

# ONE FISH, TWO FISH, THREE FISHES MORE: LONGEAR SUNFISH—OKLAHOMA'S PRETTIEST (AND NEWEST) NATIVE FISHES



**Brandon Brown**

Tahlequah, Oklahoma

Driven by environmental and chemical triggers we can't see or completely understand, each spring and summer a whole host of Oklahoma's fish species invest a tremendous amount of work and metabolic energy into reproduction. Some follow rising flood waters and broadcast huge numbers of eggs over newly flooded vegetation. Others, like Flathead Catfish, leave their deep-water haunts for shallower waters and excavate nest cavities under rocks and logs. Still others, like White Bass and Paddlefish, swim great distances upstream to lay their eggs. But perhaps no other Oklahoma fish invests more time, work, and energy into reproduction than the Longear Sunfish. Each year they devote weeks—even months—of round-the-clock effort into nesting and caring for their young. It's hard to even describe the myriad of fatherly duties constantly performed by the males, but to put it simply, they are the energizer bunnies of the fish world and are busy, busy, busy. Nonstop, twenty-four

hours a day, seven days a week, a group of nesting Longears is a dizzying display of color, motion, and energy all following a precise set of rules innately known by the Longears but seemingly hidden from our eyes. They are arguably Oklahoma's most beautiful and hardworking fish.

Longear Sunfish are one of the most common and widespread, yet unique and interesting of Oklahoma's 175 (or so) species of fish. Their species name *megalotis* is derived from their prominent gill flaps, but what people usually notice and remember about them most is their striking coloration. This is especially true for breeding males, which can be absolutely stunning during the summer months.

Longears belong to the sunfish family, a fairly large and popular group that includes well-known species like Largemouth, Smallmouth, and Spotted basses, as well as Black and White crappies and an additional 11 species that most Oklahomans collectively (but incorrectly) just refer to as perch. Although they can be found in our large lakes and rivers, Longears are first and foremost creek fish. No matter where you live in Oklahoma (except the Panhandle), there's probably one swimming within a few minutes of your house. Even in urban areas, Longears are abundant in almost any small creek or ditch with clean, permanent water.

Mature Longears are sexually dimorphic, meaning that males and females look different. This contrasts with many kinds of fish, and even some of their cousins such as Largemouth Bass. For example, if you hold a two-pound male and female Largemouth side by side, it is difficult to tell which is which. However, with Longears, it's easy to see some obvious differences between the sexes. The length of the opercular flap (gill flap) is one example, with males developing longer and more pronounced flaps than females. Perhaps not too surprisingly, there is also good evidence suggesting females prefer males with longer gill flaps.

Another good example is size. For many fish species, females are larger than males. However, with Longears, the opposite is true. Although males rarely exceed six inches, they are noticeably larger than females. The development of a nuchal hump—an enlarged area of fat, soft tissue, and fluid best described as a swollen forehead—is another example and is most prominent in the oldest and largest males.

Perhaps the best example of sexual dimorphism in Longears is the development of the male's striking breeding colors. These



**A male Redstripe Longear in an Ozark stream.**

A version of this article appeared in the March/April 2023 issue of *Outdoor Oklahoma*. It is reprinted here, in a slightly edited form, with permission. Photos by the author unless otherwise indicated.

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**Editor's note:** Visit YouTube to watch the many outstanding underwater videos Brandon has made about Longear Sunfish and other Oklahoma native fishes: <https://www.youtube.com/watch?v=8n8mCOM0X0U>

consist of varying shades of intense electric blues and turquoise greens, contrasting with deep reds and vivid glossy oranges. The exact patterns, markings, and combinations of these colors is quite complex and covers the entire face, body, and fins. These colors are most intense during summer and seem to glow and produce vibrant flashes of color in the right lighting conditions. By comparison, females are plain and ordinary looking, with dull and muted colors.

Longears are colorful throughout Oklahoma, but what's interesting is that they look different depending on where they are found. While a Largemouth Bass caught in Mississippi looks just like one caught in Wisconsin, Longears don't all look the same.

These differences in appearance are significant enough to make one wonder whether they are all fish of a single species and this has been discussed by a handful of ichthyologists over the years.

One of these is Bruce Bauer of Tennessee,<sup>1</sup> who has studied our state's Longear variation and who is trying to finish his life's work unravelling North America's Longear Sunfish speciation.

Bauer's tremendous undertaking spans 50 years of collecting, identifying, and documenting differences in Longear Sunfish from across the country. He's an encyclopedia of all things Longear and has been cited in a wide range of fisheries books and publications during the last four decades.

Bauer began working with Longears in 1973 at Eastern Kentucky University on an undergrad work study counting scales on Longears from all over North America. "When we looked at the ones from the Little River drainage in southeast Oklahoma, they really stood out. And the longer we looked, the more they stood out."

After finishing his undergraduate degree in Kentucky, Bauer moved to Tennessee Tech for his master's degree and then on to the University of Tennessee to work on his doctorate project with Longear and Dollar sunfish. "We were looking at everything and measuring anything that could be different—things like how many pectoral rays, which ray is the longest, how much longer is it, how many scales in the lateral line, how many scales above the lateral line, how many around the caudal peduncle, etcetera." These assessments were performed on literally thousands of fish.

Over the years, Bauer would set the project down and pick it up again, but he never gave up on finishing it. A few years ago, he had an opportunity to look at Longear variation using genomic-scale DNA sequencing. "It was really expensive, and some of the new DNA science stuff is over my head. But I was able to partner with some topnotch geneticists from Yale (Daemin Kim and Thomas Near) and finally take a closer look at some of these different forms of Longears. My morphometric work said they were different, but I really needed to be able to confirm it with DNA, too."

The results confirmed much of what Bauer had believed for years. In 2021, he co-authored a paper (Kim et al. 2022) on the findings: *Lepomis megalotis* wasn't one species with several different forms but a complicated group of fish with enough genetic and morphological (size and shape) variation to warrant the recogni-



A male Longear with a prominent nuchal hump.

tion of six stand-alone species. Three of these Longears occur in Oklahoma, with two of them being newly recognized and still yet to be formally named. Bauer said that work is in progress now and should be announced this year.

While Oklahoma's two new Longear species were "unknown to science" and are just now being recognized, it doesn't mean they are newly discovered, as in "never seen before." All three of Oklahoma's Longear species are common where they occur and are well-known to anglers and biologists alike. But the research by Bauer and others did answer the longstanding question: "Are all these different-looking Longears really the same kind of fish?"

Bauer's research continues and he plans to receive several more specimens from Oklahoma. Altogether, he has examined 5,406 individual Longears and 39 morphometric traits on each fish—that's a remarkable 210,834 data points.

The most widespread Longear in Oklahoma is currently known as the "Plains Longear" or *Lepomis aquilensis* (although that common name may change). It's found throughout central and western Oklahoma and in the lowlands of the Arkansas and Red rivers as far east as the Arkansas line. They are typically powder-blue or turquoise green on the front half of the fish, transitioning to brick red on the back half. They are also stockier bodied with stout "bulldog jaws" and are probably the largest of our state's three species.

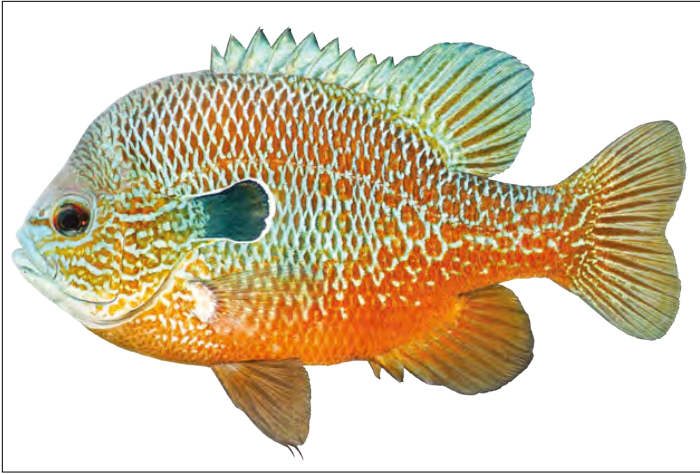
The tentatively named "Redstripe Longear" is one of Oklahoma's newly recognized Longear species and is currently designated *Lepomis* sp. "Ozark". Its range is basically the Western Ozark region of Oklahoma, Arkansas, Missouri, and Kansas, but can be found in a few streams as far west as Ponca City and as far south as tributaries of the Poteau River. These Longears are best known for their distinctive red stripe extending along

<sup>1</sup>Bruce Bauer passed away on March 23, 2023, at the age of 72. See memorials of Bruce and his work in the Summer 2023 issue of *American Currents*.

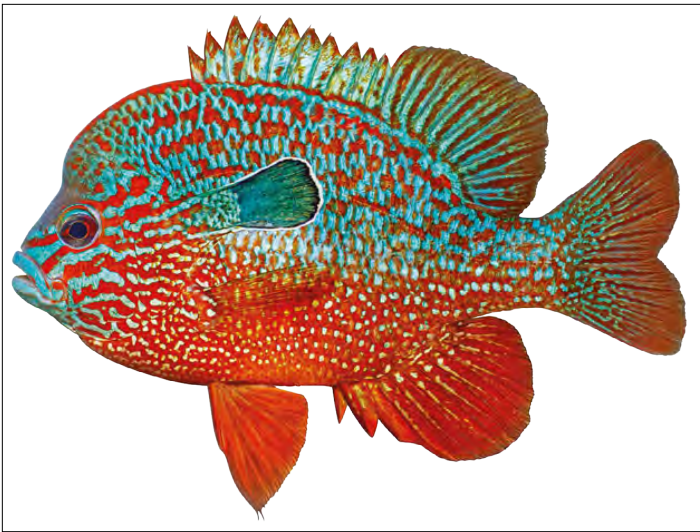


the nape from the dorsal fin to the top of the forehead. Their coloration is brilliant blue intermixed with vivid orange-reds throughout the body, stomach, forehead, and fins.

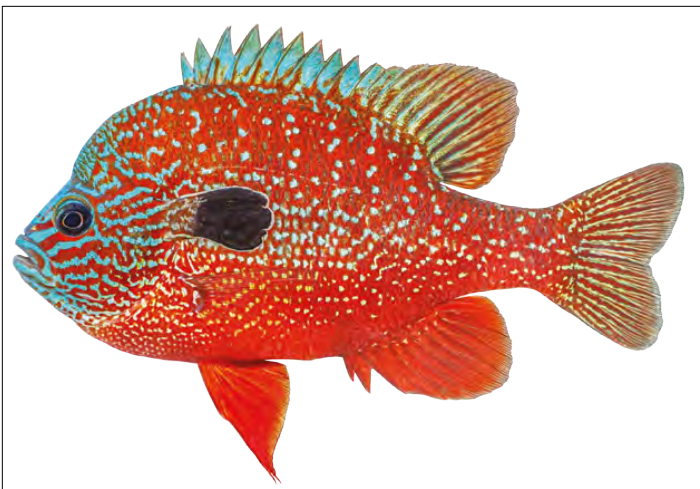
The third Oklahoma Longear species is also new and is currently referred to as the “Caddoan Longear” or *Lepomis* sp. “Ouachita.”



Plains Longear *Lepomis aquilinsis*



Redstripe Longear *Lepomis* sp. “Ozark”



Caddoan Longear *Lepomis* sp. “Ouachita”

These are perhaps Oklahoma’s most genetically and morphometrically distinct Longear, and one of the original forms that first got Bauers’s attention 50 years ago. They are found throughout the Little and Kiamichi river drainages of the Ouachita Mountains and extend to near the Gulf coastal plain to the south. Their primary colors are shiny deep red or orange with iridescent blue markings on the face, with blue dots well-distributed across the body.

Longears are undoubtedly among Oklahoma’s most unusual and interesting fish species. Often caught on hook and line, they are decidedly too small for table fare, too pretty to use as bait, and too special and unique not to be appreciated for what they are. Perhaps their best purpose is to just be admired and appreciated for their unparalleled beauty, tireless energy, and the role they play as one of the true gems among Oklahoma’s native fishes.

#### ACKNOWLEDGING THE LATE BRUCE BAUER’S LONGEAR SUNFISH RESEARCH IN OKLAHOMA

I had known Bruce as the “Longear guy” and through emails for several years but didn’t get to actually meet him until 2021. That June, I got to tag along with him and his old friend (and expert fish photographer) Richard T. Bryant to sample Longears from southeast Oklahoma. We spent two or three days hopping from creek to creek collecting fin clips and vouchers for Bruce’s project and live specimens for Richard to photograph.



Bruce Bauer in southeastern Oklahoma holding a “Caddoan” Longear. (Photo by Richard T. Bryant)



Bruce and Richard were a hoot to be around, and as a nice bonus Henry Robison stopped by one morning and I was able to have all three of them sign my old *Fishes of Arkansas* (Bruce and Richard took many of the photos in the first edition).

That trip stands out as one of my all-time favorite fish trips and Bruce was one of the most passionate and knowledgeable fish people I've ever known. He was also one of those rare people you feel like you've known longer than you really have and seem to be able to fit perfectly into any conversation regardless of whether it's while standing behind a podium or standing knee deep in a sandy creek catching "perch" and talking to a landowner down in southeast Oklahoma. I sure miss talking fish with him.

#### Literature Cited

Kim, D., B.H. Bauer, and T.J. Near. 2022. Introgression and Species Delimitation in the Longear Sunfish *Lepomis megalotis* (Teleostei: Percomorpha: Centrarchidae). *Systematic Biology*, Volume 71, Issue 2, March 2022, Pages 273–285 <https://doi.org/10.1093/sysbio/syab029>

### NANFA 2023 FINANCIAL SUMMARY

Submitted by Tom Watson, Treasurer

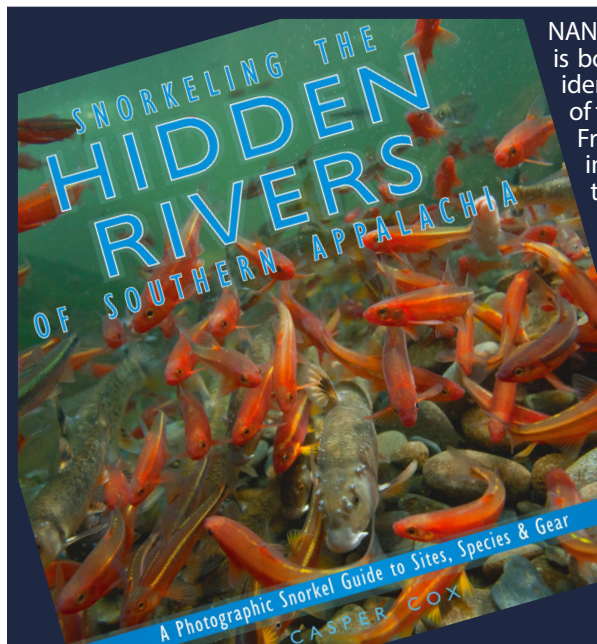
**BEGINNING BALANCE: \$58,338.91 (AS REPORTED IN JAN. 2023 AC)**

<u>INCOME</u>		<u>EXPENSES</u>	
Membership Dues	11,678.28	Convention <sup>2</sup>	-3,107.31
Convention	14,790.67	AC	-14,130.41
T-shirt sales	699.25	Grants	-1,000.00
Donations	1,419.98	USPS	-720.94
Misc.*	1,229.19	Web Site	-1,069.40
		Misc.*	-279.77
<b>TOTAL INCOME</b>	<b>29,817.37</b>	<b>TOTAL EXPENSES</b>	<b>-20,307.83</b>
		<b>YEAR END BALANCE (12/31/2023)</b>	<b>\$ 67,848.54</b>

\*Includes hats, cards, decals, AC CD, etc.

## NANFA members can help make a great organization and its publication even better.

Contact the editors with ideas for articles you'd like to write and to suggest authors or topics you want to read. • Mention AC to people who have interesting things to write about. • Submit your photos and artwork. • Suggest items for Riffles. • **Tell us what you want to see in these pages.**



NANFA's very own Snorkelmeister, Casper Cox, has written a snorkeling guide that is both useful (with maps and information about locations, access, biodiversity, identification, safety and more) and beautiful (with dozens of color photos by some of the best underwater photographers in the world). Written to complement the Freshwaters Illustrated film "Hidden Rivers," the book is a distillation of Casper's interests, experiences and skills, as well as a love letter to his favorite waters and their inhabitants.

75+ pages, lay-flat spiral binding, 3rd printing. \$30 each

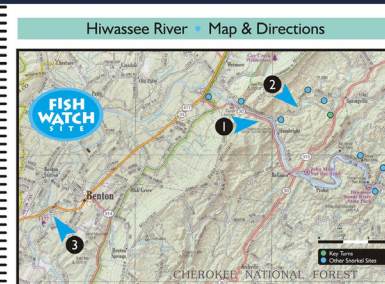
NANFA receives a donation for each copy sold through <http://www.nanfa.org/cart.shtml#guide>



Hellbenders, aka Devil Dogs or Snot Otters, are also found in the Hiwassee River. The clean water, large flat stones and an abundance of crayfish provides an excellent watery world for them to live in. If you were to spend a day here you may well see one, especially in the early dawn or dusk hours as they are generally nocturnal hunters. They breathe through the folds of skin running down their sides and remain in the water year round. Some people are afraid of them but you have nothing to fear. They are not venomous as some unknowing people claim. Consider yourself very fortunate to see a Hellbender in one of the few remaining rivers they still thrive in. They are North America's largest salamander reaching lengths of 24 inches or more.

David Herasimtschuk was honored with an international first place award in London for this stunning photo. By the way, the Northern Water Snake got away, a bit too much for this Devil Dog.

to a stream named Spring Creek located on the north side of the farm compared to the cold Hiwassee. Though the creek is much smaller runs for easy snorkeling. In early spring River Clubs with and here, just as in the shallow runs of the Hiwassee.



The Hiwassee River is only 30 minutes from the Conasauga River, via US Highway 411 north. A convenient location is the Hiwassee Picnic Site and it's just a few miles from 411, along TN 30 west toward Reliance. The picnic site offers tables, an access ramp, a restroom and a shallow gravel bar to wade out from. Be careful here as the water can dramatically and dangerously rise during power generations upriver. While in Reliance, visit the historic Webb Brothers general store and post office. On the other side of the river, at the bridge, is a fishing store and deli as well. Free camping is available along Spring Creek and paid camping with facilities at Goe Creek Campground. A visitor center is nearby. © The Hiwassee River Picnic Site.

#### Site 1 Fishes of the Conasauga River



**Bronze Darters** are the most common darter in the Smoky Mountains. I consider them handsome with their heavy pronounced snouts. From shiny brassy to muted patina, they wear their metallic scales proudly. The Latin name for the Bronze Darter is *Percina jenkinsi*, which means "The Prince." They seem to enjoy feeding in the carpet-like moss covering the rocks. Rubbing your hand gently over the river weed gently dislodges micro edibles that these handsome darters will promptly feed upon.

**Greenbreasted Darters** are at their most beautiful in the early spring. During the spawning season the males are out and about parading themselves to entice the more bland colored, gravid females, (being those filled with eggs), into their selected nesting sites. Usually this species tends to live and hide beneath the stones located in or near the faster current of the shallow.



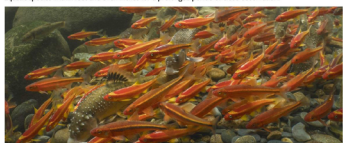
**Spotted Darters**, during the spring spawning season, only the males get the vertical bars of iridescent blue. During most of the year their bodies are a light tan color blending into the sandy substrate they favor, generally found in the calmer flowing areas.

There are many, many other species of fish found in the Conasauga River. Typically on any given day you will see 20 to 30 different fish species at the snorkel hole, and even more as you learn when and where to look. Snorkel the pools and boulder-strewn rapids further downstream and return during other seasons to see new sights. Explore! Below is one of the beautiful crayfish, marked with vermillion over sooty



#### Looking Below the Surface

Snorkeling is a wonderful way to experience another aspect of our world. Not only will you see things that most never will, it is a full sensory experience. Your body and senses are fully immersed, you are one with the watery world, floating freely in its space. Your vision is magnified by an optical enhancement making everything appear larger. Aquatic creatures will come near you, as curious of you as you of them, soon accepting your presence. Unlike on the surface world, where one generally has to view creatures from afar or by the use of binoculars, in the world below the water's surface you can gently approach many aquatic species within feet and even inches for a prolonged period of close observation.



#### Aquatic Diversity

Fishes come in all types of shapes and sizes with their bodies adorned by patterned markings, gold reds, blues, greens and colorful flowing fins. Fishes vary from long, scudgy gear patrolling the shad-baiters to sleek ambushers fish darting along the gravelled bottom. Schools of shiners abound by you, shimmering in the sunlight's rays while a Redeye Bass watches, lurking in the shadows of log jam. A new world of aquatic life awaits, beckoning your visit from the Earth's surface. Taste the flow and listen for the sounds of redfiner suction popping microscopic meals from the life side of broken bedrock. In the cracks and crevices tiny translucent eggs, lined with new life, another generation of foraging fishes taking their place in the aquatic food web. Schools of sunfish graze on slippery stones covered with algae, shaving off patches with their lower lips sharp as our fingernails. They are feeding, moving as a herd of aquatic cattle, grazing on the algae. Return in the spring and some of these sleek stone grazers will have morphed into armor-plated rolling stones and pushing deep trenches into the clean gravel for the egg-filled females. Algae, her eggs, dominant males will fertilize and protect the eggs with a cover of newly rolled stones.

This is a world mostly unseen, yet eager to be witnessed by you. With a mask of tempered glass free, released from gravity's pull, drifting through their watery world with a quiet ease. Yet, awkward, floating in the void of space, but no, you are here in a medium of living water, and to acquaint, exploring new mysteries.

Shiners and Sunfish, Trout and Redfishes, Darters and Dace, Bullheads and Hog Suckers, Drum, Predatory Bass and their prey, Lampreys and Minnows, Whitehead Catfish, along with their bottom-dwelling, omnivorous cousin the catfish, and a Sunfish in the shallow water's edge.