

# *Thunbergia grandiflora*

Trumpet vine

Acanthaceae

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## OVERVIEW

*T. grandiflora*, native to India, is widely cultivated on Maui and is sparingly naturalized in a few places. It is a pest plant in Australia invading wet forests and coastal river ecosystems. Once established, *T. grandiflora* is extremely difficult to control due to numerous underground tuberous roots. This aggressive climber is sparingly naturalized in the wild on Maui. The public could be discouraged from planting it, especially near natural areas, and it could be controlled if detected early in natural areas.

## TAXONOMY

**Family:** Acanthaceae (Acanthus family) (Wagner et al. 1999).

**Latin name:** *Thunbergia grandiflora* Roxb. (Wagner et al. 1999).

**Synonyms:** *Flemingia grandiflora* Roxb. ex Rottler, *Pleuremidis grandiflora* (Roxb.)Raf., and *Thunbergia cordifolia* Nees (Wunderlin and Hansen 2002).

**Common names:** Trumpet vine, Bengal clock vine, Bengal trumpet vine, Bengal trumpet, skyflower vine, blue skyflower, blue trumpet vine (Wagner et al. 1999, Whistler 2000, GRIN 2003).

**Taxonomic notes:** The genus *Thunbergia* is made up of about 200 species from warm areas of central and southern Africa, Madagascar, and Asia (Wagner et al. 1999).

**Nomenclature:** The genus is named after the Swedish botanist and explorer, Carl Peter Thunberg (1743-1822) (Turner and Wasson 1997).

**Related species in Hawai'i:** Numerous *Thunbergia* species are cultivated in Hawai'i and some are naturalized. Other naturalized species include *T. alata* (black-eye Susan vine), *T. fragrans* (sweet clock vine), and *T. laurifolia* (purple allamanda). A few *Thunbergia* species are cultivated but are not yet naturalized, including *T. erecta* (king's mantle) and *T. mysorensis* (mysore clock vine).

## DESCRIPTION

"Lianas. Leaves hastate-ovate, (8-)11-22 cm long, 3-15 cm wide, margins with widely spaced triangular, acute to rounded teeth. Flowers often in pendent inflorescences, each one subtended by ovate bracts 25-40 mm long; calyx reduced to a truncate, ring-like structure; corolla blue or white, 5-7.5 cm long." (Wagner et al. 1999).

"The leaves are opposite along the stem and are choko-like; up to 15 cm long and 10 cm broad, broad-based narrowing to a pointed tip, usually with deeply scalloped lobes towards the base. The trumpet shaped flowers have a short, broad tube, white on the outside, yellowish inside, which expands to five rounded pale lavender-blue petals, one

larger than the others. The flowers are up to 8 cm long and 6-8 cm across. The seed pod is inconspicuous, cone shaped, 3-5 cm long, with a rounded base. The seed is flat, up to 1 cm long and covered with brown scales. It is catapulted several metres when the ripe pod splits. The plant develops a very tuberous root system, some tubers being as large as 70 kg. The root system when cut, persistently sprouts from its many dormant buds." (Land Protection 2001).

## **BIOLOGY & ECOLOGY**

**Cultivation:** *T. grandiflora* is often cultivated on trellises for its attractive green foliage and hanging white flowers (Whistler 2000). On Maui, *T. grandiflora* is especially popular in the Wailea area where it is planted on trellises at resorts, shopping areas, and prominent places. It is also occasionally cultivated as an ornamental screen in other residential areas of Maui.

**Invasiveness:** *T. grandiflora* has escaped from cultivation in at least Florida, Hawai'i, Australia, and Singapore (Wagner et al. 1999, APIRS 2003, PIER 2003). In Australia, *T. grandiflora* is a declared noxious weed (Weeds Australia 2003). *T. grandiflora* is an aggressive climber and is difficult to control once established due to large underground tuberous roots. In Australia, *T. grandiflora* is a major threat to native vegetation of wet forest and coastal river habitat (Land Protection 2001). The plant climbs and blankets native vegetation, killing mature trees, and impeding regeneration of seedlings (Land Protection 2001).

**Pollination:** Unknown.

**Propagation:** *T. grandiflora* is propagated from seeds, cuttings, and fragments of roots (Whistler 2000, PIER 2003). Fruit has not yet been observed on Maui.

**Dispersal:** *T. grandiflora* may be spread from dumping of garden cuttings (PIER 2003). It is transported long distances by humans who grow the plant for ornament. In Australia, Land Protection (2001), reports that seeds are catapulted several meters out of pods when they are ripe. In Hawai'i, vines seem to spread vegetatively to surrounding areas and can form rather large patches. In Australia, major dispersal modes include movement of plant parts in soil and flood waters (Land Protection 2001).

**Pests and diseases:** According to Brickell and Zuk (1997), *Thunbergia* species are susceptible to spider mites, whiteflies, and scale insects.

## **DISTRIBUTION**

**Native range:** *T. grandiflora* is native to India (Wagner et al. 1999).

**Global distribution:** *T. grandiflora* has escaped from gardens in at least Florida, Hawai'i, Australia, and Singapore (Wagner et al. 1999, APIRS 2003, PIER 2003). PIER (2003) reports that *T. grandiflora* is present on the Federated States of Micronesia (Pohnpei (cult.)), Fiji, French Polynesia (Tahiti, Tahaa), Guam, Hawai'i, Palau (Koror),

Samoa (Upolu), Australia, and Singapore. It is reported as a pest in Australia and Singapore (PIER 2003). In Australia, *T. grandiflora* infestations are "patchy and are mostly scattered along coastal streams from the Tully River to Daintree. Areas of acute infestation are the Mulgrave River, the Johnstone River and lower Mossman River." (Land Protection 2001).

**State of Hawai'i distribution:** In Hawai'i, *T. grandiflora* was first collected on O'ahu in 1937 and is now sparingly adventive along hiking trails or margins of urban areas at least on Kaua'i, O'ahu, Maui, and Hawai'i (Wagner et al. 1999, Starr et al. 2002). There are large patches of *T. grandiflora*, most likely originally from plantings, along the roadside near Hilo on the Hamakua coast, Hawai'i, as well as in Kaua'i. In these lowland moist areas, *T. grandiflora* blankets the landscape and can climb up to at least 15 m (50 ft) high in trees.

**Island of Maui distribution:** During island wide surveys on Maui, *T. grandiflora* was found being cultivated from sea level to 3,000 ft (914 m). It is extremely popular in the Wailea area where it is planted on trellises near the entrance to Wailea, at the Wailea Shopping Center, and at numerous resorts and restaurants located in the area. Other areas on Maui where *T. grandiflora* is cultivated, but to a lesser extent, include residential and urban areas of Lahaina, Wailuku, Kahului, Ha'iku, Makawao, Pukalani, and Kula, where it is observed growing on fences and in yards. It was recently documented as sparingly naturalized in the Makawao area, 1,250 ft (381 m) elevation, near Maliko Gulch, where it was spreading from plantings into un-maintained woodland borders (Starr et al. 2002). Most *T. grandiflora* plants on Maui appeared to be cultivated.

## CONTROL METHODS

**Physical control:** Only small plants can be dug out as large mature plants have extensive underground root systems and will bounce back (Land Protection 2001).

**Chemical control:** Spraying or injecting with herbicides is often the only option (Land Protection 2001). The authors have personal experience with attempts to control this aggressive vine. Store bought herbicides, such as Brush-B-Gon and Roundup have been used with foliar and cut stump methods. These attempts have not been effective and the plant has repeatedly bounced back from underground roots. Perhaps a stronger concentration may be effective.

**Biological control:** None known.

**Cultural control:** The public could be discouraged from planting *T. grandiflora*, especially near natural areas.

**Noxious weed acts:** *T. grandiflora* is a declared plant under Queensland legislation which requires landholders to control it on the land and waters under their control (Land Protection 2001).

## MANAGEMENT RECOMMENDATIONS

*T. grandiflora* is a vine that is often cultivated on trellises for its attractive hanging white or blue flowers. It is considered a pest in several areas, including Australia, where it invades remnant wet forests and coastal river habitat. Once established, *T. grandiflora* vines are extremely difficult to control. In Hawai'i, *T. grandiflora* is sparingly naturalized on at least Kaua'i, O'ahu, Maui, and Hawai'i (Wagner et al. 1999, Starr et al. 2002). On Maui, most spread appears to be vegetative and most plants appear to be cultivated at this time, with a few locations that are considered naturalized. It is uncertain whether *T. grandiflora* will become a major threat to Maui's natural areas. It could be discouraged from plantings, especially near natural areas. It could be controlled if found in or near natural areas to prevent its establishment.

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