FACT SHEET

Wetland Salinity:
Predicting the ecological consequences

Fact Sheet No. 5 Biological responses to salinity: do wetlands differ?

Question

Does increasing salinity affect plant and zooplankton communities in a similar way in different wetlands?

Background

- Within the sediments of wetlands and rivers, there are dormant stores of seeds of aquatic plants and eggs of zooplankton that provide an important reservoir of biodiversity. These stores are referred to as seed and egg banks.
- Wetlands may differ in the species that are present.

Methods

- Sediment containing seed and egg banks from seven wetlands were exposed to three salinities: <800, 1500, 7500 EC units (1500 EC = 1000 mg/L).
- Sediment was wetted so it was either damp or flooded, to mimic edge and flooded locations in wetlands.
- Zooplankton that emerged (numbers of each type) in the flooded sediments were counted after four weeks, and aquatic plants that germinated (in damp sediments and flooded sediments) were counted after 16 weeks.

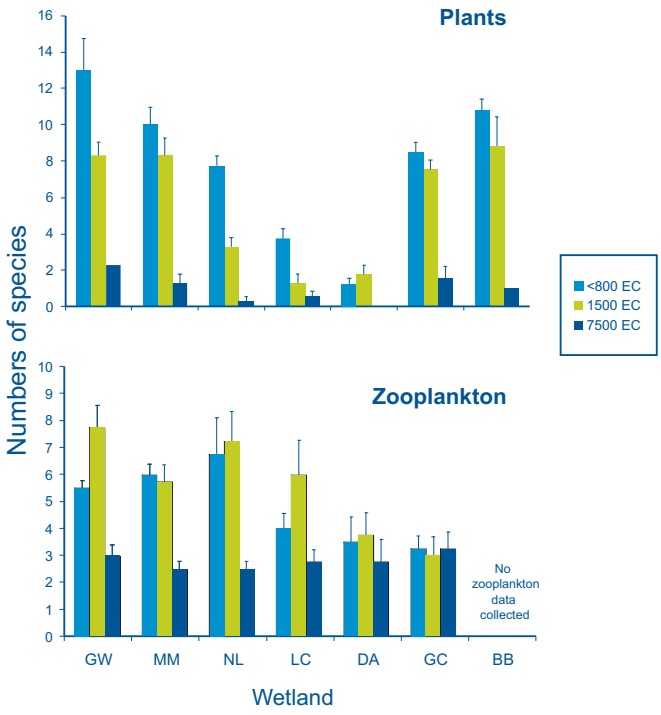
Results

- In sediments from Narran Lakes (NL), Macquarie Marshes (MM), Gingham-Gwydir Wetlands (GW) and Billybung Lagoon (BB), salinity of 7500 EC units reduced both number of species (Figure 1) and abundance of plants and zooplankton.
- In sediments from Lake Cowal (LC), Great Cumbung Swamp (GC) and Darling Anabranch (DA), the effect of salinity was not so clear, since few species emerged at any of the salinities.
- From each wetland sediment, the combination of species that emerged was unique to that wetland.

Under freshwater conditions in natural wetlands we can expect that:

- Diversity will be reduced when the salinity of the water is above 1500 EC units.
- In some wetlands, diversity may already be reduced due to previous impacts of salinity and hydrology. The past salinity history of a wetland may be important in predicting the effects of increasing salinity.

Figure 1. Number of species of aquatic plants and zooplankton emerging from sediments of seven wetlands exposed to damp conditions at three salinities (see text for wetland abbreviations)



For more information contact:

Dr Daryl Nielsen Murray-Darling Freshwater Research Centre
PO Box 991, Wodonga VIC 3689 Ph 02 6058 2360
Email daryl.nielsen@csiro.au

Dr Margaret Brock Department of Natural Resources
PO Box U245, Armidale NSW 2351 Ph 02 6773 5268
Email margaret.brock@dnr.nsw.gov.au

How can this information help?

1. By assisting communities to set, revise and deliver on current and future salinity targets and associated management actions.
2. Knowledge of the past salinity history of a wetland may help when the implications of future salinisation are being predicted.

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