

tions would like to read this book to widen their research perspectives. The teachers of plant physiology, plant biophysics, biochemistry, molecular biology, ecology and microbiology would find this book helpful in upgrading the text materials. This book will also serve as a valuable reference text. Like previous volumes in the series, volume 8 has many current research references, and a classic bibliography. The publishers deserve our greetings for excellent production but, alas, like the previous volumes of the AIPh series, this superb publication would remain out of reach of many. However, I would recommend this book for libraries and would also like to greet the editors for the commendable addition to the series. I urge the publishers to bring out all volumes in this series as paper-back and inexpensive editions, so that the available knowledge would reach all, and not just a few.

1. Ye Xudong, A Babill S., Kloli Azhang, J., Lucca, P., Boyer, P. and Potrykus, I., *Science*, 1999, **287**, 230–308.
2. Britton, G., Liaaen-Jensen, S. and Pfander, H. P. (eds) *Carotenoids*, 1995, Birkhäuser Verlag, Basel, 1995, vols. I and II.

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Gymnophiona (Amphibia) of India: A Taxonomic Study. R. S. Pillai and M. S. Ravichandran. Records of Zoological Survey of India, Occ. Paper No. 172. 1999. 115 pp. Price: Rs 300.

The book under review is a taxonomic study of limbless amphibians (also known as caecilians, Class: Amphibia, Order: Gymnophiona).

It is the first major publication on Indian Gymnophiona (formerly wrongly called Apoda) and also the first All-India basis fauna of a group of amphibians. The previous work is the celebrated *Fauna of British India* on reptiles and amphibians by G. A. Boulenger, published by Taylor and Francis, London, in 1890. There have been, of course, some publications on Indian amphibia,

on a regional basis such as the *Anuran (Amphibia) Fauna of North-East India* by S. K. Chanda, (Memoirs of the Zoological Survey of India, 1994, no. 18). There have been a couple of checklists but no detailed species descriptions and keys. A good attempt to give brief description and morphometry of salient characters of the various species of caecilians (known till then) was made by G. Bhatt (*J. Biosci.*, 1998, **23**, 73–85), however keys and diagrams (the exception being diagrams for generic diagnoses) were once again not provided.

This volume on Indian Gymnophiona describes twenty-one species in detail, four of which are new and one constitutes a new record for India. As is customary for such taxonomic treatise, the volume contains a brief introduction to the group, review of important literature, overview of external morphology and also explanation of the terms used in systematics of this group. This is followed by comments on the known distribution of the species, general habits and habitat, as well as whatever little is known about the life history of these cryptic creatures. The authors have adopted the latest revised classification of Gymnophiona and classified Indian species accordingly. For each species there is a brief diagnosis, detailed description, morphometry of available good specimens, clear camera lucida drawings of the salient features, range of distribution known, as well as additional remarks wherever there was a previous taxonomic confusion. For example, now it is conclusively demonstrated that *Ichthyophis glutinosus* is present in India; *I. beddomei* and *I. tricolor* are distinct species. Authors have also adopted some information from published literature, especially about the type specimens deposited in museums abroad. Location of the type specimens and full synonymy for each species is provided. Some photographs and distribution maps make this volume a tidy 115-page treatise.

Indian caecilians are poorly known and a publication dealing with detailed descriptions along with identification keys is certainly the most welcome and significant addition to our literature on amphibians. It is of interest to note that only 5 species were known at the time of Boulenger's book and only 3 species were added till 1960, taking the total to 8. Taylor (writer of the world famous

first monograph on caecilians), who made a major contribution, described 7 species in a short period of about 8 years. After that the only addition came from Pillai himself when he described a single species from Silent Valley. This volume describes 4 new species; thus in 110 years, since the *Fauna of British India* only 15 species have been described. This is, of course, largely due to burrowing habits of these animals and difficulty in obtaining a specimen after strenuous digging efforts, about which the authors have also commented. This treatise by Pillai and Ravichandran is based on an examination of only about 100 specimens that are scattered in different institutions. Although biochemical and other studies have been carried out in some laboratories, detailed biological studies are wanting and much remains to be discovered about Indian caecilians. The name *Ichthyophis* often brings before our eyes a very popular drawing depicting a female coiled around her eggs; but again, apart from pioneering works of our early zoologists like L. S. Ramaswami and B. R. Seshachar, very little is known about the biology of our caecilians.

It is worth noting here that there are only 6 families, 34 genera and 154 species of caecilians in the world and we have, in India, representation from 3 families and 4 genera. Regarding percentage, we have 21 out of 154 species, that is about 14%. Besides, of the 4 genera, 3 (namely *Ureotyphlus*, *Indotyphlus* and *Gegeneophis*) are endemic with distribution mostly restricted to the Western Ghats. It is well known now that these Ghats are biodiversity hotspots and are a home to an enormous number of plant and animal species. The same area is being exploited to a great extent and the habitat destruction caused in the wake of development is alarming. Already species like *Indotyphlus battersbyi* are known but from a few examples and their extinction may simply pass unnoticed as there are very few naturalists looking for them.

I am reminded of yet another group of herptiles, namely snakes of the family Uropeltidae. These snakes (many genera and species being endemic) are also inhabitants of the Ghats, are burrowing animals that feed on earthworms and are rarely seen above the ground – much remains to be done about these snakes as well.

BOOK REVIEWS

There is a hopeful awakening of the interest in biodiversity of the Western Ghats and a book such as this is really a timely addition. Many naturalists have noticed caecilians during their visits but have failed to diagnose them due to lack of literature. That lacuna is now no more and the authors as well as the ZSI must be complimented for bringing out this work. R. S. Pillai, the senior herpetologist, has vast experience about amphibian species of our country. He has several publications dealing with the taxonomy of frogs of the Western Ghats as well as North-East India. He contin-

ued his interest after retirement from ZSI and completed this work. M. S. Ravichandran has also studied the amphibians of the Western Ghats and it is my sincere hope that he soon brings out a treatise on frogs of the Western Ghats, with diagnoses and keys. Checklists are of only limited value or interest. Many genera like *Philautus* and *Rana* cannot be placed with certainty due to lack of diagnostic keys and detailed descriptions. Several new generic names for the former *Rana* sp. are proposed and are also used but there are no keys. Hence the situation, in my opinion, is

confusing. Unfortunately older literature is also not easily available and to solve this problem we need fresh literature that considers all previous works and adds new material as well. There may be more species of amphibians waiting to be discovered in the Western Ghats and elsewhere in India.

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