



FAUNA *of* AUSTRALIA



13. HISTORY OF DISCOVERY OF THE REPTILIA

Harold G. Cogger

FIRST ENCOUNTERS

When Australia was first encountered by Asian and European seafarers, the entire continent, together with Tasmania, was occupied by indigenous peoples who had an intimate knowledge of the country's reptiles and their habits. Reptiles then and now figure large in Aboriginal culture, including art and religion. It is ironic that herpetologists (Cogger 1970) first formally recorded the pig-nosed turtle (*Carettochelys insculpta*) from Australia in 1970, only to find later that this species had long ago been recorded for posterity by Aboriginal artists in the caves of western Arnhem Land (Fig. 13.1). The large Oenpelli python, *Morelia oenpelliensis*, was not known to science until 1975 (Gow 1977), but is also recorded in the early rock art of Arnhem Land.

Before the discovery of the eastern coast of Australia by Captain James Cook in 1770, and the subsequent establishment of the first European settlement in Australia—the British penal settlement at Sydney (Port Jackson) in 1788—Australia had been visited, though not always intentionally, by a number of European seafarers and explorers (Whitley 1970). Few records (and apparently no specimens) derived from these early encounters with the Australian fauna exist. Whitley (1970) recorded that no reptiles were among the few Australian animals recorded, apart from crocodiles and marine turtles noted from the southern coastal waters of New Guinea by the Spaniard Luis Vaez de Torres, who in 1606 passed through the Strait subsequently named in his honour. Nor did Abel Janszoon Tasman record any when he landed in Van Diemens Land, later to become known as Tasmania, in November 1642. Nevertheless the first Australian reptilian record goes to Tasman who, in 1644, recorded crocodiles (undoubtedly *Crocodylus porosus*) from Crocodile Island, west of the Wessell Islands, during an expedition to the Gulf of Carpentaria (Whitley 1970).

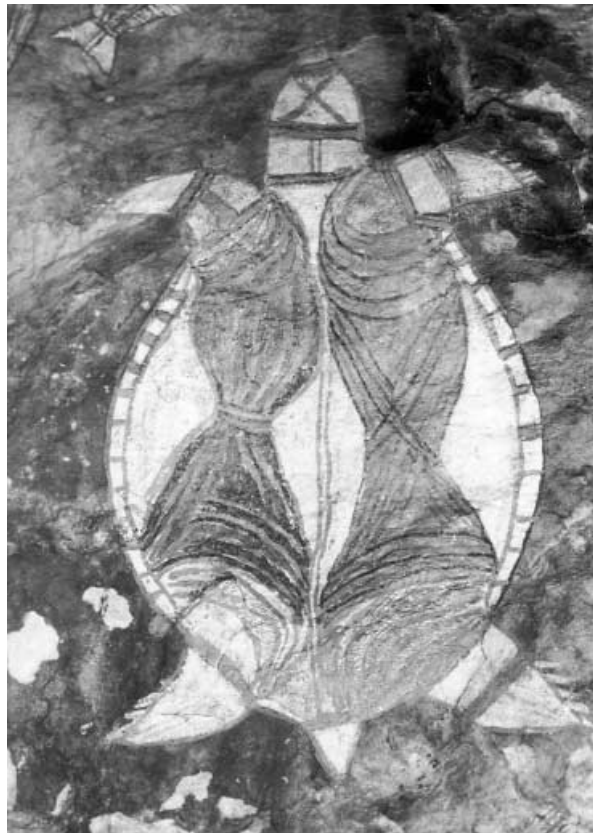


Figure 13.1 Aboriginal rock art illustrating *Carettochelys insculpta*, in which the position and extent of the limb musculature are shown clearly.

[Photo by A. Georges]

The English buccaneer William Dampier described the plentiful, edible turtles, presumably the Green Turtle, *Chelonia mydas*, when he visited the Kimberley coast in 1688. Dampier again visited the Western Australian coast at Shark Bay in 1699, and on 6 August described the first endemic Australian reptile—the scincid shingleback lizard, *Tiliqua rugosa* (Pl. 6.1). His description is diagnostic. It has already been quoted in an earlier volume in this series (Stanbury 1987), but part of it bears repeating in a herpetological volume: ‘...at the Rump, instead of the Tail there, they had a Stump of a Tail, which appeared like another Head; but not really such, being without Mouth or Eyes: Yet this Creature seem’d by this Means to have a Head at each End;...the Legs also seem’d all 4 of them to be Fore-legs, being all alike in Shape and Length, and seeming by the Joints and Bending to be made as if they were to go indifferently either Head or Tail foremost. They were speckled black and yellow like toads, and had Scales or Knobs on their Backs like those of Crocodiles, plated on to the Skin, or stuck into it, as part of the Skin. They are very slow in Motion; and when a Man comes nigh them they will stand still and hiss, not endeavouring to get away.’ (Dampier 1703). Dampier regarded their odour when opened up as so offensive as to make them inedible—an outcome of their omnivorous habits, including coprophagy.

Dampier also recorded other lizards and a ‘...small speckled Snake’, sea turtles and sea snakes during his visit to Shark Bay, but their specific identity is uncertain, despite Whitley’s (1970) identification of the sea snakes as *Pelamis platurus* (possible, but unlikely from the descriptions) and *Laticauda laticaudata* (unknown from this region).

‘...RARE AND CURIOUS SPECIMENS’

Initially, scientific knowledge of the native reptiles of Australia was confined to those species found in the vicinity of the first settlement at Port Jackson, or to coastal localities around the continent and Tasmania which were touched upon in the course of maritime explorations and surveys.

The first formal scientific descriptions of endemic species of Australian reptiles appeared in 1790 (White 1790). These had been collected in the early days of the Port Jackson settlement by or for John White, the settlement’s Surgeon General. While the descriptions have long been attributed to White, they were almost certainly prepared for White’s ‘Journal of a Voyage to New South Wales’ (1790) by Dr George Shaw in London. Shaw was an ordained clergyman who later qualified in medicine, became a keeper in the British Museum and published, with the artist Frederic Nodder, many early descriptions of animals from New Holland.

White provided illustrations of 12 reptiles, only five of which were formally named: the jacky lizard (*Amphibolurus muricatus*), the copper-tailed skink (*Ctenotus taeniolatus*), the southern leaf-tailed gecko (*Phyllurus platurus*), the eastern blue-tongue lizard (*Tiliqua scincoides*) and the lace monitor (*Varanus varius*). Other species illustrated but not named scientifically in the same work were the eastern water dragon (*Physignathus lesueurii*) (Pl. 5.3), named as a variety of *A. muricatus*, the eggs and adults of a garden skink (*Lampropholis* sp., described as the eggs and young of the viviparous blue-tongue lizard!) and six snakes—the young and adult of the diamond python, *Morelia s. spilotes*, the bandy bandy, *Vermicella annulata*, (Pl. 8.4) and a juvenile eastern brown snake, *Pseudonaja textilis*). As various artists’ renditions of the colours of the remaining two snakes are different in various editions of White’s work, their identity is uncertain; they are probably the green and the brown tree snakes, *Dendrelaphis punctulata* and *Boiga irregularis*, both still common in suburban Sydney.

13. HISTORY OF DISCOVERY OF THE REPTILIA

While the British were busy cataloguing and describing the fauna of the penal settlement of Port Jackson and its environs, a new age of scientific enlightenment was burgeoning in republican France. Of special significance to Australia and Australian herpetology was Napoleon's support of Nicolas Baudin's expedition to the south seas in the vessels *Geographe* (under the command of Baudin) and *Naturaliste* (under the command of Jacques F.E. Hamelin des Essarts). Included among their crews were the naturalists Francois Péron and Antoine Guichenot, and the artist Charles-Alexandre Lesueur—all names enshrined in latinised patronyms later assigned to species of Australian reptiles and frogs.

Baudin's expedition reached the coast of Western Australia in May 1801 (Whitley 1975), first travelling north to Timor, then returning to sail along the western and southern coastline of Australia to Tasmania, where their ships were separated until they both met up in Port Jackson in July 1802, where they stayed for six months.

Their intentions, though almost certainly strictly scientific, were deeply distrusted by the colony, believing England and France still to be war. Their naming of part of southern Australia as 'Terre Napoleon' did little to assuage British suspicion as to their territorial objectives. In Port Jackson their ships anchored in Neutral Bay—so named to provide a small neutral territory in which foreign vessels far from home might anchor to obtain fresh food and water. The French naturalists were apparently allowed to travel within the colony, but they were treated with suspicion, Péron was regarded as a spy (Whitley 1975), and collecting was restricted. Nevertheless, they collected marine animals from their anchorage, and took the opportunity to go ashore with the sailors to collect water from the stream running into Neutral Bay. There they collected specimens of the eastern water skink, *Eulamprus quoyii*, which still reside in the Muséum National d'Histoire Naturelle in Paris.

During Baudin's expedition many remote Australian localities were visited, where many animals and plants were collected for the first time. These localities included Shark Bay and King George Sound in what is now Western Australia, Kangaroo Island, Gulf St Vincent and Spencer Gulf in what is now South Australia, and King Island in Bass Strait.

The specimens collected on these expeditions were lodged in the Muséum National d'Histoire Naturelle in Paris, where they were utilised by the French herpetologists G. Bibron, A. Duméril, in their catalogue series on the world's herpetofauna (Fig. 13.2). Many of the Australian species catalogued and newly named by Gray at the British Museum were also catalogued and newly named by the Dumérils and Bibron, often almost concurrently.

Until recently, very few of the numerous illustrations made of these specimens during the voyage by Charles-Alexandre Lesueur and Nicolas-Martin Petit had been published (Bonnemains, Forsyth & Smith 1988). The fine study of the longnecked turtle *Chelodina longicollis* (Fig. 13.3) is one of the earliest illustrations of the species.

19TH CENTURY EXPLORATION OF THE CONTINENT

Some of the most productive and exciting reptile discoveries came not directly through the efforts of individual naturalists, but from broad geographic and natural history explorations of unknown or poorly known parts of the continent as part of the colonising process. Unfortunately, specimens seen on these expeditions were rarely collected. Heavy preservative and bulky preserved specimens were generally assigned a low priority by explorers preoccupied with

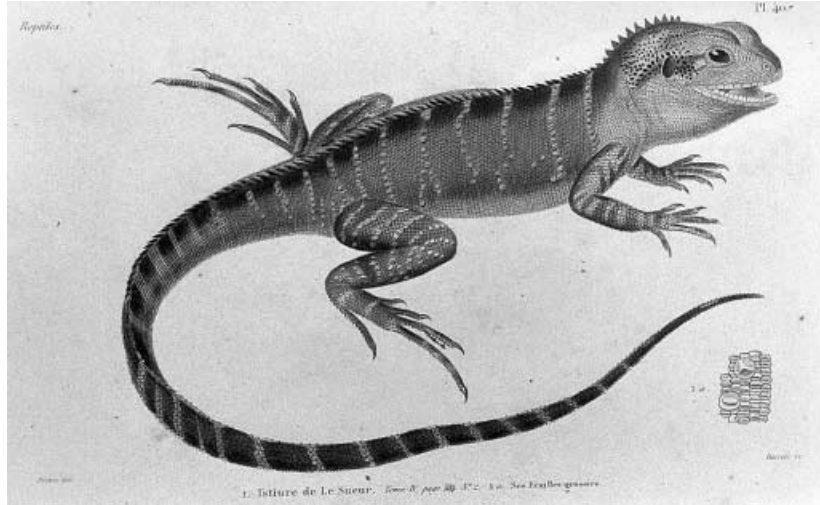


Figure 13.2 *Physignathus lesueurii*, illustrated by Duméril, Bibron & Duméril (1954).
[Photo by Australian Museum]

carrying adequate food and water. We know from both published and unpublished diaries that occasional specimens were collected on these early expeditions, but few survive today.

In eastern Australia, exploration of the interior began with the successful crossing of the Great Dividing Range immediately to the west of Sydney by a group guided by John Wilson in 1813. Until that time, knowledge of the reptiles beyond Sydney came from maritime excursions which landed at random points along the eastern coast.

Lacking staff trained in taxonomic zoology, and effectively cut off from the critical collections and literature housed in the great museums and universities of Europe, the only reptilian curiosities maintained by Australian institutions were those used for public display and edification, and not for comparative research. Consequently, new discoveries were rushed to the European centres for identification and description, with the result that virtually all of the type specimens of Australian reptile species described before the 1860s, if they still exist, are to be found in European collections.

In 1836 Surveyor-General Thomas Mitchell set out to explore the interior of New South Wales, with a view to discovering the anticipated ‘inland sea,’ which was thought to be the destination of the rivers flowing west of the Great Dividing Range. As collector, Mitchell took with him John Roach, a convict employed by the Australian Museum, and returned with a handful of reptiles virtually all of which were new to science (Cogger 1979). These were apparently lodged in the Museum on his return, but have since been lost, possibly in the Garden Palace fire of 1882 during which many of the Museum’s most valuable specimens were destroyed.

The specimens collected by Edward John Eyre on his 1839–41 explorations in South Australia and south-western Australia were sent to the British Museum in London (now the Natural History Museum), where they still reside. Similarly, specimens collected by Sir George Grey during his 1837–39 expeditions to north-western Australia to find a suitable site for a settlement, were taken to the British Museum.



Figure 13.3 One of the earliest illustrations of longnecked turtles, *Chelodina longicollis*, painted by Charles-Alexandre Lesueur during Baudin's expedition 1800–1804. [Photo by Muséum d'Histoire Naturelle, Le Havre; no. 78086]

The diversity of reptiles in northern Australia first became known as the result of opportunistic collecting by ship-based surveying expeditions. The early published catalogues of the Natural History Museum in London (Gray 1845, 1849; Günther, 1858) contain numerous new species and new geographic records attributable to the collecting activities of the crews of the *Beagle*, the *Fly* and the *Rattlesnake*.

Not until 1838, with the establishment of the settlement at Port Essington on Cobourg Peninsula (after unsuccessful attempts to establish settlements at Fort Dundas on Melville Island and at Fort Wellington on Raffles Bay) did systematic collecting result in the discovery of a whole suite of taxa now known to be widespread throughout much of northern Australia. These include *Morelia spilota variegata*, *Lophognathus temporalis*, *Oedura marmorata*, *Diporiphora bilineata* and *Lophognathus gilberti*.

Port Essington was also the destination of Ludwig Leichhardt's 1845 expedition. He was accompanied on the journey by the naturalist John Gilbert, who died on the trip after being speared by Aborigines. Collections made on Leichhardt's forward journey were taken to England from Port Essington, and his specimens are still lodged in the Natural History Museum in London. A full account of the collectors and collections associated with the settlement at Port Essington is to be found in Calaby (1974).

Between 1836 and 1875, the aridity of most of the interior of continental Australia became known through a series of small geographic expeditions, many of them involving tales of amazing fortitude and privation, and often involving heavy loss of life through thirst, starvation and conflict with the indigenous people. Despite encounters with Australia's rich arid-zone herpetofauna, few of these explorations led to significant new knowledge of this fauna.

However, as the essentially arid climatic and geographic features of the interior were defined, so its scientific exploration became more systematic. Naturalist collectors were now an essential component of any well-mounted expedition. Several of these expeditions stand out for their contribution to knowledge of the Australian herpetofauna, although this was not necessarily reflected in the publications of the time.

THE SCIENTIFIC DESCRIPTION OF OUR REPTILIAN FAUNA

Australia's reptile fauna currently stands at about 750 species. Of these, some 175 were described by European-based herpetologists before any was formally described by an Australian-based naturalist (Fig. 13.5). But systematic natural history collecting of the kind carried out by the European expeditions of the late 18th and early 19th centuries was not undertaken by Australians themselves until the middle of the 1800s. Indeed, the first description of an Australian species by an Australian-based scientist was published in 1863.

In the early days of colonial Australia, interest in our reptilian fauna tended to be general, rather than scientific, and concentrated either on the edible or the venomous. While it was early recognised that Australian reptiles were mostly different at the species level from those of other parts of the world, with a few exceptions (such as the thorny devil, *Moloch horridus*) they were not sufficiently distinctive in form or habits to warrant special attention. The attention of both the public and the early naturalists tended to be drawn to the unique, and often edible, monotremes and marsupials, or the distinctive bird fauna. However, it soon became apparent to the early colonists that a high proportion of our snakes are venomous. People and domestic animals infrequently but regularly died from snake bite, and the early records of life in the colonies are dotted with accounts of these first encounters. Early public displays of reptilian curiosities tended to emphasise our snake fauna. Consequently, it is not surprising that the first nine species described by an Australian-based herpetologist were snakes, and the tenth a crocodile! This preoccupation with snakes is also reflected in the popular literature. The first popular book devoted to a national treatment of Australian reptiles dealt only with snakes (Krefft 1869; Fig. 13.6), as did the second and third (Waite 1898; Kinghorn 1929). The first book to treat the entire Australian reptile fauna did not appear for 175 years (Worrell 1963b). The first published regional herpetofauna was for Victoria (McCoy 1878-1890), followed by that of South Australia (Waite 1929).

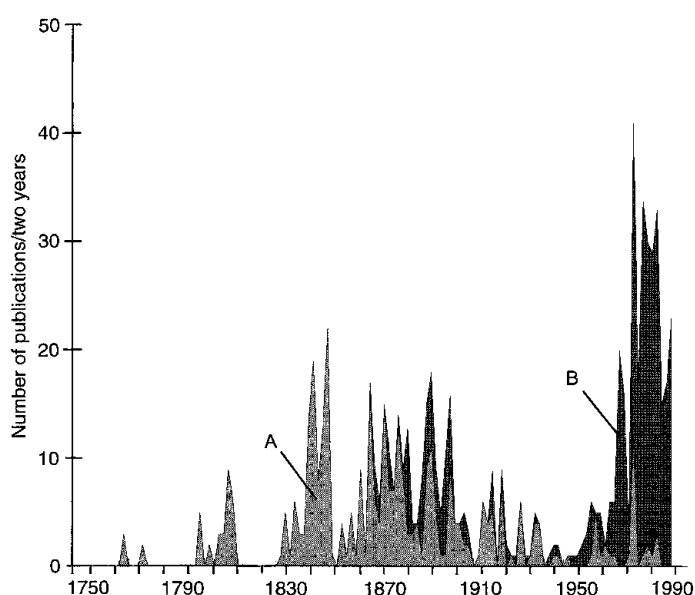


Figure 13.5 The sequence of description of currently valid Australian species, grouped by two-year increments, from 1750 to 1990. **A**, descriptions by taxonomists based outside Australia, primarily in Europe; **B**, descriptions by Australian taxonomists. [D. Wahl]



Figure 13.6 An imaginative and fine illustration of the black-headed python, *Aspidites melanocephalus*. (From Krefft's *Snakes of Australia* (1869)
[Photo by Australian Museum]

Whereas 70% of our present snake fauna was described by the end of the 19th century, only 35% of our present lizard fauna had been described by this time. The number of formal descriptions of the Australian reptile fauna significantly increased during certain periods (Fig. 13.5). The first peak occurred in the decade centred on 1845. The first peaks in Australian-based species descriptions are attributable to only a handful of individual researchers—Gerard Krefft (Fig. 13.7) in the 1860s and early 1870s, followed by William Macleay in the late 1870s and early 1880s, and Charles de Vis in the 1880s and 1890s (Fig. 13.8).

THE COLLECTIONS OF AUSTRALIAN REPTILES

By the beginning of the 20th century there were natural history museums in every Australian State, but not in the present-day Northern Territory. Their collections of reptiles had been acquired from a variety of sources, such as major expeditions, routine field collecting, and donations from collectors and the general public. The collections were small, ranging from a few hundred to a few thousands of specimens, but most museums were too underfunded to carry out extensive field surveys of their own. At the Australian Museum, Australia's oldest natural history museum founded in 1827, the first motor vehicle was donated in 1932.

In the universities, several zoologists turned their attention to reptiles, either as experimental animals or as subjects for anatomical or behavioural studies. However, with the exception of the William Macleay collection housed in the



Figure 13.7 Gerard Krefft, Australian Museum. [Photo by Australian Museum]

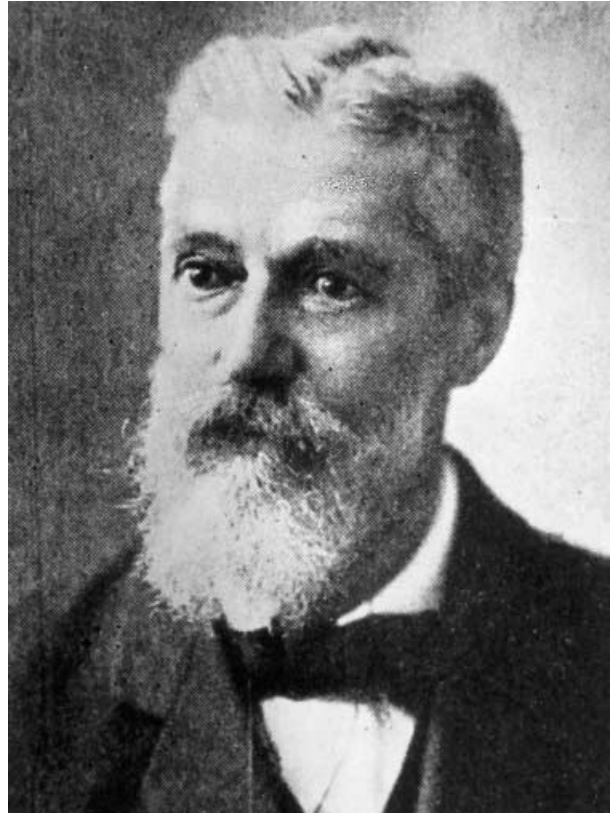


Figure 13.8 Charles de Vis, Queensland Museum. [Photo by Queensland Museum]

Macleay Museum of the University of Sydney, significant zoological museums which curated general systematic collections were not established in Australian universities, as they were in Europe and North America.

One of the most distinctive features of Australian natural history has been the failure to establish a national focus, a problem which continues to the present day. A national museum was not established until 1980, and while responsibility for the relatively small Federally-owned biological collections has been mooted for this institution, it has not been achieved. Indeed, these National Collections were mostly accumulated as working research collections of the various Divisions of CSIRO, and remain so. In recent times, there has been a healthy trend towards regarding all biological collections in Australia simply as elements in a national network, but this has not been recognised at a political level.

As a result of this history of collection-building, the description of Australia's reptile fauna between the turn of the century and the Second World War was left to a handful of museum-based taxonomists, while knowledge of the basic biology and ecology of our herpetofauna tended to come from scientists within the Australian university system. In New South Wales, Dene Fry (killed in France in 1917 at the age of 23) and James Roy Kinghorn (1891–1983; Fig. 13.9) at the Australian Museum dominated systematic herpetology. In Queensland it was Heber Longman at the Queensland Museum, in Victoria Charles Brazenor, and in Western Australia the Director of the Western Australian Museum, Ludwig Glauert. In South Australia Edgar Waite, who moved to the South Australian Museum from Sydney to take up the Directorship of that institution in 1914, made major contributions to systematic herpetology. His review of the Australian blind (typhlopod) snakes (Waite 1918) remains a seminal paper for students of this group, and his superb overview of the State's



Figure 13.9 Charles Kinghorn, Australian Museum.
[Photo by Australian Museum]

herpetofauna (Waite 1929) has been alluded to earlier in this chapter and has recently been reprinted by the American Society for the Study of Amphibians and Reptiles as a classic work in herpetology.

Incidentally, this same Society produced for the First World Congress of Herpetology in 1989 a book containing biographies of most of the world's past herpetologists (Adler 1989), including most of those mentioned in this Chapter.

Overseas, the taxonomic decisions of Arthur Loveridge, expressed in his catalogues of Australian and New Guinean reptiles and amphibians in the Museum of Comparative Zoology at Harvard University (Loveridge 1933, 1934, 1948), gave impetus to new studies of the Australian herpetofauna.

THE UNUSUAL STILL AWAITS

Following the Second World War, Australia entered a new era of prosperity accompanied by an influx of migrants from war-torn Europe. The combination of economic growth, the expansion of educational opportunities and the injection of new ideas, a new nationalism, and new technology in transport and communications, brought a renaissance of interest in the composition, ecology and conservation of our native wildlife. In herpetology, this has been reflected in a veritable explosion of newly described taxa (Fig. 13.5) beginning in the 1960s. An early contributor to this knowledge explosion was Eric Worrell, based at the Australian Reptile Park at Gosford.

Without doubt the most prominent contributor to this process was Glen Storr (Fig. 13.10). Based at the Western Australian Museum, he began a systematic taxonomic treatment of a region which had yet to be recognised as one of the richest herpetofaunas in the world. For 30 years until his death in 1990, Storr described more than 170 new taxa of Australian reptiles, and was a major contributor to the approximately 40% increase in the number of described species of Australian reptiles between 1975 and 1990.



Figure 13.10
Glen Storr, Western
Australian Museum.
[Photo by Western
Australian Museum]

The second half of the 20th century has also been accompanied by a parallel explosion in our knowledge of the ecology and phylogeny of Australian reptiles. Studies of chromosomes, isozymes and DNA have led to a refinement of our knowledge of genetic relationships. Detailed ecological studies of Australian reptiles remain relatively rare (see Bradshaw 1986 and Pianka 1986 for reviews), which impacts significantly on our ability to develop appropriate strategies to conserve our native reptiles.

To date, no Australian reptile is known to have become extinct (Cogger *et al.* 1993). While it is often contended that taxonomic knowledge of Australia's vertebrate fauna is refined and nearly complete, several recent experiences suggest otherwise. Australia's second largest species of python, *Morelia oenpelliensis* was not known to science until 1975 (Gow 1977). Nor was another large python, the carinated python (*Morelia carinata*) found until 1973 (Smith 1981), since when only three specimens have been seen of this Kimberley endemic. In 1992, a distinctive, new, large scincid lizard was found in south-eastern Queensland, less than 200 km from Brisbane, by a wildlife ranger. Still undescribed (Covacevich *et al.* in press), it typifies the need for continuing research into the distribution and taxonomy of Australia's rich herpetofauna.