



HEY, THAT'S NOT A TROUT!

Learn about some cool fish you might catch while fly-fishing for trout in the mountains

written by Jacob Rash and Luke Etchison

As any fly angler could tell you, there are few things as exciting as making a perfect cast or having an exact drift that leads to your fly or indicator disappearing. These moments of “the take” are likely etched in memories that form the foundation of our fish stories, help us make it through multi-hour work meetings and, ultimately, keep us casting on our favorite waters.

Although excitement of the take is palpable, it is followed by immediate anticipation as you wonder what is on the other end of your line. As fish biologists for the N.C. Wildlife Resources Commission, we think these moments rival shaking your largest birthday present to guess what’s inside as we cannot wait to find out.

Occasionally, you get that answer in short order as you see what appears to be an 18-inch brown trout break off your tippet. Sometimes it takes holding the tippet and fish in your hand before realizing that you have something different. With that in mind, we wanted to share information about a few non-trout species that you might encounter during outings in western North Carolina streams.

Let’s think about the scenario above, where you are standing in a stream holding a fish that you did not expect to catch. There is a good chance that it is either a minnow or chub (often called “knottyheads”) species. We will explore the numerous knottyheads later, but first, let’s talk about the two minnows that you are most likely to encounter as their potential habitat and diet overlaps with trout.

With all the vibrance of a tropical reef, an assortment of minnows, including a school of rosyside dace (middle and top of frame) spawn over a nest of a bluehead chub.

TODD PUSSER



TODD PUSSER

Schooling warpaint shiners (top) spawn with Tennessee shiners over a river chub nest.



Warpaint Shiner

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Rosyside Dace

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KNOW YOUR MINNOWS

WARPAINT SHINERS Often found in creeks and rivers that are clear and cool, warpaint shiners are a relatively large minnow that reaches sizes up to 5 ½ inches long. They also prefer streams that are well oxygenated with a wide insect prey base. Similar to trout in those environments, warpaint shiners utilize available prey and respond to insect hatches.

Whether they are eating a mayfly nymph or an adult caddisfly, warpaint shiners' large mouth allows them to eat almost any insect (or its artificial fly imitation) that hits the water. Warpaint shiners can be easily identified at any size or sex by a yellow to red streak on their cheek and red "lipstick."

ROSYSIDE DACE Rosyside dace are a minnow species (up to 4 ½ inches) that can

be found in runs and pools of small- to medium-sized, cool-water streams. At first glance, they may look like warpaint shiners, but they are a smaller minnow species and have finer scales. Like warpaint shiners, rosyside dace have a large mouth that allows for a wide prey base that overlaps with trout.

Rosyside dace are often seen schooling with juvenile trout in large mixed-species groups, which can likely decrease predation risk on early life stages of trout. They are most easily identified by the brown or golden yellow stripe, and breeding males are more obvious with a broad deep red streak.

By now you are likely thinking about one of your encounters with these minnows or another small fish that appeared after you made the perfect cast and fly presentation. These two minnows are just a fraction of the native species in North Carolina and are not

the only non-trout you have a chance of landing. In fact, there is another group of fascinating fishes that call North Carolina home and often take your fly: chubs, the eco-engineers of our mountain streams.

KNOW YOUR KNOTTYHEADS

Many folks have heard tales of chubs ("knottyheads" or "hornyheads" as they're more commonly known) being caught while fishing streams in our state. Knottyheads are a bunch of species that have been lumped together by the identifying characteristic of horns, knots or what are technically called tubercles. These fishes can vary in size, color and even "knottiness."

Typically, tubercles are only present in male fish close to spawning season. Tubercles are made of keratin, which is what hooves and fingernails are made of, and these breeding tubercles function like antlers in deer and are used for fighting and attracting a mate.

There are many fish species that grow breeding tubercles, including minnows, darters and topminnows. Even some trout and salmon species (e.g., lake trout, Arctic grayling and huchen) are known to get these breeding tubercles, even though they may not be as obvious as some of our local knottyheads.

In western North Carolina, there are five main knottyhead species that grow large, obvious tubercles: bigmouth chubs, bluehead chubs, creek chubs, river chubs and even central stonerollers. However, finding and identifying them depends on what river basin you are in, or which side of the continental divide you are on. In most streams here, you have a chance to encounter central stonerollers and creek chubs. The other three species depend on where you are fishing.

CENTRAL STONEROLLERS Central stonerollers are a minnow species that often travel with other species in large schools. Breeding males can be distinguished from other knottyheads by tubercles on much of their body, including the head and dorsal fin (the large fin on its back). However, a non-breeding male and female cannot be identified by these characteristics. The best trait for identifying central stonerollers is a firm cartilage shelf on the lower lip that is used for scraping algae off rocks, thus the term "stoneroller."

CREEK CHUBS Creek chubs can be found anywhere in western North Carolina, but, unlike the other knottyheads, creek chubs have a dark spot on the front of the dorsal fin. These fish are caught fishing and can reach over 12 inches in length.

The last three knottyheads can be extremely difficult to identify if they are side by side. Each species has a similar diet and mouth position, and they all vary in coloration. Luckily, there are only a few places that these species co-occur, so identification really considers which river basin you are in. Unfortunately, all three of the following species can be found in the New River basin, likely due to the movement of fishes between basins by humans.

BLUEHEAD CHUBS Bluehead chubs are native to waters draining into the Atlantic Ocean, including the Savannah, Catawba, Broad and Yadkin Pee Dee river basins. Bluehead chubs often have tan or yellow fins, except some in the Savannah River watershed show red fins outside of spawning season. Spawning males grow large



River Chub

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Bigmouth Chub

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Bluehead Chub

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Tubercles are key to identifying these species. River chubs feature tubercles only below their eyes on the snout; bigmouth chubs have tubercles above and below the eyes and nostrils; bluehead chubs have tubercles only above the nostrils. A male central stoneroller (below) has tubercles on much of its body, including head and dorsal fin.



LUKE ETCHISON/NCWRC

NATURE'S WAYS

“What Are Those Piles of Gravel in My Favorite Creek?”

See Nature's Ways, page 51.



TODD PUSSEY

Aquatic engineers, bluehead chub (top) and river chub (bottom) males build elaborate stone nests in streams throughout the mountains each spring.



TODD PUSSEY

tubercles above the nostrils and often have a bright blue head; this position of the tubercles in a breeding male is the easiest way to differentiate these three species.

RIVER CHUBS River chubs are found in streams that flow into the Tennessee River from western North Carolina, including any stream in the Hiwassee, Little Tennessee, French Broad and Watauga river basins. River chubs are easiest to identify when they are a spawning male, like bigmouth and bluehead chubs. They can reach up to 13 inches long and are found anywhere from medium-sized streams to larger rivers. A breeding male grows large tubercles below the eyes on the snout. Their head also becomes very swollen and turns pink, purple or red when they are ready to spawn.

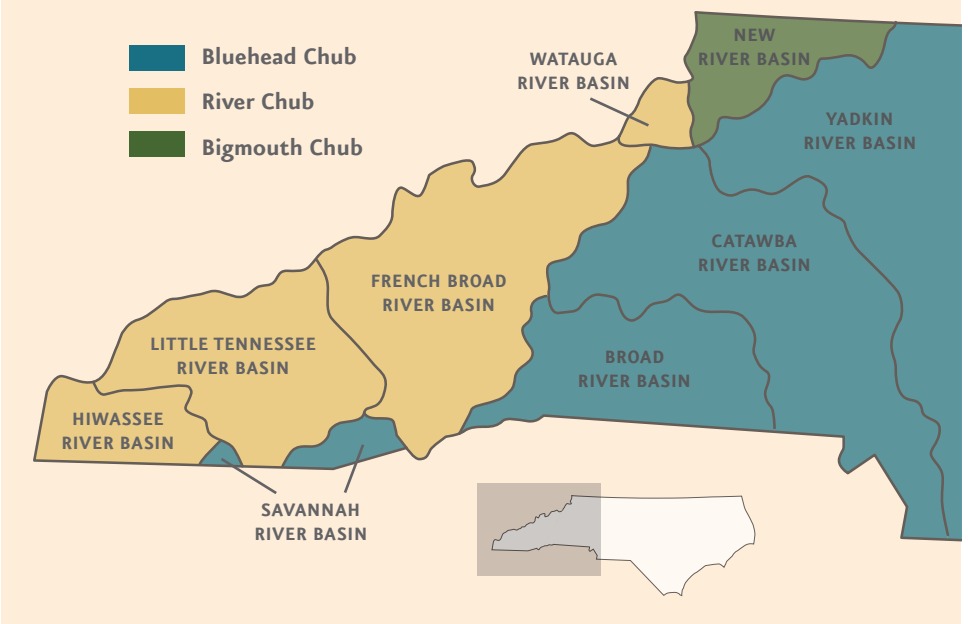
BIGMOUTH CHUBS Bigmouth chubs are like the other chub species, but they are only native to the New River basin of western North Carolina and grow over 10 inches. As the name implies, this species has a larger mouth than its counterparts and it has a slightly more robust body shape. Unlike bluehead chubs and river chubs, this species has many smaller tubercles above and below the nostrils. Like a river chub, the bigmouth chub has a large pink to purple swollen head when it is ready to spawn.

ROLES KNOTTYHEADS PLAY

These fish are much more than just unique looking. All five play a significant role in maintaining our stream ecosystems. We mentioned earlier they are the eco-engineers of our mountain streams because they each modify habitats by building spawning nests that are often used or required by other fish species. The importance of nest-builders like these species has been noted by many cultures, including early Native Americans in the Hudson Bay area who called them “Awadosi,” which translates to “stone carriers.”

Male river chubs, bigmouth chubs and bluehead chubs build large pebble mounds used for spawning. These mounds vary in size and are typically built by a larger male

KNOTTYHEADS IN NORTH CAROLINA



to attract females. These chub mounds are used by many other species for spawning and play a critical role in stream ecology.

Without the mounds built by these engineers, many aquatic species would have lower reproductive success or not reproduce at all. Their “engineering” also modifies habitat which increases species diversity and abundance of aquatic insects and fishes. Many additional species will use the nest (or mound) for spawning and the associated school of fish for protection. Some fish species are so closely tied to chub mounds that they will not begin spawning until chub milt (sperm) is present in the mound.

Even stonerollers and creek chubs enjoy the added benefit of a mound in a stream. These species don't require a chub mound for spawning but are often found building spawning pits in the bases or sides of large chub mounds built by river chubs, bigmouth chubs and bluehead chubs in Western North Carolina.

TROUT CONSERVATION FLOWS DOWNSTREAM

As we noted earlier, these are but a few of the native species in North Carolina, so their presence and persistence are important symbols of the health of our aquatic resources. We understand that telling these species

apart can be challenging, so we hope that we have been able to help provide identification and awareness of additional fishes in our waters. We also know that anglers may not encounter these fishes on a regular basis, but you might (and given how big some knottyheads get, maybe you should).

These two species of minnows and knottyheads are interwoven into the health of our aquatic systems. We would be surprised if there is a reader of this article who does not appreciate the value of our state's aquatic resources, and for trout anglers, we remain in a unique position to have our coldwater conservation efforts (the work done to care for trout and their habitats) provide an expansive impact.

Just like the knottyheads, our actions have far-ranging impacts beyond their immediate goals. Our efforts directed toward trout can have a much larger conservation footprint to help everything lower in a watershed. In the end, the good work done to help trout and their habitats has impacts beyond our favorite fishing holes. Often those impacts are not seen directly, but as we just discussed, sometimes you get a peek. In the end, trout conservation really does flow downstream. ♦

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