

Patterns of Tidal Flushing within a Mangrove Forest: Lake Coombabah, South East Queensland Australia

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Abstract

The project sought to discover the pattern of tidal flooding at the mangrove fringe of Lake Coombabah in south east Queensland. The area is urbanising rapidly and pressures on wetlands are increasing. The role of mangrove systems in the larger context was not well understood, for example their contribution to the habitats of other organisms such as fish and crabs. As well, there are negative issues with the wetlands as they provide habitats for disease-bearing mosquitoes. Ross River and Barmah Forest viruses are the major ones in the Lake Coombabah area. The mangroves thus play a dual role: in providing important habitat for wildlife and in providing habitat for mosquitoes. The nature of the flooding pattern, its size and duration, are key elements for the mosquitoes that require a variety of water levels (for the species in this area).

The aim was to explore flooding patterns and to see if high tides flooded all mangrove areas adjacent to Lake Coombabah and what kind of water fluctuations occurred, as a basis for informing manager stakeholders including the local mosquito control agency.

Detailed analysis was first done on the local standard port tide station using long-term records. These analyses were then used together with local observations to identify patterns of flooding at the study site. Tidal levels were collected using pressure gauges at 19 places in the system. The gauges were set out at several times and over complete spring tide cycles. It was found that tidal flooding was not even over the area, but that there were at least 4 patterns, in areas that flooded at different 'trigger' tide heights and with different durations of flooding.