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## ***Inland Fishes of California* by Peter B. Moyle**

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## BOOK REVIEW

**Inland Fishes of California.** 2002. Peter B. Moyle; illustrations by Chris Mari van Dyck and Joe Tomelleri. University of California Press, Berkeley and Los Angeles, California. \$70.00, cloth; 502 pages + xv. ISBN 0-520-22754-9.

The production of “state fish books” has been a growing industry in recent decades and some, like this one, are now appearing as revised and dressed-up editions. This new edition is fully justified by massive changes in the California environment, continuing establishment and spread of nonnative fishes, and increasing knowledge of California fishes in their ecosystems. The author and his associates have done a significant portion of this research, especially on nongame species often ignored by management agencies.

The book consists of 4 introductory chapters (Distribution Patterns, Ecology, Change, and A Conservation Strategy) followed by Identification and Keys and ~350 pages of family and species accounts. The introductory chapters are outstanding. Zoogeography and ecology of this large, complex region and its fishes are clearly discussed with support from good maps and nice figures of fish community organization, distributional patterns, etc. Were I still teaching, I’d borrow some of these figures to project in lectures. The mismatch of California’s human population with water availability, coupled with other environmental damage and the influx of nonnative fishes, requires a chapter on change. This litany of replacement and loss is followed by a logical justification for conservation and a multi-layered plan for aquatic conservation in California.

The introductory material for the keys is adequate but brief. Pharyngeal teeth, although mentioned here and in the species accounts, are not illustrated. A picture of the sharp pharyngeals of a pikeminnow vs. the molariform ones of a sucker would show the functional

importance of these teeth to some fishes and give the beginner some understanding of the reasons ichthyologists consider them important. I lacked material to test the keys but they should work, even for difficult groups (lampreys, juvenile salmonids, sculpins). I’m a fan of keys where alternatives in binary couplets are illustrated as one progresses through the key, but perhaps this isn’t necessary in this relatively simple fauna. Cautions to users are given in footnotes.

Species accounts include identification, taxonomy, names, distribution, life history, and status. References are numbered in the text with author and date at the end of each account. Gray literature and personal communications are cited, which I consider useful and appropriate. Distribution maps, most of which are quite adequate, are shaded instead of the dot format which many prefer. The maps are small, making isolated populations hard to locate since some are not circled. In other cases, some localities mentioned in the text, such as the original established populations of the introduced wakasagi smelt, are not mapped. Maps include symbols denoting status and habitat; I learned to cope with these while reading the book but found them cryptic a few weeks later when I went back to a single account. All species are illustrated with excellent drawings, most by C.M. van Dyck. Color plates by J. Tomelleri are up to the artist’s usual high standards; about one-third of the 37 plates are salmonids, but my favorites are the Lahontan redband and the riffle sculpin (common names are used in figure captions, text, and the extensive tables in the introductory chapters).

Enough is known about California populations of most of the 67 native species and 51 introductions to warrant lengthy species accounts. The longest (chinook salmon) is 11 pages and details the biology and status of evolutionarily significant units (ESUs) and distinct spawning runs. Because the author’s stated bias is toward

native species, minnows, sculpins and the live-bearing tule perch, all receive thorough coverage. Details of variation, distribution, and status are given for polytypic species such as the tui chub. Introductions, dispersal, ecological effects, and control activities are recorded for non-native species.

The book, including figures, is well produced, although I tallied a dozen misspellings of place, person, and organism names. Most of the book is accessible to nonprofessionals although lake areas are given in hectares and no conversion is given. These quibbles aside,

this is a fine book. Aquatic biologists working in California must have it, all westerners will find it useful, and easterners will benefit from the contrast of the very different western and eastern fish faunas. Moyle's emphasis on conservation extends far beyond the borders of California and deserves to be read everywhere fishes, water, and human populations interact.

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