

Response of mangrove trees to increased siltation: A focus on wood anatomy and physiognomy

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Sediment accumulation in mangroves is a natural process facilitated by the complex root structure of the trees. Mangrove forests therefore function as land builders by accumulating between 1 and 8mm sediment annually. However, excessive sediment accumulation in mangrove areas may lead to seedling mortality, mature tree die back or even death of an entire stand. Sediment accumulation would be aggravated by climate change as weather conditions are becoming more and more erratic. Extreme downpours have become frequent as a result of additional heating of the earth. These heavy rains may ultimately lead to a higher sediment load in the mangrove areas of up to 10cm deposited during a single event. The mechanism behind survival or death of trees after sediment burial has not been documented.

In this study we evaluated the response of the three most common mangrove tree species (*Rhizophora mucronata*, *Ceriops tagal* and *Avicennia marina*) along the Kenyan coast to sediment burial. In addition, we attempted to determine the tolerance threshold of mangroves to sediment burial. We hypothesise that increased sediment accumulation results in more hypoxic conditions making it energy expensive for water uptake in the saline mangrove environment. We analysed the change in hydraulic architecture and physiognomy of trees exposed to three different levels (15cm, 30cm and 45cm) of artificial sediment burial after a period of one year. Xylem vessel characteristics and root development were used, to assess the adaptation capacity of the different tree species to the sediment burial.

Biography

Judith is a fourth year Ph.D. student at the Vrije Universiteit Brussels (VUB) in Belgium studying mangrove wood formation as a basis of sustainable wood production. She completed her master degree in Ecological Marine Management at the same university five years ago. In her home country, Kenya, Judith is a research scientist at the Kenya Marine and Fisheries Research Institute (KMFRI). She has also worked in other institutions including Non-Governmental Organisations in various capacities including; project co-ordination, extension services etc. Judith has published three articles including one in a peer review journal.

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