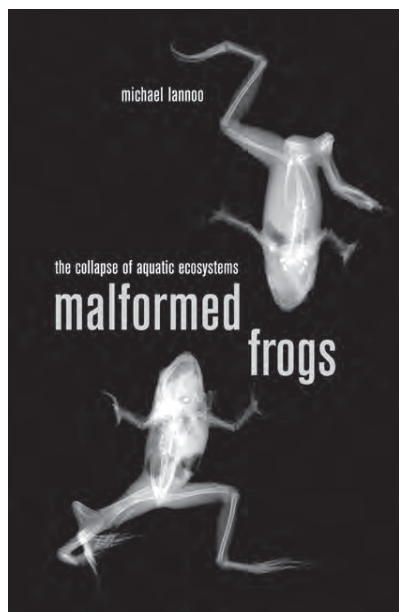

BOOK REVIEWS

Malformed Frogs: The Collapse of Aquatic Ecosystems

Michael Lannoo

2008. University of California Press, Berkeley, Los Angeles, London. 768 pp.



Malformed frogs have been prominent within the issue of amphibian declines. They underline one of the original key concerns stemming from the phenomenon that amphibians may, like the now overworked canary in the coalmine, be warning of hitherto unrecognised environmental degradation. Apparently amphibian malformations have been documented from as long as 300 years ago, but it was the more recent discovery of malformed Northern Leopard Frogs by junior high school students in Minnesota, in 1995, that raised awareness of amphibian malformations among both the public and research communities.

This book provides a readable summary of the research into amphibian malformations in North America. It includes a thorough catalogue, which the author summarises as ‘parts missing, parts present but abnormal, and parts extra’. Sixty-three radiographs of frogs (by far the majority of malformations have been reported from anurans

rather than urodeles), form the basis of the catalogue which provides a reference for researchers and, in some cases, indications of the underlying causes of the malformations themselves. The book also gives descriptions of some well-known malformation hotspots, defined as sites where peak counts of malformed amphibians are at least 5% of the population sampled.

In spite of the attention given to the issue of malformed frogs, Mike Lannoo’s account has an air of frustration and disappointment. Unusually, for a scientist, he concludes that we do not need further research to unravel the causal factors. In fact, Lannoo’s view is that progress has been hampered by disputes over causes and that, overall, the issue has been a scientific failure, because of the lack of focus on remediation. Lannoo notes that no malformed frog hotspot has been restored to ecological health as a result of research.

The factors that have been found to cause malformations are examined with particular attention given to the trematode parasite *Ribeiroia ondatrae* and agro-chemicals. Lannoo comes to the conclusion that no single factor satisfactorily explains the full range of malformations documented but he proposes that the practical solution may be simply to reduce agricultural inputs into aquatic systems. Not only does this redress problems caused by direct impact of agro-chemicals on amphibian development, but it is also likely to reduce the numbers of *Ribeiroia*, which tend to increase in nutrient-enriched water.

A chapter on malformations in humans concludes that, in general, these differ from those in amphibians, as the former tend to have a genetic basis, whereas in amphibians they tend to be environmentally induced. Nevertheless, Lannoo stresses the potential significance of findings of Lowcock et al. (1997) that chromosomal damage has been detected in malformed frogs. Whilst, this is the exception rather than the rule, Lannoo urges that if genetic abnormalities are involved at all, then we should be concerned about potential effects in humans, too.

‘Malformed Amphibians’ is something of a hybrid between a scientific detective story and a reference book – but it does the job of both well.

REFERENCES

Lowcock, L.A., Sharbel, T.F., Bonin ,M., Ouellet, M., Rodrigue, J. and DesGranges, J.-L. (1997). Flow cytometric assay for in vivo genotoxic effects of pesticides in green frogs (*Rana clamitans*). *Aquatic Toxicology* **38**, 241-255.

JOHN BAKER

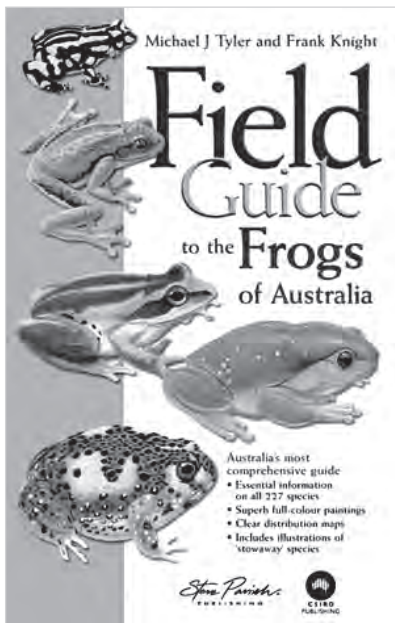
c/o Amphibian and Reptile Conservation, 655a Christchurch Rd, Boscombe, Bournemouth, Dorset, BH1 4AP.



Field Guide to the Frogs of Australia

Mike Tyler and Frank Knight.

2009. CSIRO Publishing, Australia, 200 pp.



When first receiving the ‘Field Guide to the Frogs of Australia’ I was impressed by the aesthetics of the front cover, with its brightly coloured illustrations. This, coupled with a brief peruse through the book reinforced the sheer skill and attention to detail of the workmanship. The practicality of the

book is recognisable by the plasticized cover that could protect the pages during periods of rain or accidental tea spillage.

Pages one to three of the field guide present a varied and busy introduction, including the use of Latin names, common or colloquial names and stowaways. The author highlights the swiftness of using an illustrated and mapped guide for species identification that only becomes inadequate when the species is differentiated by its call. The author provides 227 species accounts, with the exception of new species of *Litoria*, *Uperoleia* and *Crinia* yet to be described, and with the possibility of more to be discovered.

Latin nomenclature is a stable process, however, the change in stability for anurans is mentioned. In 2006 Daryl Frost and team reassessed anuran families, such as the change of *Bufo marinus* to *Rhinella marinus* but the former is retained by the author pending further information. The misuse of common names for a number of species such as ‘Bullfrog’ and ‘Green Tree Frog’ is mentioned due to the many species that look alike have sympatric distributions. The author states that Latin is preferred and only refers to the most popular common names in the guide.

The stowaway section is significant due to the Cane Toad (*Bufo marinus*) problem. Species accidentally entering Australia in cargo is a fascinating yet deeply concerning problem and thankfully the book holds a special illustrated section for the readers’ interest and for future reference in this. The author highlights the main stowaways established including *Litoria fallax* into Guam. A very nice but simplified sketch of an anuran is shown on page two, illustrating the main morphological measurements taken in the field.

I found that one of the most important areas of the book is within pages four to nine; that encapsulate a comprehensive review of the six families, Hylidae, Limnodynastidae, Microhylidae, Myobatrachidae, Ranidae and Bufonidae, and their genera. The sheer detail given in such a small section will provide the reader with a vital preface to lead them smoothly through the book. One pleasing snippet is the addition of unique behavioural aspects, for instance the genera *Assa* (Myobatrachidae), in