

Bowfin: North America's Freshwater Thug

By Christopher Scharpf



Doug Stamm

The two nasal tubes on the bowfin's snout, as seen in this photo, allow it to detect prey in dark and murky waters of eastern North America.

Spoken aloud, the scientific name of the bowfin—*Amia calva*—is one of the prettiest of fish names. Yet the mellifluousness of its moniker totally belies the thuggish nature of the fish it signifies. Many fishes are voracious predators, but the bowfin is one of the meanest fishes in North America. In fact, it may be the only fish in the world that has left the water of its own volition to attack a man on land (more on that below).

Bowfin lurk in the quiet, weedy areas of swamps, small streams, ditches,

ponds, oxbow lakes, bayous, borrow pits, and estuaries throughout the lowlands of the eastern United States and the southernmost portions of Ontario and Québec. They're "prehistoric" fishes whose ancestors populated the fresh and marine waters of the world 135 to 95 million years ago. Two species of fossil bowfin, 35 to 50 million years old, are known from Colorado and Wyoming.

The sole-surviving species is just that—a survivor. Bowfin can tolerate high temperatures and low oxygen

levels that kill other fishes by using their swim bladder to breathe atmospheric air. In addition, their gills maximize gill-to-water contact and maintain their structural integrity when exposed to the air. These are handy adaptations in waters that go stagnant when decaying plants use up most of the oxygen, or dry to mud puddles in summer droughts.

The bowfin's ability to breathe air has led to claims that it can aestivate like lungfishes for up to 21 days when

waters dry up, then “come back to life” after the next substantial rainfall. But such claims are based on anecdotal reports and have not been backed up by laboratory experiments.

Still, the bowfin is one mean, scrappy fish. It looks it, too. With a bullet-shaped body, armor-like plates around its head, and an unsmiling, fearsome mouth, it has the unmistakable appearance of a fossilized fish that’s come to life. Its canine-like teeth are sharp and numerous, giving it a carnivorous scowl. And its long, undulating dorsal fin (the bowfin of its name) allows it to swim forwards and backwards with equal dexterity.

Scientists call the bowfin a “predatory generalist,” which is just a fancy way of saying it eats anything that moves. Fishes, worms, crayfishes, insects, leeches, mollusks, frogs, toads, salamanders, snakes, lizards, and small rodents have been found in bowfin stomachs. Active at night and dawn and dusk, the bowfin hunts with a strikingly quick lunge, opening its large mouth, sucking in prey, and then slamming the jaws shut. Total elapsed time: 0.075 seconds.

Bowfin are unique among North America’s “living fossil” fishes (the others are sturgeons, gars, and paddlefish) in that they build elaborate nests and protect their young, two behaviors normally seen in more “advanced” fishes. Spawning takes place in spring or early summer, usually at night. In shallow water, males construct a bowl-shaped nest among weeds, tree roots, or under logs. Males bite off sections of plants and place them into the nest, forming a kind of “bed.” Sometimes they uproot plants by fanning their caudal and pectoral fins. Once the

nest is complete males wait patiently for a female to arrive.

Eggs hatch after 8 to 10 days. Bowfin larvae have an adhesive disc on their snouts with which they attach themselves to plant material in their nest. About nine days later they are free-swimming and follow the male closely, forming a tight school or “ball” of young. Should a baby bowfin become separated from the school, it swims in circles until the male reappears. And should an intruder come near, be it a fish, stick, net, swimmer, or even another bowfin, the male attacks. In one extreme case of bowfin aggression, a 14-inch male that was guarding 30 to 40 fry rushed at a snake collector who was standing on the bank. The bowfin actually propelled itself eight inches out of the water and up a slightly sloping grassy bank several times.

In addition to aggression, male bowfin will resort to trickery to protect their young. Males have been seen creating diversionary splashes, giving their young a chance to swim away from danger. Males also have been seen using their tails to create a mud screen between their young and any approaching predator.

The bowfin’s aggressiveness makes it a tough angry fighter at the end of a line, but they’re also notorious tackle busters. After grabbing a lure, bowfin often return to the bottom, tangling the fishing line on logs, roots, tree limbs, and aquatic vegetation. Many bowfins simply bite through the line with their needle-sharp teeth. Landed bowfin may at first appear docile, but suddenly spring to life, tangling nets and line with violent thrashings of their body.

Bowfins are generally considered to be poor to eat, but Native Americans were reportedly fond of them, and residents of the Deep South use them for dishes such as fish balls, jambalaya and gumbo. Creamed bowfin on toast is said to be soothing for children with stomachaches. In Louisiana, bowfins are cultured in commercial hatcheries for their roe, which is marketed as “Cajun caviar” or the decidedly more upscale trade name “Choupique Royale.”

The bowfin has given rise to two unusual superstitions. According to one legend, bowfin meat possesses the power of turning raw after it has been cooked and allowed to sit overnight. And as if that weren’t miraculous enough, a bowfin wrapped in Spanish moss and buried during the correct phase of the moon will seven days later transform itself into a black moccasin snake!

Perhaps the most important value of bowfins to humans is strictly academic. As a living relict from the past, the bowfin is an important fish in the study of vertebrate evolution, and is a mainstay in comparative anatomy and vertebrate zoology labs.

Apparently, being a thug — as well as an over-protective parent — is one way to survive millions and millions of years. ♦

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