

## Swietenia humilis

precious tropical wood

### LOCAL NAMES

English (Pacific mahogany, dry zone mahogany); Spanish (zopilote, zapaton, venadillo, gateado, cobano, coabilla, caoba del Pacifico); Trade name (precious tropical wood)

### BOTANIC DESCRIPTION

*Swietenia humilis* is a small to medium-sized deciduous tree 15-20 m tall. Bole short, often crooked, unbuttressed, from 30-50 cm in diameter and with a dark-grey or brownish-black, longitudinally fissured bark and in older specimens rough and flaking. Young branches glabrous, slender with small roundish, brown lenticels.

Leaves clustered at ends of branchlets, usually paripinnate rarely imparipinnate, sometimes with an abortive terminal leaflet, 12-30 cm long; rachis glabrous, pulvinus swollen. Leaflets opposite or sub-opposite, sessile or sub-sessile, 2-7 pairs, usually ovate to elliptic-ovate sometimes ovate-lanceolate, apex caudate or long acuminate, extended into a slender filiform thread, base rounded or acute, slightly asymmetric chartaceous, waxy, 4.5-14 cm long, 1.75-4.5 cm broad, upper and lower surfaces glabrous. Venation reticulate, secondary venation raised and prominent on both surfaces.

Flowers unisexual, but the male and female flowers are very similar. Inflorescence usually axillary sometimes sub-terminal, 4-18 cm long, erect or spreading, much shorter than leaves, terminal thyrses often densely clustered, glabrous. Calyx 5-lobed, lobes obtuse, deltate to sub-orbicular, 0.5-1 mm long, margin ciliolate. Numerous small nectaries are found on the petiole, rachis, petiolules and both surfaces of all leaflets of the pinnate compound leaves. They are circular to elongate with a smooth secretory surface. Petals 5, free, slightly contorted in bud, 5.5-7.5 mm long, 2.5-3 mm broad, lingulate to obovate, glabrous, margin ciliolate. Staminal tube cylindrical or urceolate, slightly constricted at throat, 3-5.5 mm long, terminated by 10 short acuminate or narrowly deltate appendages, glabrous inside and out; anthers or antherodes 10, sessile contained within mouth of tube.

Ovary 4-5 locular with 10-16 ovules, style very short and glandular, 1-1.5 mm long with a discoid style-head. Pistillode in male flower more slender, narrowly cylindrical with well-developed loculi but rudimentary ovules. Style 2-3 mm long, with a thin head.

Fruit an erect capsule, ovoid, sometimes elongate-ovoid with a short umbo, pale greyish brown, smooth or indistinctly pitted, 8-20 cm long, 10-12 cm in diameter, 4-5 valved, outer valves very woody, 5-7 mm thick, inner valves much thinner, mottled pale brown and white. Seeds pale straw-brown, 6-9 cm long including wing. The specific epithet 'humilis' literally describes its low height in comparison to other mahogany species. *S. humilis* is listed as an endangered species in need of conservation in Appendix II of CITES.

### BIOLOGY

*S. humilis* hybridizes with *S. macrophylla* and *S. mahagoni*. Hybridization has been confirmed by cytological studies. The flowers are unisexual. All the hybrids show intermediate characters. Flowering occurs in April and May and the fruits take almost a year to mature.

Zucc.

Meliaceae



Tree: Medium-sized specimen of *S. humilis*, 15 m in height, growing in degraded seasonally dry tropical forest (Comayagua Valley, central Honduras). (Colin Hughes)



Tree: Medium-sized (20 m) specimen of *S. humilis*, kept and protected for timber production after forest clearance for agriculture (San Jose La Arada, Chiquimula, south-east Guatemala). (Colin Hughes)



Seed capsule: Ripe fruit (capsule) of *S. humilis* just starting to dehisce. Up to 15 cm long. (Colin Hughes)

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### ECOLOGY

*S. humilis* is fairly common in tropical dry deciduous forest and savanna, in rough scrub, on rocky hillsides and in cultivated fields from 0-1 200 m altitude.

### BIOPHYSICAL LIMITS

Altitude: 0-1 200 m

### DOCUMENTED SPECIES DISTRIBUTION

Native: Costa Rica, El Salvador, Guatemala, Mexico

Exotic: Haiti



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**

Apiculture: The faintly fragrant flowers are visited by bees.

Timber: The heavy timber is used in local carpentry.

Gum or resin: A colourless gum exudes from the branches and trunk of the dry zone mahogany.

Poison: The bark and seeds possess a stringent alkaloid, reputed to be very poisonous. The extracts significantly inhibited the growth and feeding of third instar larvae of *Tenebrio molitor*.

Medicine: The seeds of *S. humilis* are used in traditional medicine to treat chest pains, coughs, cancer and amoebiasis, and for their anthelmintic properties. The tetranortriterpenoids humilinolide A from the *S. humilis* seeds induces smooth muscle (ileal and uterine) contraction.

Other products: The tetranortriterpenoids, humilinolides A-D are obtained from *S. humilis*.

### **SERVICES**

Erosion control: The tree can be planted along valleys to prevent soil erosion.

Shade or shelter: Zopilote is a good shade provider.

Reclamation: Dry zone mahogany is a suitable candidate for dryland forestation programmes.

Soil improver: Leaf litter from *S. humilis* enhances soil fertility.

Ornamental: The tree is aesthetically enhancing.

Intercropping: Can be planted in farm systems or plantations as an agroforestry tree. Allelopathic effects are noted for humilinolide A and C (from the seeds), they significantly inhibited radicle elongation in *Amaranthus hypochondriacus* and *Echinochloa crus-galli*.

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### **TREE MANAGEMENT**

Planting in the rains is favourable for *S. humilis* and initial survival of *S. humilis*, is higher under shade.

### **GERMPLASM MANAGEMENT**

Seeds storage is orthodox, *S. humilis* seeds are predicted to survive well for 266 years under optimal storage conditions.

### **PESTS AND DISEASES**

The species is attacked by a parasitic moth from the genus *Hypsipyla*, whose larvae bore up through the leading shoots of saplings causing their death or subsequent low branching of the mature tree.

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### **FURTHER READING**

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Perusquia M et al. 1997. Contractile response induced by a limonoid (humilinolide A) on spontaneous activity of isolated smooth muscle. *Phytotherapy Research*. 11(5): 354-357.

Segura-Correa R. et al. New tetranortriterpenoids from *Swietenia humilis*. *Journal of Natural Products*. 56(9): 1567-1574.

### **SUGGESTED CITATION**

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