Managing for Metal Mobility in the Gippsland Lakes

What is the issue?

Elevated heavy metal concentrations have been reported in previous studies of sediment, plant and animal life in the Gippsland Lakes. However, little is understood about the potential risks of those contaminants, either in the sediment, or if they were to become mobile in the water column of the Lakes.

What did we do?

Sediment cores were collected from four sites (Heart and Dowd Morass, Hollands Landing, Lake King North) that were previously identified to have elevated levels of metals. These cores were subject to a range of incubation experiments designed to simulate expected changes under altered climate and flow conditions. Metal concentrations in the sediments and (where possible) porewater and water column were tested before and after the experiments to determine metal concentrations and any fluxes between the sediment and the water.

Fig. 1 Core sediment from the field and after drying.

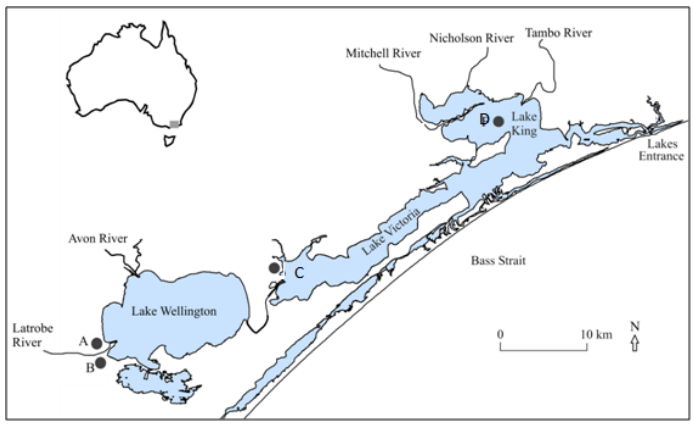

Fig. 2 Map of sampling sites

What did we find?

Concentrations of metals at the study sites were all relatively low and not of concern, when compared with the national sediment quality guidelines (ISQG, 2016). However, fluxes of metals between sediment and water were observed under the following conditions:

- Drying conditions in the morasses
- Anoxic events at Lake King North
- Changes in oxidation state (exposure) at Hollands Landing

Although the likelihood for metal fluctuation currently is low, caution should be applied under changed environmental conditions, such as extended drought periods (morasses) and flooding and algal bloom events (Lake King). It is recommended that these sites be monitored and re-tested, if these conditions occur.

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