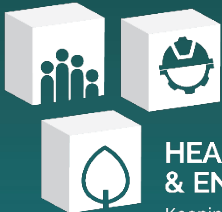


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**HEALTH, SAFETY  
& ENVIRONMENT**  
Keeping KAUST Safe

Teacher's Factsheet:  
**The Magnificent Mangrove**



## Grey mangrove (*Avicennia marina*)

- Occurs in intertidal zones on a range of soft muds to sandy soils.
- It is common along the tidal margins of estuaries.
- Commonly colonizes developing mud banks.
- Trees have a large trunk covered by light grey, finely fissured bark that supports a spreading leafy crown.
- Leaves measure up to 8 cm in length and 5 cm in width, they are oval, pointed and arranged opposite one another on the stems.
- The leaves are glossy green above with a distinctive pale and slightly hairy, grey underside.
- Stomata (pores) and salt glands are scattered over the entire leaf surface but are more abundant on the underside.
- Flowers are small and yellow, and appear in clusters.
- A distinguishing feature of this species is the numerous spongy pencil-like pneumatophores (aerial roots) that spread out from the base of the trunk.
- Pneumatophores originate from horizontal, underground lateral roots and grow vertically through the soil surface to enable the mangrove roots to breathe.
- The peg-like roots of the grey mangrove can form a dense covering over the ground.
- Flowering occurs in mid to late summer.
- The pale green, flattened fruits (3 cm long and 2 cm wide) consist of a thin, hairy seed coat and enclose two closely folded seed leaves.
- The seeds germinate while attached to the tree (vivipary), which allows for quick establishment once the seed settles.
- As a pioneer species, grey mangrove is very tolerant of extreme saline conditions as it actively resists the uptake of salt at the roots.
- Can withstand short periods of inundation by freshwater or hyper saline water (salinity exceeding that of seawater).
- Stabilize river banks and channels, provide areas for spat settlement in oyster culture
- Act as a source of pollen for beekeepers, and provide suitable habitats for water birds and juveniles of important recreational and commercial fish species.
- Increase the amenity value of our waterways by screening development and buffering storm surges and wind.



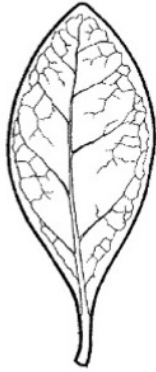
## Red mangroves (*Rhizophora mangle*)

- Has distinctive prop roots which support the main trunk and assist with gas exchange.
- Forms extensive, often pure stands around the shores of shallow protected bays, estuaries and inlets.
- Prefers soft, well drained muddy soils. It also establishes on rock or coral-based sandy soils and is a dominant species of lower tidal mangrove forests.
- Is commonly seen along the lower tidal reaches and immediately behind the seaward fringe of mangroves, sometimes with grey mangroves.
- The main trunk is erect and covered by rough, reddish-brown bark.
- Stout, large arching prop roots are characteristic of the species, which support the main trunk and contain numerous lenticels (air pores) on their surfaces.
- The lenticels are air-filled spaces that connect with underground root structures.
- Aerial roots growing from the tree's limbs also help the plant breathe. These do not take root even after reaching the soil and are produced by lower branches.
- Leaves are oval-shaped, thick and leathery, and may reach 15 cm in length and 6 cm in width.
- They are dark green with numerous small, reddish-brown dots on the lower surface and a small deciduous pointed tip.
- Small, creamy-white flowers occur in branching pairs while the leaves are arranged in opposite pairs on the stem.
- Flowering occurs in winter, with the production of a single-seeded, brown, oval-shaped fleshy fruit during summer.
- Seeds germinate on the tree (vivipary), which results in the appearance of a long, green, rounded propagule (seedling) about 30 cm long before dropping from the tree.
- The propagule protrudes through the wall of the fruit to hang vertically beneath it. This buoyant germinated seed is the first stage of the root system.
- Eliminate salt at their roots as water is taken up.
- Excess salt that finds its way into the plant is stored in the leaves, and removed from the plant when the leaves die and fall from the tree.
- Red mangroves provide essential habitat for wildlife and marine species, such as fish, birds, insects and mud crabs.

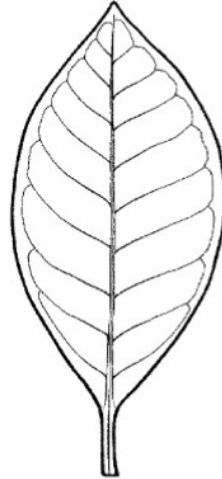




## Comparing Grey vs Red Mangroves (Leaf)

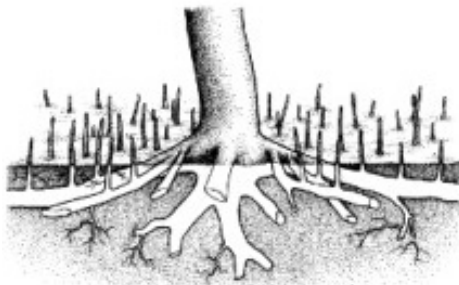


*Avicennia marina*

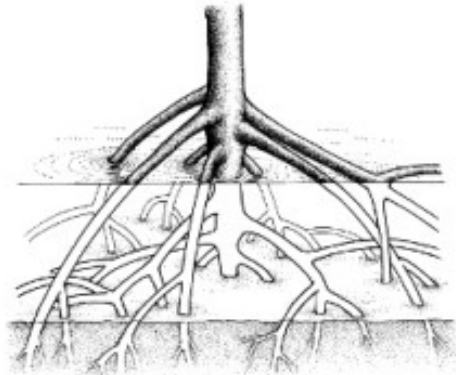


Rhizophoraceae

## Comparing Grey vs Red Mangroves (Roots)

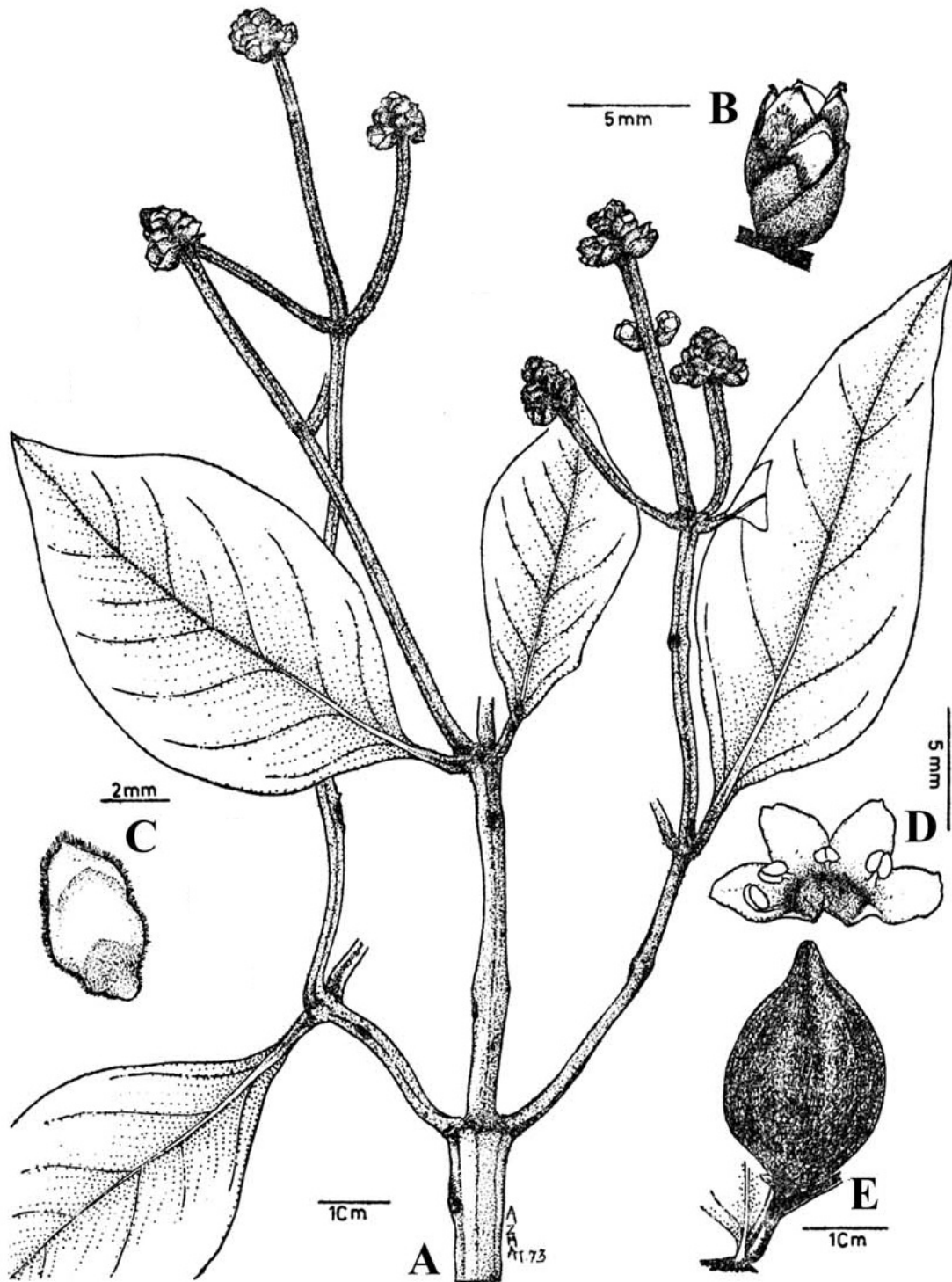


AVICENNIA



RHIZOPHORA

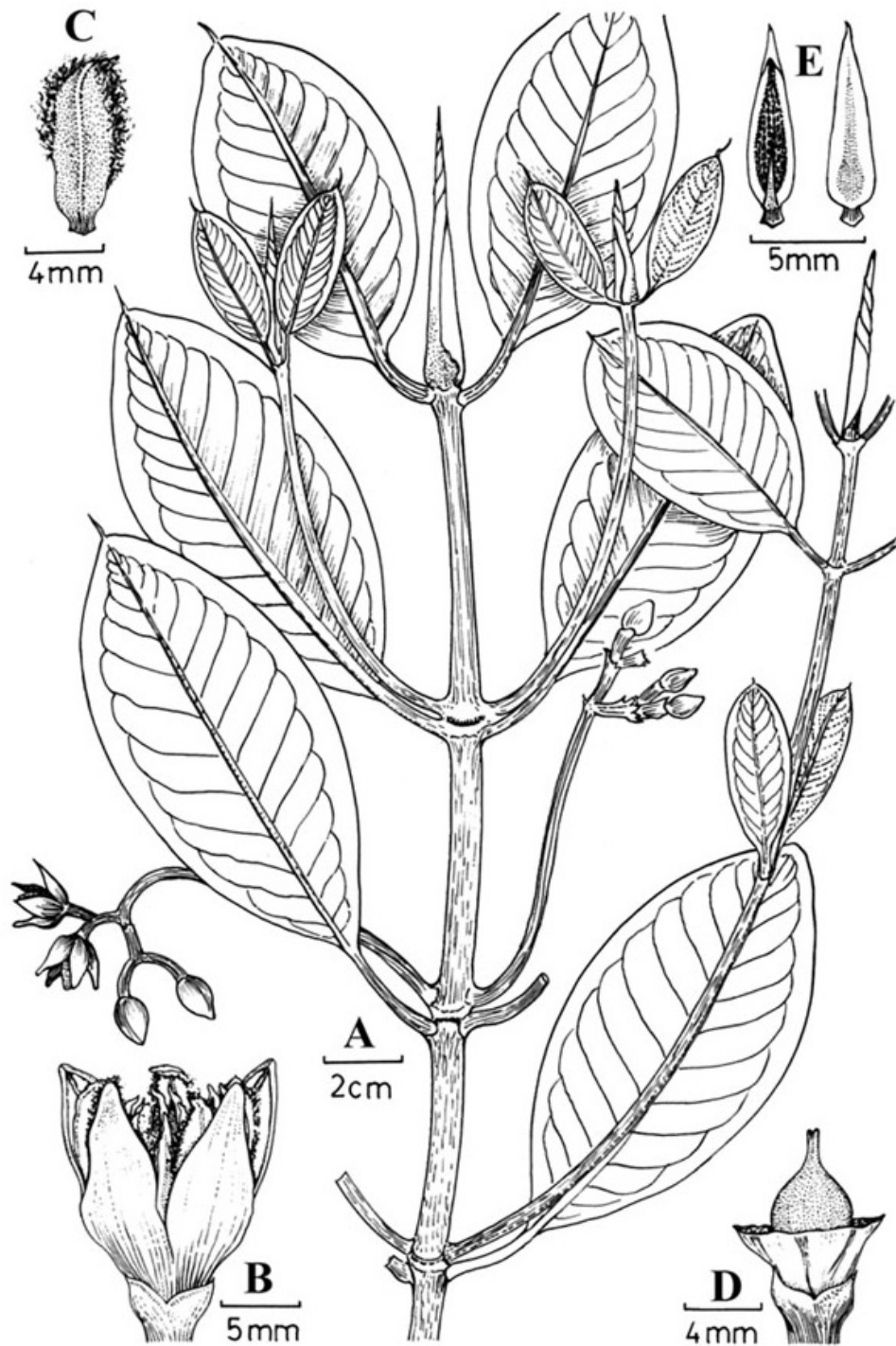
*Grey mangrove (Avicennia marina)*



A) Flowering Shoot  
B) Flower  
C) Sepal

D) Petals with Stamens  
E) Fruit

## Red mangrove (*Rhizophora mangle*)



A) Flowering Branch  
B) Flower  
C) Petal

D) Ovary  
E) Stamen