

# **The Naturally Saline Environment of the Lower Lakes**

## **- further evidence which refutes ‘freshwater ecological character’ claims**

### **Background**

It has been claimed by those advocating a ‘freshwater only’ policy for the management of the Lower Lakes of the River Murray, that for the past several thousands of years these lakes have been predominantly, if not virtually always, a freshwater wetlands environment.

The South Australian Government’s ‘Securing the Future, a long term plan for the Coorong, Lower Lakes and Murray Mouth’ - a management plan for these 800 plus square kilometres of lake and surrounding shorelines, included these words through draft after draft of the public consultation process, (despite submissions of strong evidence to the contrary)

*“ ---there is solid evidence that the Lower Lakes were predominantly freshwater, and the established ecological character reflects that history.”*

(‘Securing the Future’ draft for public comment, December 2009, p82 and the final plan, June 2010, p139)

While there are a number of sources of information which independently challenge the validity of such statements, **this short paper analyses the historical ecological character of the Lower Lakes shorelines through the descriptions given to ‘common plant species’ which have been deemed relevant to the grazing of stock on these lakeside lands.**

### **A Reliable Source of Environmental Data?**

The **Lower Lakes Plant Guide** (a 42 page ‘spring bound’ booklet) describes itself as, “A Field Guide of Common Plant Species in the Lower Lakes, South Australia.”, and was published in 2009 (revised 2010) by the very groups responsible for promoting and implementing the ‘freshwater only’ policy stance outlined above, viz the Lakes Hub community centre program of the SA Government Murray Futures project, and the Goolwa to Wellington Local Action Planning Board Inc. Given its source we can be sure that in the selection of this publication’s content there has been no biased intent to cast doubt upon the ‘freshwater only’ policy, and yet the content does just that.

**Analysis of the plant data contained in this publication demonstrates a historical ‘ecological character’ for these Lower Lakes shores which clearly was not predominantly fresh,** thus directly conflicting with the claims the publishers continue to make in other contexts. (see postscript).

### **A Fair Consideration**

The ‘Lower Lakes Plant Guide’ notes in its introduction that,

*“Livestock grazing is a major land use around the Lower Lakes region of South Australia, and has traditionally provided graziers with ideal conditions to establish their properties due to the availability of permanently fresh water.”*

- and it should be acknowledged here that following the construction of the barrages in the 1930s for the purpose of preventing incursions of saline water from the Southern Ocean when river flows were low, the lakes **have** for the past 70 years been artificially maintained as permanently fresh.

Not-with-standing the inevitable tension between the grazing of domestic stock and the maintenance of historic ecological character (which these groups claim to support), this plant guide booklet is intended for lake shore graziers with fodder information and forage analysis derived from a ‘Sustainable Grazing Trial’ which collected data from 11 sites around the Lakes to investigate “*the effects of various grazing regimes on the lake edge and floodplain.*”

The 39 plants included in the guide, “*were those most commonly observed at the 11 trial sites, and around the Lower Lakes area.*”

Thus the sample under consideration here can be considered to be a fair representation the environment in which they grow, with common and widespread native plant species in particular giving an insight to the ‘historic ecological character’ of their habitats. Thus, they have **not** been selected by this author in any dishonest attempt to sway opinion away from the ‘freshwater only’ ideology

### **Analysis**

Taking the whole sample of 39 plant species, 24 (61.5%) are noted to have salinity associations and/or tolerance by name and/or by the specific reference made to their tolerance of salinity

Of the 23 **native plants** in the sample, 14 (61%) are noted to be associated with salinity, and 10 (62.5%) of the 16 introduced plant species commonly found around the Lakes, were similarly noted to have salinity associations through naming and/or tolerance.

### **Implications**

The native species identified as being salt tolerant/salt associated are the more significant because their ecological development over the past several thousand years indicates an ongoing salinity component which must therefore have been a feature of the ecological character of this lakeside environment over that time.

To have 61% of the plants in this sub-sample clearly identified as being salt tolerant/salt associated, (as part of an investigation devised by the very groups who insist **in other contexts** upon a ‘freshwater ecological character’ for these wetlands); confronts the claims for a ‘freshwater only’ history upon which the SA Government’s Department of Environment and Natural Resources has based its whole rationale for the long term future of the Lower Lakes

### **‘Bent Science’**

This paper exposes just one more example of ‘bent science’ - where relevant evidence exists but has been ignored and/or misrepresenteded in another context in order to ‘support’ an otherwise untenable policy position. But this is just one of a number of factual inconsistencies which independently refute the DENR contention that these lake environs have been “*predominantly fresh water*” with an “*established ecological character that reflects that history.*”

(Securing the Future document DENR December 2009 p82, and the final plan, June 2010, p139)

Fossil diatom evidence from lake bed core samples is another example of evidence which fails to provide strong support for the ‘freshwater only’ thesis but which is claimed to do so. Even an 1842 map annotation from the ‘Plan of the Settled District of South Australia’ (State library of South Australia) which shows pre-settlement lakeside vegetation at the northern extremes of Lake Alexandra to have been “*Saltwater Scrub*” is clear evidence of ‘historical ecological character’ quite different to that claimed by the DENR , and others.

**It is time that the Murray Futures Project team of the SA Government’s DENR acknowledged these facts and modified the ‘long term plan’ accordingly with an objective analysis of the ecological advantages and disadvantages of allowing an estuarine system to develop when river flows are so reduced by drought that the alternative is to allow lake water levels to fall below sea level (as they did in the recent drought).**

The disastrous ecological, social and economic consequences of acid sulphate soils, wind blown erosion of exposed lake bed, corrosion of structures, sand drift deposition along shore lines, emergency construction of bunds and regulators, slumping banks and impact on lakeside communities – all could have been avoided by opening the barrages appropriately to allow hydraulic connectivity between the ocean and the lakes and the development of a dynamic estuary at sea level for the duration of the drought.

### **Postscript**

It is perhaps ironic that the Goolwa to Wellington Local Action Planning Board and the DENR Lakes Hub/Murray Futures groups which jointly published this ‘Lower Lakes Plant Guide’ and provided the data which so clearly refutes the ‘historic freshwater ecological character’ claim, are also responsible for the publication and continued promotion of ‘A Fresh History of the Lakes: 1800s to 1935’ (Sim/Muller 2004) – a publication which sets out to prove the ‘freshwater only’ position. That the Sim/Muller document has been discredited and dismissed by this author on a number of occasions for its clearly demonstrated bias in selection and interpretation of data is perhaps not surprising given the contradictory evidence that abounds and yet it has been used as a key reference by the DENR in their ‘Securing the Future’ Long Term Plan to support of their ‘freshwater only’ policy.

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