TAXONOMY, ECOLOGY AND PALAEOECOLOGY
OF OSTRACODS FROM AUSTRALIAN INLAND WATERS

by

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ABSTRACT

The taxonomy of ostracods from Australian inland waters is reviewed. Three new genera and 21 new species are described and 24 other species re-examined (13 of which are re-described). Notes on the ecology and distribution of Australian non-marine ostracods are provided. There is a high diversity of endemic halobiann species, most of which are planktic. Some elements of the freshwater fauna are endemic, some of which belong to genera found elsewhere, and a number of species are found in New Zealand. Part of the temporary pool fauna consists of cosmopolitan species.

To introduce the palaeolimnological studies, a classification of waterbodies in Australia is provided to assess the best sites for palaeoecological and palaeoclimatological investigations. An examination of the sort of information fossil ostracods can provide is also presented.

To trace past histories of selected lakes, 1,241 samples from Quaternary lacustrine sediments from south eastern Australia are examined for their fossil ostracod remains. From these samples, 12 ostracod species are described, 3 of which are new.

Ostracods and other fossil remains are studied from cores from 4 maar lakes in western Victoria. Results indicate that water salinity of 2 of these lakes (Gnotuk and Keilambete) varied during the Holocene, usually synchronously. As these changes in water salinity relate to water levels, this information follows the postulated changes of levels for the deeper and less saline Lake Bulleenmeri. Little information is available from the fourth Lake Purnumbete core as water level remained
high and no ostracods are recovered. The data for Lake Keilambete compare well with previous published data from sediment analyses.

The study of ostracods from a profile at Pulbeena and Mowbray Swamps in north western Tasmania provides information on water flow from springs at both sites for the last 80,000 and 110,000 years respectively. The data are consistent with the previous palynological information from aquatic plants.

The ostracods extracted from a core at Lake George in New South Wales define the presence of high water level phases in the lake for the last 70,000 years. This information differs for some periods with the previous sedimentological and palynological data.

The ostracods taken from a short core at Pillie Lake, situated near the coast in South Australia, indicate changes in water salinity and from permanent to ephemeral water conditions. This change is thought to be related to sea level regression. Additionally, the ostracod fauna demonstrates the unusual formation of dolomite under permanent water conditions.

Changes in lake levels and water flow are then considered in broad climatic terms for south eastern Australia for the Late Pleistocene and Holocene. Brief comparison with changes in lake levels for the same period in Africa shows a similar pattern to the one registered in Australia but with a shift in time of the order of 1,000-2,000 years.