

Reseña de Libros

Peces de las Aguas Continentales de Costa Rica

By William A. Bussing. 1987. Editorial de la Universidad de Costa Rica, San José; 217 pp., 146 figs., 29 color pls. Hardcover US\$56, soft cover US\$42 (outside Costa Rica, in Costa Rica these prices are ₡ 2700 and ₡ 2100, respectively).

The book treats the 128 species of fishes known from the fresh waters of Costa Rica, where the author has studied these animals for more than twenty years. The fishes are distributed among 33 families (of which 14 are monotypic) that comprise 30 primary (4 families), 50 secondary (4 families) and 48 vicarious fishes. Four of the 128 species are undescribed (the description of one these, a chichlid, is in press). There are 28 color plates, of which 19 are cichlids, the largest family of Costa Rican freshwater fishes (22 species). Poeciliids comprise 20 species (of which only 1, *Brachyrhaphis* n. sp., appears in color). As is characteristic for Central America, the fauna is dominated by cyprinodontoids and cichlids (48 species) and marine invaders (43), with 20 kinds of characins (nearly half of Panamanian/South American origin, like most of the catfishes). Some of the cichlids (the large piscivores in particular) as well as the tarpon, *Brycon* (a characin), mullet, *Joturus pichardi*, robalos (*Centropomus*) and roncador (*Pomadasys*) are of commercial value.

Major goals of the author are to provide a ready means for identification and to give information on natural history and distribution. Many life histories remain to be deciphered. Spawning seasons vary such that some poeciliids and cichlids reproduce throughout the year whereas other fishes spawn in either the dry or wet seasons. The distribution maps are models of how such maps should be presented. A thoughtful plus is that each figure is keyed to its map.

The book is designed for use by laymen aquarists, biologists, and ichthyologists, with a minimum of technical terms, giving the distinctive characters for each fish along with a serviceable illustration. At least 12 species are endemic to Costa Rica (6 characins, 1 catfish, 3 cyprinodontoids, 2 cichlids) whereas four others, currently known only from there, probably occur in adjacent countries as well (e.g.

Chichlasoma rhytisma lives in Panama, where it was misidentified by Behre (1928) as *C. calabrense*). Several species are either confined to southern Costa Rica (e.g. *Roeboides ilseae* in Río Coto) or occur north of Panama only in this section of Costa Rica. Distribution limits for more northerly Pacific-slope species lie near the mouth of the Gulf of Nicoya. The treatment of the difficult catfish genus *Rhamdia* is excellent, laying to rest many synonyms by recognizing only three valid species.

There are illustrated family keys with keys to genera and species only of Characidae, Pimelodidae, Cuprinodontidae (*Rivulus* only), Poeciliidae, Atherinidae, and Syngnathidae. For each species the distinctive characters, ecology, and general distribution; as well as miscellaneous data (mostly taxonomic) are frequently given. Inset maps (on each distribution map) show Mesoamerican ranges of the primary secondary, and essentially freshwater fishes. The commonest freshwater fish in Costa Rica is a molly, *Poecilia gilli*. No doubt additions to the fauna will occur in such genera as *Centropomus* (only 3 species listed whereas 9 are known from Guatemala), and in the Ariidae (only 1 whereas 9 are known from Mexico) and likely among the Gerreidae.

The very generous format (23 x 31 cm) allows ample space for the distribution maps and illustrations, of which the excellent color plates greatly enhance the value of the book. The black and white figures are most useful, although lack of contrast in a number of the photographs (especially of poeciliids) obscures details that would have been helpful in identification. Information on size, sex, and locality for these figures is given at the end of the book.

After a brief history of Costa Rican ichthyology, and of the ichthyogeography of Mesoamerica (a strong subject of the author), information is given on the aquatic environment with a helpful map showing the drainage basins

and another of the principal collection stations. A sobering note points out that in recent years there has been a marked reduction in numbers of species and of individuals in certain rivers, with contamination of waters through the escape of agrochemicals, silt (from deforestation), and drying of Pacific-slope streams from irrigation projects. The author makes a plea to conserve the native resources.

A few needed changes and suggestions are: (1) replace *Pygidium* with *Trichomycterus*; (2) in Fig. 15A, suborbital 2 of *Brycon americanus* is suborbital 3; (3) consider the conclusion by Mees (1974) that *Nannorhamdia* is a synonym of *Imparfinis*; (4) replacement of *Melaniris* by *Atherinella* (Chernoff 1986); (5) consider the validity of *Pomadasys ramosus* (Poey), a senior synonym of *P. boucardi*; and (6) remove the Río Usumacinta basin from the range of *Cichlasoma maculicauda* (see Miller, 1976:155). The range statement given for *Poecilia mexicana* inadvertently excluded the Atlantic slope from Mexico to NW Honduras. These are minor deductions that can creep into any such general work.

This thorough, up-to-date contribution sets high standards for others preparing regional books on Neotropical fishes. Its appearance is very timely with respect to the strong current

interest in the maintenance of biotic diversity, especially in tropical regions. Bussing's book is the best account of any Central American fish fauna and should be part of the library of anyone interested in Neotropical fishes.

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