
BOOK REVIEWS

Extinction in Our Times: Global Amphibian Declines

James P. Collins and Martha L. Crump
2009, Oxford University Press, 273 pp.



‘Something is very wrong’. These words are taken from the 20 April 1989 journal entry of Martha Crump in her excellent ‘In Search of the Golden frog.’ (Crump, 2000). With increasing desperation she was coming to realise that the Dink Frogs, Glass Frogs, Harlequin Toads and, most famously, the Golden Toad (*Bufo periglenes*) that had been abundant only a few years before, were now absent completely from her study area in Costa Rican cloud forest. That same year, at the First World Congress of Herpetology in Canterbury it became apparent that this was not an isolated incident but that similar declines were happening in anuran populations in parts of the globe as varied as Tanzania (Kihansi Spray Toads *Nectophrynoides asperginis*), Australia (Gastric Brooding Frog *Rheobatrachus silus*), Canada (Western Chorus Frogs *Pseudacris triseriata*) as well as many others, and affecting not just frogs and toads but salamanders too, such as many species of the North American *Plethodon* genus.

In ‘Extinction in Our Times’ Collins and Crump

pick up the story of how workers first realised the chilling fact that stories and anecdotes of disappearing amphibians were starting to become significant and how this catalysed the formation of working groups and organisations such as the Declining Amphibians Population Task Force and the many others that have followed in the years since. These groups led the coordination and extensive monitoring and research that has been taking place ever since, slowly building up a clearer picture of why these devastating losses might be occurring.

Gloomy as its subject matter is I couldn’t help but enjoy reading this book! This is a fascinating story of scientific detective work as the intricacies of amphibian reproductive modes, habitat use, distribution and other factors are investigated in a new light with the added urgency of an ongoing collapse in many populations. Understandably the shadow of Chytrid fungus (*Batrachochytrium dendrobatidis*, or Bd) looms over this book, with many pages devoted to the description of its effects, ominous spread and possible causes. Other potential causes of stress to amphibians and their environments are not ignored however, with sections on introduced species, the pet trade, pollution and global climate change. Habitat loss, therein called ‘land use change’, is covered, although this section is surprisingly brief. The fact that many declines are likely caused by a combination of factors interacting synergistically is what makes the problem such a difficult one to solve – a fact that is well represented in the book as the various scenarios and hypotheses are explored. The authors put forward both sides of any arguments and do not hide the fact that there are sometimes tensions within the herp community as to how facts are interpreted (such as the disputed ‘Chytrid-thermal-optimum’ hypothesis).

I was pleased that the book quickly puts to rest the inappropriate and often repeated ‘Canary in the coalmine’ metaphor, designed to show that amphibians are the ideal indicator species to warn of impending environmental problems (see also Beebee et al., 2009; Sewell & Griffiths, 2009). This misleading statement seems to be regularly trotted out in any mainstream article about amphibian

extinctions when one would actually think the deployment of straight facts would suffice – the disappearance, ‘forever’, of any animal is surely enough to grab attention? Fragile and sensitive skin notwithstanding, I think a 350 million year tenure on earth to date is testament to a certain amount of resilience for our humble amphibians!

This is not a despairing book resigned to the inevitable loss of all of our amphibians but more of a review of the progress that specialists, and importantly, not only herpetologists, but also experts in many other disciplines such as climate change, toxicology, ecology and policy have made in documenting current threats and supporting education and funding. It serves as a summary of the current status of our collective knowledge of the problem and a timely reminder to all that are not actually engaged in researching and mitigating the issue that this is not a problem that will resolve itself. In fact the book ends with the phrase ‘one mystery yields another’ – in other words, although we have discovered much and made steps toward understanding and combating the range of problems we have also opened up new avenues of thought and with it new puzzles to solve. Among these problems is the issue of an increasing reliance on maintaining threatened species in captivity (albeit forced by circumstances, to ensure at least some survival). This becomes a problem when an amphibian is unable to be reintroduced into a safe and disease free natural habitat until further discoveries are made about Bd, its life history and the possibilities of producing animals from captive stock with immunity or reduced susceptibility.

Anyone with an interest in our planet and its wildlife will be able to grasp the importance of these events and even if not an avid herper themselves will be able to see that the title could refer to a number of different taxon groups in the

very near future – mammals being one of them. We are watching species drop out of existence before our eyes, not just in one place but across the globe – and there is a very good chance that we are at least partly to blame. This book is not an epitaph for amphibians worldwide, but a quietly inspirational reminder that there is a major problem. However, it is one that can hopefully be solved with continued focus and funding.

This book understandably does not provide answers to all the problems of amphibian declines and extinctions but it certainly illustrates in a clear, readable and not prohibitively scientific way how the race to get to the bottom of the problems is well under way. There have been many papers published on amphibian declines in recent years and keeping anywhere near up to date has been a tall order. This book provides a very welcome synthesis in drawing together different strands of current research and investigation to date. I sincerely hope that a second volume can follow in time and that the message will be a positive one.

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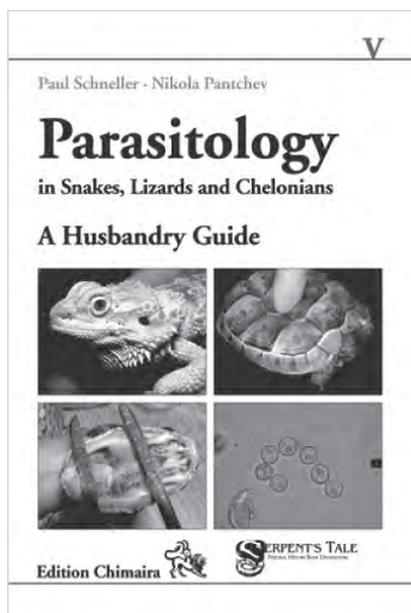
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Parasitology in Snakes, Lizards and Chelonians: A Husbandry Guide.

Paul Schneller and Nikola Pantchec
2008, Edition Chimaira,
Frankfurt am Main, 203 pp.



'Parasitology in Snakes, Lizards and Chelonians, a Husbandry Guide', by Paul Schneller and Nikola Pantchec is a 203 page hard-bound text that was translated from the original German by Dr. Nina Norden. The reviewer considers this a beginner's text for this subject material covered in this book. The guide is divided into four sections (chapters) that run together one after the other: 1. General Parasitology in Snakes, Lizards, and Chelonians; 2. Specific Parasitology in Snakes, Lizards and Chelonians; 3. Zoonoses; and 4. Glossary.

Section 1 covers detrimental effects of parasites, the need for parasitological examinations and correct sampling, quarantine enclosures, terrarium decontamination, treatment of parasitic diseases, and recognizing health problems in reptiles. Several typographical errors can be found here and throughout other portions of the book due to the translation. They are minor points but should be mentioned. The photographs of parasite eggs and

oocysts are occasionally out of focus, but overall they are generally good to excellent in quality. Occasionally a figure does not match with the statement made in the text. For instance, the authors state on page 31 "Dosage and duration of treatment must be agreed between reptile keeper and skilled veterinarian (fig 1)". Figure 1 is that of a Russian tortoise with a pharyngostomy tube for food and drug administration.

While there is an extensive table of antiparasitic drugs, no dosages or frequency of administration are provided. Potential toxic effects should have been included. Disinfectants are also mentioned within the text but recommended concentrations and more detail on how they should be used is needed. Terrariums are commonly used for small reptiles in Europe while in the US cages or enclosures of reptiles tend to be less intricate. Good information is provided on how to manage a terrarium. On page 14, the authors state that "Reptiles kept in captivity are often infected with parasites and the resulting parasite-disease can lead to severe health problems". However, today we see that more and more reptiles are being captive bred and overall fewer parasitic diseases are being seen. Some persist and some have even intensified as a result of captive breeding practices, but in the reviewer's experience there has overall been a decline in captive bred reptiles. This is not the case for those reptiles that are still being imported from the wild. On page 15, the authors state that "Reptiles held in captivity are more susceptible to parasite infection than wild reptiles." The reviewer is unsure of the point the author is trying to make. Possibly what is meant is that wild caught reptiles with parasite infections are more susceptible to detrimental effects of the parasites. Susceptibility to infection should remain the same, whether in captivity or the wild. Prevalence of infection will vary.

Comments in this chapter and elsewhere in the book about detrimental effects of oxyurids on the host may be more speculation than actual fact. There are few reports in the literature concerning detrimental effects of oxyurids in reptiles. Some clinicians consider them normal fauna of the colon of herbivorous reptiles and do not administer parasiticides to make them oxyurid

free. The section on mites, images of mites and their control is particularly good. However, some American products such as Provent-a-Mite (Pro-Products, www.pro-products.com/) are not mentioned.

Section 2 covers major groups of external parasites, internal parasites (helminths), and internal parasites (protozoa). On page 40, the authors state that "Disease eradication from the environment is as important as treatment of the affected animals (see Chapter 1.4). This is a mistake commonly made in the medical literature. Disease is a change in structure and function of tissue and may result from a pathogen for those infectious diseases or result from toxicosis, metabolic disturbance, nutritional deficiencies, and neoplasia, etc. Disease is not present in the environment, but present in the host. Pathogen eradication from the environment should be attempted. Figure 60 may be an egg of *Rhabdias* and not *Strongyloides*. Eggs of the two should have been shown side-by-side to exhibit distinguishing features. These may be difficult to distinguish. Throughout this section and other sections of this book, arrows should have been added to point to specific parasites or other structures in various figures. Figure 123A is probably a Burmese python rather than a reticulated python. One important parasite missed in this chapter is intranuclear coccidiosis of tortoises. Several papers can be found in the scientific literature. A brief review should have been included. Infection vs infestation should have been clarified. At times the wrong term is used. Infestation should have been included in the glossary. Additional terms that are often

confused are clinical signs vs. symptoms. Clinical signs are what we observe in an animal when doing an examination. Symptoms are subjective human sensations. On page 169, the authors state that *Entamoeba invadens* infections in chelonians are usually asymptomatic. This may be the case but deaths of chelonians associated with amoebic infections have been reported in chelonians. Also, *Caryospora* fungi has been reported as an important pathogen in sea turtles.

The third section on zoonosis is short and reflects the limited number of zoonotic parasitic diseases reported to be transmitted from reptiles to humans. More references could have been added here and elsewhere throughout the book.

Section 4 is a Glossary of terms used throughout the book. This is a welcome addition. As mentioned above, several important definitions are lacking but overall the authors do a good job in defining the most pertinent terminology.

While many of my comments above are critical in nature, I want to make sure the readers of this review understand that I critique written works through the eyes of a scientist who has reviewed many scientific publications throughout his career. Overall I recommend this book for anyone interested in an overview of parasitic infections/infestations in reptiles.

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