



(paperbark trees) caused by an influx of seawater via a tidal creek.

An attempt was made to stop the tidal creek encroaching on the freshwater habitat by constructing a barrage across the creek, however this eroded and was outflanked by the tidal creek. *eriss* was asked to examine the area and focused on a salt-affected freshwater wetland about 12 km south-east from Point Farewell. The wetland is fed by freshwater springs, and in the past served as a valuable source of freshwater for Aboriginal people during the dry season.

Photogrammetric interpretation was used to compare aerial photos of the area from 1950 onwards, looking for connections between the changes in morphology of the basin and the climatic and oceanographic history of the region. Aerial and on-the-ground studies were also carried out to assess the current state of the area.

A view through time

In 1950, the area was almost free of saltwater intrusion. The freshwater basin, a string of billabongs vegetated with forests of paperbark trees, was protected from the incoming saltwater tide by old beach ridges, vegetation, and a build-up of alluvium deposited by the freshwater stream during the wet season. Sedges and grasses covered the coastal plain, and the salty tidal creek extended just 1 km inland.

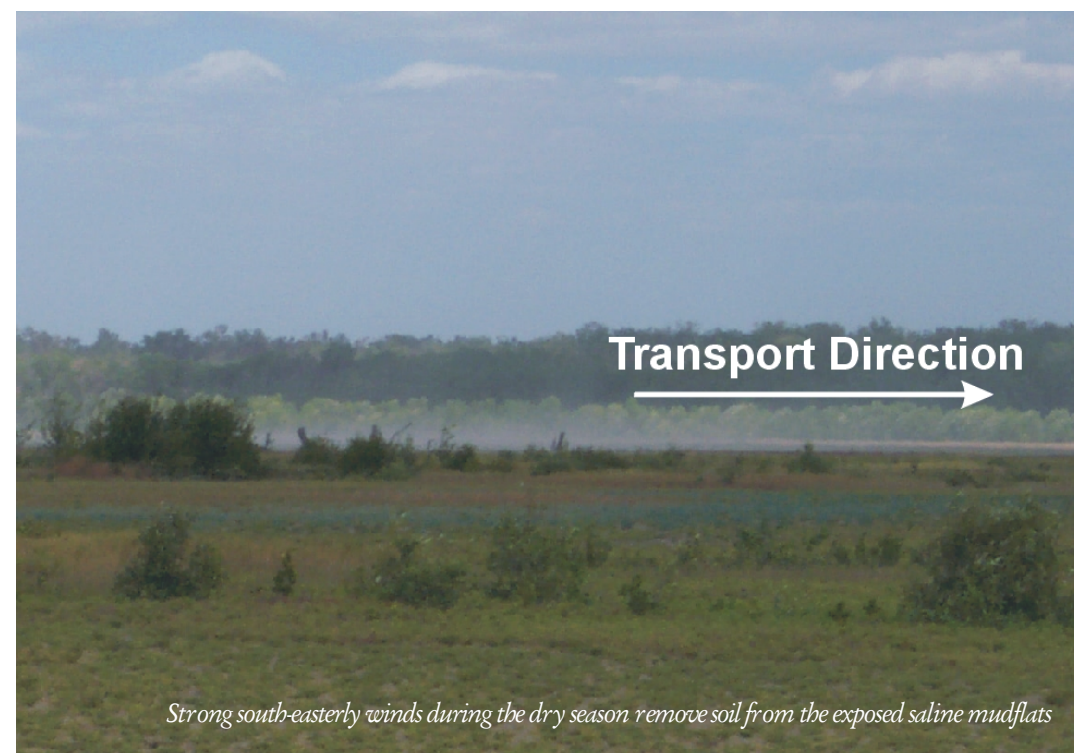
From 1973 to 1975, above average wet season rainfall and floods were recorded. Increased flooding appears to



have cut through the barrier formed by the alluvium, allowing tide water to move further into the freshwater basin, a process compounded by above average sea levels.

From 1975 to 1984, the tidal creek network rapidly extended inland. Low-frequency and low-intensity cyclones and above average water levels provided good conditions for inland channel extension, and the wet season floods during this time were weak and did not prevent tidal water from entering the freshwater wetland.

Left: During the dry season the unvegetated saline mudflat cracks deeply and the soil/sediment is removed by strong winds



By 1997, bare saline mudflats on this part of the coastal plain had increased almost 10 times, more than half the paperbark forest had been lost, and the tidal creek had extended 4 km inland.

The freshwater basin today

Today, evidence of saltwater intrusion can be seen in the morphology of the area. The main mangrove-lined, tidal creek extends inland from the coast to the freshwater basin. Tidal splays are left on the coastal plain where tidal flooding, scour and deposition of sediment have taken place during high tides. There are localised areas of erosion within areas of paperbark forest dieback, and bare saline mudflats

Below: Study area at Point Farewell. The left image shows the extent of the tidal creek in 1950 and the right image shows the tidal creek in 1997. By 1997 the tidal creek had penetrated 4km inland from its opening at the estuarine funnel of the East Alligator River.

