***Clidemia hirta* (L.) D. Don** Koster's curse
MELASTOMATACEAE

Synonyms: *Melastoma hirta* L.
Clidemia crenata DC.
Melastoma elegans Aublet
Clidemia elegans (Aublet) D. Don

General Description.—Koster's curse (a Hawaiian name) is also known as clidemia, soap bush, camasey, camasey peludo, nigua, kak mél, bon bon mél, canot-macaque, and bonbon bleu. It is a weak upright or scrambling shrub that varies in mature size from less than 1 m to 5 m in height, depending on habitat. Koster's curse is supported by shallow lateral roots and abundant fine roots. There are usually multiple stems arising as sprouts from the rootstalk and base of the principal stem, especially in older and disturbed plants, resulting in dense shrubs. The branches and twigs are slender. The 5- to 18-cm, opposite leaves have a short petiole, five to seven principal nerves radiating from the base, an ovate blade with a serrated to entire edge, usually subcordate base and pointed tip. The whole plant is covered with brown hairs. Inflorescences are branched axillary cymes with five-merous white flowers. The fruits are ellipsoidal, purple-to-black berries 6 to 8 mm long with a flavor similar to blueberries, but weaker. Each fruit contains over 100, 0.5- to 0.7-mm-long, coffee-colored seeds (author's observation, Howard 1989, Liogier 1995, Smith 1992, Stevens and others 2001).

Range.—Koster's curse is native to the Greater and Lesser Antilles, southern Mexico, Central America, and South America as far south as Northern Argentina and Bolivia (Howard 1989, Liogier 1995, Stevens and others 2001). It has naturalized in Hawaii, American Samoa, many of the Pacific and Indian Ocean islands, Australia, Southern Asia, Sri Lanka, India, and East Africa (Binggeli 1997, Pacific Island Ecosystems at Risk 2002).

Ecology.—In its native range, Koster's curse colonizes disturbed habitat—landslides, river banks, burned areas, tree tip mounds, pastures, old fields, plantations, fence rows, and roadsides. It occurs as scattered plants, occasionally as thickets, which flourish for a few years and succumb to competition or disease and insects. It tolerates a wide range of soil properties as long as moisture is adequate. Annual rainfall ranges from about 1200 to 4000 mm. Elevation may vary from near sea level to 1,500 m. The species grows well in full sun but is moderately tolerant of shade. In some non-native habitat in the absence of the usual insects, fungi, and fast-growing competitors, Koster's curse forms dense and tall, monotypic thickets under forest canopies that shade out virtually all vegetation below them (Binggeli 1997, Smith 1992).

Reproduction.—Koster's curse flowers and fruits year-round in continuously moist habitat. After dry seasons or droughts, in which it may defoliate or die back, it recovers and begins flowering again. A large plant may produce more than 500 fruits/year (Smith 1992). A collection of fresh fruits from Puerto Rico weighed an average of 0.2171 $\pm$ 0.0081 g/fruit. Air-dried seeds separated from them averaged 0.00383 g/seed or 260,000 seeds/kg (author's observation). The seeds are dispersed by birds, feral pigs, other animals, and humans. The seeds can remain viable in the soil for up to 4

years. The stems root on contact with moist soil; even detached leaves have been observed to root (Smith 1992).

Growth and Management.—Koster's curse grows slowly in the first months and faster thereafter. It often dominates at the end of the first year (Binggeli 1997). Individual stems live 2 or 3 years in Puerto Rico, although plants may live longer by sprouting. There is little motivation to encourage Koster's curse and often a need to control it. Single-pass mowing is usually ineffective. Spraying with broadleaf herbicides is the most widely used control method, supplemented by hand pulling (Rubber Research Institute of Malaya 1973). At best, such measures are temporary. Some success has been achieved with biocontrol by the introduction of *Liothrips urichi*, a thrips (Binggeli 1997). A number of other natural controls are being studied (State of Hawaii Department of Agriculture 2002).

Benefits and Detriments.—Desired or not, Koster's curse helps revegetate disturbed areas and provides a reliable food source for wildlife. The species is used in Brazil to treat *Leishmania braziliensis* skin infections (Franca and others 1996). On the other hand, Koster's curse is a serious threat to understory plant species in fragile tropical island ecosystems (Pacific Island Ecosystems at Risk 2002). It is a serious weed in tropical plantations such as rubber (*Hevea brasiliensis* Muell. Arg.). Sheep have been shown to control most weeds in plantations but will not eat Koster's curse (Chee and Faiz 2002). Goats suffer toxicity from hydrolysable tannin when fed the plant (Murdiati and others 1990).

References

Binggeli, P. 1997. *Clidemia hirta* (L.) D. Don (Melastomataceae). http://members.lycos.co.uk/WoodyPlantEcology/docs/web-sp5.htm. 4 p.

Chee, Y.K. and A. Faiz. 2002. Sheep grazing reduces chemical weed control in rubber. Australian Centre for International Agriculture Research. http://www.aciar.gov.au/publications/proceedings/32/paper26.pdf. 4 p.

Franca, F., E.L. Lago, and P.D. Marsden. 1996. Plants used in the treatment of leishmanial ulcers due to *Leishmania* (Vannia) *braziliensis* in an endemic area of Bahia, Brazil. Revista da Sociedade Brasileira de Medicina Tropical 29(3): 229-232.

Howard, R.A. 1989. Flora of the Lesser Antilles, Leeward and Windward Islands. Vol. 5. Arnold Arboretum, Harvard University, Jamaica Plain, MA. 604 p.

Liogier, H.A. 1995. Descriptive flora of Puerto Rico and adjacent islands. Vol. 4. Editorial de la Universidad de Puerto Rico, San Juan, PR. 617 p.

Murdiati, T.B., C.S. McSweeney, R.S.F. Campbell, and D.S. Stoltz. 1990. Prevention of hydrolysable tannin toxicity in goats fed *Clidemia hirta* by calcium hydroxide supplementation. Journal of Applied Toxicology 10(5): 325-331.

Pacific Island Ecosystems at Risk. 2002. Clidemia hirta (L.) D. Don, Melosomataceae. http://www.hear.org/pier3clhir.htm. 5 p.

Rubber Research Institute of Malaya. 1973. *Clidemia hirta* in South Johore. Planter's Bulletin 128: 140-144.

Smith, C.W. 1992. Distribution, status, phenology, rate of spread, and management of clidemia in Hawai'i. In: C.P. Stone, C.W. Smith, and J.T. Tunison, eds. Alien plant invasions in native ecosystems of Hawaii, management and research. University of Hawaii Cooperative National Park Resources Studies Unit, Honolulu, HI. p. 241-253.

State of Hawaii Department of Agriculture. 2002. Plant pest control, persisting biological control problems. http://www.hawaiiag.org/hdoa/pi_ppc_bioprob.htm. 6 p.

Stevens, W.D., C. Ulloa-U., A. Pool, and O.M. Montiel, eds. 2001. A Flora de Nicaragua. Monographs in Systematic Botany Vol. 85, No. 2. Missouri Botanical Garden Press, St. Louis, MO. p. 945-1,910.

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