# Collecting and the Spatial Habits of Three Native Killies

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by

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Sometimes, even when we know where they are, our native fish gems may be rather tough to come by. This is especially true for killifishes of the genus *Fundulus*, known for their fleet behavior and really novel and sometimes downright bizarre escape tactics. Here, I share my experiences with three species I've encountered in the field. Each has its own range of spatial habits and behaviors that both beguile and frustrate the would-be collector.

My first experience with killies in the wild was with one of the most familiar—the banded killifish, *Fundulus diaphanus*—also popular in some regions as a bait fish. The banded killifish may also be the most difficult to catch, because of its quick darting movements, and a tendency to dive to the bottom when threatened. I gained my real appreciation for this species when I found some in a small rocky stream below the overflow of Cranberry Glade Lake, in Somersette County, Pennsylvania. They were, indeed, very fleet. To this day, I still wonder how an awkward teenager managed to catch at least a half dozen or so with little more than a plastic cup. In fact, these fish seem more difficult to catch with a seine—which later I learned they avoid like the plague if pursued in areas where they have more room to maneuver, like the shallows of lakes and rivers. Also, they are adept at escape even where there is less room, diving to the bottom and wriggling beneath the weighted edge of the seine. Dip netting may sometimes produce results, especially for specimens stranded in shallow puddles below the spillway of a lake that is receding during a drought. Be forewarned, though, that these, and perhaps most killies in general, are reluctant to enter a baited minnow trap.

Easier—perhaps the easiest of all killies—to collect may be the blackstripe topminnow, *F. notatus*. I collected these once in Ohio. My first try with a dip net in Grand Lake St. Mary's proved to be unpromising. Out of two specimens cruising the shallows, I managed to net only one. My luck was better in the nearby St. Mary's River (by my standards, more a creek than a river). Although the task wasn't easy, the *F. notatus* were actually less difficult to catch than the banded killies back home. In fact, their quasi-religious devotion to the top three to six inches of the water column made it possible to locate them even when my collecting activities stirred up large amounts of sediment. Any self-respecting banded killie in the same situation would simply dive into the muddy depths and out wait the collector. The blackstripes, however, were quick to return to their favored cruising depths, and were thus easy to spot after only a short wait.

Perhaps one of the most elusive fishes in killie-dom are the starhead topminnows, a distinct group that includes four species that were only recently distinguished taxonomically. These fishes range from the upper Mississippi Valley to the Gulf states. One other, the lined topminnow, *F. lineolatus*, inhabits the eastern seaboard from Virginia to Florida.

The northern starhead, like possibly all members of this group, has a novel strategy for evading predators. This fish leaps onto the shore, where it waits for a brief period before wriggling back into the water. Although this is presumably an effective way to escape from the jaws of marauding pickerel or bowfins, it's a poor defense against herons and native fish enthusiasts!
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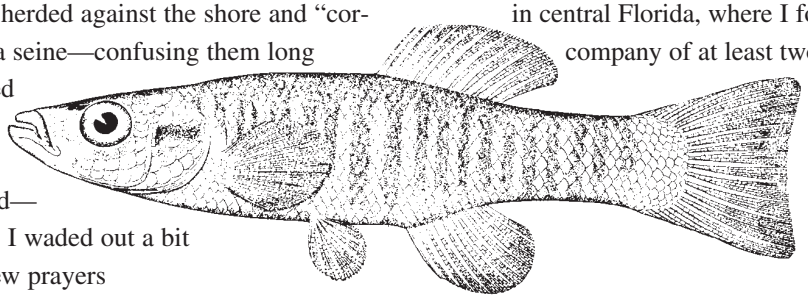
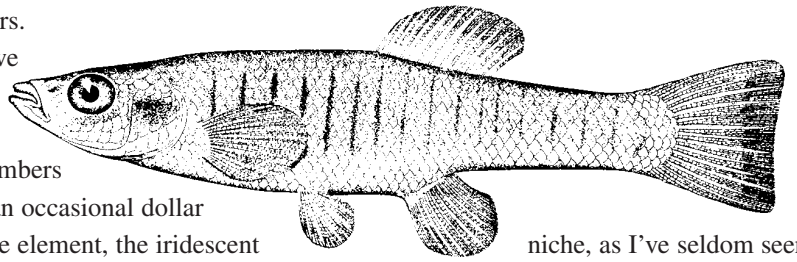
I rate the starhead as intermediate in collecting difficulty, between the banded killie and the blackstripe topminnow. In Florida, I pursued both the eastern starhead (*F. escambiae*) and the lined topminnow (*F. lineolatus*). Both were difficult to catch: the eastern, very difficult, the lined, next to impossible. These species frequent densely vegetated waters between the reeds and lily pads, which they depend upon for shelter.

During our first encounter with *F. escambiae* in the Florida Panhandle, my friend Mike and I met with little success. After three hours of dip netting before nightfall rendered collecting impossible, we had only six specimens to show for our efforts. But a year to reflect allowed us to reformulate our strategy. I had noticed that sometimes both blackstripe topminnows and even banded killifish sometimes could be herded against the shore and "corralled" briefly with a seine—confusing them long enough to be scooped up with a dip net. I tried this on the Florida starheads and—*Eureka!*—it worked. I waded out a bit from shore, said a few prayers to defray alligator encounters (or worse), then cut off our quarry's retreat to deeper waters.





**Above:** banded killifish, *Fundulus diaphanus*, male. **Below:** banded killifish, *Fundulus diaphanus*, female. From Jordan and Evermann, *The Fishes of North and Middle America* (1896-1900).

Lo and behold, we scooped out oodles and oodles of them, along with greater numbers of mosquitofish and an occasional dollar sunfish! In their native element, the iridescent greenish-gold spot on their heads made the starheads easy to spot and set them apart from the mosquitofish. I can only wonder what practical function this appealing trademark has. I'm told, however, that the "star" on the crowns of these fish is composed of specialized scales covering a light-sensitive third eye, the function of which remains in the realm of speculation.

I believe that the wide disparity of spatial habits of these three species is an amazing series of adaptations to different ecological niches. Along with my field observations, I've also been able to observe fish introduced to my pond. While wading around during plant-thinning and other maintenance tasks, I am often followed by hordes of curious fish—mostly golden shiners and northern redbelly dace. These pick at my legs, and feast on bloodworms and other insect larvae that my footsteps dislodge from the ooze that form on the pond's liner. And along with an occasional darter or sunfish, the banded killies get their share as well. Blackstripe topminnows, for the short time they inhabited the pond, fed mainly at the surface. But based on my observations in both aquaria and the pond, fed both at the surface and at intermediate depths. These somewhat segregated feeding habits may make it possible for some of these species to co-exist in the wild without being in direct competition with each other. This may be the case for bodies of water in the upper Midwest, where *Fundulus diaphanus*, *F. notatus*, and the local representative of the starhead group, *F. dispar*, are often found together. The same may be true for a lake I visited in central Florida, where I found *F. lineolatus* in the company of at least two other *Fundulus* species, the Seminole killifish (*F. seminolis*) and the golden topminnow (*F. chrysotus*). All lived together along the lake's weedy margins.

One last note regarding capture techniques. A method that works well for the golden topminnow is to scoop out some dense aquatic growths with a dip net, and sort through it for the fish. Apparently, this species favors this particular niche, as I've seldom seen it displaying on areas of open bottom, like the banded killie, or cruising the surface like the starheads do.

It may also be possible to go after members of top-water-inhabiting groups with cast nets, or to stalk them at night in the weedy shallows with a flashlight or headlamp. However, the collector should check all local regulations regarding night time collecting. Would-be collectors in southern locales should also be forewarned that alligators also feed at night.

In conclusion, catching elusive killifishes requires both skill and forethought. Otherwise it's all a matter of fisherman's luck: you might get your fish or else just return home wet, hungry, and with nothing to show for your efforts.