Suggested citation of this Section: Adams, J. 2014. Mangroves.(eds). Ugu Lwethu – Our Coast. A profile of coastal KwaZulu-Natal. KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, Cedara, 40-41.

# 3.5 Mangroves

**Mangroves occur on the eastern coastline of South Africa, from East London (Nahoon Estuary) to Kosi Bay, between mean sea level and mean highwater springtide level. They are inundated during high tide and exposed during low tide.**

These unique trees have special adaptations to cope with the harsh tidal and saline environment. They have pneumatophores (aerial) roots that allow them to survive in sediments that are poorly drained, saline, anoxic and rich in organic matter.

The South African populations represent the southernmost distribution of mangroves in Africa, and one of the highest latitudes for this group in the world. The white mangrove is the most widespread species, followed by the black mangrove and then the red mangrove. Tonga mangrove, Indian mangrove and cannonball mangrove only occur in the Kosi Estuary.

Mangrove with pneumatophore roots.

Photo: Fiona MacKay

In South Africa, mangroves grow exclusively in the sheltered estuarine environment, occurring in 38 estuaries, 11 of which are in KZN. They occur in both permanently open estuaries as well as temporarily open/closed systems (see *Section 3.3*). However, longer periods of mouth closure (>56 % of the year) have a negative effect on the trees, as they are sensitive to prolonged inundation caused by higher water levels. The black mangrove is more tolerant of basal inundation than the other species, occurring in estuaries that are more frequently closed to the sea.

## About mangroves

Mangrove forests in South Africa are generally small. In the past the majority of South African mangrove forests were between 0.5 and 10 ha,[1] but there have been a few very large forests, including Mhlathuze (652 ha), St Lucia (571 ha), Mlalazi (129 ha) and Durban Bay (200 ha) in KZN, with a reported total mangrove area of 1 058 ha for South Africa in 1982. In 2005, mangrove forest cover showed an

increase to 1 634.7 ha, with an increase of nearly 700 ha for the KZN coastline (from 786-1 391.1 ha). This growth is attributed to sedimentation and the increase in available habitat for mangrove colonisation, especially the pioneer white mangrove in the Mhlathuze Estuary.[2] The Mhlathuze River was canalised and a new mouth was constructed to compensate for the development of the Richards Bay harbour. The increase in intertidal habitat encouraged the spread of mangroves. In other estuaries that have increased sedimentation in their lower reaches, mangrove cover has also increased over time, e.g. Mlalazi and Mgeni.[3] In the Kosi Bay tidal delta, the presence of subsistence fish traps set up by local communities have altered tidal flow and increased mangrove propagule deposition and germination.[4] Mangroves often have fringing thickets of lagoon hibiscus and mangrove fern.

Although there was an increase in the total area covered by mangroves, a recent survey shows that there was a decrease in the number of estuaries in which mangrove stands were found in KZN, from 22-11.[1; 5] These losses were attributed to land being converted to sugarcane farms, and to road infrastructure developments, most notable the N2 Freeway.[6] Natural events such as floods can also deposit silt, covering the base of the trees and causing die-back.

The most impacted system has been Durban Harbour, from which mangroves were physically removed during harbour construction and expansion, decreasing their area from 200 ha to just 15 ha.

## Spatial distribution

Each of the mangrove species found in South Africa has a different distribution pattern. The white mangrove is the most widespread and common of all the species; it is a pioneer species occupying the lower intertidal zone. The black mangrove is also common along the KZN coast, occurring in the higher intertidal area. Although not considered to be a pioneer, it has been found to colonise some temporarily open/closed systems such as the Mgababa, Mzamba and Mtentu estuaries. The red mangrove generally forms large dense stands on the banks of creeks and streams that feed into estuaries. The Tonga mangrove found at Kosi Bay is at its most southern distribution, while the Indian mangrove also only occurs at Kosi, being inundated at spring high tide. The cannonball mangrove is very rarely encountered in South Africa, with only one specimen recorded in the Kosi system.

## Importance of mangroves to the KZN coast

Globally, mangrove forests provide protection for natural coastal habitats and the human areas against storms and floods. Within South Africa however, mangroves are generally found in estuaries and consequently their capacity to protect the shoreline is limited. Indirectly, coastal developments along estuaries do benefit from mangroves and the protection they provide during severe storm and sea conditions. It is recommended that a mangrove buffer zone of 25 m be maintained to ensure that adequate protection can be provided by the mangroves.[7]

The ecosystem services provided by intact mangroves are of importance, particularly their regulation of sediment processes and organic export to the ocean. Should these services be greatly modified, the cascading effects on the entire ecosystem could be severe. Durban Bay, for example, has had a significant loss in mangroves due to harbour development, urbanisation, eutrophication and chemical and organic pollution, and consequently the entire estuary is now classified as highly degraded.[8; 9; 10]

**Whilst it may be comforting to know that the total area of mangroves in KZN has marginally increased in recent times, it is of concern that their geographic distribution has been reduced as manifest by their local extinction in a number of estuaries. Changes in freshwater inflow to estuaries, increased sedimentation due to land degradation and transformation, and prolonged closed mouth conditions all negatively affect mangroves.**

**South African mangroves are at the limits of to their latitudinal distribution, and thus are even more susceptible to anthropogenic impacts. Changing the size and structure of mangrove forests decreases their natural ability to recruit and regenerate, thereby further decreasing the ecosystem services provided by these systems. Protection of existing stands of mangroves is essential if people of KZN are to benefit from their goods and services.** ■

Copyright:
This publication may be reproduced in whole or in part for educational or non-profit purposes without special permission from the copyright holder, provided that acknowledgement of the source is made. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior written permission from the KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute.