

Current issues in the conservation of the terrestrial herpetofauna of Tasmania

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ABSTRACT

The native herpetofauna of Tasmania, though a small part of the rich Australian fauna, is ecologically and biogeographically distinctive. It contains 31 terrestrial species and six marine species. Among the terrestrial fauna nine species (29 per cent of the fauna) are endemic. Only one species, *Niveoscincus palfreymani*, is considered to be threatened.

Habitat for most species is well reserved but human impacts on unreserved land have reduced the amount of available habitat for some species (e.g., *Litoria raniformis*) and these need monitoring. Distributional and abundance data are incomplete for almost all species, although amphibian and reptile atlases, currently under preparation by the Parks and Wildlife Service, should improve this situation considerably.

The highest priority for action to conserve the fauna is for the State Government to pass legislation to protect native species. Actions to conserve the fauna as well as recent attempts to exploit it are summarized.

INTRODUCTION

This paper outlines issues and processes affecting the conservation of the Tasmanian terrestrial herpetofauna. The herpetofauna contains 31 terrestrial species which include: three hylid and seven myobatrachid frogs and an unusual new undescribed frog; one agamid; 16 scincid lizards and three elapid snakes (Table 1). There are six marine species but they are not included in this paper. Information on the distribution and general ecology of the fauna is contained in Martin and Littlejohn (1982) and Rawlinson (1974).

Interest in the skinks has been recently stimulated by a series of detailed studies on their taxonomy and phylogeny (Hutchinson and Donnellan 1988, 1992; Hutchinson *et al.* 1988, 1989; Hutchinson and Schwaner 1991). This work includes the discovery of new alpine species (*Niveoscincus microlepidotus* and *N. orocryptus*) and the clarification of the relationships between the three species within the "entre-causeauxii" complex of the genus *Pseudemoia*. It has improved understanding of the fauna and provides a better information base for conservation action.

Robertson (1993) announced the discovery of a new species of frog from the southern highlands of the state in November 1992. The species is unusual and belongs in a new genus (M. Davies, pers. comm.). Its distribution is currently being investigated by David Ziegeler of the Parks and Wildlife Service and a species description is being co-ordinated by one of us (DR).

CONSERVATION STATUS

None of the Tasmanian herpetofauna is presently considered to be endangered, although data are scarce even for the best studied species, except *Niveoscincus palfreymani*. (Table 1). Quantitative data of any kind are scarce for Tasmania's herpetofauna. The only recently published ecological studies are those by Schwaner (1991) and Taylor *et al.* (1993). An atlas of frogs, based on records of calls and specimen collections, is being compiled by Peter Brown of the Parks and Wildlife Service with the assistance of volunteers. This work began in 1990 and will continue until 1994. It will considerably improve published information about the distribution and abundance of the frog species. A reptile atlas is also under consideration but specific surveys will still be necessary for the more cryptic species and those confined to high altitude habitat.

Niveoscincus palfreymani is the only reptile considered to be vulnerable (Cogger *et al.*, in press). This arises from its very localised distribution on Pedra Branca Islet and its total dependence on a small seabird colony for food (Rounsevell *et al.* 1985). Should these birds leave the island or rodents gain access to it the species would quickly become extinct. Habitat modified by agriculture and urbanization in lowland areas has eliminated *Litoria raniformis* from wetlands it formerly occupied in some districts (Tyler in press). This species has the narrowest habitat niche of any Tasmanian lowland frog. The recently described skink *Niveoscincus orocryptus* is confined to high mountains

Table 1. The terrestrial herpetofauna of Tasmania. (Species * = endemic. Types of threat: 1 — no legal protection; 2 — significant habitat reduction; 3 — predators and food supply (see text). Conservation status in bracket after Cogger *et al.* (in press) and Tyler (in press). Habitat conserved: ++ adequately; — inadequately).

Species	Threat type	Status/abundance	Habitat Cons.
CYCLORANINAE			
<i>Limnodynastes dumerili</i>	1	common	++
<i>Limnodynastes peronii</i>	1	common, range limited	++
<i>Limnodynastes tasmaniensis</i>	1	common	++
MYOBATRACHINAE			
<i>Geocrinia laevis</i>	1	widespread	++
<i>Pseudophryne semimarmorata</i>	1	common	++
<i>Ranidella signifera</i>	1	very widespread, very abundant	++
<i>Ranidella tasmaniensis</i> *	1	very widespread, very abundant	++
?Gen. nov. sp nov.*	1	common at five known sites	++
HYLIDAE			
<i>Litoria burrowsi</i> *	1	common	++
<i>Litoria ewingii</i>	1	very widespread, very abundant	++
<i>Litoria raniformis</i>	1,2	[K], range has declined	++
AGAMIDAE			
<i>Tympanocryptis diemensis</i>	1	common	++
SCINCIDAE			
<i>Bassiana duperreyi</i>	1	common	++
<i>Cyclodomorphus casuarinae</i>	1	widespread, common	++
<i>Egernia whitii</i>	1	common	++
<i>Lampropholis delicata</i>	1	common	++
<i>Lerista bougainvillii</i>	1	range limited	++
<i>Niveoscincus greeni</i> *	1	common, restricted habitat	++
<i>Niveoscincus metallicus</i>	1	very widespread, very abundant	++
<i>Niveoscincus microlepidotus</i> *	1	common, restricted habitat	++
<i>Niveoscincus ocellatus</i> *	1	common	++
<i>Niveoscincus orocryptus</i> *	1	restricted habitat	++
<i>Niveoscincus palfreymani</i> *	3	[V] Rare, habitat very restricted	++
<i>Niveoscincus pretiosus</i> *	1	common	++
<i>Pseudemoia entrecasteauxii</i>	1	common	++
<i>Pseudemoia rawlinsoni</i>	1,2	known only from one site	—
<i>Pseudemoia pagenstecheri</i>	1,2	known only from a few sites	—
<i>Tiliqua nigrolutea</i>	1	widespread, common	++
ELAPIDAE			
<i>Austrelaps superbus</i>	1	common	++
<i>Drysdalia coronoides</i>	1	widespread, common	++
<i>Notechis ater</i>	1	widespread, common	++

in reserves and seems secure. *Pseudemoia rawlinsoni* is known only from a single specimen collected from Cape Barren Island in Bass Strait. The habitat of *Pseudemoia pagenstecheri*, another recently recognized species, is probably the most threatened in Tasmania. It inhabits tussock grassland which is a poorly conserved plant community in Tasmania. Significant threats to the fauna outside of reserves generally are human-induced. For the fauna generally there is little information on the likely effects of, for example, changes to agricultural and forestry practices, increased urbanization, or fire.

Potential ecological competition from the naturalization of exotic species including other non-Tasmanian herpetofauna is the most intractable threat and has resulted in a ban on the general importation and exportation of

herpetofauna. Escaped tortoises, *Chelodina longicollis* previously kept as domestic pets, have already established themselves in major river systems across the state. The Tasmanian Government has supported attempts to farm *Notechis ater serventyi* from Chappell Island and other forms of the species collected on offshore islands and the mainland of Tasmania. Export of the products from such commercial operations is hampered by the lack of state legislation protecting the species.

LEGISLATION

Other Australian states and territories legislated to protect their herpetofauna over a decade ago. With the exception of *Niveoscincus palfreymani*, which is legally protected as a threatened species, none of Tasmania's other terrestrial species are specifically protected by

legislation. Consequently there are no controls on collecting of fauna outside of reserves, housing, or translocation of specimens and anyone is free to buy, keep, sell or swap any species within the State. Fortunately all species except *Pseudemoia pagenstecheri* and *P. rawlinsoni* are known to be present in nature reserves. An attempt to introduce protective legislation was, in fact, made by a previous government on 12 June, 1991 when amendments to the Wildlife Regulations were gazetted. Subsequently these were disallowed by the Legislative Council on 24 September, 1991.

It is informative, though frustrating, to record the demise of this legislation in the face of growing co-operation between herpetologists and governments in Australia generally (Knowles *et al.* 1991) and the almost universal recognition of the need for it. Its intention was to enable the then Department of Parks, Wildlife and Heritage to control and regulate trade in native herpetofauna, the collection of herpetofauna from the wild, and their maintenance in captivity. To achieve this all Tasmanian reptiles and amphibians were to be scheduled as protected fauna. However, the intention in the first instance was clearly to protect reptiles since the collection of frogs, at all stages of their life history, was to be allowed without permit. In addition anyone was to be allowed to kill a snake that threatened humans or domestic animals. The legislation foundered following intense political lobbying from two organizations. The Tasmanian Herpetological Society and the Tasmanian Fauna Society wanted exemptions for their members to enable them to collect and keep up to six specimens of each reptile species. They clearly wanted to enable members to continue collecting reptiles (primarily snakes) without having to justify or explain the need, an interesting and privileged status afforded to no other professional or amateur wildlife society in Tasmania.

The dropping of protective legislation is unlikely to seriously endanger the herpetofauna in Tasmania at this time since, as already pointed out, populations of most species may be found in reserves. Of greater immediate concern is the possibility of uncontrolled and undocumented transfer of animals around the State. Many of Tasmania's frogs and reptiles inhabit a very wide range of habitats and are of especial biogeographic interest. Their populations are little known in detail and many exist in isolation on islands and are worthy of detailed study before the characteristics that make them distinctive are lost. One internationally renowned example is

that of the rapid evolution of isolated populations of *Notechis ater* on islands, including Chappel Island off southern Australia (Schwaner 1991). Herpetofauna from the mainland of Australia and elsewhere (Jones 1993) which includes many species that either have (e.g., *Chelodina longicollis*), or can (e.g., Varanidae), become naturalized in the State can be readily introduced into Tasmania accidentally or intentionally. Tasmania already has enough feral animals and the lack of legislative powers to regulate and protect native herpetofauna will continue to limit severely the ability to control the import and export of reptiles and amphibians.

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Fig. 1.



Fig. 2.



Fig. 3.

Figs 1–3. Specimens of an undescribed new frog (Gen. nov. sp. nov.) recently found on mountain tops in southern Tasmania. 1. One female and two males; 2. Two males; 3. Two males and three females. (Photos: Hans and Annie Wapstra.)