



U.S. Fish and Wildlife Service

COLUMBIA CONSERVATION CHRONICLE

A JOINT PUBLICATION BY
MISSOURI ECOLOGICAL SERVICES
FIELD OFFICE
&
COLUMBIA
FISH & WILDLIFE CONSERVATION OFFICE
SEPTEMBER 2013



Inside This Issue

The Devil's Horn and the Baptism Pool	3-6
Tributary Spotlight: Bubbly Creek, Chicago	7
Cool, Clear Water of the Ozarks	8-9
A Shockingly Good Time	10

*On the Cover: Leaves and flower buds of spatterdock (*Nuphar luteum*) rise from rosettes deep in Barren Fork Creek. Photo credit: Jeff Finley, USFWS.*

*Above: A please mussel (*Venustaconcha pleasii*), identified by the black siphon, is found nestled among the leaves and gravel in Baptism Pool of Barren Creek Natural Area. Photo credit: Jeff Finley, USFWS.*

The Devil's Horn and the Baptism Pool

Were it not for the rope swing, stone campfire ring and fresh footprints in the sand, I would have thought I was the first person to ever see this place. Nestled deep in the Ozark Hills of rural Carter County, Missouri, off a sparsely populated patch-paved county road and a couple miles down a two-track gravel lane and past a rusty tin-roofed, sun-grayed wooden church house exists one of the prettiest places I've ever visited: Big Barren Creek Natural Area in Mark Twain National Forest. Lilly pads dotted a postcard picturesque pool that teemed with schools of minnows. This large pool of clear water rests at the base of the Devil's Horn bluff.

Local folks searching for relief from the summer heat can be found cooling themselves in the "swimmin' hole." There aren't many visitors to this



*Rope swing at Baptism Pool on Big Barren Creek Natural Area.
Photo credit: Jeff Finley, USFWS.*

remote spot so they are eager to share stories about this unique place they take such pride in. We were told that on special Sundays the church congregation used to amble up the gravel road to witness a full-immersion baptism by coincidence in the pool below the Devil's Horn bluff. They pointed out where wagons crossed when the area was settled, where the moonshiners set stills during prohibition, and they helped us discover the remains of a spring box once used to gather drinking water for a nearby home. A vine-covered chimney standing in solitude is all that remains. They enlightened us with recollections of big fish, fist fights, marriage

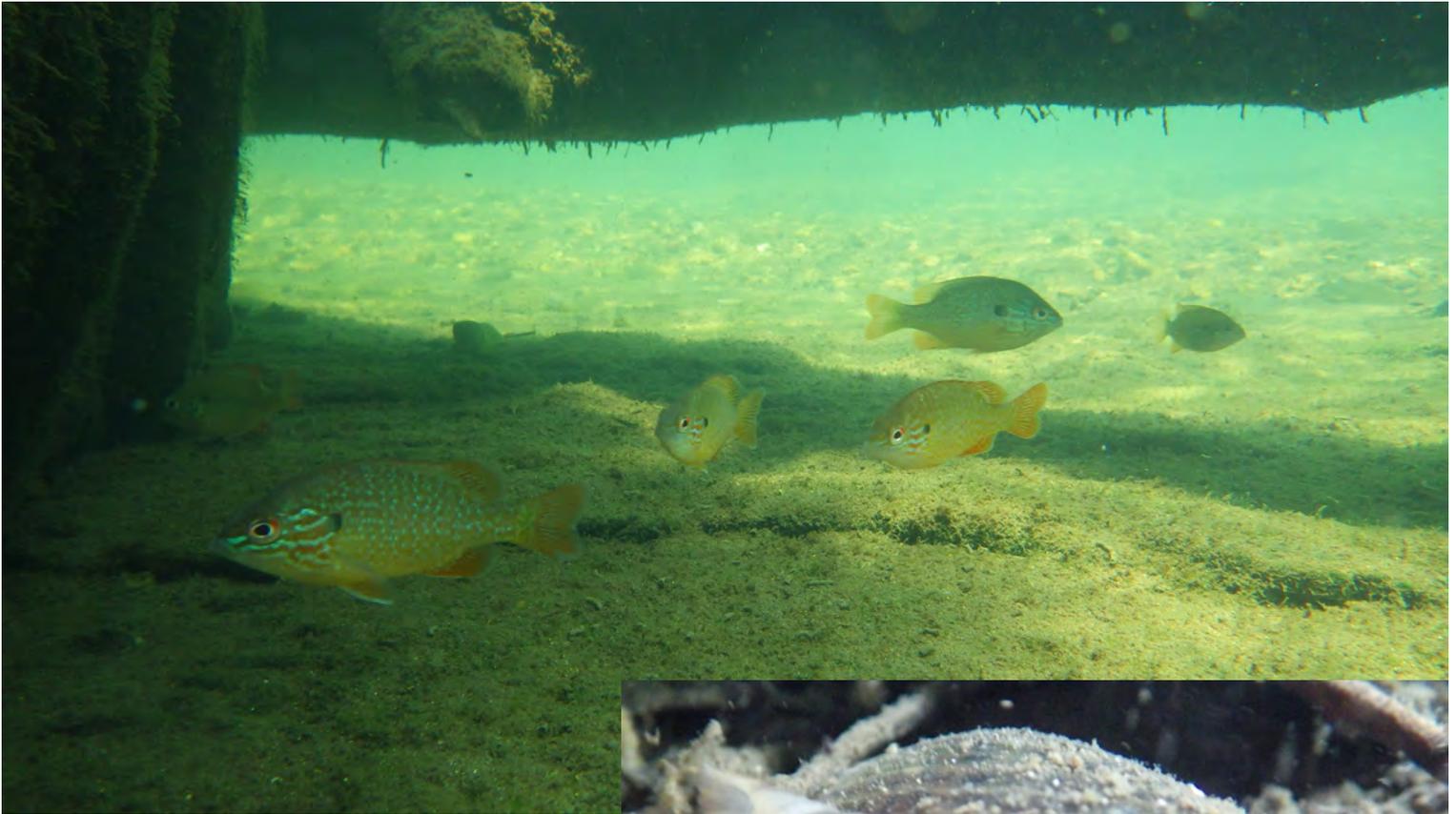
proposals, and which families' children had stacked the rocks in a makeshift dam to deepen the pool. No matter the tale, they were all threaded with a deep respect and sense of pride in this special place.

Since being designated a Natural Area in 1989, this portion of Big Barren Creek has been under special management by the U.S. Forest Service. The dolomitic bluffs and fine-grained chert forests have remained relatively untouched for decades. The creek is a gaining portion of a losing stream; that is, numerous springs bubbling from the porous limestone fill several cool, clear, permanent pools of water joined by shallow silver riffles. Downstream of these bluff pools, Big Barren Creek goes barren and soaks into a dry and rocky creek bed. It is lost underground for several miles before it is reborn near Twin Springs and its confluence with the Current River.

Few fisheries workers have cataloged the species that dwell in these pools. Aside from a few seine net hauls from the years 1941, 1971, and 1994, only 20 species of fish were known to reside here. Our task was to look deeper and determine habitat quality and fish species composition of Big Barren Creek, and to identify species which may require special management considerations for Mark Twain National Forest. Our study revealed that 45 fish species inhabit these waters including several species of conservation concern and two which had never been known to live in this part of Missouri, the Ozark Shiner and Pugnose Minnow.



A darter collected from Barren Creek. Photo credit: Heather Garrison, USFWS.



Above: Redspotted Sunfish (*Lepomis miniatus*) hide in the shadows of Baptism Pool . Right: a rainbow mussel (*Villosa iris*) displaying a tantalizing lure reveals glochidia filled sacs. Below: Slippershell mussels (*Alasmidonta viridis*) burrowed into the substrate of Big Barren Creek Natural Area. Photo credit: Jeff Finley, USFWS.





Above: Bryan Simmons dives in the surreal blue-green waters of Baptism Pool to survey mussel populations of Barren Creek. Below: Andy Roberts and Bryan Simmons identify mussel species collected from the pool. Photo credit: Jeff Finely, USFWS.

(Continued from page 3)

But we learned about more than just fish. We discovered several Arkansas brokenray mussel shells in the shallows. These mussels are in the *Lampsilis* genus which is composed of several extremely rare and endangered species. To our knowledge a mussel survey of the area had never been completed and the discovery of the brokenrays subsequently prompted one.

Freshwater mussels are not typically found in small headwater streams of the Ozarks, but we discovered at least 8 different genera with as many as 10 different species. The identity of two of those potential species is being examined. Finding such mussel diversity and densities of rare species seen nowhere else in the state was all the more proof that this is a very unique place. Even the colorful names of mussels--the slippershell, creeper, rainbow, purple lilliput, Ouachita kidneyshell--they speak to the same. Most of the mussels were found around the massive old spatterdock roots and in the gravel beds below riffles. The roots were as large as my forearms and dense risers to the lily pads were reminiscent of diving through a miniature kelp forest in the Pacific Ocean. SCUBA diving the deep clear pools reminded me of a tropical reef in the Atlantic, only without the taste of salt. The pinkish leaves at the bases of the spatterdock looked like fan coral--the brilliant orange and teal



Brett Witte and Wyatt Doyle pulling the seine through a shallow area of Barren Creek. Photo credit: Jeff Finley, USFWS.

of the several species of sunfish, blood-red and iridescent blues found on various minnows and shiners were all similar to salty cousins in tropical waters. What's more, three different species of crayfish skittered about and peeking ever so warily from their rocky hideaways. Never in my 20 years of diving, have I experienced such a beautiful dive in fresh water.



Looking head on at the gaping mouth of a sculpin captured in Barren Creek. Photo credit: Heather Garrison, USFWS.

Mussels, minnows and memories weren't the only thing we discovered on this project. While looking for mussels around the chunky rubbles littering the bedrock in a deep pool below a bluff, I found an old fishing lure wedged in a crevice between two large stones. The hooks had long rusted away. The rear propeller dissolved into a puff of rusty dust when I pulled it from its snag. One glass eye was missing but the balsa body still had its raspberry spots on a honeydew body, still vibrant after being shielded from the sun's fading rays. The best I can find, this old wooden Heddon Dowagiac Minnow was manufactured prior to 1920. My imagination prompted a sepia vision of an angler in woolen trousers and waxed mustache cursing his cotton line when it snapped decades ago.

As much as I'd like to think I was the first to discover this pristine Ozark paradise, I am far from it--and I hope to not be the last. These special little places, adored by locals and occasionally visited by passers-through, are a fresh reminder of the wonders we are so blessed to experience and charged with protecting. I shall return some day, to enjoy the sights, the cool refreshing water, and perhaps even hear another story or two about the Baptism Pool below the Devil's Horn bluff.

*Fisheries
Jeff Finley*

Tributary Spotlight: Bubbly Creek, Chicago

As a former carp lead and now occasional member of our periodic Chicago-bound carp crews, I have motored past Bubbly Creek many times. Technically known as the South Fork of the Chicago River's South Branch, this charmingly named small tributary lies a little less than 3 miles southwest of the Willis Tower and a little over one nautical mile upstream of the Western Avenue boat ramp. Therefore, crews working on the North Shore or downtown sections of the Chicago Area Waterways System (CAWS) typically watch it go by on the right early in the morning as they head to the first site of the day.

During the 19th century, a wetland resided where Bubbly Creek now flows. Channels were dredged to increase flow to the Chicago River and provide needed real estate to the growing city. While the name "Bubbly Creek" may create a vision of a babbling brook or quaint forest stream, the name was actually far more literal. Local meatpackers dumped waste, namely blood and entrails, into the nearest stream. Decomposition in the stream led to the release of methane and hydrogen sulfide gas bubbling up

from the depths. In his 1906 book "The Jungle", Upton Sinclair described bubbles rising to surface and bursting, making rings two to three feet wide. A nickname like Bubbly Creek wasn't much of an exaggeration.



Bubbly Creek as it looks today. Though the creek still bubbles, overt waste dumping has been stopped and plans are being developed to remediate the stream. Picture courtesy of skyscrapercity.com, Photographer Steely Dan.

Currently, no livestock entrails find their way into Bubbly Creek. The bubbles in Bubbly Creek now come from compressed air that is injected into it to increase oxygenation. Bridgeport Village sits next to the creek, testifying to the tolerable odor levels. Though fish and plant life can now be found there, the large amounts of wastewater contributed with each heavy rain and the lack of gravitational flow still create less than optimal conditions. Chicago Metropolitan Water Reclamation District is investigating new and improved sanitation methods to make all of the Chicago Area Waterways System a more pleasant place for people and aquatic resources.

*Fisheries
Brett Witte*



A historical picture of Bubbly Creek, Chicago. A chicken stands atop floating sludge in the creek. Photo courtesy of Chicago History Museum, Photographer Chicago Daily News.

Cool, Clear Water of the Ozarks

While the State of Missouri boasts some of the most pristine streams in the Midwest, the majority of work completed by the Columbia FWCO is on the turbid waters of the Big Muddy - the Missouri River. That is until recently. In 2012, the U.S. Forest Service's, Mark Twain National Forest (MTNF) and Columbia FWCO began working collaboratively to identify inhabitants of select priority streams in the Ozark Hills on MTNF. In an effort to fill data gaps and provide management recommendations, several streams would need to be inventoried for fish and other aquatic life. This began with Big and Little Barren creeks in Carter and Ripley Counties of Southeast Missouri.

Big and Little Barren Creeks

The only known data on Big Barren Creek was from a few seine hauls conducted in 1941, 1974 and 1994 cataloging only 20 fish species and there was no known data from Little Barren Creek. After a reconnaissance of the area we set mini-fyke nets, seined and sampled using a backpack electrofisher. Our survey revealed 45 species in the area to include several fish species



Tracy Hill and Jeff Finley seine a stream in Mark Twain National Forest in an effort to gather baseline fish community data. Photo credit: Heather Garrison, USFWS.

of conservation concern; the Ozark Shiner and Pugnose Minnow.

While conducting our fish survey, we observed several fresh shells from Arkansas brokenray mussels. This prompted an additional SCUBA survey to catalog the mussel fauna of the Big Barren Creek Natural Area. This survey revealed eight species of mussels to include a robust population of several uncommon species including slippershell, Ouachita kidneyshell and Arkansas brokenray. SCUBA diving in the clear



Jordan Fox and Jeff Finley identify a crayfish collected from Noblett Creek. Photo credit: Heather Garrison, USFWS.

cool waters of this pristine location prompted me to write an article for the Meanders section in Eddies, our national fisheries publication <http://www.fws.gov/eddies/>, scheduled to be released this fall. But why wait, the same article is in this edition of the Columbia Conservation Chronicle titled "The Devils Horn and the Baptism Pool".

Upon completing the Barren Creeks survey we met with MTNF

to present our findings and look ahead into future partnership opportunities. Kelly Whitsett, USFS Forest Hydrologist and Theresa Davidson, USFS Forest Wildlife & Fisheries Program Manager, provided us with a list of several other streams in need of inventory. We agreed to focus on several streams in the Willow Springs Area of the Ava/Cassville Ranger District in 2013. A reconnaissance trip once again revealed working in cool clear waters of tributary streams in the Ozarks.

Willow Springs

We sampled fish from five streams, Noblett, Spring, Little Indian, Middle Indian and Indian Creeks, all tributaries to the North Fork River of the White River basin in Southern Missouri and Northern Arkansas. Noblett Creek is interrupted by a small dam constructed by the Civil Conservation Corps in 1938-40 to create a bathing beach and recreational reservoir. Noblett Creek eventually flows into Spring Creek before joining the North Fork. Spring Creek flows almost entirely through remote and isolated areas of the MTNF boasting the most preserved watershed we sampled. Indian Creek, and its two major tributaries (Middle and Little), meanders through



Tracy Hill and Andrew Moulder (USFS) seining in Indian Creek. Photo credit: Jeff Finley, USFWS.

a patchwork of private and public lands before flowing into the North Fork River.

We've just completed entering the data and will begin drafting our report this winter. It is refreshing to work in cool clear water, trading gillnets, trot lines and trawls for backpack electrofishers, dip nets and waders and handling sculpins, darters, shiners and madtoms instead of sturgeon, buffalo, catfish and carp. We are excited about the work we've already completed and are anxious to work in cool clear waters of Mark Twain National Forest in the future.

Fisheries
Jeff Finley



Above: A colorful Rainbow Darter (*Etheostoma caeruleum*) briefly rests on the stream bottom. Right: A Banded Sculpin (*Cottus carolinae*) is perfectly camouflaged among the natural gravel found in Ozark streams. Photo credits: Jeff Finley, USFWS.



A Shockingly Good Time

In late September, Jordan Fox and I went to Warsaw, Missouri to attend the course Principles & Techniques of Electrofishing. The course was taught by USFWS National Conservation Training Center instructors Dr. Alan Temple and Dr. Jan Dean and was attended by staff of Missouri Department of Conservation (MDC) and USFWS. Classroom time was spent in lecture on electrical pathways, Ohm's and Joule's Law (that brought about a multitude of calculations to find resistance and power), water chemistry (understanding how conductivity effects electrofishing) and importance of equipment standardization. Jordan and I spent several afternoon sessions with Dr. Dean and Dr. Temple mapping electrical fields of and evaluating

equipment on a few MDC electrofishing boats. It was interesting to see how each boat differed and, in turn, helped us gain a higher understanding of the importance of standardization and equipment evaluation. Though Jordan and I are newbie's to the realm of electrofishing, this course provided important knowledge and skills in electrofishing that will become useful for the future of our office when we are faced with the challenges of electrofishing with different types of equipment in the variable aquatic conditions found throughout the Midwest.

*Fisheries
Jeremiah Smith*



Students of the Principles & Techniques of Electrofishing course discuss the layout and rigging of this electrofishing boat. Photo courtesy of: Jan Dean, USFWS.

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