

Community Volunteer Acid Sulfate Soil monitoring project in Lakes Alexandrina and Albert, South Australia (August 2009 – June 2010)

Introduction

Community concern about the ecological, economic and recreational impacts of the degradation of the Lower Lakes comprising Lakes Alexandrina and Albert during the recent period of record low inflows from the River Murray has translated into local community action. In the Lower Lakes, community volunteers been monitored acid sulfate soil (ASS) changes along the lakes' shoreline as the lake levels have changed during the period August 2009 to June 2010.

Methodology

During the period, the volunteers have applied an ASS sampling protocol to select sampling areas, and to sample soils at three sites in the area, namely (1) under water, (2) on the shoreline, and (3) the beach. The protocol also gave guidelines on sampling three standard depth layers in the soils at each site (i.e. 0 – 5 cm, 5 – 30 cm, and deeper than 30 cm), describe the appearance of the soil layers, measure pH, and store the samples. The samples were then sent frozen to CSIRO laboratories in Adelaide for laboratory pH testing, and then incubation pH testing. Incubation pH testing indicates the acidification hazard of the soil by creating ideal conditions for sulfides in the soils to oxidise to sulfates with production of sulfuric acid (acidification). Typically, the more acidic the incubation result, the greater the ASS hazard of that soil back in the landscape under drying conditions (i.e. further falls in lake water level).

Understanding the pH graphs

The graphs show pH trends of soil samples over time. pH is on the left-hand axis, and sample IDs on the lower axis. "T0" represents the pH of samples before incubation, and "T1", the final pH after incubation. Sample sites contain three layers, e.g. 1.1 (0 – 5 cm), 1.2 (5 – 30 cm) and 1.3 (deeper than 30 cm), hence "T0 1.1" and "T1 1.1" show the pre-incubated and incubated result of the 1.1 soil layer. Four surveys are shown (August 2009, November 2009, March 2010 and June 2010), which are colour coded, showing pH trends over the survey period. Some plots have gaps in the data because not all survey sites were visited each survey (e.g. for logistical reasons) or it was not possible to retrieve deeper layer samples for safety reasons, or stone was encountered.

Acknowledgements

We acknowledge funding by the then South Australian Department for Water, Land and Biodiversity and Conservation (DWLBC), Ms. Carole Richardson (Lower Lakes Revegetation Officer) for her role in coordinating the volunteers, and of course, the +30 local volunteers who often worked under difficult conditions because of their desire to be part of the Lakes' management solution.

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