Coastal Plain Collecting

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The Coastal Plain biogeographic province of the Mid-Atlantic region (the "Carolinian Zone" of older literature) offers intriguing opportunities for the native fish collector. This province is characterized by low gradient streams, abundant swamps, and other wetland habitats. These waters are often warm, stagnant, and, in many cases, moderately to highly acidic. They are populated in most cases by very hardy fishes that are well-adapted to the sub-optimal conditions of an aquarium.

Many of these fishes are also very attractive, or have interesting habits that endear them to some collectors. Some of them, such as the blackbanded (*Enneacanthus chaetodon*) and bluespotted (*E. gloriosus*) sunfishes, are well established in the aquarium hobby and have been bred in captivity for many generations both here and abroad. Others are less known and are only now becoming more prevalent in private collections. These include madtoms, minnows, and the secretive pirate perch (*Aphredoderus sayanus*). And while lacking many of the highly colorful minnow species typical of streams farther inland, coastal streams do have their share, including the rosyside dace (*Clinostomus funduloides*), and the interesting but seldom-found ironcolor shiner (*Notropis chalybaeus*). The rosyside dace is a real beauty in full breeding color. And the ironcolor shiner—well, that was the main quarry of a weekend excursion to the Washington, D.C. area in early October 1998.

Southern Maryland's Zekiah Swamp Creek

On a Saturday morning, my friend Mike Quispe and I headed from the Pennsylvania mountains towards the home of NANFA's then-president Bob Bock to sample the Zekiah Swamp Creek system in southern Maryland. (Bob's scientific collecting permit had us covered.) We arrived around noon, transferred some of our gear to Bob's van, and were off.

Our first spot was the outflow from Cedarville Pond in Cedarville State Forest near the southern tip of Prince George's County. This is near the headwaters of Zekiah Swamp Creek, an extensive tannic water system that extends across a good portion of the rural landscape. It's a complex of braided stream channels and swamp forest protected by a combination of state-owned parcels and conservation easements secured with private land owners. Unfortunately, much of the privately owned parts are posted and off limits to the public. The swamp itself has an interesting history of resisting human encroachment, the legacy of which remains in the form of old ditches dug by those who sought to tame it, drain it, and convert it to farmland. In the end, the swamp prevailed, and the farmers, for the most part, gave up.

This unfriendly bedlam of greenbriar and tear thumb is, of course, a unique biological treasure, home to many rare plants, reptiles, amphibians, and birds. For us, however, it was the fishes we sought to sample. Our first efforts in the outflow of Cedarville Pond yielded mostly minnows: rosyside dace and young fallfish (*Semotilus corporalis*, unexpected at a coastal plain location). We also saw introduced bluegill (*Lepomis macrochirus*), pumpkinseed (*L. gibbosus*), eastern mudminnow (*Umbra pygmaea*, a basic inhabitant of virtually every swamp, springhead, and roadside ditch in the region), a few juvenile redfin pickerel (*Esox americanus*), and one subadult creek chubsucker (*Erimyzon oblongatus*), which I retained.

After sampling the pond, we looked at the lower reaches of the stream where it passed under Forest Road. I was hoping the ironcolor shiner would be here, but the water was not as clean and flowing as it had been during a previous visit. A combination of drought and beaver activity had turned the stream into a still, silt-bottomed biotope more suited to the large bluegills that hovered near the surface, and the painted turtles that scurried from their perches as we approached.

We moved on, working our way down the system, wetting our nets a few more times where roads intersected public access sections of the stream. Unfortunately, we did not see the hoped-for schools of minnows. The water was deep and the mucky bottoms were not conducive to seining. In fact, we did not encounter any fishes again until we reached the crossing of Rt. 5, which intersects a dual channel.

The first channel (probably just a side channel that fills during flood conditions) was not flowing at all. A couple of deep pools near the bridge yielded abundant redfin pickerel and flier (*Centrarchus macropterus*; Fig. 1). Bob and I retained a few of the flier. The Zekiah Swamp flyer are interesting in that they represent the northernmost range extension of this essentially southern fish.

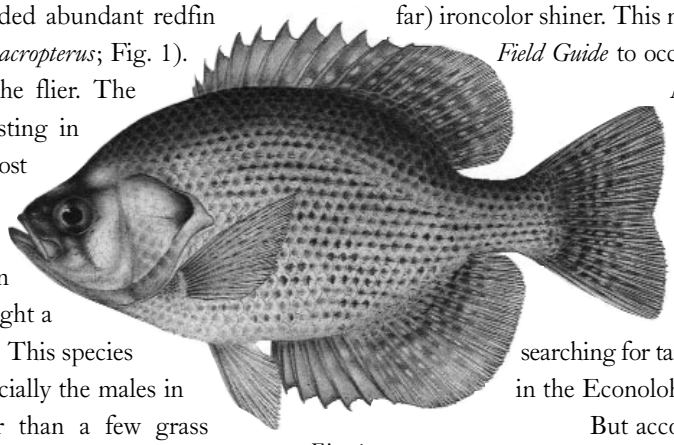


Fig. 1.
Flier, *Centrarchus macropterus*.
Illustration © Joseph R. Tomelleri.

Our last stop was the main channel of Zekiah where we caught a few bluespotted sunfish for Bob. This species truly lives up to its name—especially the males in full breeding condition. Other than a few grass shrimp we did not see much else. Especially missed were the ironcolors, for which this particular spot is listed as a historic location. The falling of dusk kept us from tarrying any longer. From there we returned to Bob's residence and said our farewells before the next leg of our journey.

Northern Virginia's Dragon Swamp

The second leg of our weekend journey started off at the residence of Mike Thennet on Sunday. Before setting out, we had to do a little maintenance on the fish collected the day before. The fliers had developed the frayed and whitish tipped finnage symptomatic of ammonia burn. Despite elaborate preparations to ensure the sponge filter in the bigger cooler was well colonized by aerobic bacteria, apparently it was not enough. A partial water change was in order.

Mike Thennet treated a five-gallon bucket of tap water and we poured about half of it in to dilute the water in the cooler. The effect was almost immediate. Within minutes the fliers were already looking less distressed. Setting the remaining portion of water aside for later, we felt assured that our catch would be safe until our return that evening.

We departed late morning with my dual air pump, the smaller cooler reserved for the ironcolor shiners we hoped to catch, two of my green buckets with the snap-on lids to hold our catch in the field, and, of course, Mike Quispe's long-handled dip net and my new seine. Mike Thennet brought his 10-foot seine.

Our destination was a few hours down I-95 and then south and eastward onto the peninsula that lay between the estuaries of the Rappahannock and York rivers. This was the gently rolling lands of the Virginia Coastal Plain or "tidewater" zone, which promised many of the species mentioned above and others we had yet to encounter, including the elusive (so far) ironcolor shiner. This minnow is plotted in the Peterson *Field Guide* to occur in a continuous range on the Atlantic Coastal Plain from New Jersey and the DelMarVa peninsula, through the tidewater zones of the western shores of Maryland and Virginia, and south to Florida (where I encountered it once while searching for taillight shiner [*Notropis maculatus*] in the Econolohatchee River near Orlando).

But according to *Freshwater Fishes of the Carolinas, Virginia, Maryland & Delaware*, the range of the ironcolor shiner tends to be more disjunct—which may be the more accurate account. To get within "range," we had to travel to the land between the two great rivers and then search for appropriate habitat, which I presumed would be low-gradient streams with tannin-stained waters over sandy bottoms, and possibly some vegetation.

Our travels took us to a Walmart near the town of Tappahannock where Mike Quispe and others (friends of Mike Thennet's) who did not already have Virginia fishing licenses could purchase five-day permits. Then we headed toward the interior of the peninsula to where the road intersects the stream run of Dragon Swamp, a very sluggish dark water swamp that was probably not ideal habitat for shiners that seem to prefer at least some current. But it was an ideal site for some other interesting species.

Here we caught a few small mudminnows, a young bluespotted sunfish, and a small American eel (*Anguilla rostrata*). These we retained before moving on to look at other spots more conducive to shiners. Mike Thennet's friend Ray, an angler, tarried at the site to try his luck and would be picked up later. The rest of us backtracked to check out some smaller streams we saw on our way through the forest.

Unfortunately, none of these streams seemed to harbor any fish life—except for the skeleton of what was probably a

large fish dropped in the woods by a predator. These streams were either too small, or were probably too muddy bottomed to be suitable habitat for ironcolor shiners. At our last stop on this road, Mike Quispe and I waited while the others drove back to pick up Ray, who also did not have much luck aside from a few nibbles.

As the day was slipping away, we started working our way back towards Washington, D.C., desperately trying to keep pace with Mike Thennet's van, which easily outpaced us. We stopped a few more times along the way. The first stop was at deep and muddy run that looked very unfriendly to seiners. But it did have quite a few turtles. We saw stinkpots and a huge redbellied slider that broke the surface of the turbid water. There was also evidence of a lot of beaver activity.

The next stop was pretty much the same. But at the next and final stop we hit pay dirt!

Satinfin Shiners, Madtoms, and More

We followed Mike Thennet's van onto a small gravel road that branched off the highway into a parcel of state-owned land across from Fort A.P. Hill Military Reservation. I was encouraged by the sight of a small stream in which I could actually see a few minnows darting away into a deeper hole as we crossed a small bridge that led to a parking area. One could not ask for a more user-friendly location than this.

I, with my four-foot seine and bucket, and Mike Quispe with his dipnet, bee-lined for the pool directly above the bridge. Mike Thennet and his friend, catfish expert Shane Linder, used a 10-foot seine in the pools downstream. Ray seemed left out since the small stream did not offer much in the way of angling opportunities.

I went into the pool and herded a group of minnows upstream. As the fishes began darting back toward me in an attempt to skirt around my seine, I raised it and brought up quite a few to examine on the shore.

The most abundant fish was, surprisingly, the satinfin shiner (*Cyprinella analostana*). Surprising to me, at least, since I didn't except to see this species in a coastal plain habitat (although Bob Bock told me he caught them quite frequently in acidic coastal streams). I thought they were pretty much found in Piedmont and montane streams and rivers, like the places where my father used to take me when I was a kid. Although they weren't the ironcolor shiners I was looking for, the satinfin shiner is desirable all the same. It's similar to the spotfin shiner (*C. spiloptera*) we have in Greenlick Creek back home, but to my eyes it's more robust and attractive.

The other abundant minnow species in this stream was harder to identify. It had a pale lateral stripe on a brownish, blue body, and for a moment I was wondering if it might be what we were looking for. But as I recall, a photograph of the ironcolor I had seen on the Internet had a much deeper ground color—almost golden brown—described as "straw colored" in the literature. Also, the lateral stripe was darker. On some of the specimens I examined, especially the larger ones, the stripe was faded. I showed some to the others and we soon concluded that what we were catching were juvenile fallfish. This was another unexpected find, since fallfish are not supposed to be found this far down on the coastal plain at this latitude. According to our range maps, it should be more of a Piedmont fish. Its presence here may have represented either an unrecorded relict population from a cooler epoch, or introduction via bait bucket. Of course, how much do we really know about the ranges of nongame fishes anyway? Distribution surveys too often reflect the collecting patterns of the surveyors rather than the actual distribution of the fish.

A few other minnows turned up in our seines, including the ubiquitous blacknose dace (*Rhinichthys atratulus*), and one individual of a silver-scaled shiner no one could identify. I guessed it might have been a spottail shiner (*Notropis hudsonius*). Other common fishes included some rather large tessellated darters (*Etheostoma olmstedi*), bluegill, redbreast sunfish (*Lepomis auritus*), a pumpkinseed, a small warmouth (*Lepomis gulosus*), juvenile American eels, and a large yellow bullhead (*Ameiurus natalis*). I also turned up a fingerling smallmouth bass (*Micropterus dolomieu*) which, along with the larger fallfish and eels, are probably near the top of the piscatorial food pyramid. Given this species composition and other cues like the occasional freshwater mussel shell, I would have considered this more of a Piedmont stream were it not for some of the more typical Coastal Plain elements that also turned up.

Shane, the catfish guy, was delighted to collect a margined madtom (*Noturus insignis*) from under the many waterlogged pieces of dead wood that were about. This species is frequently encountered in the tidewater zone as well as streams of the Piedmont. Farther upstream we also collected a tadpole madtom (*N. gyrinus*). This catfish is predominantly found below the Fall Line. Still farther upstream, Mike Thennet's seine produced the most unexpected find of all—a pair of bluespotted sunfish. And when we returned to the vicinity of our vehicles to clean our gear and do one last water change before heading home, we caught a large pirate perch (front cover).

Sorting our catch, I retained most of the satinfin shiners, a few young fallfish, some tessellated darters, and the pirate

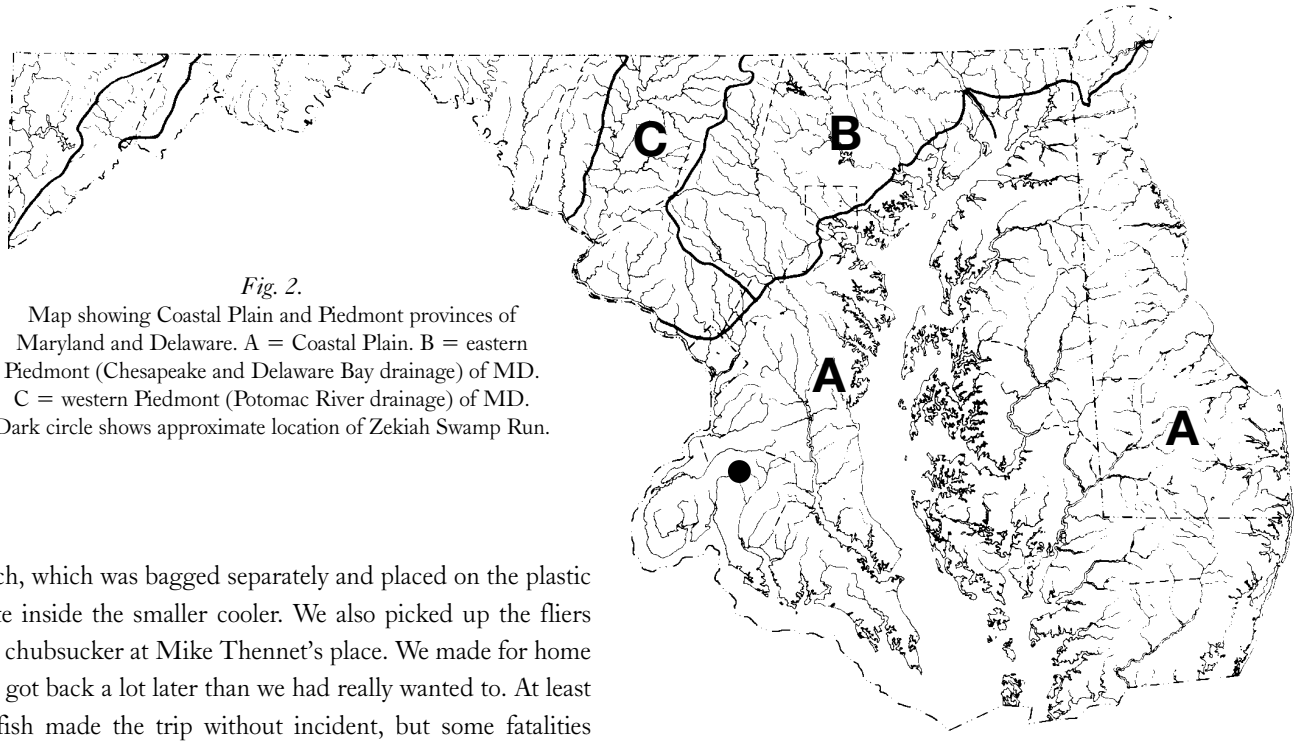


Fig. 2.
Map showing Coastal Plain and Piedmont provinces of Maryland and Delaware. A = Coastal Plain. B = eastern Piedmont (Chesapeake and Delaware Bay drainage) of MD. C = western Piedmont (Potomac River drainage) of MD. Dark circle shows approximate location of Zekiah Swamp Run.

perch, which was bagged separately and placed on the plastic grate inside the smaller cooler. We also picked up the fliers and chubsucker at Mike Thennet's place. We made for home and got back a lot later than we had really wanted to. At least all fish made the trip without incident, but some fatalities occurred the next day. Three of the fallfish committed suicide by stranding themselves on the grate. (I made a mental note not to include this grate on future trips.)

Thoughts on the Distribution of Fishes Throughout the Coastal Plain

The stream on the military reservation remains an enigma to me. Perhaps the beaver dam just beyond the overpass of the main road was the source of the bluespotted sunfish and other fishes more typical of coastal swamp habitats. Perhaps there is a correlation between beavers and the distribution of many Coastal Plain fishes that inhabit still or slowly flowing waters. Beaver ponds may even explain how these species occasionally turn up in relict populations farther inland, especially in the deeper south, where the progression to uplands is more gradual and climate is warmer.

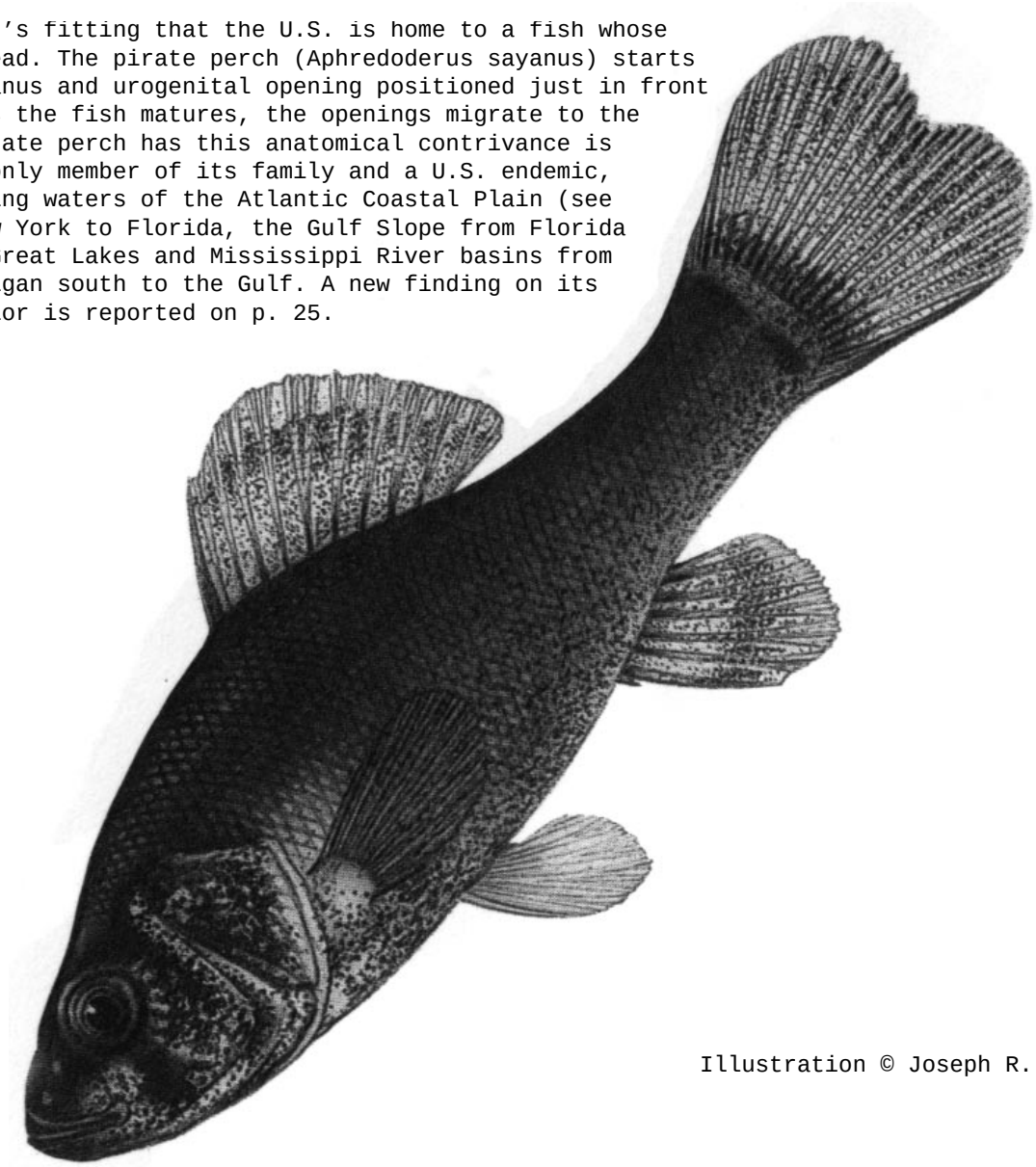
In the north, the boundary between Coastal Plain and Piedmont is more sharply defined. Many of the species that inhabit this biogeographic province are of southern origin. As their ranges advance farther north, they tend to be squeezed into a more narrow range near the coast. Some species have range extensions up the valleys of major rivers like the Potomac and the Susquehanna. Bluespotted sunfish, for example, have been recorded in central Pennsylvania.

The Fall Line, which in colonial days marked the limits of inland navigation of the region's rivers, also limited the development of our nation's oldest major cities. It's no strange coincidence that Philadelphia, Baltimore, Washington, and Richmond sprang up where they did. Aside from commercial access, these cities also offered convenient hydropower for milling grain. Long after the advances of technology rendered these points less important, the major urban corridor of the eastern seaboard exists as it is today.

Unfortunately, this has had a major effect on the aquatic fauna of the Coastal Plain. Changes in stream conditions wrought by increased usage of the watersheds has forever altered the species composition of many of these systems. Could siltation of waterways and agricultural runoff be the reason why ironcolor shiners are so hard to find these days? Or is it the introduction of gamefish? It's too soon to draw conclusions, but it would be sad if my quest for ironcolor shiners would only reveal that the species has dramatically declined or disappeared altogether from areas where it was once historically so common.

For the time being, we will refine our collecting techniques and continue our searches farther down in the Zekiah Swamp Creek system of Maryland, where I hope that a greater volume of water will better maintain the habitat in times of drought. We will also return to the site in Virginia to search neighboring watersheds and places more conducive to the species we are seeking—and species we are not seeking, but are delighted to find anyway.

Some might think it's fitting that the U.S. is home to a fish whose anus is near its head. The pirate perch (Aphredoderus sayanus) starts out life with its anus and urogenital opening positioned just in front of the anal fin. As the fish matures, the openings migrate to the throat. Why the pirate perch has this anatomical contrivance is unclear. It's the only member of its family and a U.S. endemic, native to slow-moving waters of the Atlantic Coastal Plain (see pp. 13-16) from New York to Florida, the Gulf Slope from Florida to Texas, and the Great Lakes and Mississippi River basins from Wisconsin and Michigan south to the Gulf. A new finding on its reproductive behavior is reported on p. 25.



"There probably isn't another North American native fish that can surpass that morose-looking oddball of a creature called the pirate perch, *Aphredoderus sayanus*, in terms of just plain oddness."
— John R. Quinn