

HERPETOLOGY IN AUSTRALIA

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As in Europe and the United States, herpetology in Australia has developed substantially in recent years. This is particularly evident in the greater involvement of workers in the areas of captive husbandry and study of wild populations. Perhaps it would be more accurate to say that their work has become more widely known as a result of an upsurge in publication of either short notes or more lengthy articles.

Much of Australia's herpetofauna is unique and as such is highly prized in other countries. However, with Australia's very strict import/export laws, the numbers of native reptiles and amphibians that leave these Antipodean shores are very small. As a result, information on almost any level relating to these animals is eagerly seized and devoured by our overseas counterparts. Until recent times, as in any country, many of the so-called common species have been taken for granted and their study shamefully neglected. Species such as the Eastern long-necked tortoise (*Chelodina longicollis*), Blue-tongued skinks (*Tiliqua* spp.), Stump-tailed lizards (*Trachidosaurus rugosus*) and Carpet python (*Morelia spilotes variegata*) were poorly documented. This was not because they had not been widely kept and studied, but rather that their keepers did not consider that they possessed the capabilities to publish their observations. With the advent and growth of the amateur herpetological societies and the involvement in such groups of experienced herpetologists, this situation is changing — to the benefit of herpetology in general. Our knowledge of these 'common' species has been further augmented by the attention of university researchers, three examples being Bull and Satrawaha's work on activity patterns of the Stump-tailed lizard, Chessman's comprehensive, ecological study of south-east Australia's freshwater tortoises and Shine's work on many Australian elapids.

Australia's junior herpetologists usually commence with one of the afore-mentioned species or perhaps the small dragons (*Amphibolurus* sp.), the so called Grass skinks (*Leiopisma* sp. or *Morethia* sp.) and sometimes a Green tree frog (*Litoria caerulea*). The more adventurous may try the geckoes, in particular *Underwoodisaurus milii*, some of the medium-sized skinks (*Egernia* sp. or *Sphenomorphus* sp.) or even a Common tree snake (*Dendrelaphis punctulatus*). The tortoises, Blue-tongues and Stump-tails are often family pets whereas the others will be the responsibility of one or more boys, and occasionally girls, in their early teens. These are often members of one of the amateur herpetological societies of which there are currently five in Australia. Not surprisingly these tend to be concentrated in the more heavily populated south-east. Within these groups they are able to compare notes, gain help and encouragement from the more experienced members and, hopefully, publish items of interest in the societies' newsletters or in the twice yearly journal, 'Herpetofauna'.

The societies are also performing a number of other valuable functions including working within the general community to increase public awareness and appreciation of reptiles. Field studies have been undertaken in many areas either by individual societies or by a number of members with their society's backing. Lectures and displays have been presented by society members to local community groups and senior members of the societies have assisted with specimen and tissue collecting at state museums and other institutions. All Australian states have laws and regulations covering reptiles and amphibians and most societies are actively involved in preparing submissions to the relevant authorities which aim to ease sometimes overly restrictive regulations that adversely affect the *bone fide* activities of members. Indeed in some instances it would appear that the regulations have been formed with ease of enforcement as the primary aim.

Australiasia's amateur herpetologists are represented at the national level by the Australasian Affiliation of Herpetological Societies (A.A.H.S.). Also encompassing the New Zealand

Herpetological Society, the Affiliation's councillors, one from each Society, have as their main aim the promotion of liaison between the member Societies and between individuals through field work, conventions, the publication and distribution of 'Herpetofauna' and the distribution of other information. Other objectives include the scientific study and conservation of reptiles and amphibians and their habitats. At the present time, 'Herpetofauna' is the main outlet for herpetological material in Australia, containing as it does a range of articles and short notes as well as news from the member Societies.

The Australian Society of Herpetologists (A.S.H.) has, as the bulk of its membership, those working with reptiles or amphibians in a professional capacity or those individuals whose interests are of a more scientific nature than those of members belonging to the aforementioned groups. A small newsletter is published biannually and contains book reviews; lists of recent herpetological papers, theses, etc.; A.G.M minutes and other items of interest.

A further organisation is the Australian Herpetologist's League which was formed early in 1981. A number of initial teething troubles now appear to have been overcome and their publication, 'Australian Journal of Herpetology', should provide a valuable additional outlet for those wishing to publish in Australia.

Researchers in many Australian universities have chosen reptiles or amphibians as subjects for their studies. Frogs of many taxa, Stump-tailed lizards, the smaller skinks (e.g.: *Leiopisma* sp.) and fresh-water tortoises have figured strongly in this area. Amphibians have received particularly intensive research with Australian frog workers contributing enormously to both local and world herpetology. Although many people have been, and still are, involved those worthy of mention include Mike Tyler, Bert Main, Murray Littlejohn and Angus Martin. Valuable chromosomal work, involving many species, is being undertaken at the Australian National University with a number of papers coming from Max King and Greg Mengden. Australian sea turtles and crocodiles have been, and still are, the subjects of comprehensive research involving specimens under both wild and captive conditions. Prime examples of this work are Harry Messel's extensive survey of the Estuarine crocodile (*Crocodylus porosus*) and Graham Webb's current studies of the freshwater crocodile (*Crocodylus johnstoni*). Workers from National Parks and Wildlife Services, and universities, are collaborating on sea turtle research, in particular the Green and Loggerhead turtles (*Chelonia mydas* and *Caretta caretta*). Recent attempts to set up 'rural' industries in northern Australia based on sea turtles and involving aboriginal and island communities appear to have failed due to withdrawal of government funds. Visiting workers have also contributed greatly to our knowledge of Australian species with prime examples being John Legler's studies of Australia's chelid tortoises and Kluge's extensive revisions of Australia's geckos and legless lizards.

As well as the National Parks' involvement previously mentioned, further studies involve distribution of desert and rainforest reptiles, numerous taxonomic reassessments and many ecological studies. Similar work is being carried out by various museum herpetological staff including Hal Cogger and Allen Greer at the Australian Museum, Graema Gow at the Northern Territory Museum, Jeanette Covacevich at the Queensland Museum, Glen Storr at the Western Australian Museum, Terry Schwaner at the South Australian Museum and John Coventry at the Victorian Museum. We have also seen an increase in the extent and number of herpetofaunal surveys, particularly in some of the more remote areas of the continent. For the most part these have been brought about by new environmental laws in most States, as well as by major new developments especially involving the mining sector. Apart from Eric Worrell's 'Reptiles of Australia', very little material has been published by herpetologists employed in Australia's zoos until recently. However, in the last five years a number of papers have appeared covering Australia's crocodiles and tortoises, native and exotic pythons, and more general observations relating to captive individuals. Australia cannot boast very large collections such as those possessed by some North American zoos. However, we do have three, comprehensive, medium-sized collections of 70-100 species at Melbourne and Taronga Zoos, and the Australian Reptile Park at Gosford near Sydney. Smaller collections are displayed at Perth Zoo, Western Australia; Whyalla and Renmark, South Australia; Warrnambool, Victoria and Beerwah in Queensland. There are also many private herpetologists many of whom are supplying valuable information on captive breeding and husbandry. Two instances of how zoos can collaborate with other

institutions have involved Melbourne Zoo in the last two years. In September, 1980, 11 zoo-bred Estuarine crocodiles were despatched to the Queensland National Parks and Wildlife Service's Northern Research Centre at Pallarenda near Townsville. From there they were taken to suitable habitat, marked and released as part of a long-term study of this species. The second venture involved a total of 13 zoo-bred Taipans (*Oxyuranus scutellatus*) which were sent to Mr. Charles Tanner at Cooktown in northern Queensland where they have been incorporated into a venom collection programme. Mr. Tanner is an important supplier of Taipan venom to the Commonwealth Serum Laboratories at Melbourne for use in antivenom production.

Melbourne and Taronga Zoo's have done well in the field of captive breeding including such notable species as *C. johnstoni*, *C. porosus*, *Geochelone elegans*, *G. elongata*, *G. gigantea*, *Clemmys guttata*, *Basiliscus plumifrons*, *Cyclura cornuta*, *Iguana iguana* (multiple generation), *Python reticulatus*, *P. sebae*, *Liasis amethystinus* and *Bitis gabonica*. Many other species are bred on a regular basis with native forms including *Chelodina longicollis*, *Emydura krefftii*, *E. macquarii*, *Amphibolurus vitticeps*, *Tiliqua scincoides*, *Liasis childreni* and *O. scutellatus*. Some of the smaller collections have also achieved some important success, the most recent being what is probably a world first for the Woma (*Aspidites ramsayi*) at Bredl's Reptile Park, Renmark. Other breedings of note include *Alligator mississippiensis* at the Australian Reptile Park, *Pseudemadura umbrina* at Perth Zoo (with only limited rearing success) and *Acanthophis antarcticus* at the Whyalla Fauna Park (on a regular and continuing basis).

With Australia having the rather dubious distinction of possession a higher percentage of venomous than non-venomous land snakes it is not surprising that extensive studies have been and continued to be undertaken on Australia's dangerous species and their venom. Foremost in this field is Dr. Struan Sutherland of the Commonwealth Serum Laboratories (C.S.L.) in Melbourne. Together with this colleagues, Dr. Sutherland has developed such vitally important techniques as the 'pressure/immobilization' type of first aid and the Venom Detection Kit, the former totally eliminating the trauma of slashing and sucking and the latter enabling rapid identification of the venom injected. Their work is not restricted to snake venoms as is evidenced by the recent development of an antivenom for the Funnel-web spider (*Atrax robustus*). A number of smaller 'reptile parks' have a 'snake-milking display' as part of their presentation. While some not listed here tend to be bordering on the sensational, others relating to Australia's dangerous snakes, their venom, case-histories of bites, etc., are constantly appearing both in the popular press and scientific literature. Recent work at the C.S.L. indicates that Australian species hold the top 10 places in a listing of the world's 'deadliest' land snakes on the basis of venom toxicity. With this in mind it is therefore quite pleasing to note the gradual shift in public reaction in recent years away from a snake, any snake, being something that is only fit for killing and hanging over a road-side fence. Perhaps this change is simply an extension of the increase in public awareness for wildlife in general.

To meet the demand created by the upsurge of interest in, and study of, Australia's herpetofauna, a number of publications have been released in recent years. The following are of significance in their particular fields:

- Tortoises of Australia (1978) John Cann
 - Snakes of Australia (1976) Graeme Gow
 - Lizards of Australia (1976) Stephen Swanson
- } Angus & Robertson, Sydney
- A Field Guide to Australian Frogs (1977) John Barker and Gordon Grigg, Rigby Ltd., Sydney.
 - A Field Guide to Reptiles of the Australian High Country (1980) Robert Jenkins and Roger Bartell. Inkata Press, Melbourne.
 - Keeping Reptiles and Amphibians as Pets (1980) Chris Banks, Thomas Nelson. Australia Pty. Ltd., Melbourne.
 - Reptile Ecology (1976) Harold Heatwole, University of Queensland Press, St. Lucia, Queensland.
 - Frogs; revised edition (1982) Michael Tyler, Collins, Sydney.
 - Dangerous Snakes of Australia (1982) Peter Mirtschin and Richard Davis, Rigby Ltd., Sydney.
 - Reptiles and Amphibians of Australia; revised edition (1979) Harold Cogger, A.H. & A.W. Reed, Sydney.

— Proceedings of the Melbourne Herpetological Symposium (edited by Chris Banks and Angus Martin) (1980) Zoological Board of Victoria, Melbourne.

The last-mentioned title is the published version of the highly-successful Melbourne Herpetological Symposium. Organised by the staff of the Reptile Department, Royal Melbourne Zoo, under the auspices of the Zoological Board of Victoria, this event was an attempt by the organisers to bring together herpetologists from all levels and areas of involvement. As one of those responsible, I am delighted that we were so successful. Further meetings of this type are anticipated for other centres in Australia, the next being planned for Sydney during January, 1984. Annual meetings are held by all the societies, but Australia's widespread and relatively small population is probably the main factor in preventing a large, broadly-based, annual gathering. This is not to say that Australian herpetologists are ill-informed, as the word-of-mouth method of transmitting information appears to be most efficient. Further, as well as receiving local news, many subscribe to at least one overseas herpetological publication.

On the surface, it may appear to some overseas readers that little of herpetological value is happening in Australia. This is probably due to our distance from other centres and our lack of a quarterly journal along the lines of those published by British and North American societies. However, once contact has been established with herpetologists in this country, one can see that herpetology in Australia is thriving. Knowledge of our herpetofauna is continually being broadened on all levels and the many contacts that most of us in Australia have developed will continue to be of great value to herpetology around the globe.

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Some readers may question the scientific names I have used. While there have been a number of recent taxonomic reassessments involving Australian species, I have followed 'Reptiles and Amphibians of Australia' (Cogger, 1979) as a standard text.