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January 2006

Book Review- Amphibians of an Amazonian Blackwater Pond in Peru: Schluter, A.

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BOOK REVIEWS

Copeia, 2006(4), pp. 834–836
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AMPHIBIEN AN EINEM STILLGEWÄSSER IN PERU—MIT EINER ILLUSTRIRTEN CHECKLIST DER AMPHIBIEN UND REPTILIEN DES UNTEREN RÍO LLULLAPICHIS/AMPHIBIANS OF AN AMAZONIAN BLACKWATER POND IN PERU—WITH ILLUSTRATED CHECKLIST OF THE AMPHIBIANS AND REPTILES OF THE LOWER RÍO LLULLAPICHIS. Andreas Schlüter. 2005. Frankfurter Beiträge zur Naturkunde Band 22, Edition Chimaira, Frankfurt am Main, Germany. ISBN 3-930612-51-8. 347 p. €49.80 (cloth), available in Germany from www.chimaira.de; in the USA at Bibliomania, Serpents Tale, or Zoo-book Sales.—Panguana Biological Field Station covers two square kilometers on the lower Río Lullapichis in the Amazonian lowlands of central Peru (Departamento de Huánuco, 9°37'S, 74°56'W, ca. 260 m elev.). Besides herpetological surveys (e.g., Toft, 1980; Aichinger, 1987; Schlüter, 1987a, b), several other neotropical faunas (e.g., rotifers: Koste, 1988; acari: Wunderle, 1992; mammals: Hutterer et al., 1995) and tropical ecology in general (Verhaagh, 1989) have been studied at Panguana. The field station was founded 1968 by the German ecologist Dr. H.-W. Koepcke and his wife Dr. M. Koepcke, an ornithologist. Andreas Schlüter was a graduate student of H.-W. Koepcke (University of Hamburg) and spent 17 months (August 1977 to December 1978) doing fieldwork at Panguana. This work resulted in his dissertation on "Ecological investigations at a blackwater pond in the tropical rainforest of Peru with special regards on amphibians" (Schlüter, 1984).

The book consists of—with some modifications—the dissertation of Schlüter (1984) and is structured as follows: table of contents (pp. 5–7); foreword by M.-O. Rödel (pp. 9–10); foreword by A. Schlüter (pp. 11–12); acknowledgments (pp. 13–14); I. introduction and objectives (pp. 15–16); II. material and methods (pp. 17–21); III. description of the research area (pp. 23–28); IV. surveyed water types (pp. 29–44); V. short autecologically orientated descriptions of the anurans recorded at the forest pond (pp. 45–167); VI. overview of distribution types (p. 168); color photos of amphibians arranged by families (pp. 169–216); VII. about resistance of the observed anurans (pp. 217–238); VIII. anuran calls at the pond (pp. 239–255); IX. about the phenomenon of mass choruses at the forest pond (pp. 256–

260); X. ethological surveys on tadpoles (pp. 261–273); XI. ecological formulae and biocenotic context (pp. 274–282); XII. discussion (pp. 283–288); color photos of reptiles arranged by orders and families (289–320); XIII. Zusammenfassung (pp. 321–322); XIV. abstract (pp. 323–324); XV. resumen (pp. 325–326); checklist of the amphibians and the reptiles of the Lower Río Lullapichis (pp. 327–333); XIV. literature cited (pp. 334–347). The book contains 325 figures, including color photos (104 of amphibians, 65 of reptiles), black and white photos (41 including amphibians, habitats, and species of rotifers), drawings, maps, tables, and audiospectograms.

The unpublished dissertation of Schlüter (1984) was well known not only to herpetologists in Germany, where it influenced the careers of young scientists, as noted by Rödel in his foreword, but also among South American herpetologists and North Americans working in the Amazonian region. When I started fieldwork in Peru in 1997, I was introduced to Schlüter (1984) by my Peruvian colleagues, and I am among the people who are glad that his work finally has been published and is now available to a broader audience.

The book includes a checklist for the lower Río Lullapichis and additional photos of amphibians and reptiles not in Schlüter's dissertation. However, the book needs to be read in the context of the time the research was carried out; this is clearly reflected in the literature cited (the majority of the articles are from the 1960s–1980s with only a few more recent citations).

During his intensive fieldwork, Schlüter recorded 71 species of anurans, among them eight unidentified species of *Eleutherodactylus* (Table 3). Of these 71 species, 30 were recorded at the pond. For those 30 species a detailed account is provided, including information on taxonomic history, geographic distribution, material from Panguana listed by collector with number of specimens (e.g., for *Scinax ruber*: Aussem 15, Koepcke 1, Schlüter 19), diagnostic characters, advertisement call, prey, reproduction, time of activity, relation to the forest pond, and an autecological account, as well as drawings, audiospectograms, and photographs.

Publication of Schlüter's work after 21 years necessitated updating the taxonomy, and I found some discrepancies between the "old text" and the added checklist of species known from the lower Río Lullapichis (e.g., *Centrolenella* vs. *Cochranella* in the checklist; *Eleutherodactylus* sp. 1–8 vs. *Eleutherodactylus* sp. "A"–"D" in the

checklist, and two species of *Osteocephalus* vs. five in the checklist). These differences are a bit confusing; a footnote indicating the species that have been described or differently diagnosed in the meantime would have been helpful. As is typical for an ecological survey, observations have priority over specimen collecting. An appendix listing the material collected (at least for the specimens collected by Schlüter) at Panguana would have been a useful resource for comparisons by herpetologists focussing on systematics and biogeography.

Many of the ecological terms used refer to Koepcke (1971–74). A glossary of frequently used terms would have been helpful for persons not familiar with Koepcke's terminology. I would not consider the "search for an adequate habitat (pond) for the offspring" (see p. 72) as mentioned for female *Bufo marinus* as parental care (see comments and classifications for parental care by Duellman and Trueb, 1986).

The color photos are of very good quality and show species in their habitat, many exhibiting behaviors such as calling, amplexus, or sitting with an egg clutch. A few photos show species from outside Peru (Brazil, Ecuador, and Guyana) chosen by the author to show species similar morphologically to those at Panguana (see foreword by Schlüter). Schlüter says in his foreword that time has not increased the quality of the figures, and, indeed, the figures reflect the design and graphical techniques in use when the dissertation was written. Some figures are of such low quality (e.g., figs. 54, 252, 253, 260) that they should have been redrawn. Handwritten words within graphics (e.g., figs. 251–253) are not acceptable, and the type used in the legends of several graphs is too small and barely legible (e.g., figs. 251–253, 260). That is a particular problem for the graphics (figs. 251–253) showing results of interesting experiments on tadpole behavior.

The book contains a few misspellings (e.g., p. 46: *Eleutherodactylus peruvianua* should be *Eleutherodactylus peruvianus*; p. 298: Abb. 279: Parque Guachipa should be Parque Huachipa), the left column of fig. 127 has a gap and lacks graphics "d" and "e", and the Spanish summary lacks the last sentence (paragraph 15). These are the sort of problems that can be found in nearly every book, often as a result of the editorial process, and do not affect the scientific value of the work. The book was written for the professionals as well as the general public interested in amphibians and reptiles. Because of the number of color photos and drawings, the book can be used as a field guide to the amphibians and reptiles of central Amazonian Peru.

Long-term ecological studies focussing on anuran communities at one locality are rarely seen, but Schlüter's work complements two others in Amazonian Peru (Rodríguez, 1992 and Duellman, 2005). This book provides detailed and valuable information on the ecology of a tropical amphibian community in the Amazonian lowlands and hopefully will continue influencing and encouraging researchers as the dissertation has for 21 years. Biologists need to gain a better understanding of amphibians, a group that is declining worldwide.

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