



**Australian  
Systematic  
Botany  
Society**



**Australian Entomological Society**



**ECOLOGICAL  
SOCIETY OF  
AUSTRALIA**



19 March 2007

The Hon. Malcolm Turnbull MP  
Minister for the Environment and Water Resources  
Parliament House  
Canberra ACT 2600

Dear Minister

### **Re: Australian Biological Resources Study**

The task of identifying, naming and understanding the Australian biota is an immense and important one that is currently suffering from a significant skills shortage. We believe this shortage, without government intervention, will become serious to the point where it will jeopardise the conservation of Australia's biological diversity and key areas of several natural resource industries. We strongly believe that the solution to this impending crisis is best tackled through an enhanced training program and additional research funding to the **Australian Biological Resources Study** that will expedite the next generation of scientific expertise in this area and the delivery of taxonomic names and their associated biological information.

The science of taxonomy and systematics are interrelated biological disciplines. Taxonomy is the process of naming and describing new species. Systematics is the science of determining how these species are related to each other, where they occur in the landscape (i.e. their distribution) and, to some extent, their ecology. It is a modern science, informed by molecular analyses and careful study of organisms in the field and in museum and herbarium collections, enabling rapid and predictive biological diagnostic work to be undertaken when needed by industry, public health, water resource organisations, quarantine, Landcare, marine science and conservation.

### Australia's Biodiversity

Nearly 500,000 species are thought to exist in Australia, of which only a small fraction are currently named. The following table outlines our current estimates of the extent of most of the biota.

	<u>%</u>		<u>Estimated # Spp.</u>
	<u>Described</u>	<u>% Undescribed</u>	
Terrestrial Vertebrates	98	2	2,500
Vascular Plants	70	30	25,000
Marine Invertebrates	30	70	80,000
Terrestrial Arthropods	25	75	255,000
Other Terrestrial			60,000
Inverts	15	85	
Fungi	15	85	50,000
<b>TOTAL</b>			<b>472,500</b>

### Importance of Taxonomic/Systematic Research

There are numerous examples of enormous increases in previously unknown species that represent significant biological challenges. The discovery of 300 new species of Australian gum trees (eucalypts) in the last 20 years shows that even large organisms are still being found. The discovery of large numbers of insects and other invertebrate animals living in underground caverns and water bodies in arid central Australia has astounded the biological community. This so-called 'stygo fauna' (organisms living in underground water) includes whole groups of blind beetles and small crustaceans that were completely unknown only a few years ago. Many of these species have very small natural distributions. The discovery of stygo fauna in areas of resource exploration and mining development has triggered a response from State and Federal agencies to ensure that no species is likely to become extinct as a result of any mining or related activity. In a similar way, the documentation of the Australian biota and the development of a sound taxonomic knowledge base are of critical importance to identifying insect pests in agriculture, species that can contaminate food exports, identifying our marine resources, and recognising biosecurity threats to our continent. Taxonomic information is also crucial in understanding the processes that govern the sustainable use of Australia's water resources, including the numerous microorganisms that live in our waterways and deliver crucial ecosystem services.

**Essentially, all these areas form key components of the Australian Government's National Research Priority area - *An Environmentally Sustainable Australia*.**

We believe that the increasing skills shortage and diminished research capacity in taxonomy can be solved at relatively modest cost by implementing or enhancing three programs.

1. New ABRS Postdoctoral Fellowship Scheme. This would be a new initiative modelled on the Australian Research Council postdoctoral scheme. It would fund two Fellows per year for a period of three years, selected on the basis of excellence. Each Fellowship would be awarded \$90,000 (salary, on-costs and research funding) to pursue taxonomic research within a university or government research laboratory. These early career researchers would represent the next wave of systematist scientists ready to fill the skills shortage.

**TOTAL COST: \$600,000 per annum.**

2. Expanded ABRS PhD Scholarship program. The ABRS currently funds only one new PhD scholarship per year, each of which runs for three years, at a total cost of approximately \$85,000 per year. This program should be immediately expanded to fund two additional PhD students per year. These students would be based at universities around the country and sometimes affiliated with other key research organisations (e.g. State herbaria, museums, CSIRO).

**TOTAL ADDITIONAL COST: \$200,000 per annum.**

3. Enhanced ABRS Research Grants Scheme. The ABRS Research Grants Scheme currently distributes \$1,875,000 towards the study of the systematics of the Australian biota. Some 30 projects are funded each year on the basis of excellence and relevance to ABRS and National Research Priorities. Although this scheme has received slight increases over the last few years the current level of funding is significantly less than 12-14 years ago, even though the cost of doing this research has increased on average by more than 70%. An enhanced scheme should see a doubling of available funds.

**TOTAL ADDITIONAL COST: \$1.9 million per annum.**

To effectively develop and administer the above schemes, they should be phased in over three years so that the additional funding would build up from \$1.25 million in Year 1 to \$2.7 million in Year 3.

The provision of the above training opportunities for postgraduates and early career researchers would significantly address the skills shortage that is so clearly evident in this area of biology. The requested additional funds are, in reality, modest, but would have an enormous effect on the capacity of the nation to deliver on government policy and national need. However, without such increases, it is clear that the current limited administered funds for ABRS will soon start to fail in delivering on its core role as the provider of high-quality knowledge on the taxonomy of the Australian biota.

We thank you for your interest in this matter, and we request that you meet with a small group of us to discuss this matter further.

On behalf of the 2,600 members of our scientific societies/organisations,

Yours faithfully



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cc. **Prof. Marilyn Sleigh**, Chair, Australian Biological Resources Study Advisory Committee  
**Dr Cameron Slatyer**, Director, Australian Biological Resources Study