

Golden Anniversary of the Australian Society of Herpetologists

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Herpetology is the study of frogs and reptiles and has had a long history within Australia (Shea 2014). The Australian Society of Herpetologists turned 50 in 2014, having been organised in 1964 with representatives from New South Wales, Victoria and the Australian Capital Territory meeting at Canberra High School to discuss what could be done to lift the profile of herpetological research in Australia. From this initial discussion arose the Australian Society of Herpetologists and the annual meeting that is moved around the country to provide the background for what herpetological research is being undertaken within Australia. Australia has a herpetofauna (crocodiles, snakes, lizards, turtles and frogs) that attracts research from within and outside Australia. Over the last three years, over a quarter of the papers that have been published in the *Australian Journal of Zoology* have been about herpetological projects. This area of research is still growing and developing (around 200 attendees at the last two annual meetings) as herpetological studies are characterising the large diversity of species within Australia, as well as examining the potential effects of climate change on the biology of the frogs, lizards and snakes present from temperate to tropical environments.

One of the biggest questions with regard to biodiversity is ‘how many species?’ To address that question requires some accord in what defines a species. The paper by Oliver *et al.* (2014) presents a modern approach to ensure that our understanding of biodiversity is integrated into conservation and biological research, as well as deal with species complexes in the rapidly advancing genetic techniques that can be used. In addition, they suggest that current morphological and genetic techniques can be used to make systematics research more efficient, but must also be integrated into other areas of biology as well.

The background and the subsequent founding of the Australian Society of Herpetology is recounted, indicating the founding members and their contributions to the area, both through their own work, but, more importantly, as a result of their inspiration to several graduate students who themselves established outstanding research programs around Australia. As Shea (2014) shows, the trajectory for herpetological papers and numbers of scientists dealing with herpetological questions is ascending rapidly. The groundwork for the interactions (as indicated by multi-authored papers) and the importance of herpetology as a discipline within Australia has been maintained through the presence of the society over the last 50 years.

Part of the attraction of herpetology as a discipline in Australia is the breadth of studies that have been undertaken on the Australian herpetofauna. Twenty-one years ago (1993), the

Royal Society of New South Wales published ‘Herpetology in Australia – A Diverse Discipline’ and that description is still accurate as the papers that make up the remainder of this special issue are clearly diverse in both topic and taxon.

Three papers dealing with various aspects of chelonian biology are presented. Metabolic rate and the role of temperature in affecting the metabolism of *Pseudemydura umbrina* from Western Australia is examined (Arnall *et al.* 2014). The use of the data to generate a thermal performance curve suggests that the activity of these turtles may be limited by an upper temperature around 30°C, which is in line with behavioural observations. Also within Western Australia, an examination of paternity from three different nesting regions indicates that female population size does not influence multiple paternities in loggerhead turtles, *Caretta caretta* (Tedeschi *et al.* 2014). Typically, one or two males sire each clutch, but as these are the first data on paternity for these sites, the work constitutes the baseline data for potential changes with environmental changes.

Myuchelys bellii, the western sawshelled turtle, is found currently from the southern region of Queensland (Bold Rock Creek) to northern parts of New South Wales (Namoi and Gwydir Rivers). Concern regarding the long-term viability of these populations resulted in Fielder *et al.* (2014) carrying out an eight-year study on the reproduction and growth of these turtles, indicating that age of sexual maturity differs between males and females, and that concern regarding the isolated structure of the populations is warranted.

Switching to lizards and frogs, the next four papers start with the theme of endangered species; in this case, foraging by the skink, *Liopholis slateri* (McKinney *et al.* 2014). This lizard is a sit-and-wait predator of insects and exemplifies several of the burrow-inhabiting lizards that are found in Australia which are dependent upon habitats that permit burrow formation.

Although most of the burrow-dwelling lizards have an invertebrate diet, in aquatic habitats the opposite situation can exist because invertebrates pose a threat as they feed on the eggs, tadpoles and froglets of native frog species. Various invertebrates consume native species, and this threat to frog populations is reported (Wilson *et al.* 2014), showing that crayfish (*Cherax destructor*), notonectids (*Enithares woodwardi*) and some caddisfly nymphs can cause damage to native frog populations.

Burrow-dwelling lizards that sit-and-wait can forage successfully, but how do such isolated species reproduce? Using filming techniques on the pygmy bluetongue lizard (*Tiliqua adelaidensis*), Ebrahimi *et al.* (2014) found that, during

the mating period, these lizards may undertake longer-range movements, either to find a mate (males) or to potentially attract a mate (females). How the female attraction may occur is still unknown.

Most studies on native herpetofauna are directed towards conserving known populations or understanding the diversity of species; however, some native species have spread to become invasive species in other countries. One such successful invader is the delicate skink, *Lampropholis delicata*, currently established in Hawaii and New Zealand. More recently, this lizard has been reported in many habitats on Lord Howe Island. Chapple *et al.* (2014) have studied the biology of this invasive species over six years and show how morphological differences are present in different populations of these lizards, potentially as a result of different introductions of this species from various areas on the Australian east coast. The species poses a threat to native invertebrates on Lord Howe Island, but its reproductive success makes control processes difficult.

This issue concludes with two short reports on using genetic techniques that are used to aid herpetological studies. The first reports on extracting DNA from scats to aid recognition of individual species from the scats that are present, and therefore minimising capture of individuals (Pearson *et al.* 2014). The second short report describes the extraction of anonymous nuclear DNA from the shingle-back skink, *Tiliqua rugosa*, and discusses whether such DNA strands can be used with other species in the *Egernia* group (Ansari *et al.* 2014).

So after 50 years, the Australian Society of Herpetologists is still an important venue for the exchange of ideas and knowledge with respect to Australian fauna. If anyone is interested in contacting the society, the website is <http://www.australiansocietyofherpetologists.org/index.html>.

Best wishes for another 50 years of expanding our understanding of the interaction of the herpetofauna and their Australian habitats.

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