occupy a large portion of the coastal plain. The mudflats dry during the dry season and are eroded by the wind as dust storms sweep the coastal plain. Loss of soil from wind transport may increase the depth of the basin, letting in even more salt water.

What is driving saltwater intrusion and morphological change?

Saltwater intrusion appears to be linked to climatic and oceanographic processes such as Wet season floods, stronger than average monsoonal activity, storm surges, higher than average sea level conditions and very high tides. When these events coincide, they can change the morphology of the coastal region, and result in an increase in saltwater intrusion.

Can it be managed?

It appears that saltwater intrusion is a natural process related to big climatic and oceanographic conditions and the natural physiography of the area. It may not be practicable to prevent salinisation of freshwater wetlands along some parts of the coastal plain.

Further studies could be done into management options, such as the construction of barrages, which could replicate the buffering of natural barrages such as existed in the basin near Point Farewell prior to 1973.

Research may focus on why climatic and oceanographic processes undermine some barrages, and whether barrages could be constructed in a way that would increase their effectiveness.

Based on research undertaken by Kristy Winn as part of a BSc honours project.

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The Environmental Research Institute of the Supervising Scientist carries out scientific research for the protection of people and the environment in places that are highly valued by the Australian community.

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Supervising Scientist notes

SALTWATER INTRUSION – A NATURAL PROCESS

What is saltwater intrusion?

Saltwater intrusion is a major coastal management problem confronting the conservation of freshwater wetlands, flora and fauna all over the world.

Over the last 50 years, tidal creeks in the Alligator Rivers Region in Northern Australia have rapidly extended inland to low-lying freshwater wetlands, turning them saline. This process, called saltwater intrusion, is natural and leads to significant ecological and morphological changes to coastal freshwater environments.

Why is it a problem?

Saltwater intrusion leads to the loss of freshwater vegetation and the spread of saline mudflats into previously vegetated areas. This can lead to the destruction of crocodile breeding grounds and magpie geese habitat and can impact on the ability of the local Aboriginal people to hunt and gather food. Saltwater intrusion also affects the high conservation values of coastal freshwater wetlands, as it reduces the diversity of flora and fauna.

Point Farewell - a case study in Kakadu

In 1995, an Aboriginal traditional owner noticed the disappearance of magpie geese (*Anseranus semipalmata*) from wetlands at Point Farewell in Kakadu National Park. As magpie geese and eggs are a traditional food for the local Aboriginal people there was concern about the extent of the change and the loss of a valuable resource. It was likely that the disappearance of the geese was related to the dieback of freshwater wetland vegetation

Dead stands of paperbark trees (Melaleuca) often indicate saltwater intrusion