BOOK REVIEW


The second edition of Ecotoxicology of Amphibians and Reptiles is a thorough update of the previous edition. Although nearly all of the chapters have been extensively rewritten and others entirely replaced, the book remains a masterful summary of the literature dealing with contaminants on these understudied taxonomic groups. The 18 chapters begin with background material and then progress to the effects of contaminants on reptiles and amphibians, with some discussion of their implications for management and conservation. The book does assume that the reader has a working knowledge both of toxicology and of herpetology; because of this, readers whose training does not incorporate both fields may have to do some background reading to fully grasp the material presented. At other times, some material may seem to be a bit rudimentary. It is not easy producing a work that intends to blend 2 disciplines that have remained largely separate, particularly during graduate training. However, the editors and authors have for the most part managed to balance detail with the need for brevity given the broad range of topics covered.

The first chapter is an overview, noting the sharp increase in research on amphibians and contaminants in the last decade compared to the 30 years previous. Unfortunately, no such increase in research has occurred for reptiles, which remain little-studied in terms of ecotoxicology. Although enormous gaps in our knowledge continue to exist, ecotoxicology is finally growing into a discipline that addresses whole-organism responses, with implications for populations and ecological communities.

The second and third chapters discuss the global status of amphibians and reptiles, particularly their declines, and present an overview of potential causes. Although reptile declines have been as dramatic and far-reaching as amphibian declines, they are less well publicized. There is nothing shockingly new in these chapters, but the summaries are well presented and serve as overviews for the conservation issues facing these taxa before the book focuses on contaminants.

The fourth chapter presents an overview of ecotoxicology as it is relevant to reptiles and amphibians. The chapter reviews various types of studies, ranging from laboratory work to field studies that have involved reptiles and amphibians, biomarkers of exposure, and finishes with a discussion of ongoing and emerging issues. The tables summarizing results of published studies are particularly valuable as an overview and a general resource.

The fifth chapter deals with the physiological ecology of reptiles and amphibians, with an emphasis on life history and natural history traits most relevant to contaminant exposure in the wild. There are brief discussions of physiological energetics, dietary exposures and digestive physiology, and thermoregulatory excretory, and osmoregulatory physiology. The chapter then shifts to a discussion of commonly used toxicological endpoints used in studies of amphibians and reptiles, both in laboratory studies and in the field. These include reproduction and endocrinology, reproductive ecology, development, and behavior. A section addresses metabolism, biomarker, and energetics-based tools. The chapter concludes with sections on interactions between chemicals with environmental and physiological factors, and multiple stressors.

The sixth and seventh chapters survey effects of currently used pesticides on amphibians and reptiles. Table 6.1 compiles and summarizes studies published on amphibian ecotoxicology in the last decade; this is another useful overview of what has been done so far. Reptile work has lagged so far behind that done on amphibians that this chapter has been merely updated, not rewritten, from the first edition. The synthesis and discussion presented, however, suggest that concerns over reptiles and their potential exposure to commonly used pesticides are very timely, and this chapter can certainly serve as a starting point for relevant and important research.

Chapter 8 addresses the effects of the herbicide atrazine on amphibians and reptiles. This highly controversial pesticide has been the subject of numerous studies and regulatory rulings; the chapter does an outstanding job summarizing what is understood so far, and what regulatory actions have recently been taken. No doubt this will all be subject to rapid revision, but the chapter will remain valuable because of its succinct and well-written overview.

Organic contaminants and their routes of exposure in amphibians and reptiles, respectively, are the subjects of chapters 9 and 10. The table summarizing literature for amphibians is thorough and helpful; the chapter on reptiles takes a different approach consistent with the fact much less research has been done on reptiles. So far, much of the work focuses on reporting residues and estimating transfer via various exposure routes; this chapter may well help the science move forward toward exploring the consequences of such exposures.

Chapters 11 and 12 deal with metals and metalloids; in this, amphibians and reptiles are both poorly studied. Chapter 11 presents a short overview of issues to consider when designing research examining metal impacts. This will be particularly helpful as researchers work to bridge the gaps between the disciplines of herpetology and toxicology. In contrast, the authors of chapter 12 take a different approach, and painstakenly summarize what is known about metal concen-