



## The Maugean Skate, *Zearaja maugeana* sp. nov. (Rajiformes: Rajidae) — a micro-endemic, Gondwanan relict from Tasmanian estuaries

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### Abstract

A new species of rajin skate, *Zearaja maugeana* sp. nov., is described on the basis of specimens from two estuaries in remote southwestern Tasmania. The species, known locally as the Maugean Skate, has been assessed as Endangered in the *IUCN Red List of Threatened Animals* based on its rarity and very narrow geographic range. It is also one of the few skates worldwide to occur mainly in brackish water. The Maugean Skate belongs to a group of anatomically conservative, *Dipturus*-like skates conforming to the currently unrecognized genus *Zearaja* Whitley. This ancient group, with a Gondwanan lineage possibly dating back to the Cretaceous, contains at least two other species: *Z. nasuta* from New Zealand and *Z. chilensis* from South America. The skeletal morphologies of the *Zearaja* species are compared with typical *Dipturus* skates and their phylogenetic position discussed.

**Key words:** Rajidae, skate, new species, estuarine, Tasmania, *Zearaja*

### Introduction

In 1979, a series of exploratory trawl surveys were initiated to investigate commercial fish resources on the continental shelf and slope off southeastern Australia. Some skates (family Rajidae) caught were unidentifiable and this initiated a local revision of the fauna by the senior author. The most problematic subgroups were those members of the genus *Dipturus* (then assigned to *Raja*) which contained new taxa from both inshore and deep continental slope habitats. By the mid 1980's, this fauna had been well delineated with four rajin skates, *Dipturus cerva* (Whitley 1939), *D. lemprieri* (Richardson 1845), *D. whitleyi* (Iredale 1938), and an undescribed species, *D. sp. A* (*sensu* Last & Stevens 1994), known from the continental shelf. Of these, *D. whitleyi*, a large skate that reaches more than 1 m disc width, and the smaller and more common *D. lemprieri*, were known to occur frequently in coastal marine habitats of Tasmania. However, no skates were recorded from the brackish middle and upper estuaries of the region.

Tasmania's coast is geomorphologically and hydrologically complex and displays a rich array of marine habitats within a comparatively small geographic area. Perhaps the most unusual of these environments is the biologically complex region known as Port Davey (Figure 1), a ria estuary (i.e. derived from a drowned river valley) that is now a marine national park (Tasmania Parks & Wildlife Service 2006). This remote estuary, which is embedded in the 1.4 million ha Tasmanian Wilderness World Heritage Area in southwestern Tasmania, encompasses about 20% of the Tasmanian landmass. It includes a large coastal inlet that extends inland as a 12 km long channel (Bathurst Channel) leading to a 40 km<sup>2</sup> estuarine basin (Bathurst Harbour). The biota of the channel, about 50 m deep and permanently stratified, is unlike that found anywhere else around Australia, sharing superficial affinities with the fiords of Patagonia and southern New Zealand (Edgar et al. *in press*). High tannin loadings released from runoff over button-grass plains eliminate light in shallow depths. Consequently, coastal algal communities found typically elsewhere in the region are replaced by rich and unusual invertebrate communities, elements of which are related to animals usually found deeper offshore on the adja-