Brian TIMMS and Jane COOPER, 2014. Seagull Lake, Western Eyre Peninsula, South Australia: A Saline Lake to Benefit from Climate Change? Geomorphology, Invertebrates, Birds and the Future. *Acta Geologica Sinica* (English Edition), 88(supp. 1): 101-102.

Seagull Lake, Western Eyre Peninsula, South Australia: A Saline Lake to Benefit from Climate Change? Geomorphology, Invertebrates, Birds and the Future

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Seagull Lake is an unusual saline lake, having a marine spring connected to a large continental ecosystem. With climate change the balance between the two is likely to change. This lake originated about 6000 years ago as a marine bay, since occluded by coastal dunes. Presently the main lake varies in salinity seasonally from 75 to 200 g/L with the spring virtually constant at 37-40 g/L; in severe summers the main lake dries. Invertebrates number 37 species of which 17 are marine confined to the spring, including two cnidarians, two polychaetes, four crustaceans and eight mollusks. The lake itself supports a few widespread continental saline species, and other freshwater-derived invertebrates in the peripheral lake lets. A fish, *Leptatherina presbyteroides,* lives permanently in the main spring and spreads to the lake in winter. Thirty-nine species of birds have been seen on the lake including only a few regular species but many transients. The Banded Stilt is by far the most common and Seagulls and Fairy Terns breed on lake islands each spring. With climate change, decreased rainfall and higher sea level will deliver more marine water to the lake, changing its geomorphology and initially lowering its salinity. This will result in increased invertebrate and bird diversity and probably allowing some marine animals into main lake, which would be permanent. However, eventually evaporation will increase salinity resulting in a salt flat with virtually zero diversity.

Key words: lake origin, compartmentalization, salinity regime, marine invertebrates, other invertebrates, fish, waterbirds, predicted changes.

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Acknowledgements

Financial assistance for the researchers to undertake the initial fieldwork in 2012 was provided by the Friends of Streaky Bay Parks as a Caring for our Country grant. The Royal Society of South Australia provided a research grant to assist with the continuation of the work in 2013. BVT thanks Nathan Gazsik for field assistance in mapping the beaches, John Vosper and Caleb Rankin for general field assistance, Kiran Liversage for taking some readings of the staff, and Peter Needle for hospitality. BVT again thanks identifiers of various marine invertebrates as listed in Timms 2009, 2010 and also Craig Williams and Chris Watts for respectively identifying *Aedes camptorhynchus* and *Laccobius zietzi*

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