

Wetland Salinity: Predicting the ecological consequences



FACT SHEET No. 2 – Aquatic Invertebrates

Project Objectives

- To quantify the relationship between increasing salinity and the structure of biological communities that develop from dormant aquatic plant seeds (see Fact Sheet No.1) and zooplankton eggs.
- To determine how the interaction between salinity and hydrology influence wetland biological communities.

Background

Within the sediments of wetlands and rivers there is a store of eggs of small aquatic invertebrates that provide an important reservoir of biodiversity. Loss of viability of this “egg-bank” will have a significant long term impact on the biodiversity of wetlands.

Methods

- Sediment from 6 wetlands within the Murray-Darling Basin (MDB) was collected. Sediment from 3 wetlands in the northern MDB (Gingham-Gwydir Wetlands, Macquarie Marshes & Narran Lakes) was exposed to 5 salinities - <800, 1500, 3000, 4500 & 7500 EC units and sediment from 3 wetlands in the southern MDB (Great Cumbung Swamp, Lake Cowal, & Nearie Lake) was exposed to 3 salinities - <800, 1500 & 7500 EC units.
- Sediment was flooded to a depth of 30 cm for 3 weeks.
- The total number and the number of different types of invertebrates hatching were determined for each wetland at each salinity.

Results

Invertebrates hatched in large numbers from the northern MDB wetland sediments and appear to be adversely affected once salinity reached 1500 EC. Substantially lower numbers of animals hatched from the southern wetland sediments making it difficult to detect any effects of salinity (figure1).

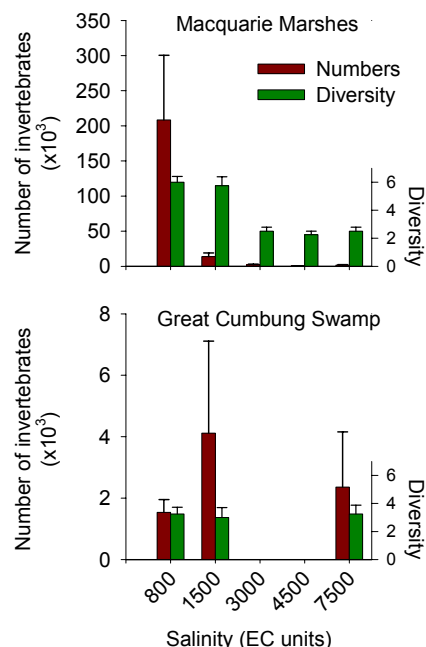
Overall:

- Salinity above 1500 EC reduced diversity and abundance of small aquatic invertebrate communities.
- These communities of small aquatic invertebrates differed between wetlands in their response to salinity. This may be a reflection of the histories of each wetland (i.e. prior water regime and/or exposure to salt).

Key outcomes

1. Assist communities to set, revise and deliver on future salinity targets and associated management actions.
2. Contribute knowledge needed to guide the conservation of wetlands not impacted by salinity.

Figure 1. Example of hatching of eggs from a wetland in the northern and southern MDB.



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