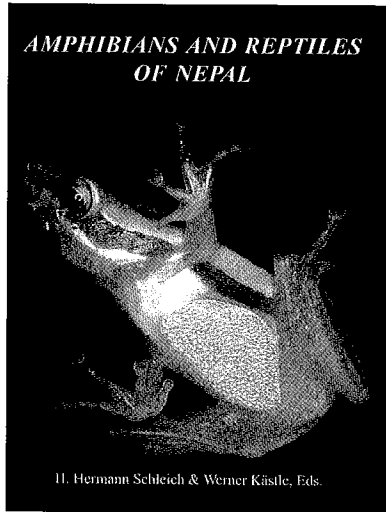


Amphibians and Reptiles of Nepal: Biology, Systematics, Field Guide, edited by H. Hermann Schleich and Werner Kästle. 2002. A.R.G. Gantner Verlag, Ruggell (distributed by Koeltz Scientific Books: koeltz@t-online.de). [2], x + 1201 pp. Hardcover. € 149.00 (US \$174.00). ISBN 3-904144-79-0.

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Amphibians and Reptiles of Nepal (A&R of N) joins the growing list of field guides, photographic atlases, and natural histories of the Asian herpetofauna. It is a totally different book from any of the other recent volumes on Asian herps, matching—actually exceeding—Zhao and Adler's *Herpetology of China* (1993) in total pagination. Weighing in at 2+ kg, it is a field guide for the laboratory or reading desk, certainly not for the backpack



in Nepal's mostly vertical countryside. But Schleich and Kästle were not attempting to provide a guide for the hip pocket or backpack. Their goal was "to compile a summary of today's knowledge on Nepalese amphibians and reptiles." They have succeeded.

Of course, no book of this size and with multiple authors is without some shortcomings. In this case one problem is that the weight of the pages breaks the binding with minimal use. Others will be identified as I examine the different features of *A&R of N*, and I will also offer a few reviewer's laments expressing my desire for some things to have been done differently.

The herpetofauna of Nepal is modest, totaling 52 amphibian and 125 reptilian species (data from *A&R of N*): one salamander, one caecilian, 50 frogs, two crocodylians, 15 turtles, 39 lizards, and 69 snakes. The low diversity of the herpetofauna is not unexpected owing to Nepal's small size (140,400 km²) and its mountainous landscape with a significant portion climatically unsuitable for herps. The editors note that only 3.17% of Nepal is habitable for amphibians and reptiles. While this precision of habitable area seems overstated and an underestimate (perhaps 31.7%?), the herpetofaunal Lebensraum is small. Nepal consists of a series of east-west stepwise bands of habitat, each of increasing elevation. The terai grasslands are shared with India. Next is a series of low hills that create multiple narrow valleys with a mixture of grasslands and dry evergreen forests. This is followed by a mountain range extending upward to about 2000 m; these mountains form the southern edge of the broad fertile midlands, formerly mainly forested and now largely farmed, with the mountains of the Fore

Himalaya (2500–4000 m elevation) on their northern edge. Northward and upward of the Fore Himalaya is the Great Himalaya with landscapes largely inhospitable to herps. The habitable area for herps is also habitable for people and much of it has experienced human usage for hundreds of years. The impact has been increasing steadily since the end of World War II, with expanding human populations in the terai to midland areas because of malarial control and the immigration of Indian farmers. Trekkers arrived in the 1970s and as their numbers increased so did the demand for wildlife and forest resources. The Nepalese government and local conservation organizations recognized the situation and initiated programs to preserve habitats that accommodated the needs of residents and visitors. Even though the programs are not totally successful, they have preserved "wilderness" habitats for much of the wildlife. Preserves, such as the Royal Chitwan National Park, provide habitats for tigers, rhinoceros, and the recently described endemic *Rana chitwanensis*.

More species certainly will be discovered and the diversity of the Nepalese herpetofauna increased further. Two new agamid lizards are described in *A&R of N* and a few frogs and lizards are labeled as unknowns in the photographic plates. It was in Nepal that Alain Dubois recognized the complexities of the *Fejervarya limnocharis* complex; he found three species (*F. pierrei*, *F. syhadrenis*, *F. teraiensis*), two of them new, sympatric in the terai of central Nepal. Multiple Nepalese species likely hide today under a single name in other groups of amphibians and reptiles. In their advice to critics (= reviewers) paragraph, the editors identified four genera, e.g., *Calotes* and *Orioliaris*, that contain more species than currently recognized. This phenomenon is probably common for most of the widespread South Asian species, because few systematists have examined local and regional variation in Asian species, and those that have quickly recognize a high level of regional speciation. A good example is Wüster's recognition of multiple species of *Naja* in South and Southeast Asia. It is our growing knowledge of the Asian herpetofauna and the expanding literature on this fauna that makes *A&R of N* useful. In addition to summarizing our current knowledge, it serves as a benchmark to assist our decisions on conservation and research priorities.

A&R of N follows the organization of the earlier compendium on the herpetofauna of North Africa by Schleich, Kabisch and Kästle (1995). With that volume, it shares many organizational features, the page layout, color plate quality and formatting, and publisher. The Nepalese volume, however, offers more topics, although similar treatment of the subject matter within the shared topical chapters. This volume also has a broader authorship; 12 authors are identified although I could match only eleven authors with chapters. Authorship is listed only at the beginning of each chapter and not all chapters have their authors identified. The chapters or sections and their authors are: 1) Introduction (authorship unidentified, presumably H. H. Schleich and W. Kästle); 2) The Environment (presumably Schleich and Kästle); 3) Amphibians and reptiles in Nepalese culture and economy (Karan B. Shah); 4) Snakebite avoidance and medical treatment (Klaus Kabisch); 5) Nepal's herpetofauna on a razor's edge between threat and conservation (Tirtha Maskey, Schleich and Kästle); 6) Species list with annotations (Schleich, Christiane Anders and Kästle); 7) Zoogeography of Nepalese amphibians and reptiles (Kästle, Schleich, Indraneil Das and Anders); 8) Special part - Detailed information

on Nepalese amphibians and reptiles (multiple sections devoted to accounts of the families, genera, and species of the herpetofauna). This section is multi-authored: Amphibia (C. Anders); Crocodylia (Maskey and Schleich); Testudines (Schleich and Kästle); lizards (Kästle, except *Draco* [Kalu Ram Rai], *Oriotiaris dasi* n. sp. [Shah and Kästle], *Sitana schleichi* n. sp. [Anders and Kästle], Scincidae [Valery Eremchenkoe]; Serpentes (multiple authors: Boidae including *Python* [Kabisch], Colubridae [Ulrich Gruber], *Coelognathus* and *Elaphe* [Notker Helfenberger], *Elachistodon westermanni* [Das], *Oligodon kheriensis* [Schleich and Kästle], Elapidae, Typhlopidae & Viperidae [Kabisch]); 9) Supplements (= Appendices); 10) Abbreviations and scientific terminology; 11) Literature references; 12) References for text figures; 13) Species index (with nine subsections). Andreas Diener is the listed author without chapter identification. Clearly, the contributions of Kästle and Schleich to this volume are substantial.

The substance of *A&R of N* begins with the second chapter "The Environment" (Note: the numbering of the chapters/sections is mine, not the editors'). This gives a concise introduction to landforms, climate, and life zones; it is not overly detailed but definitely adequate for those unfamiliar with Nepal. The third chapter offers a fascinating and brief introduction to herps in Nepalese religions and legends. It also provides an explanation of the various uses of amphibians and reptiles for medicine and food. The fourth chapter provides an overview of snakebite in South Asia with a focus on Nepal. It contains much information in a compressed presentation. I was surprised to discover that Russell's vipers were not implicated in any Nepal bite incidents, and that cobra and krait bites predominate; in contrast, Russell's vipers are responsible for the greatest number of bites and fatalities in the neighboring Indian state of Uttar Pradesh. This chapter also provides detailed first aid treatments for snakebite; this information is both unnecessary and dated (e.g., including cut and suction). The Nepalese audience requiring this information will not have access to this book and would potentially be harmed by some of the advice. The fifth chapter examines the conservation of Nepalese herps; while a broad brush review of the current situation, it contains a good history of conservation in Nepal and addresses both local use and trade in amphibians and reptiles.

The sixth chapter is "Species list with annotations." The annotations largely address distributional data and species misidentifications. These observations could have easily been incorporated in chapter eight, the taxonomic accounts. Zoogeography is the topic of Chapter 7. The presentation is mainly tabular, e.g., number of species in Nepal and adjacent countries, by elevation, by longitude, and so forth. This manner of presentation affords the reader a variety of distributional tidbits on each species or groups of species, although these factoids are more ecological than biogeographical. The authors begin their "biogeographic" discussion with an examination of centers of radiation for genera, each of which is implicitly accepted as a clade. The centers are subregions of biogeographic regions or realms that are explained in a subsequent section on distributional patterns. It is not clear in the centers or distributional sections how or why a species or genus is assigned to a zoogeographic subregion. The biogeographical analysis is descriptive and based on the *a priori* assignment of species to subregions, resulting in a chapter informative at a most general level.

Chapter 8 is the field guide portion of *A&R of N*. It is also the most extensive section of the book, totaling 915 pages. These pages are packed with information derived from the literature and recent fieldwork, and it is a section to be mined for natural history information on Asian species. It is also a chapter that frustrates me greatly because of data truncation. However, before outlining my frustrations, I must summarize the general organization of this section for readers unfamiliar with the earlier compendium on North African herpetology. Each group (class, order, family, etc.) contains a key if the group is not monotypic for Nepal. Each species account consists of up to 10 major sections (etymology, synonymy and vernacular names, identification, ecology and general behavior, reproduction, geographic range, systematics, subspecies, notes, references); the identification, ecology, and reproduction sections are further subdivided. Each of the higher categories has fewer sections and is notably brief. Page layout is double column; the right column is double the size of the left and is reserved mainly for text, the left column for figures. This page layout works well for the field guide portion where figures occupy most of the right column but is much less effective elsewhere where one third of each page is blank for many consecutive pages.

Text figures are black and white line drawings, functionally and, in most cases, attractively rendered. An idiosyncrasy of the Schleich and Kästle compendia is that each page begins with a new Figure 1, thus there are hundreds of Figure 1s, tens of Figure 2s, and declining numbers of Figure 3 and beyond (15 figures on a single page appears to be the high). Legends are succinct and sufficient; they do, however, lack source information. That information is available in the "References for text figures" in the rear of the book. Schleich and Kästle have borrowed broadly from the herpetological literature and created many new illustrations. Each species commendably has its own spot distribution map, and each map is covered with a grid overlay. An additional and useful feature of the maps is that a smaller South Asian map lies below the Nepal map and displays the total Asian distribution of the species. Equally commendable, each spot can be identified by its position on the grid and reference to the alphabetical list of localities in the "Supplement" chapter. Additionally, the first section of the "Supplement" has a list of localities for each species. I applaud the editors on this much attention to mapping and providing the details on species occurrences and the localities. In spite of this massive effort, however, there is a problem that makes the distributional data less reliable or verifiable than it might be. The locality information, aside from that derived from the literature, may or may not be based on voucher specimens. Further, the editors provide no evidence that they checked the holdings of the world's major museums for locality data.

The textual sections of each account are overall data dense but with peculiar lapses. More attention is directed at the etymology of the scientific name and at vernacular names than at the synonymies. Each of the few synonymies checked (I used frogs because of the convenience and currency of Frost's *Amphibian Species of the World* website: <http://research.amnh.org/herpetology/amphibia/index.html>) lacked one or more primary synonyms. I did not locate an editorial statement that the synonymies were intentionally incomplete. The Identification (= Description) sections contain a broad range of characteristics and these are conveniently arranged in subsections. The presentation is also consistent within genera

and generally within major groups, thereby permitting a ready comparison between congeners. I find fault with two aspects of the Identification. First, it appears that much of the data therein is a composite from throughout the range of the entire species; this fault is particularly unfortunate because widespread Asian species are likely complexes and a summary of the traits in Nepal populations would have been most valuable. Second, the measurement section most commonly presents a maximum length of a male and of a female. Means and ranges are much preferable and should be derived from adult animals only. I also protest the use of only total lengths for snakes. I suspect that if I had a stronger ecological or behavioral interest that I would find similar faults with those sections; however, in my defense and as a commendation to Schleich and Kästle, the amount of information and its methodical organization for these topical areas far exceed that available in similar books.

I did not test the identification keys. They are laudably based solely on external morphology and, in most instances, on traits that can be counted, measured, or differentiated by naked eye and hand lens. Taxonomy and nomenclatural usage are variable in recency and explanation. Part of this variation results, I believe, from the asynchronous completion of the various taxonomic groups as well as the taxonomic inclinations of different authors. Based on the literature cited, some parts may have been completed in late 2000, others in late 1998 or early 1999. For example, the *limnocharis* complex of frogs is now widely placed in the genus *Fejervarya* not *Limnonectes*; the placement of some snake-eyed skinks in *Asymblepharus* has not yet gained wide acceptance (outside the former Soviet Union); and the elevation of the small bodied *Kachuga* subgenus *Pangshura* had not yet been published when *A&R of N* appeared; *Python* is considered a boid with no indication that the author is aware of literature addressing the differences of pythonids and boids.

A set of 127 tripartite photographic color plates separate the amphibian and reptilian taxonomic accounts. Many species are depicted with two or more images. The images at 5.5 x 10 cm are sufficiently large to reveal identification characteristics. Multiple images display variation in color and different aspects of the animals. The quality of the images is generally good, and a significant portion derive from Nepal specimens. As for the Identification section, use of Nepal individuals and samples increases the book's usefulness to those of us who study herps in other parts of Asia. Similarly, I find the habitat and the local consumption-trade images instructive.

The final sections of *A&R of N* include appendices, a bibliography, and indices. I noted earlier the presence of distributional and geographic data in the appendices. The final appendix is a glossary of scientific terms used in the text. The bibliography is extensive, reflecting the broad search of the herpetological literature for information on Nepal amphibians and reptiles. The species or taxonomic index consists of two parts, one arranged as a classification and the second alphabetically. These two include pagination references. The final three indices give Nepali, English, and German vernacular names for the Nepal herpetofauna. Although I am not a strong advocate of vernacular/common names, these indices will be a useful resource for many readers.

An ultimate question must be asked of a book of this size: Is it too large, or rather, did the editors/authors attempt too much? For

me, the answer is yes! Multiple, smaller, topically more detailed and focused books would have better served the herpetological and other biological communities. The size of *A&R of N* will prevent most users from taking it into the field. Its cost, while reasonable at 12.5¢ per page, places it out of reach of many biologists and certainly for most Asian ones. Most academic libraries similarly cannot afford to purchase *A&R of N*, so despite its usefulness, its information will be unavailable to the majority of its intended audience. Another fault of attempting to cover all topics in a single volume is that the individual coverage of each topic becomes more superficial, as noted above.

When initially requested to review *A&R of N*, I thought that a comparison with Tej Kumar Shrestha's (2001) recent *Herpetology of Nepal: A Study of Amphibians and Reptiles of Trans-Himalayan Region of Nepal, India, Pakistan and Bhutan* would be useful. Alas, my attempts to find a bookseller who has a copy of the latter have shown that such sellers are as elusive as the yeti. *A&R of N*, in contrast, is readily available. If you have serious interest in the Asian herpetofauna, you should have a copy nearby on your bookshelf.

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