

## BIODIVERSITY OF PARASITIC PROTOZOA IN AUSTRALIA

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Biodiversity is a term applied to describe the number, variety and variability of organisms. Its colloquial application is usually as a measure of species diversity or species richness. Thus, the concepts of 'species' and 'species boundaries' are integral to any discussion on biodiversity, and with them, the basal question of what constitutes meaningful variation. Protozoan taxonomy is an evolving mix of morphological and molecular characters, and is based largely on decisions made intuitively and arbitrarily using multiple characters. Where to draw species boundaries has become more difficult in the face of a bewildering level of variation uncovered in recent years due largely to an increase in the resolution of our taxonomic techniques (e.g. ultrastructural and genetic studies). A major challenge for contemporary protozoan taxonomists is to update the existing systematic framework to incorporate our current level of knowledge and to decide on the relative importance of parasite morphology, genetics and biology to the concept of the protozoan 'species'. This task is compounded by the relative paucity of information on our endemic protozoan parasites. In Australia, in even vertebrate hosts, little is known of the biodiversity of parasitic protozoa. What knowledge we do have is, not surprisingly, linked to clinical disease, e.g. detailed knowledge of some species of coccidia and of some enteric ciliates, flagellates and amoebae of mammals. We have some knowledge of a few species of haemosporidia of reptiles and birds but even here, molecular studies and experimental work are required to identify species boundaries. In view of these limitations, the best estimate of the biodiversity of Australia's parasitic protozoa is that there are 'lots of species'!

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