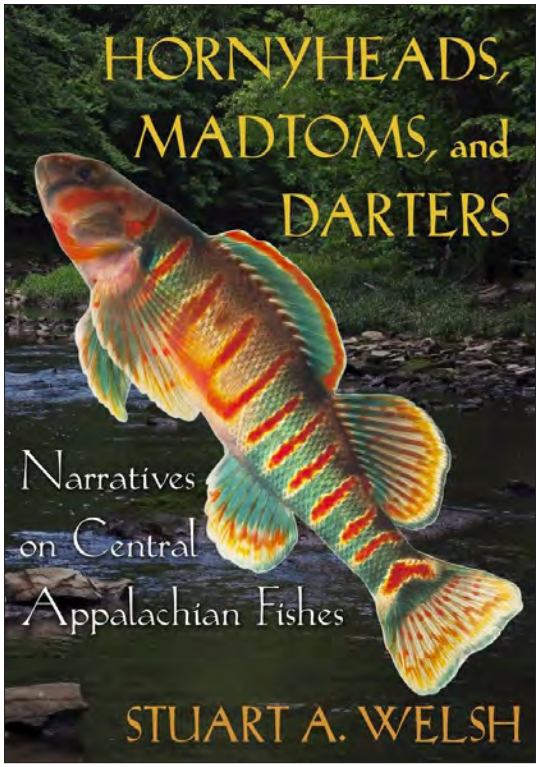
BOOK REVIEW

HORNYHEADS, MADTOMS, AND DARTERS: NARRATIVES ON CENTRAL APPALACHIAN FISHES

Christopher Scharpf

The ETYFish Project



Birders have lots of books detailing the behavior and ecology of their subjects. After all, birds are easily seen and observed. North American freshwater fishes, not so much. Many "Fishes of …" books tend to be field and identification guides. Diagnostic characters. Distribution. Habitat. And maybe a short paragraph on the fish's life history or ecology. *Hornyheads, Madtoms, and Darters: Narratives on Central Appalachian Fishes*[1] is a welcome departure. It's a full-bodied natural history, written by a fisheries research scientist, Stuart A. Welsh, who prefers to study fishes in the wild, not the lab.

Welsh's writing style harkens back to, and includes numerous excerpts from, naturalists of the 19th and early 20th centuries. Welsh says these naturalists wrote when "science writing was less concise." Yes, maybe so. But no one can deny their writings are more fun to read than papers in contemporary academic journals. Welsh admirably continues their tradition, penning what he calls "narratives," short but detailed essays on the fishes of Central Appalachia, a region he defines to encompass the eastern parts of Kentucky and Ohio, West Virginia, western Virginia, parts of southern and central Pennsylvania, western Maryland, and a small part of southern New York.

While emulating the "less concise" style of "old-school" naturalists, Welsh doesn't skimp on concise modern-day science. His essays are jam-packed with the latest research and insights into fish ecology, ethology, and physiology. In the essay on Logperch *Percina caprodes*, for example, Welsh delves into physics, mathematics, and optical illusions to explain how the Logperch's vertical stripes confound potential predators. In the next chapter, Welsh uses game theory and the Prisoner's Dilemma to explain "predator inspection," which is when one or more potential prey fishes leave the safety of their shoal to get a closer look at the bigger fish that's trying to eat them. And in the chapter on Eastern Sand Darter *Ammocrypta pellucida*, Welsh uses aerodynamics to explain how the darter, not a particularly strong swimmer, can nevertheless remain motionless in swift water. All fascinating stuff.

Here's a small sampling of some of the other topics Welsh covers: The role of lampreys in stream nutrient cycling. The vital link between Hemlock trees and Brook Trout populations. The head-scratching riddle of the Trout-perch, which is neither trout nor perch. "Cross-dressing" Bluegills. And why the Smallmouth Bass is the "gamest fish that swims." No fish is too obscure or too well-known. They're all worthy of study and admiration, and they all have revelatory stories ("narratives") to tell.

For me, personally, Welsh's most revelatory narrative is the one on the Creek Chub *Semotilus atromaculatus*. As regular readers of *American Currents* might know, my research focus is the etymology of fish names. One of my unbreakable rules in conducting this research is never to rely on secondary sources, such as regional "Fishes of …" books, no matter how good they are. Instead, I should always begin with the original publication in which the name was proposed. I broke this rule with *Semotilus atromaculatus*.

Physician-politician-naturalist Samuel L. Mitchill (1764–1831) described the species as *Cyprinus atromaculatus* in 1818. The specific name means "black spotted." At my ETYFish Project website (etyfish.org), I said that the black spot in question is the black spot at the anterior edge of the dorsal-fin base. This explanation is given in two major books: *Freshwater Fishes of Virginia* (Jenkins and Burkhead, 1994) and *Fishes of Alabama* (Boschung and Mayden, 2004). Indeed, the dorsal-fin spot is a major diagnostic character of the species. The trouble is, Mitchill never mentioned this dorsal spot in his brief description. Instead, he mentioned that the fish's back, sides, belly, and fins are "marked by black dots, consisting of a soft or viscous matter, capable of being detached by the point of a knife without lacerating the skin …".

In the chapter titled "Spots and Dots," Welsh sets me straight on the meaning of the name. He explains that the "black dots" of Mitchill's specimen are external black cysts that contain a parasit-

[1] *Hornyheads, Madtoms, and Darters: Narratives on Central Appalachian Fishes*. Stuart A Welsh. 2023. Ohio University Press. xvi + 320 p. ISBN: 9780821426104 $26.95 (softcover).

ic flatworm called a trematode. This condition is often called Black Spot Disease, caused by digenean trematodes (flukes) of the families Diplostomatidae and Heterophyidae. The raised black "spots" (actually nodules) are where the parasite has encysted itself in the skin of the fish. The fish serves as a second intermediate host for the trematode. They acquire the parasite from infected snails, the first intermediate host. When fish-eating birds and mammals eat the infected fish, trematode eggs within the feces are released into the water. When the eggs hatch, they parasitize the snails. Then the larvae transform into a free-swimming form, whereupon they infect fish. The cycle then continues. I have collected many Creek Chub (a common fish where I live) and several other species covered with these unsightly black spots. I have not conducted an exhaustive literature search, but I believe Welsh is the first person to offer the trematode explanation for "*atromaculatus*." It clearly makes sense, especially since Mitchill described the black dots as "soft or viscous matter, capable of being detached by the point of a knife without lacerating the skin …". The ETYFish Project entry has since been revised.

The book is well illustrated. An attractive black-and-white sketch-like rendering of a photograph, showing both fish and habitat, opens every chapter. Hardly a spread of the main text goes by without a photo, drawing, diagram, chart, or map illustrating a key concept in the text. The book concludes with 10 pages of appendices, a 16-page glossary for those unfamiliar with ichthyological parlance, 35 pages of bibliographic notes, and an index. Some of the definitions in the glossary seem unnecessary (e.g., caterpillar, renaissance man).

Welsh ends the book mentioning some of the central Appalachian fishes he didn't include (e.g., sturgeons, mudminnows, killifishes). "I hope to write a future companion volume," he says. Put me down for a copy.