**Avicennia germinans** (L.) L.  

*Avicennia africana, Avicennia elliptica, Avicennia floridana, Avicennia nitida,*  
*Avicennia oblongifolia, Avicennia officinalis var. nitida, Avicennia tomentosa, Bontia germinans, Hilairanthus nitidus*)

**Black Mangrove**

**Other Common Names:** Mangle, Mangle Negro.

**Family:** Acanthaceae, sometimes alternatively placed in Verbenaceae or with a more narrow interpretation of the families Acanthaceae or Verbenaceae it is classified in its own family the Avicenniaceae S.F.L. Endlicher.

**Cold Hardiness:** Hardest of the taxa collectively termed Mangroves, useful in warmer USDA zones 9b(9a) to 13.

**Foliage:** Evergreen, simple, opposite, thick, leathery leaves are oblong to elliptic in outline; the margins of the 1½” to 3½” long leaves are entire; venation is pinnate, leaves are medium to dark glossy green above with yellow midrib and the margins have a yellowish hallow, underneath they have silvery white pubescence; upper surfaces sometimes with extruded salt crystals; petioles are short, ¼” to ½”(¼”) in length, and yellow-green to green in color.

**Flower:** Moderately showy mildly fragrant perfect hypogynous ½” diameter individual flowers are borne in 3” or 4” diameter terminal cymose clusters; the corollas are fused into a cylinder at the base, but then splay into four elliptic to obovate individual white lobes; the corolla is subtended by five small sepals; the throat of the corollas is flushed yellow; flowers appear whenever temperatures permit, which is primarily from summer to early fall in our region.

**Fruit:** Green elongated flattened teardrop shaped single seeded green capsules with an acuminate tip mature to a dark brown color and reach about 1” in length; when the seed cracks naturally, the cotyledons and a short stem are usually already formed on the fuzzy lima bean-shaped seed which often germinates viviparously facilitating rapid establishment.

**Stem / Bark:** Stems — twigs are green with white pubescence becoming brown at maturity with darker blackish or purplish blush at the nodes, eventually taking on a gray-brown color; aerial rootlets may develop on larger branches; Buds — laterals small and nearly encased in the axis of the petiole and twig; Bark — smooth gray initially, later scaly and gray, then finally shallowly ridged and furrowed with narrow darker gray or blackish ridges and broader lighter brown furrows.

**Habit:** This species has a very larger natural range and varies from shrubs a few feet tall to 40’ or 50’ tall trees depending upon the location; in our region, cold temperatures tend to restrain the growth size to that of shrubs or perhaps small trees, 3’ to 8’ (10’) tall, with an equal or greater spread; numerous slender spike-like vertical pneumatophores reaching to a level slightly above the typical high tide line develop from the roots surrounding the plants and are a good identification feature.

**Cultural Requirements:** Although more cold tolerant than many tropical Mangrove taxa, *A. germinans* culture is still limited principally by cold exposure in our region; it is very heat tolerant, but requires moisture and will tolerate poorly drained soil and standing water; although extremely tolerant of exposure to both aerial and soil salinity exposure, *A. germinans* will also grow with fresh water; shelter from cold winter winds and removal of cold damaged tissues will help keep the plants presentable; it tolerates neutral to alkaline soils.

**Pathological Problems:** Physiological parameters rather than pathological issues are the limiting factors for *A. germinans*; few serious disease or pest problems are encountered.

**Ornamental Assets:** Plants form dense glossy canopies of dark green foliage, interesting pneumatophores, attractive creamy white fragrant flowers, and tolerate direct exposure to seawater.

**Limitations & Liabilities:** The primary limitation to the growth of Black Mangrove in our region is winter cold; temperatures much below freezing will cause dieback or death depending upon the severity and duration of the cold event.

**Landscape Utilization:** Where cold tolerant, *A. germinans* makes a handsome bank stabilizer and is outstanding screen for use in brackish or saline soils, particularly those which flood; it also makes a good component for educational gardens as a container specimen that can be used in seasonal water features for education about coastal ecology and then protected from cold in a greenhouse or indoors in winter; the flowers make the plant an excellent source of honey.

**Other Comments:** These functionally, if not botanically, related Mangrove taxa are incredibly important ecologically and economically in relationship to coastline preservation and protection from shoreline erosion and storm damage; they also serve invaluably as estuary habitat for the sport and commercial fishing.
industries; the genus name honors the 2nd century physician and philosopher named Ibn Sina; the specific epithet refers to the viviparous nature of the seeds.

**Native Habitat**: Black Mangrove is the only species of the taxa collectively known as Mangroves which is thought to historically be native to Texas where it is found mostly along the more southern portions of the coast; however it appears to be naturally expanding its range northward along the coast following a series of mild winters; it is also native to Florida, most warmer coastal areas of the Central America, the Caribbean, South America, and West Africa.

**Related Taxa**: In recent years Red Mangrove and White Mangrove have been reported to be moving north from their traditionally native ranges and establishing in warmer portions of the Texas coast; no cultivars are reported of any of the Mangroves; in nature where it grows in conjunction with *Rhizophora mangle*, *A. germinans* is usually found more inland behind the Red Mangrove in the tidal flats.

**Laguncularia racemosa** (L.) K.F. von Gaertner  
(Conocarpus racemosus, Laguncularia glabriflora,  
Rhizaeris alba, Schousboea commutata, Laguncularia obovata)

- *Laguncularia racemosa* is also known as White Buttonwood; although a member of the family Combretaceae, and closely related to the Tropical Buttonwood or Button Mangrove, *Conocarpus erectus* L., this species is treated here along with the other taxa called Mangroves due to their similar habitats and uses in coastal landscapes; in warmer climates *L. racemosa* forms multi-trunked colonies of small to medium size, 30’ to 40’ tall, evergreen trees on the landward side of *A. germinans* and *R. mangle*; in our region plants tend to only be short shrubs kept in check by periodic cold snaps; the oval to elliptic leaves are smaller, 2” to 3” long, than those of *R. mangle* and have two prominent salt glands on the petiole just below the blade; tips are rounded to occasionally emarginate; the strongly erect trunks have vertical ridges in the bark; a massive root system is present relative to the above ground portions of the plants; short blunt pneumatophores may also be present, but the pneumatophores are very much shorter, stouter, more blunted, and less noticeable than those on *A. germinans*.

- White Mangrove is native to Florida and coastal Mexico, as well as much of the Caribbean, Central America, and South America where it is found primarily in proximity to the coast; White Mangrove has recently been reported to have at least one adventive natural population in extreme South Texas following a recent hurricane, but is usually restricted to areas with little or no frost, USDA zones 10 to 13; White Mangrove is the least cold hardy of three Mangroves discussed here.

- Tiny, white, fragrant, urn-shaped or elongated narrow cup-shaped flowers are found in spike-like racemes arising from the leaf axils; flowering occurs year-round in the tropics, but is mostly in summer to late fall when plants survive long enough to do so in our region; from an ornamental perspective, this species is probably the least aesthetically interesting of the three Mangroves discussed herein, perhaps being useful as a screening shrub, background, or windbreak plant where fully cold hardy; the genus name derives from the Latin word laguncula for a small bottle, probably in reference to the flower shape; the specific epithet refers to the racemose inflorescences.

**Rhizophora mangle** L.  
(Rhizophora americana)

- *Rhizophora mangle* is also known as American Mangrove, Mangle, Mangle Colorado, Mangrove Rojo, or simply Mangrove; although a member of its own family Rhizophoraceae C.H. Persoon (a conserved name), it is treated here due to its similar uses and habitats as the other taxa known collectively as Mangroves; Red Mangroves are small spreading trees, 20’ to 30’ tall in tropical areas, much smaller due to cold dieback in our region, with single or more commonly multiple trunks supported by large prop roots; the opposite, simple, evergreen leaves are thick and leathery, elliptic to oblong in shape with entire margins, and acute to nearly rounded tips and bases; upper surfaces are medium to dark green, with a paler green beneath; foliage is more clustered on the periphery of the canopy and the leaves are typically larger, 2” to 6” long, than with *A. germinans* and *L. racemosa*; this lends the tree an overall coarser texture than with *L. racemosa* or *A. germinans*; the small loose pendent axillary clusters of flowers are much less noticeable than with *A. germinans*, consisting of a 1” diameter four petaled corona that is pale yellow surrounding a small creamy white four–parted corolla.

- A characteristic complex matrix of downward angled thickened aerial prop roots support the main trunks of *R. mangle* making it incredibly stable in the coastal mud and sand permitting it to withstand hurricanes, storm
surges and severe wind and waves; this trait has made Red Mangrove a protected species in many coastal locations where it is critical to habitat preservation; the matrix of roots also assists in soil building extending the coastal barriers further into the ocean protecting inland plants, animals, people and structures; this matrix of prop roots and the viviparous seeds with spear-like roots that stab into the soil or float away to form new colonies are excellent identification features; the seeds often have developed to the stage of small plantlets before they detach from the trees.

• In addition to naturalization and preservation along the coasts and brackish tidal marshes, *R. mangle* is useful for bank stabilization, as a conversation piece, barrier plant along waterways, windbreak, storm surge protector, and in educational gardens as a conservation education tool; the aerial roots supporting the trunks of *R. mangle* are the source of the genus name meaning bearing roots and the specific epithet is probably a Latinized form of the word mangue meaning mangrove.

• Red Mangrove is native to Florida, coastal Mexico, the Caribbean, Central America, South America, and West Africa as well as being naturalized along many other coasts pantropically; several populations have been reported to be naturalizing along the warmer portions of the South Texas coast as seeds are moved north, however it is very sensitive to cold damage, being hardy only in USDA zones 10(9b) to 13; freezing temperatures for more than brief periods can cause severe damage.

References: Black and Gilman, 2004; Haehle and Brookwell, 1999; Lehman et al., 2005; Richardson, 1995; Turner et al., 2003.