Clidemia hirta 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Myrtales	Melastomataceae

Common name kauresinga (English), kaurasiga (English), mbona na mbulamakau (English), ndraunisinga (English), roinisinga (English), vuti (English), soap bush (English), Hirten-Schwarzmundgewaechs (German), Koster's curse (English), faux vatouk (English), clidemia, kúi

Synonym *Melastoma hirtum* , L.

Similar species

Summary The invasive shrub Clidemia hirta is a problem in tropical forest understories in its introduced range, where it invades gaps in the forest, preventing native plant species from regenerating. The spread of Clidemia hirta has been linked to soil disturbances, particularly that caused by the wild pig, another invasive species. It has proven to negatively effect native ecosystems and is difficult to control in the Hawaiian archipelago. It is feared it will have a similar effect in other regions where it has been introduced such as in various Indian Ocean Islands (Seychelles), the Malaysian Peninsula and parts of Micronesia (Palau).

view this species on IUCN Red List

Species Description
Koster’s curse is a coarse perennial shrub up to 2m tall. The stems are covered with red bristles that lighten with age. The leaves are opposite, simple and petiolate. The ovate-to-oblong leaf blades are hairy with crenate margins. The surfaces appear pleated. Five major veins originate at the base of the leaf and extend to the apex. The inflorescence is a panicle that can be terminal or axillary. The calyx has five hairy linear lobes atop a long urceolate hypanthium. The corolla consists of five small white petals. The fruit is a hairy ovoid many seeded bluish-black berry (Weedy Plants of the US Undated).

Notes
Prolific in high rainfall areas, slow growing and poor fruiting in dry areas or dense shade.

Habitat Description
Clidemia hirta does not occur in forest in its native range (however, see below) but is a vigorous invader of tropical forest in its introduced range. For *C. hirta*, its absence from forest understory in its native range likely results in part from the strong pressures of natural enemies (DeWalt Denslow and Ickes 2004). In the lowlands of Central and South America and Caribbean Islands (where it is native) it colonises naturally and anthropogenically disturbed open areas such as pastures, riversides, roadsides, and tree plantations (DeWalt Denslow and Ickes 2004). In its introduced range *C. hirta* is abundant in open areas and gaps in the understory of old-growth forest (Smith 1992, Rejmánek 1996, Strahm 1999, in DeWalt Denslow and Ickes 2004). *C. hirta* appears to be more shade tolerant in its introduced range (Wester and Wood 1977, in DeWalt Denslow and Ickes 2004). \r\n
The following notes are taken from reports of the plant in its native range (from Peters 2001). In La Mucuy National Park in Venezuela, a montane tropical rain forest (*ca* 2200m elevation; mean annual rainfall *ca*1800mm), all *C. Hirta* plants in primary forest were beneath closed canopies. It was particularly prevalent along steep embankments with exposed soil. Even plants near trails were extensively shaded. Several gaps were searched but no *C. Hirta* plants were located, although other *Clidemia* species were found. At Caparo Forest Reserve, a lowland tropical deciduous forest (*ca* 150m elevatopm; mean annual rainfall *ca* 1200mm) in Venezuela, *C. Hirta* occurs primarily along trails, but also in the undisturbed understory, and seldom in full sunlight. In another part of its native habitat, Trinidad, it is most common in wet, partially shaded sites, and prevalent along trails and roads, and at the sides of clearings (Taylor 1928, Cook 1929, in Peters 2001). A study conducted in 1994 north of Manaus, Brazil, found *C. Hirta* in the understory of young secondary forest (K. Ickes, pers. Comm.). Extensive searches for *C. Hirta* in Costa Rica have located the plant only in highly disturbed sites, such as roadsides, pastures, and tree plantations, but never in forest gaps at La Selva. (K. Ickes Pers. Comm., in Peters 2001).

Reproduction
Each fruit contains over 100 seeds and a mature plant produces in excess of 500 fruits each season. The seeds can remain dormant for up to four years in the soil (Smith Undated).
Flowering and fruiting occur throughout the year with prolific production of seeds (Peters 2001). Continuous flowering has been observed in areas where the rainfall exceeds 2 500mm/yr with no dry season. However in areas where rainfall is as low as 1 000mm/yr and where there is a dry season the plant does not fruit or flower much after the dry season has begun. Leaves fall off, growth ceases and some death of shoot tips occurs. As long as the drought does not last more than six months plants recover and resume reproduction within a short time (Smith Undated).

General Impacts
Invasive plants present a major problem to conservationists because of their tendency to replace diverse natural vegetation with exotic monocultures (Cronk and Fuller 1995, Rejmánek 1996, in Peters 2001). Plant invasion poses a serious threat to forests because of its potential to reduce biodiversity and lead to the extinction of native flora and fauna (Usher 1991, in Peters 2001). Invasions may precipitate species extinction through either the direct displacement of native species by aliens or through the indirect effects of alien species on the ecosystem (Phillips 1997, in Peters 2001).\r\n
C. hirta may be present in a location without causing observable changes in an ecosystem for up to 30 years. For example, in both Hawaii and Fiji, *ca* 30 years elapsed between the first sighting of the species and the time that it was recognised as a conservation problem (Wester and Wood 1977, in Peters 2001). In Hawaiian communities, *C. hirta* may be replacing endemic species that formerly predominated, threatening their extinction (Wester and Wood 1977, in Peters 2001). The impact of this weed on native species and ecosystems is devastating and the rate at which it spread throughout the islands is alarming (Smith Undated). Its invasion into Hawaiian forests is apparently aided by a release from these herbivores and pathogens (DeWalt Denslow and Ickes 2004). It is a highly invasive shrub in the montane rain forests and cloud forests of Samoa, Fiji, Wallis and Futuna, and the Hawaiian Islands (Meyer 2000, in Binggeli Hall and Healey Undated). While *C. hirta* has not yet had the far-reaching ecological consequences at the Pasoh Forest Reserve (on the Malaysian peninsula) that have been documented in Fiji and Hawaii, some modification of the natural ecosystem seems likely, especially if the recent increase in disturbance continues. The results of at least one study have implied that by competing with native species in gaps, the *C. hirta* invasion in the Pasoh Forest Reserve, a previously undisturbed continental tropical forest, has the potential to alter forest regeneration. A survey on the status of invasive woody plant species in the western Indian Ocean found that the major environmental impact of invasive species in the region is the reduction of the native regeneration through competition by exotic species (Mauremootoo 2003). This becomes most apparent with thicket-forming species such as *C. hirta* (and also including *Chrysobalanus icaco*, *Lantana camara*, *Psidium cattleianum*, *Ravenala madagascariensis*, *Rubus alceifolius* and *Syzygium jambos*) (Mauremootoo 2003). The survey also rated *C. hirta* as one of the most problematic invasive species in the Comoros Archipelago and Réunion and as one of the main invasive species on Mauritius and the Seychelles (Mauremootoo 2003).

Management Info
Preventative measures: A Risk assessment of *Clidemia hirta* for the Pacific region was prepared by Pacific Island Ecosystems at Risk (PIER) using the Australian risk assessment system (Pheloung, 1995). The result is a score of 27 and a recommendation of: reject the plant for import (Australia) or species likely to be a pest (Pacific).\r\n
\r\nPhysical: Manual weeding may be effective for small populations. In healthy ecosystems *Clidemia hirta's* dominance is a temporary phenomenon with forest trees overshading it within 7 years.\r\n
\r\nGround disturbance created by feral pigs (*Sus scrofa*) plays a major role in the establishment of *C. hirta* and other populations of alien species in Hawaii (Smith 1993, Stone *et al*. 1993, in Peters 2001). These pigs are native to North Africa and Eurasia, including Malaysia, but are currently found on many oceanic islands and all continents except Antarctica (Lever 1985, in Peters 2001). They are omnivorous and obtain a substantial portion of their food by grubbing for roots, bulbs, fungi, invertebrates, and other belowground material (Aplet *et al*. 1991, Fensham 1993, Kotanen 1995, in Peters 2001). Severely grubbed areas may extend for more than a hectare, but are typically composed of many small (*ca* 1 m2) patches of ground disturbance. Through trampling, rooting, and preferential feeding, feral pigs in Hawaii have disturbed natural plant communities dramatically (Aplet *et al*. 1991, Stone 1993, in Peters 2001). Wild pigs may also act as agents of dispersal for introduced species including *C. hirta*(Stone and Loope 1987, in Peters 2001). Because of this link the possibility exists of controlling *C. hirta* by managing pig populations, especially at places where the link between soil disturbance and invasive plant spread has been established, such as at the Pasoh Forest Reserve (Malaysian peninsula).\r\n
\r\nDisturbance is a key element in the establishment and invasion of *C. hirta*. Wildfires, landslides, windstorms and other forms of soil disturbance (such as pig rooting) accelerate the dominance of this weed (Smith Undated; Peters 2001). In its native environment plants are confined to open areas and only become dominant about twelve months after disturbance, such as in slash-and-burn agricultural areas (Burkhart Pers. Comm, in Smith Undated). All new range extensions in Hawaii begin along the open edges of trails or other disturbed areas. In order to keep the weed out of an area the primary management objective should be to minimise and prevent disturbance (Smith Undated). \r\n
\r\nAll efforts to eradicate newly established populations of *C. hirta* in Hawaii failed when they were not initiated before first fruit set (Smith Undated). There have been many well-meaning attempts by volunteer groups to control the spread of *C. hirta* through pulling it by hand, unfortunately the effort is likely to fail. The seed bank produced by these plants is colossal over a very short period of time (Smith Undated). In order to effectively control an infested area by mechanical means eradication efforts must be conducted at least once a year for up to 10 years. Only two instances of successful control, Kamakou (Moloka'i) and Pu'u Kukui trail (Maui) are known (Smith Undated). Clidemia is susceptible to a number of herbicides but will regenerate unless further applications are made. Chemical control does not appear to be practical in Hawaii's native ecosystems, particularly those difficult to access (Smith Undated).\r\n
\r\nClick here for Information about remote sensing for understory invasive plants and documenting the spread of weeds.

Pathway
The long-distance routes and methods of *Clidemia hirta* invasion are unknown, but it probably is introduced accidentally by people (Cronk and Fuller 1995, in Peters 2001). In Hawai'i spread of clidemia is thought to be due to people who work in or use forests (from Smith Undated). No one group is entirely responsible for the spread. Some abandoned clearings previously used to grow marijuana suggest that in West Maui, Hawai'i, marijuana growers are partly responsible for its spread. In other areas (O'ahu, Moloka'i and the Nounou and Na Pali Coast invasions on Kaua'i) invasions were observed along forest trails first suggesting that hikers were responsible. Vehicle spread was thought to be the method of spread of the weed to the Kilauea East Rift zone on Hawai'i island and the Wai'anae mountains on O'ahu. Yet other infestations are thought to be due to spread by pig hunters.Most alien populations of this plant are probably the result of deliberate ornamental introductions.

Principal source:

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Pubblication date: 2006-07-24

ALIEN RANGE

[1] AMERICAN SAMOA
[1] FIJI
[1] INDONESIA
[1] MALAYSIA
[1] MAURITIUS
[1] PALAU
[1] SAINT HELENA
[3] SEYCHELLES
[1] SRI LANKA
[6] UNITED STATES
[1] COMOROS
[1] GUADELOUPE
[1] MADAGASCAR
[1] MARTINIQUE
[1] MAYOTTE
[1] REUNION
[2] SAMOA
[1] SINGAPORE
[2] TANZANIA, UNITED REPUBLIC OF
[1] WALLIS AND FUTUNA

Red List assessed species 6: CR = 6;

Anogramma ascensionis **CR**
Labordia cyrtandrae **CR**
Pteris adscensionis **CR**
Chamaesyce herbstii **CR**
Otus moheliensis **CR**
Schiedea kaalae **CR**

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