

# Mangrove

*Rhizophora mangle* L

Mangrove family (Rhizophoraceae)

Post-Cook introduction

This species, naturalized on protected muddy seashores, is easily recognized by the mass of peculiar branching curved and arching stilt roots that enable the trees to spread in shallow salt and brackish water and form dense, impenetrable thickets at tide level. Each fruit supports an attached odd cigarlike seedling that elongates hanging down.

Small evergreen tree to 33 ft (10 m) high and 8 inches (0.2 m) in trunk diameter, reported to reach a height of 75 ft (23 m) elsewhere. Bark gray or gray brown, smooth and thin on small trunks, becoming furrowed and thick on larger ones. Inner bark reddish or pinkish, with slightly bitter and salty taste. Twigs stout, gray or brown, hairless, ending in conspicuous narrow pointed green bud 1–2 inches (2.5–5 cm) long, covered with 2 green scales (stipules) around pair of developing leaves and making ring scar around twig when shedding.

Leaves opposite, crowded at end of twig, hairless, with slightly flattened leafstalks of  $\frac{1}{2}$ – $\frac{7}{8}$  inch (13–22 mm). Blades elliptical,  $2\frac{1}{2}$ –4 inches (6–10 cm) long, blunt-pointed at apex and short-pointed at base, slightly rolled under at edges, slightly leathery and fleshy with side veins not visible, shiny green above, yellow green beneath.

Flowers usually 2–4 together at leaf base on forked green stalk altogether  $1\frac{1}{2}$ –3 inches (4–7.5 cm) long, slightly fragrant, pale yellow, about  $\frac{3}{4}$  inch (2 cm) across. The bell-shaped pale yellow base (hypanthium) less than  $\frac{1}{4}$  inch (6 mm) long bears four widely spreading narrow pale yellow sepals almost  $\frac{1}{2}$  inch (13 mm) long, leathery and persistent; four narrow petals  $\frac{3}{8}$  inch (10 mm) long, curved downward, whitish but turning brown, white woolly or cottony on inner side; eight stamens; and pistil of two-celled ovary mostly inferior but conical at apex, with two ovules in each cell, slender style, and two-lobed stigma.

Fruits dark brown, conical, about  $1\frac{1}{4}$  inches (3 cm) long and  $\frac{1}{2}$  inch (13 mm) in diameter, with enlarged curved sepals, remaining attached. The single seed germinates inside fruit, forming long narrow first root (radicle) green except for brown enlarged and pointed end, to  $\frac{1}{2}$  inch (13 mm) in diameter. When about 8–12 inches (20–30 cm) long, the heavy seedling falls into the mud or water. It may be carried by water and ocean currents before becoming firmly rooted. Flowering and fruiting continue through the year.

The sapwood is light brown, heartwood reddish brown or dark brown. The wood is hard, very heavy (sp. gr. 0.9–1.2), durable in the soil but susceptible to attack by dry-wood termites.

Elsewhere, it is used as roundwood for posts and poles and is excellent for fuel and charcoal. Wood in larger sizes has been employed also for marine piling and wharves, shipbuilding, and in cabinetwork. The bark is important commercially in tanning leather, and the leaves are rich in tannin also. A dye and medicines have been obtained from the bark. Fishermen in Puerto Rico preserve their lines with an extract from the roots.

Mangrove forests on depositing shores aid in extending the shoreline, holding the black mud in place and gradually advancing on the side toward the ocean. Where native, this species with its stilt roots growing in shallow water extends farther seaward than mangroves of a few other plant families.

Planted and naturalized in salt marshes of Kauai, Oahu, Molokai, Lanai, and Hawaii. Trees can be seen from the bridge at Heeia, as well as the shoreline reefs of Kaneohe Bay and Leeward Molokai.

## **Champion**

Height 61 ft (18.6 m), c.b.h. 3.7 ft (1.1 m), spread 23 ft (7.0 m). Kohana-iki, Kailua-Kona, Hawaii (1968).

## **Range**

Widely distributed on silt shores of Atlantic Coast of tropical America from Florida, Bermuda, and Bahamas through West Indies and from northeastern Mexico to Brazil. The same or closely related species also on Pacific Coast from northwestern Mexico to Peru, on coasts of western Africa, and in Melanesia and Polynesia.

## **Other common names**

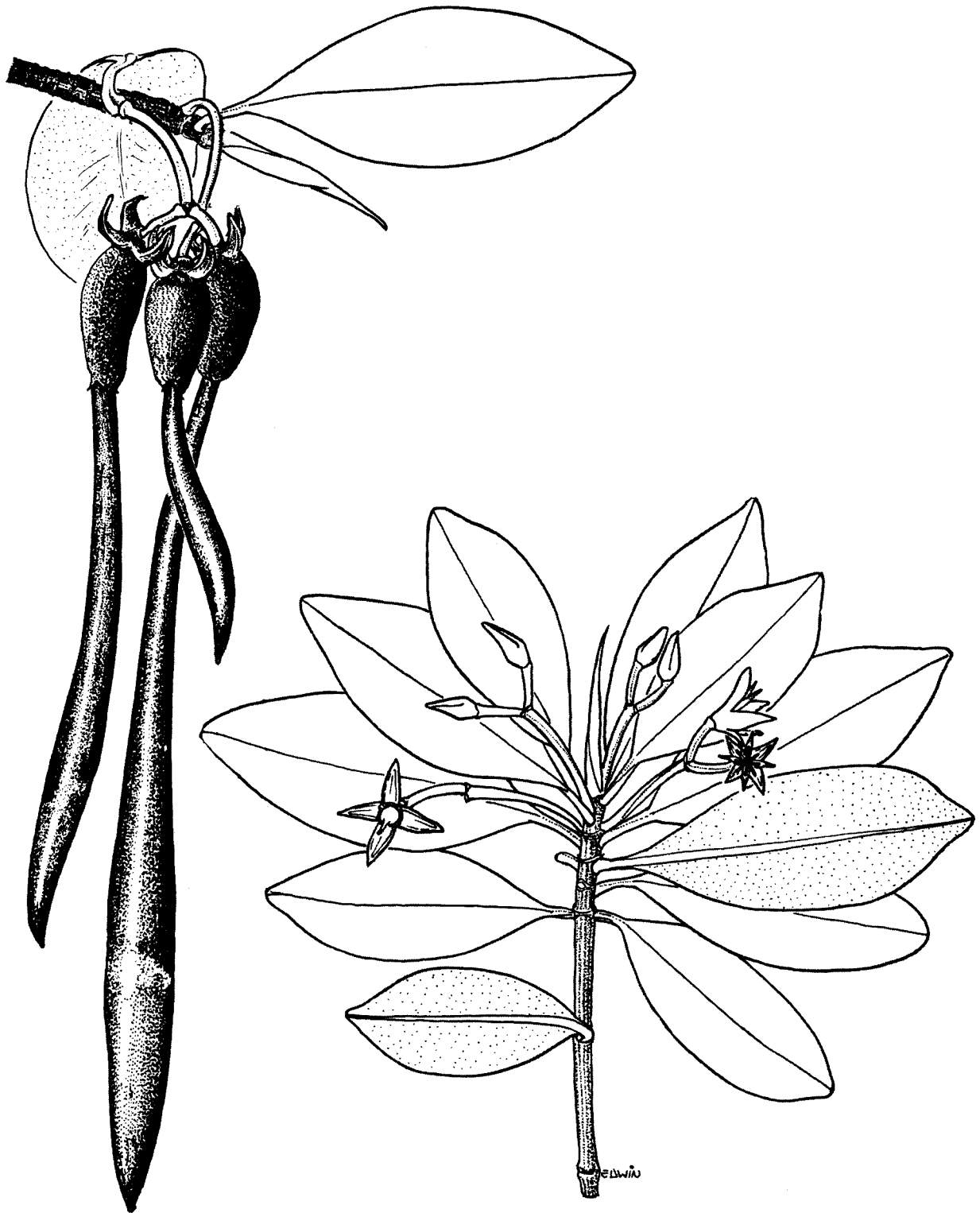
red mangrove, common mangrove, American mangrove; mangle, mangle colorado (Puerto Rico, Spanish)

## **Botanical synonyms**

*Rhizophora mangle* var. *samoensis* Hochr., *R. samoensis* (Hochr.) Salvoza

Where necessary to distinguish other unrelated mangroves of seashores, this species is known as red mangrove.

Red mangrove was first introduced to Hawaii in 1902, according to Degener (1933-1986), to hold the soil in the mudflats of southwest Molokai. It has become thoroughly naturalized there. Twenty years later, this and other mangroves were planted in salt marshes of Oahu. Classed also as a weed, often spreading into fish ponds, where eradication is difficult (Hasselwood and Motter 1966).



**Mangrove**

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Fruiting twig (left), flowering twig (right),  $\frac{2}{3}$  X (P.R. v. 1).