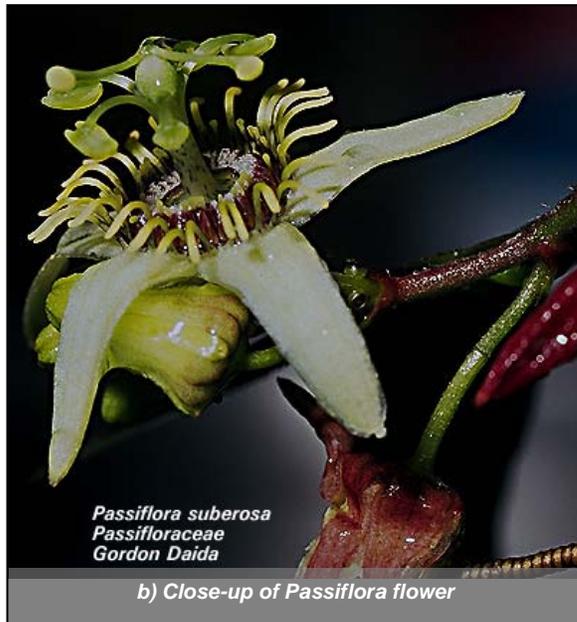
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### **Wild passion fruit (*Passiflora suberosa*)**

- Scientific name & Code:** *Passiflora suberosa* L., PASU3  
Synonyms – *Passiflora pallida* L.
- Family:** Passifloraceae – Passion-flower Family
- Duration/Growth Habit:** Perennial Vine/Forb
- Common names:** English – wild passion fruit, corkystem passionflower, devil’s pumpkin, indigo berry  
Hawaiian – huehu haole
- Origin:** Tropical America. First collection in Hawaii (O’ahu) in 1916.
- Description:** Perennial vine with tendrils. Stems commonly purplish. Leaves 3-lobed or entire 4-8 cm long. Petiole with 2 opposed glands. Flowers solitary in axils, sepals yellow-green, coronal fringe purple (petals absent), flowers 18-25 mm broad; pedicel 1.5-2.5 cm long. Fruit sub globose, purple, about 1 cm thick. Seeds wrinkled, 3-4 mm long.
- Propagation:** Abundant seed producer – seeds are spread by fruit-eating birds and other animals.
- Distribution:** Identified in Hawaii (Kauai, Lanai, Maui, Oahu), Guam, CNMI (Saipan, Tinian), and Palau (main island group).
- Habitat/Ecology:** An aggressive weed, naturalized in grassland, shrubland, open dry forest, and diverse mesic forest, and on exposed ridges at elevations to 2000 feet.
- Environmental impact:** Climbing, creeping vine, it does best in subcanopy layers where it smothers shrubs, small trees and the ground layer: in some areas it can smother the upper canopy as well. Mostly shade tolerant. Can create a fire hazard. Tolerates, or benefits from mutilation, cultivation, of fire.
- Management:** Physical – Regrowth from lower nodes reduces effectiveness of hand/mechanical weeding: need to completely remove root system.  
Chemical – Probably sensitive to hormone-type herbicides but may require basal treatments to protect host plants. Young plants susceptible to drizzle applications of glyphosate.  
Biological – A fungal pathogen (*Colletrotrichum*) may be effective. Propagules survive passage through the gut of animals.

**PIER Risk Assessment: High Risk, score: 12**



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### Blue trumpet vine (*Thunbergia grandiflora*)

- Scientific name & Code:** *Thunbergia grandiflora* Roxb., THGR3  
Synonyms – *Thunbergia lacei*, *Thunbergia clarkei*
- Family:** Acanthaceae – Acanthus Family
- Duration/Growth Habit:** Perennial Vine
- Common names:** English – blue trumpet vine, Bengal clock vine, Bengal trumpet, large-flowered Thunbergia, skyflower
- Origin:** Asia (Northern India)
- Description:** Climbing vine with broad, cordate 5-7 nerved palmately lobed leaves to nearly 20 cm long, almost as broad, pubescent, on 4-12 cm long petioles. Flowers in pendant racemes, large and showy, calyx pubescent, corolla violet or whitish, the tube pale yellow, 3-3.5 cm long, 6-8 cm wide. Seeds smooth on one side, warty on the reverse.
- Propagation:** Seeds, cuttings, and fragments of stems and roots.
- Distribution:** Identified in Hawaii (Hawai'i, Kaula'i, Maui, O'ahu), Guam, Palau (main island group), Pohnpei.
- Habitat/Ecology:** Climbing vine that grows readily from tuberous roots that are spread in soil or water. It infests roadsides and pastures, forming impenetrable thickets. Riparian areas and the edges of rainforest are particularly at risk of invasion.
- Environmental impact:** Smothering vine that can enshroud even tall trees. Serious threat to lowland tropical rainforests. Can establish 100% ground cover over several acres. Not known to support any native wildlife and provides a refuge for feral pigs.
- Management:** Physical – Pulling plants and harvesting underground tubers can be effective over time but is very labor intensive.  
Chemical – Spraying or painting cut stumps with glyphosate or 2,4-D is effective. Sensitive to imazapyr applied to foliage during active growth. Aerial growth may be killed with 2,4-D or glyphosate but plants resprout from tubers. Triclopyr appears promising in trials for foliar application and cut-stump treatments.  
Biological – The potential for biological control has not been evaluated.

**PIER Risk Assessment: High Risk, score: 11**

Blue trumpet vine - *Thunbergia grandiflora*



a) *Thunbergia* flower and leaves



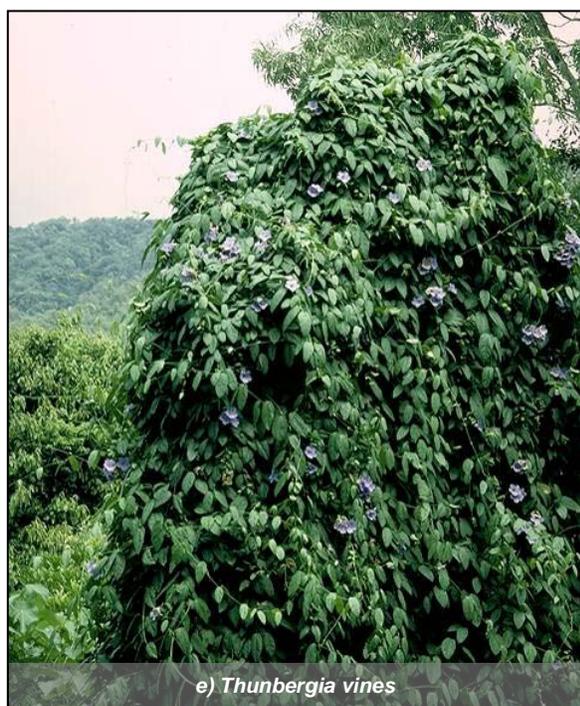
b) *Thunbergia* climbing/smothering trees



c) *Thunbergia* leaves



d) Close-up of *Thunbergia* flower



e) *Thunbergia* vines

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### **Bronze-leaved clerodendrum (*Clerodendrum quadriloculare*)**

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- Scientific name & Code:** *Clerodendrum quadriloculare* (Blanco) Merr., **CLQU2**  
Synonyms – *Ligustrum quadriloculare* Blanco
- Family:** Verbenaceae – Verbena Family
- Duration/Growth Habit:** Perennial Shrub
- Common names:** English – bronze-leaved clerodendrum, fireworks, Philippine glorybower, shooting star, starburst bush
- Origin:** New Guinea, Philippines
- Description:** An erect, glabrous, or nearly glabrous shrub or small tree 2-5 m high. Leaves paired, oblong, 15-20 cm long, apex acuminate, base rounded, the upper surface green, the lower surface usually dark-purple. Flowers in many-flowered terminal paniced cymes, in showy large clusters with a narrow pink tube to 7 cm long, ending in 5-lobed white oblong-elliptic lobes about 1.5 cm long.
- Propagation:** Produces large amounts of viable seed and suckers profusely from the roots. Seeds mostly distributed by birds and other animals.
- Distribution:** Identified in Hawaii, Guam, CNMI (Rota, Tinian), American Samoa, Chuuk, Kosrae, Pohnpei, Yap, Palau (main island group).
- Habitat/Ecology:** Suckers and sprouts profusely. Mostly found along roads and disturbed areas. Forms dense thickets. Very shade tolerant. Requires specialist pollinators (very long corolla tube). Tolerates, or benefits from, mutilation, cultivation, or fire.
- Environmental impact:** Can form monotypic thickets in forests (tolerates full shade).
- Management:** Physical – Very difficult to control manually by pulling.  
Chemical – For young plants, triclopyr can be used as a foliar application; for larger plants undiluted triclopyr can be applied to cut stems.  
Biological – The potential for biological control has not been evaluated. Seeds survive passage through the gut of animals.

**PIER Risk Assessment: High Risk, score: 11**

Bronze-leaved clerodendrum - *Clerodendrum quadriloculare*



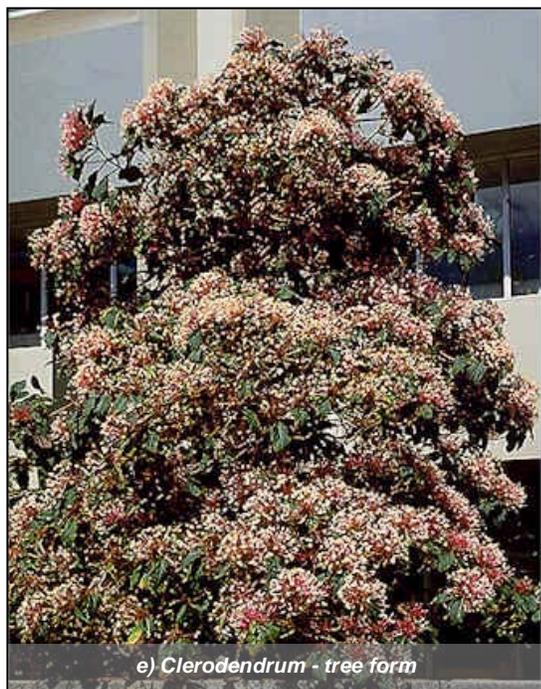
a) *Clerodendrum* flowers and leaves



b) *Clerodendrum* leaves showing dark purple lower surface



c) *Clerodendrum* infestation in a forest setting



e) *Clerodendrum* - tree form



d) *Clerodendrum* underground stem and sprout

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### Fountain grass (*Pennisetum setaceum*)

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- Scientific name & Code:** *Pennisetum setaceum* (Forssk.) Chiov., **PESE3**  
Synonyms – *Pennisetum ruppelii* Steud., *Phalaris setacea* Forssk.
- Family:** Poaceae – Grass Family
- Duration/Growth Habit:** Perennial Graminoid
- Common names:** English – crimson fountain grass, African fountain grass, fountain grass
- Origin:** Northern Africa
- Description:** Sparsely branching, tufted perennial grass 0.2-1 m high with feathery (bristly) spike-like inflorescences, the bristles long and detaching with the spikelets. Leaves up to 40 mm long x 3 mm wide, stiff and rough. Leaf sheaths to 15 cm, hairy at throat. Ligules a dense row of hairs. Inflorescence cylindrical, 100-250 mm long or more, usually purple or rose-colored, bristles about 20 mm long. Fruits are seeds.
- Propagation:** Prolific seed producer; seeds are spread by wind.
- Distribution:** Identified in Hawaii (Hawai'i, Kaho'olawe, Kaua'i, Lana'i, Maui, O'ahu), Guam, Kosrae, American Samoa
- Habitat/Ecology:** Weed of dry forest, roadsides, grasslands, coastal dunes, and lava fields. Very fire and drought tolerant. Stimulated by fire and rapidly colonizes burnt areas.
- Environmental impact:** Crowds out other herbs and seedlings. Forms thick stands that impede growth and regeneration of other plants, completely eliminating the native vegetation in time. Promotes fires by producing large quantities of biomass.
- Management:** Physical – Intensive grazing management in pastures and replanting trees in dryland forests.  
Chemical – Sensitive to glyphosate, imazapyr and hexazinone applied by spraying and by the drizzle method.  
Biological – The potential for biological control has not been evaluated. Unpalatable to cattle except for young shoots.

**PIER Risk Assessment: High Risk, score: 26**

Fountain grass - *Pennisetum setaceum*



a) *Pennisetum* bunchgrass (tufted) form



b) Close-up showing hairs on leaf sheath



c) *Pennisetum* tillers, leaves, & inflorescence



d) *Pennisetum* inflorescence



e) *Pennisetum* spikelets and bristles

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# Invasive Species Fact Sheet

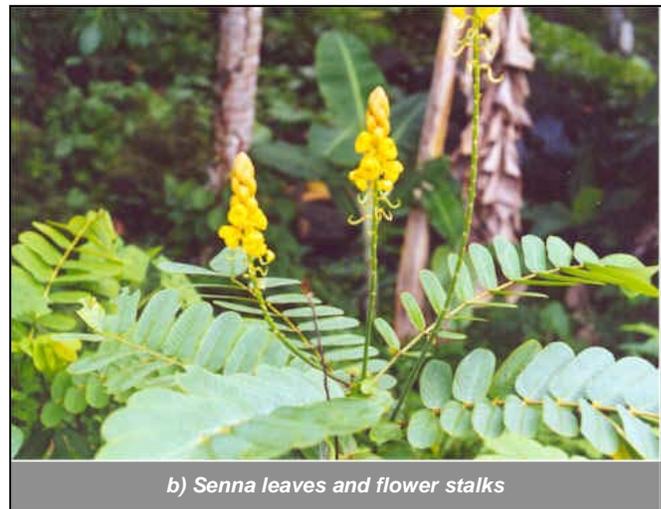
## Pacific Islands Area

### ***Candle bush (Senna alata)***



- Scientific name & Code:** *Senna alata* L. Roxb., **SEAL4**  
Synonyms – *Cassia alata* L., *Herpetica alata* (L.) Raf.
- Family:** Fabaceae – Pea Family
- Duration/Growth Habit:** Perennial Tree/Subshrub
- Common names:** English – candle bush, candelabra plant, candlestick senna, emperor's candlesticks, golden candelabra tree, ringworm bush, Roman candle tree  
Chamorro – Acapulco, akapuku, andadose, candalaria, take-biha
- Origin:** Northern South America. Introduced to Hawaii prior to 1871.
- Description:** Coarse, erect shrub 3-5 m tall. Leaves pinnate, 50-80 cm long with 8-14 pairs of large leaflets (largest at the farthest end) up to 17 cm long, ovate-oblong, truncate or slightly notched at end. Inflorescence a long pedunculate erect, dense, oblong spike 10-50 cm, the yellow flowers (about 2.5 cm diameter) crowded and overlapping. Legume (pod) ripening black, straight, papery, winged on the angles 15-20 cm long x 1 cm wide. Seeds numerous (60) and flat.
- Propagation:** Seeds: pods and seeds distributed by water or animals. Can also sucker from roots.
- Distribution:** Identified in Hawaii (Kaua'i, Lana'i, Maui, Moloka'i, O'ahu), Guam, CNMI (Agrigan, Rota, Saipan, Tinian), Chuuk, Kosrae, American Samoa, Pohnpei, Yap, Palau (main island group)
- Habitat/Ecology:** Invades forests, forest edges, humid ravines, riverbanks, woodlands and grasslands. Forms extensive root systems in the first year and competes for space and nutrients. Not a Nitrogen fixing plant. The short-lived shrub grows best in sunny locations on most soils from sea level to 850 feet elevation.
- Environmental impact:** Forms dense thickets; the large leaves shade out most native plants. Particularly aggressive in areas where there is a high water table.
- Management:** Physical – Usually ineffective because of suckering. Seedlings may be dug out provided all roots are removed.  
Chemical – Susceptible to triclopyr, picloram, and 2,4-D. Slash aerial growth close to the ground and apply picloram + 2,4-D to the cut surfaces immediately.  
Biological – The potential for biological control has not been evaluated.

**PIER Risk Assessment: High Risk, score: 10**



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# Invasive Species Fact Sheet

## Pacific Islands Area

### *Miconia (Miconia calvescens)*

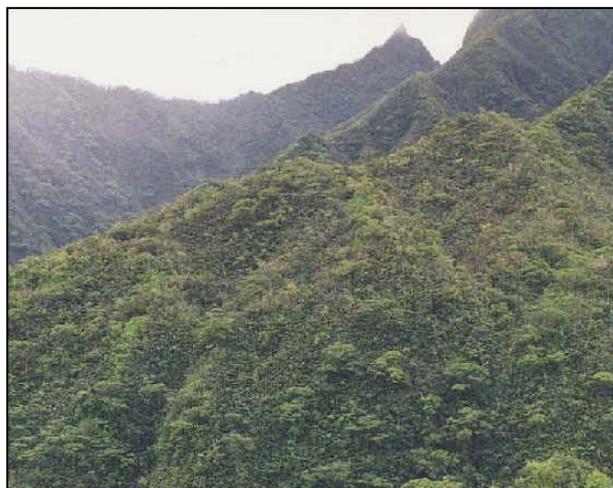


- Scientific name & Code:** *Miconia calvescens* DC., MICA20  
Synonyms - none
- Family:** Melastomataceae – Melastome Family
- Duration/Growth Habit:** Perennial Shrub/Tree
- Common names:** English – velvet tree, bush currant, miconia, purple plague, velvetleaf
- Origin:** Central and South America
- Description:** Tall, branched tree to 15 m high. Young Branchlets, inflorescences, and bracts stellate-puberulous. Leaves large, opposite, 17-40+ cm long, 7-15 cm wide, 3-nerved, ovate, velvety, green and shiny on upper surface, purple below. Panicle 20-30 (50) cm long with paired primary branches with many 5-merous, sessile, white-petaled flowers. Calyx about 3 mm long, petals 2-3 mm long.
- Propagation:** Prolific seed producer. Spread by wind, water, birds, and other animals.
- Distribution:** Identified in Hawaii (Hawai'i, Kaua'i, Maui, O'ahu)
- Habitat/Ecology:** Invasive tree of forests, forest edges, and grasslands. Common to riparian habitats and humid thickets from lowland to montane tropical forests from sea level to 5000 foot elevations. Reproduces even in dense shade.
- Environmental impact:** Highly invasive tree of mesic and wet forests (>60 inches of rain/year). A single plant can produce over 1 million seeds that are spread by birds, or in soil on shoes, equipment, or hooves of animals..Shade tolerant and fast growing, forms dense stands with heavy shade that replace native species, alter habitats, and contributes to soil erosion (the weak root system does not hold soil well and dense canopy prevents the establishment of a herbaceous ground cover).
- Management:** Physical – Smaller saplings can be dug out by hand.  
Chemical – Sensitive to triclopyr ester in foliar applications to cut surfaces and as basal bark treatments, and also to glyphosate applied to cut surfaces.  
Biological –Two fungal pathogens are available as bio agents. *Colletotrichum gloeosporioides* f. sp. *miconae* has been released and is under evaluation. *Coccidiella myconae* produces large wart-like growths that deform leaves. Other potential fungal agents include a tar spot disease (*Guignardia* sp.) and a leaf blight (*Kuronomyces* sp.)

**PIER Risk Assessment: High Risk, score: 14**



a) *Miconia* Leaves and flowers



b) Almost pure stand of *Miconia* – trees will eventually be displaced



c) *Miconia* leaves - upper surface



d) *Miconia* leaves – lower surface



e) *Miconia* habit

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