Restoring estuaries and tidal wetlands
*by Dr William Glamore**

Estuaries link the rivers to the ocean and have played a vital role in the development of Australia. Since European settlement, estuaries have been the sites of our main population centres, ensuring activities such as fishing, birding and boating are integral parts of the Australian culture.

However, development has also brought industrialisation, deforestation, intense drainage works, wastewater disposal, increased sedimentation and poor water quality. Although efforts have been made to remediate some previous impacts, substantial research and leadership are needed to restore our estuaries.

Case study

The Big Swamp Restoration Project in New South Wales (NSW) is a recent example of how the entire estuary, the relevant science and the people must all be understood to successfully restore the landscape.

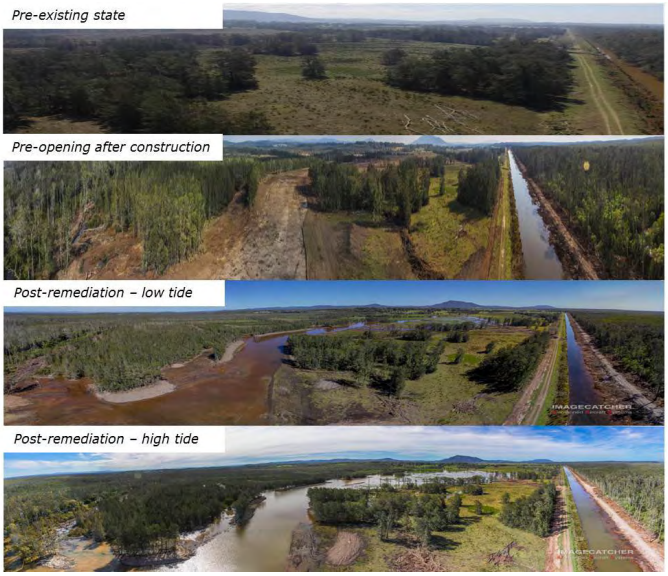
Historically the Big Swamp area contained a vibrant ecosystem with extensive birdlife and aquatic fauna, providing a rich food source for the local Ngamba tribe and early settlers. In 1905, the Big Swamp Drainage Scheme attempted, via major engineering works, to drain the landscape for flood mitigation and to create arable land. By 1911 the drainage scheme was declared a failure, and subsequent engineering works have only added to on-ground issues including extensive acidification of surface-water and groundwaters. The drainage waters have since been linked to an overall degradation of the estuary's ecological health and a significant decline in oyster production.

Restoration

During 2012–2014, staff from the Greater Taree City Council and the Water Research Laboratory at the University of NSW (UNSW), undertook extensive investigations and large-scale on-ground works to restore Big Swamp and improve estuarine health.

The project involved detailed science analysing the linkages between localised groundwater movements, on-site drainage, estuarine hydrodynamics and catchment-wide flooding to assess the implications of converting large areas back to tidal wetlands. Broad consultation guided the scientific process and made sure that the community expectations and the proposed outcomes were aligned.

In June 2014, a new 800 ha restored wetland was unveiled at Big Swamp. The design of the restored site ensures that upstream stakeholders and downstream ecology all benefit from the on-ground works. The new wetland includes 200 ha of tidal wetland, over 23 km of infilled drains, and large areas of new habitat for fish and birds.



Evolution of the Big Swamp restoration project.
Photos: ImageCatcher

Listen to the canary

Unfortunately, the results at Big Swamp are an exception to the norm. In general, the tidal rivers and coastal wetlands of NSW have not been sufficiently valued or prioritised. Estuary management continues to be lost, ecologically, between the highly visible coastline and the upland catchments. Few coordinated programs are actively addressing estuarine issues in NSW, and discharges of acid water continue to plague most coastal floodplains.

Leadership is required urgently, to promote estuarine initiatives, encourage collaboration, link estuarine science to practice and policy, and protect and restore estuarine and tidal wetland ecosystem services. Estuaries are the 'canary' in the climate-change 'coal mine', and we should be heeding their warning right now, and begin planning for the future.

For further details please contact Dr William Glamore, at w.glamore@wrl.unsw.edu.au or (02) 8071 9868. Please also join Will on the Linked-in group: Estuaries and Tidal Wetland (Australia).

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Larger view of the Big Swamp area after restoration. Photo: ImageCatcher.