

Tournefortia argentea

L. f.

Boraginaceae

LOCAL NAMES

English (velvet leaf soldierbush, tree heliotrope, velvet leaf); Tongan (tuhuni)

BOTANIC DESCRIPTION

Tree heliotrope is a densely branching slow growing shrub or small tree up to 10 m tall

Leaves large, simple, alternate, light green, silky, pubescent, oblanceolate to obovate, base attenuate, apex rounded to subacute, 10-22 cm x 3-8 cm; in whorls at the branch tips.

Flowers many and tiny; white to pinkish-white with corolla 3-4 mm long and 4-7 mm in diameter, arranged on long twisted stalks.

Fruit small depressed-globose, pubescent, 5-8 mm in diameter, with spongy wall; minutely apiculate, and divides into 2-4 pale nutlets turning light brown when dry and enclosing 2-4 seeds in the corky tissue.

The bark is light brown or gray and deeply corrugated.

Tree heliotrope has very strong vertical and lateral roots that anchor it even in the harshest coastal conditions.

BIOLOGY

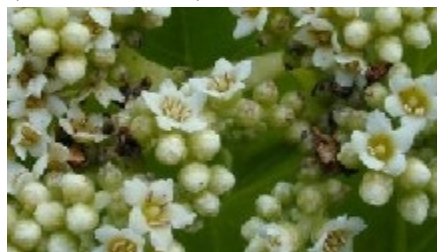
Both cuttings and air layers begin flowering within 1–2 years. Tree heliotrope generally flowers and sets fruit continuously throughout the year.



Leaves and flowers at Kure Atoll, Hawaii (Forest & Kim Starr)



Habit at Kanaha Beach Maui, Hawaii (Forest & Kim Starr)



Habit at Kure Atoll, Hawaii (Forest & Kim Starr)

ECOLOGY

Tree heliotrope grows in equatorial to subtropical maritime climates of the Indian and Pacific oceans. It only grows in these hot, salty, windswept coastal environments and is an early colonizer (pioneer plant) in these habitats, often found near to the water's edge, along the coast, often on sandy beaches either solitary or associated with strand plants. Associates in the strand include naupaka (*Scaevola taccada*), beach hibiscus (*Hibiscus tiliaceus*), milo (*Thespesia populnea*), portia tree (*Ipomoea pes caprae*), and *Vigna marina*. It can also be found on limestone slopes in association with *Pemphis acidula* and *Bikkia tetandra*.

This species is commonly found on sandy beaches and rocky coral limestone slopes where soils are very thin. These soils are typically shallow, well drained, and of low fertility (deficient in iron, nitrogen, potassium, and trace elements).

This species is tolerant of drought, full sunlight and steady and strong winds.

BIOPHYSICAL LIMITS

Altitude: 0 - 15 m

Temperature: 23 - 29°C

- Mean maximum temperature of hottest month 26 - 32°C

- Mean minimum temperature of coldest month 20 - 26°C

- Minimum temperature tolerated 18°C

Rainfall: 300 - 5000 mm

Soil type: Prefers light and medium texture soils; tolerates shallow, saline, and infertile soils. It is capable of growing near the ocean in saline conditions and infertile, sand and rocky soils. The soils are mainly lithosols and inceptisols, pH 6.1 - 7.4.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia, Kenya, Madagascar, New Caledonia, Sri Lanka, Taiwan, Province of China, Tanzania, Vietnam

Exotic: Malaysia, Singapore



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

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PRODUCTS

Food: The leaves are often eaten raw as a vegetable salad and due to its flavor, which resembles parsley. Leaves are also stuffed in cooking pigs as a spice.

Fodder: Used as pig fodder and the leaves used as fish bait.

Medicine: The leaves are widely used in traditional medicine and rituals, from curing childrens' rashes, diarrhea, and fish poisoning to medicinal teas, steam baths, and to stop bleeding, antidote against snake bites and cover bruises. The leaves are also used to cure diseases caused by the violation of sea taboos. A remedy containing root extract is taken to treat rheumatism. Other plant parts are reputedly used to treat weakness following childbirth.

Timber: The wood is used in house construction, canoe parts, and handicraft items, knife and other tool handles, frames for diving goggles, gongs, and canoe bailers.

Fuel: On some islands, the plant is endangered because of its use as a readily available fuelwood.

Apiculture: Flowering nearly continuously nearly throughout the year, tree heliotrope is a good source of bee forage. The flowers also attract numerous butterflies

Essential oils: In Kiribati, leaves used as a female deodorant. Corpses are treated with crushed leaves as a preservative and to minimize odor.

Tannin or dyestuff: In Tahiti, the leaves are used in the preparation of a red dye

SERVICES

Erosion control: The fact that this is a pioneer species in nutrient-depleted coastal environments suggests that it may play an important role in soil stabilization. Has excellent potential for shoreline stabilization and wind protection.

Ornamental: A very attractive ornamental tree in homes, beaches and other hot, sunny community gathering places due to its silky leaves with silvery sheen in the sun; curly inflorescences and fruit clusters; the umbrella canopy and grayish, deeply corrugated bark. The plant is suited for container growing as a bonsai.

Soil improver: Tree heliotrope leaves are important mulch on atoll islands. The fact that it is a pioneer species in nutrient-depleted coastal environments suggests that it may play an important role in soils stabilization.

Boundary or barrier or support: Though tree heliotrope does not tolerate extensive pruning or shearing, it has been used as an untrimmed hedge or barrier plant and is a valuable species in coastal protection and as a salt spray barrier.

Shade or shelter: Being a salt-spray tolerant species, it makes an important wind and salt spray barrier. It makes a wonderful shade tree in home gardens. The tree serves as nesting sites for some ocean birds.

TREE MANAGEMENT

Tree heliotrope seedlings grow slowly and take 12 months or longer to reach an acceptable size for outplanting - about 35 cm tall, with a woody stem 10 mm in diameter at the base.

Light fertilization with a balanced organic fertilizer is beneficial to hasten growth, but not for grown trees. The tree can be lightly pruned to maintain a desired shape, although it is recommended to leave substantial foliage when pruning.

GERMPLASM MANAGEMENT

Fresh ripe fruits should be collected from the tree. Seeds are mature when the fruit turns translucent and soft. Seed storage characteristics are unknown but can keep for a few weeks under dry and cool storage. No seed pretreatment is necessary. The seeds can be sown directly in containers 6 mm deep or pre-germinated in trays. Germination takes 2–4 weeks.

PESTS AND DISEASES

Tree heliotrope is relatively free of pests and diseases. It is, however, subject to infestation by heliotrope moth larvae (*Utetheisa pulchelloides*). Root rot is also a problem if the soil is too wet.

FURTHER READING

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SUGGESTED CITATION

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