



Two new species of *Colubotelson* Nicholls, 1944 in Tasmania's Lake Pedder: persistence of Phreatoicidae (Crustacea, Isopoda) in therein

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Abstract

The Tasmanian lakes Pedder and Edgar were inundated in 1972 to create a reservoir to feed into a hydroelectric power scheme, despite biologists highlighting the uniqueness of the fauna therein. This fauna included undescribed species of phreatoicidan isopods, which were noted in several subsequent publications but not formally described. In 2010, the original beds of these two lakes were revisited and successfully sampled for these isopods as part of a program to assess the conservation status of the unique fauna of this large freshwater body. These two previously reported species of phreatoicidan are both new to science, distinct from each other and belong to the genus *Colubotelson* Nicholls, so we provide descriptions and illustrations of these species to assist their identification by other biologists. The two species are easily identified by the shape of the pleotelson and setation of the head, although they are separated by considerably more than two hundred specific differences. *C. pedderensis* sp. nov. was collected only from the now deeply submerged bed of the original Lake Pedder, whereas *C. edgarensis* sp. nov. may be found more widely in the current extent of Lake Pedder, owing to its appearance in previously collected samples from the original Lake Pedder as well as in the now drowned area of Lake Edgar. These results bring the known diversity of the family Phreatoicidae in Tasmania to 26 described species, including 16 in the genus *Colubotelson*. The persistence of phreatoicids in Lake Pedder, despite the extensive changes to its ecosystem, suggests that these two species are more resilient than was suspected.

Key words: Lake Edgar, conservation status, biodiversity, freshwater benthos

Introduction

Until the early 1970s, Lake Pedder, in Tasmania's south-west, was a small lake of approximately 9 km², and relatively shallow with a depth of less than 3 m. Lake Pedder had been created geologically by an out-wash of Precambrian quartzites that dammed the Serpentine River (Tyler *et al.* 1996). The bed of the lake originally consisted of pink quartzite sand in the south and of quartz pebbles to the north (Tyler *et al.* 1996). In 1972, the original lake bed was inundated (Felton 2008) following the completion of a series of dams. As a result of flooding, Lake Pedder today is Australia's largest body of freshwater, with an area of 235 km² at full supply and a maximum depth 43 m (309 m above sea level).

Lake Edgar lay to south-east of the original Lake Pedder (Fig. 1), and was a much smaller and shallower lake: less than one km² and 1.7 m at it deepest (Knott & Lake 1974). The substrate at the greatest depth in Lake Edgar was described as being a black organic ooze (Knott & Lake 1974). Following inundation by the greatly expanded Lake Pedder, the former Lake Edgar now lies drowned within the south-eastern boundary of the new Lake Pedder (Fig. 1).

According to Bayly *et al.* (1972), four endemic species were known to be present at the time of inundation of the original Lake Pedder: the annelids, *Breviatrria multiprostatus* (Brinkhurst, 1971) and *B. pectinatus* (Brinkhurst, 1971), a decapod crustacean, *Parasticoides pulcher* Riek, 1967, and a vertebrate, the fish species *Galaxias pedderensis* Frankenberg, 1968. Subsequently, several endemic taxa new to science were described from the pre-inundation Lake Pedder: a new genus and species of a freshwater planarian (Turbellaria: Tricladida; Ball 1974) collected in 1972, a species of water bug (Hemiptera: Corixidae; Knowles 1974) and two species of caddis-flies (Insecta: Trichoptera; Neboiss 1977) collected in 1965.