

# North American Freshwater Fishes: Natural History, Ecology, and Conservation

Melvin L. Warren, Jr.<sup>1</sup> and Brooks M. Burr<sup>2</sup> (Editors)

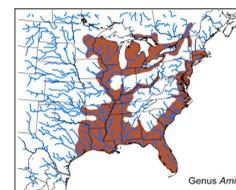


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## Chapter Coverage for Featured Families

- 1. Introduction:** relates familial and common name to the fishes, highlights specialized features, and places the focal taxa in context of the rest of the group.
- 2. Diversity and Distribution:** synthesizes information about familial, generic, and species diversity, evidence of cryptic diversity, and native distribution of genera.
- 3. Phylogenetic Relationships:** covers intra- and interfamilial phylogenetic hypotheses (cladistically based methodologies) of relationships.
- 4. Fossil Record:** summarizes fossil history of the family emphasizing North America, but also noting important extra-continental fossils.
- 5. Morphology:** synthesizes information on physiognomy and morphological structures, specialized anatomical characters (e.g., skeletal, gut, reproductive morphologies), sensory organs, swimming kinematics, and functional ecomorphology.
- 6. Genetics:** synthesizes studies on karyology, phylogeography, intraspecific variation, hybridization and introgression, and isozyme activities.
- 7. Physiology:** highlights diversity of physiological traits, tolerances (e.g., water temperature, DO, pH, salinity, turbidity), swimming performance, vision, hearing, chemical ecology (e.g., pheromones, alarm signals) bioenergetics, and metabolism.
- 8. Behavior:** synthesizes papers on non-spawning behaviors (e.g., aggression, dominance, learning movement, schooling, foraging, alarm signaling, patch choice).
- 9. Reproduction:** describes reproductive cycle including sexual maturity and dimorphism, spawning cues, migrations, and site, prespawning and spawning behaviors, mating system, reproductive allocation (fecundity, egg size, GSI), and embryo and larval development.
- 10. Ecology:** focuses on topics of autecology (i.e., habitat, diet, ontogenetic shifts in diet, growth, longevity) to the functional importance of taxa in ecosystems.
- 11. Conservation:** focuses on imperiled fishes in the family and reasons for decline.
- 12. Commercial Importance:** covers economic importance and cultural values of taxa in the family (e.g., sport and commercial fisheries, hobbyists).
- 13. Literature Guide:** points reader to major sources of information on the family (e.g., species-specific or topic specific treatments).



Distribution map example.

## Summary

Over 1,200 native freshwater fish species occur on the North American continent, comprising the largest temperate, freshwater fish fauna on Earth. The importance of freshwater fishes in North American ecosystem function, their value economically and as providers of ecological services, and the growing need to conserve this fauna can not be over emphasized. In the last 30 years, major scientific advances have been made for these fishes across multiple disciplines (e.g., systematics, genetics, physiology, behavior, ecology, and conservation). These advances are marked by increased specialization and fragmentation of knowledge about the diverse North American fish fauna.

Our book is the first, fully-illustrated multi-volume work synthesizing the diversity, natural history, ecology, and biology of 52 fish families with coverage including Canada, the coterminous United States, and Mexico (south to isthmus of Tehuantepec). Non-taxonomic chapters provide syntheses on evolution and ecology of fish communities, mating behavior, effects of introduced fishes, and conservation.

Our goal is a near-comprehensive synthesis of information on freshwater fishes in North America. We have 71 authors engaged in the project. Volume 1 (chapters 1-13) is anticipated to go to Johns Hopkins University Press in late August 2011 for release in about 1 year. Volumes 2 and 3 will follow at roughly 1-year intervals.

## Acknowledgments

- A. Commens-Carson, E. McGuire, and G. McWhirter provided bibliographic and illustration assistance. V. Burke, Editor, and J. Malat at JHU Press provided frequent advice and assistance. Funding provided in part by the Center for Bottomland Hardwoods Research, Southern Research Station, USDA Forest Service.

## Contacts

- USDA Forest Service, 1000 Front Street, Oxford, MS 38655. [mwarren01@fs.fed.us](mailto:mwarren01@fs.fed.us).
- Department of Zoology, Southern Illinois University, Carbondale, IL 62901. [fishrule61@gmail.com](mailto:fishrule61@gmail.com).

