



Figure 1. *Guazuma ulmifolia* tree.

This tree species grows to a height of 15 m; leaves are lanceolate, margin serrulate with apex acuminate or acute. Flowers are yellow with five petals arranged in cyme inflorescence and maximum flowering occurs during August and September. Fruit is a capsule sub-globose, woody and indehiscent³. Germination is epigeal and begins in about eight days. The seeds secrete a gelatinous coating that inhibits germination. It has been observed that without

treatment only 5% germination is obtained. The best treatment procedure is to immerse the seed in boiling water for 30 s which results in 87% germination. Scarification and acid treatment were also found to be effective⁶.

Chennai is one of the Indian metropolitan cities facing a high degree of urbanization leading to shrinkage of open lands. In Chennai city, *G. ulmifolia* trees are found planted as avenue trees along roadsides. This species is spreading to all

parts of the city along the sewage channels and open spaces. Although natural regeneration is slow, surprisingly the plant population is increasing in the city as climatic factors seem to be favourable for its growth. In future, the Chennai city vegetation may be dominated by this species.

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Mangrove forest cover of Visakhapatnam coast is under threat

Mangroves, the only woody halophytes growing at the confluence of land and sea, have been extensively used traditionally for food, timber, fuel and medicine¹. They presently occupy about 4445 sq. km of area along the coastline, which accounts for 5% of the world's mangrove vegetation². Mangroves are valuable ecological and economic resources as they are important nursery grounds and breeding sites for birds, fish, crustaceans, shellfish, reptiles and mammals³; a renewable source of wood⁴; accumulation sites for sediment, contaminants, carbon and nutrients⁵; and offer protection against coastal erosion⁶ and tsunami⁷. Mangroves have been particularly vulnerable to exploitation because they contain valuable wood and fisheries resources, and occupy coastal

land that is easily converted to other uses. The scale of human impact on mangroves has increased dramatically over the past three decades, with many countries showing losses of 60–80% or more of the mangrove forest cover⁸ that existed in the 1960s but most data show variable loss rates and there is considerable margin of error in most estimates. The destruction of mangroves is usually proportional to human population density. Major reasons for destruction are urban development, aquaculture, mining, agriculture and overexploitation for timber, fish, crustaceans and shellfish^{9–11}. The remaining mangrove forests are under immense pressure from clear cutting, encroachment, hydrological alterations, chemical spills, storms and climate change disaster¹².

The topic of our discussion is a small patch of mangrove forest near the Meghadrigedda creek of Visakhapatnam coast of Andhra Pradesh. There is no mention of these mangroves in the Forest Survey of India report, which has been carrying out regular mapping and monitoring of the forest resources of India every two years¹³. Venkanna *et al.*¹⁴ and Venkateswarlu *et al.*¹⁵ reported the occurrence of mangroves and their associates in Meghadrigedda creek but these studies do not give a detailed floristic account of mangroves and their habitats.

The creek located in Visakhapatnam (17°42'30"–17°43'11"N and 83°14'45"–83°15'50"E) on the east coast is flushed by the seasonal Meghadrigedda stream. The Meghadrigedda reservoir is the main water supply reservoir to Visakhapat-



Figure 1. The axed mangroves of Meghadrigedda creek.

nam, the stream travels a long distance and joins the sea at Visakhapatnam Port Inner Harbour. Various industrial effluents join the stream and are ultimately discharged into the inner harbour waters. The approximate extent of mangrove habitat is 55 ha which comes under Visakhapatnam Port Trust area, extending up to the Visakhapatnam Airport. *Avicennia marina* (Forssk.) Vierh. and *Excoecaria agallocha* L. are dominant tree species found along the creek whereas *Acanthus ilicifolius* L. is distributed sparsely among the mangroves. Mangrove associates, namely *Aeluropus lagopoides* (L.) Trin. ex Twh., *Cressa cretica* L., *Heliotropium curassavicum* L., *Sarcobolus carinatus* Wall., *Sesuvium portulacastrum* (L.) L., *Suaeda maritima* (L.) Dumart and *S. nudiflora* (Wild.) Moq., were also recorded from the area. Nine true mangrove species with five mangrove associates were reported from the study area¹⁶. The mangrove cover is eroding fast due to dredging activities by the Port Authority. About 50% of mangroves of the area has been depleted in

recent times (Figure 1). The dredging of the stream started in 2006 to protect the airports from flooding¹⁷. Conservation of the remaining mangrove cover of this area is the need of the hour. The state forest department should take immediate action to protect the mangroves. Use of geospatial technology could provide valuable and spatially explicit information about the present status and degradation of mangrove cover in the study area. The areas where mangroves have already been cleared should be put into reforestation activities. Further decline of mangrove cover must be protected before it is too late.

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