ACTA PALAEONTOLOGICA POLONICA

# Fish remains, mostly otoliths, from the non-marine early Miocene of Otago, New Zealand

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*Acta Palaeontologica Polonica* 57 (2), 2012: 319-350 doi: http://dx.doi.org/10.4202/app.2010.0127

Fish remains described from the early Miocene lacustrine Bannockburn Formation of Central Otago, New Zealand, consist of several thousand otoliths and one skeleton plus another disintegrated skull. One species, *Mataichthys bictenatus* Schwarzhans, Scofield, Tennyson, and T. Worthy gen. et sp. nov., an eleotrid, is established on a skeleton with otoliths in situ. The soft embedding rock and delicate, three–dimensionally preserved fish bones were studied by CT–scanning technology rather than physical preparation, except where needed to extract the otolith. Fourteen species of fishes are described, 12 new to science and two in open nomenclature, representing the families Galaxiidae (*Galaxias angustiventris, G. bobmcdowalli, G. brevicauda, G. papilionis, G. parvirostris, G. tabidus*), Retropinnidae (*Prototroctes modestus, P. vertex*), and Eleotridae (*Mataichthys bictenatus, M. procerus, M. rhinoceros, M. taurinus*). These findings prove that most of the current endemic New Zealand/southern Australia freshwater fish fauna was firmly established in New Zealand as early as 19–16 Ma ago. Most fish species indicate the presence of large fishes, in some cases larger than Recent species of related taxa, for instance in the eleotrid genus *Mataichthys* when compared to the extant *Gobiomorphus*. The finding of a few otoliths from marine fishes corroborates the age determination of the Bannockburn Formation as the Altonian stage of the New Zealand marine Tertiary stratigraphy.

**Key words:** Pisces, Eleotridae, Galaxiidae, Retropinnidae, *Mataichthys*, otoliths, freshwater taxa, Early Miocene, New Zealand.

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