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*On the Cover: Water droplets cling to winged sumac (*Rhus copallinum*) after an autumn rain shower. Photo credit: Rick Hansen, USFWS.*

*Above: A bald-faced hornet's nest (*Dolichovespula maculata*) hangs from the branches of a sugar maple tree (*Acer saccharum*). Photo credit: Rick Hansen, USFWS.*

Migratory Birds in Missouri Benefit from Upcoming Changes to Tower Lighting

Migration is a perilous journey for birds traveling between breeding and wintering grounds, and adding to the challenge of surviving the trip is the presence of lighted communication towers.

Neotropical songbirds, such as warblers, thrushes, vireos, tanagers, sparrows, etc., use stellar and other physical cues for navigation when migrating at night. However, this navigation

can be disrupted during periods of inclement weather (i.e., foggy, rainy, snowy) when a halo of light is created around warning lights on towers.

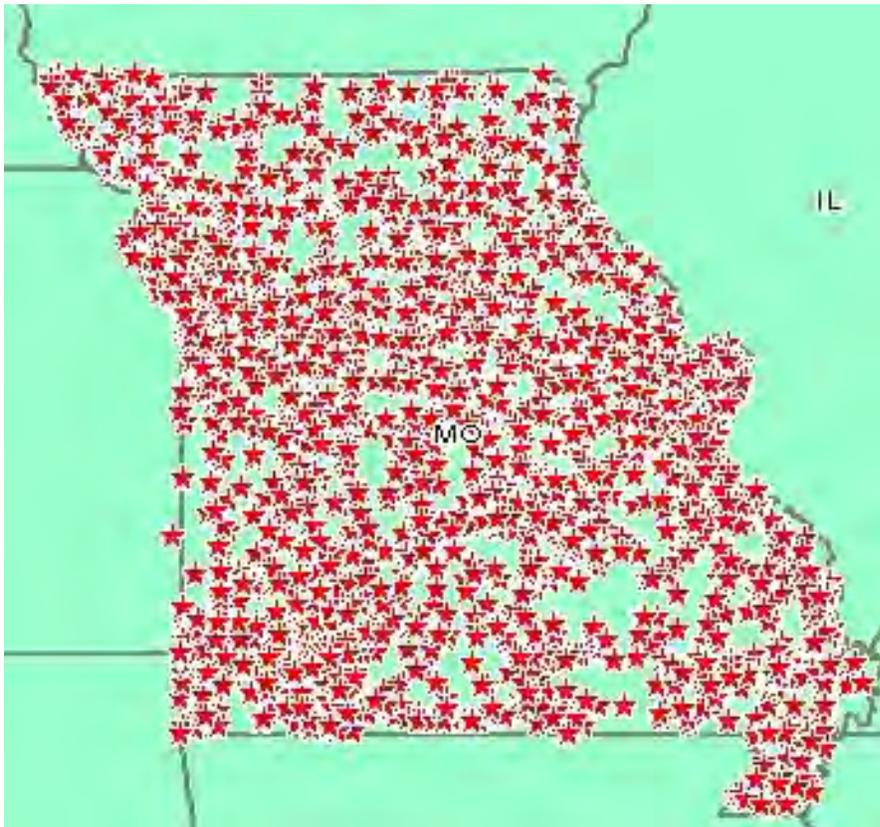
Under these conditions, birds can become disoriented and drawn into the light. Reluctant to leave the light, they continuously circle the tower and eventually collide with each other, the tower, guy wires, or drop from exhaustion. The Service estimates

than each year 4-5 million birds are killed by communication towers.

But hope is on the horizon. Following concerns from the Service and other organizations, the Federal Aviation Administration (FAA) initiated a study evaluating the need for steady burning

lights on towers. Steady burning lights have been the standard obstruction lighting recommended by the FAA to ensure aviation safety. But these lights also result in significantly more avian mortalities than other lighting systems (e.g., flashing or strobe lights) and have been identified as the primary cause of avian mortalities at communication towers. However, FAA

researchers concluded through this study that steady burning lights can actually be flashed, or in some instances omitted altogether, and still provide sufficient visibility to pilots. As a result, the agency is proposing to redefine their standards on obstruction lighting so that steady burning lights will no longer be necessary.



Locations of the 2,700+ communication towers in Missouri equipped with lighting. Construction of new communication towers has been increasing at an estimated 6-8% annually since development of the cellular telephone. Map courtesy of the Federal Communications Commission Antenna Structure Registration System.

So what does this mean for birds in Missouri? It means that the number of mortalities should be reduced as new towers are built with lights less likely to attract night-migrating birds. Although the FAA has yet to finalize the changes, Columbia

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Missouri Ecological Services (CMFO) has already been successful in working with cellular telephone companies to ensure that no steady burning lights are used on communication towers. In addition, CMFO plans to encourage companies to rewire lighting configurations at towers known to attract large numbers of neotropical birds during migration. These

improvements will add to existing conservation measures by CMFO such as working with companies to build towers without guy wires (also shown to increase bird mortalities) and building shorter towers in areas known to support large numbers of migratory birds.

*Trisha Crabill
Ecological Services*



Communication towers equipped with steady-burning (L-810) lights. Photo courtesy of Mike Parr, American Bird Conservancy.

Oklahoma Gets a Look at the Paupier Net

In our efforts to build new gears to target Asian carp we have found a new tool to sample juvenile paddlefish in large rivers. Armed with the Paupier Net developed by Innovative Net Systems, I met with Oklahoma Game and Park's paddlefish biologists and Oklahoma State University's Dr. Jim Long to see if we could find stocked or wild juvenile paddlefish from the Neosho and Spring rivers. Paddlefish in the Oklahoma River system have not had good recruitment since the late 1990's and biologists are unsure what is needed to restore the adult population now being harvested. Oklahoma Department of Wildlife Conservation (ODWC) maintains one of the largest paddlefish databases in the world. The agency has done this by building and servicing a facility that processes angler's paddlefish as they harvest them. As an angler, you can call a hotline to have them pick up your fish from the dock or you can drop them off at the facility. In 20 minutes you can have your fish cleaned and sealed in vacuum packed bags free of charge. For the agency's part,



Jason Schooley, Oklahoma Game and Parks, removes a juvenile paddlefish from the Paupier Net. Photo credit: Wyatt Doyle, USFWS.

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they get a suite of biological fish data that helps them set limits and explore recapture, movement and growth for their paddlefish population. The agency funds its program through the commercial sale of the caviar it obtains from the fish which is otherwise illegal for anglers to sell due to the potential for overharvest and black-market exploitation. As biologists attest, this program is a monumental task, but it has propelled them to the front of paddlefish science. The ODWC has also implanted hundreds of juveniles with telemetry tags to determine seasonal movements in an effort to better understand their life history. During my visit, we targeted active locations of tagged fish with the Paupier trawl. The Paupier, or butterfly trap net, is no more than a shrimp skimmer with a custom designed net for capturing Asian carp. In tributaries of the

Missouri River, we have reported capturing juvenile paddlefish readily in our efforts for Asian carp. However, despite trawling for 5 miles during daylight and dark periods, we only captured one wild juvenile paddlefish in Oklahoma. As with all new gears, we learn something along the way. The capture of the juvenile fish showed that there is some level of recruitment in the system and future efforts may need to target deeper water during this season. Our work has just begun on this front. We now have nets designed specifically to capture the juvenile paddlefish and will be working in different locations of the Midwest to help other agencies develop this method to assess their paddlefish stocks.

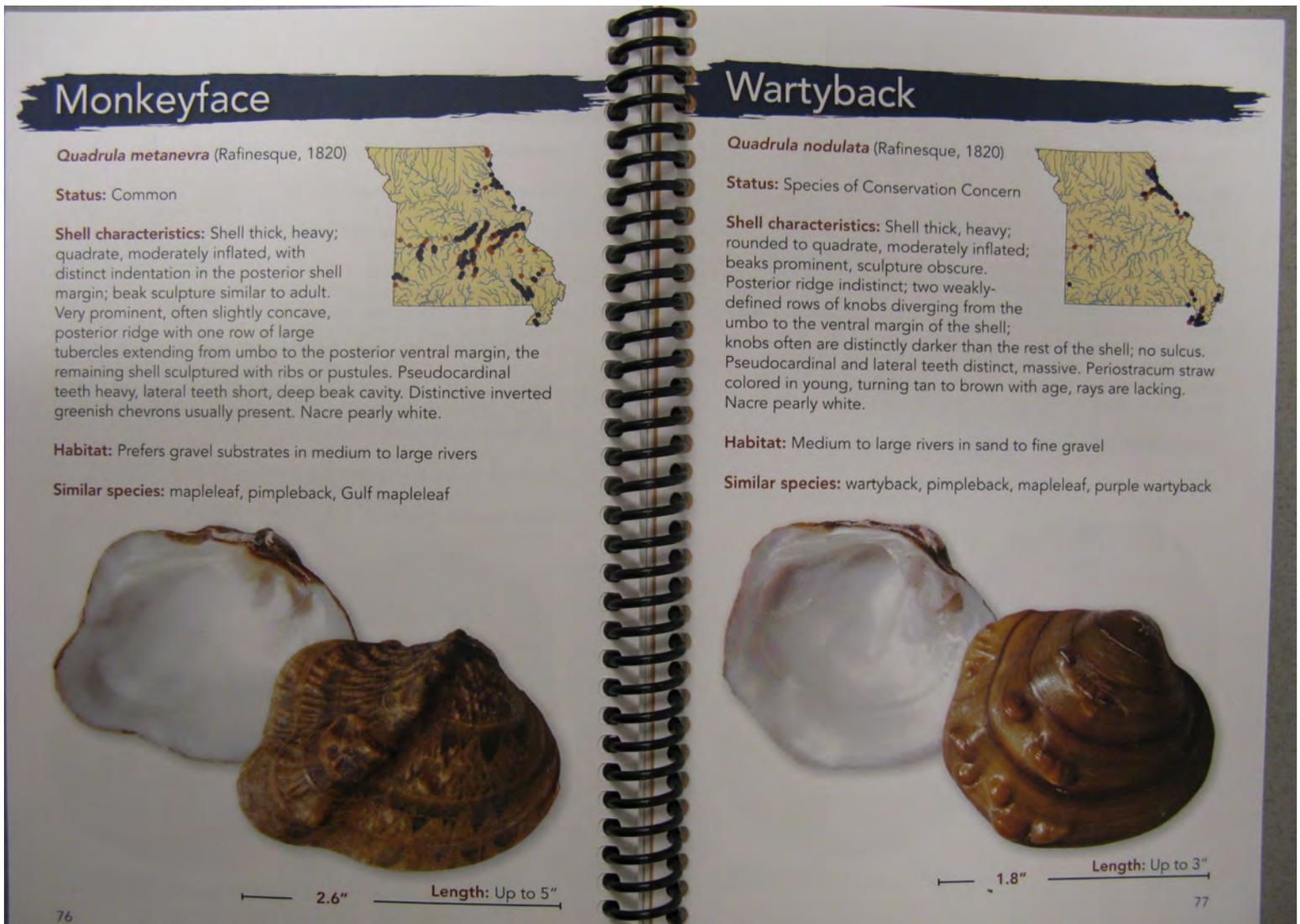
Wyatt Doyle
Fisheries

Missouri's Freshwater Mussels

Identifying freshwater mussels in Missouri just became easier. The Columbia Missouri Field Office funded and assisted with the development of a field guide to the mussels of Missouri. The 94-page book includes color photos and range maps for each species. Producing the guide was a team effort by the Missouri Department of Conservation, Missouri State University and U.S.

Fish and Wildlife Service. Over 70 species are featured in Missouri's new field guide to freshwater mussels. For information on how to obtain a copy of this field guide, please contact the Missouri Ecological Services Field Office at 573/234-2132.

Andy Roberts
Ecological Services



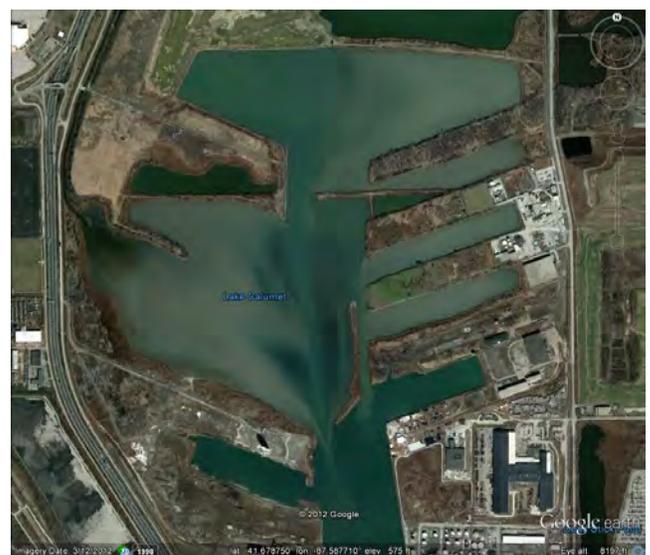
Over 70 species are featured in Missouri's new field guide to freshwater mussels. Photo credit: Patty Herman, USFWS.

Fishing in the CAWS: Shocking!



As part of Region 3's commitment to preventing the spread of Asian carp into the Great Lakes, Columbia FWCO sent two field crews up to the Chicago Area Waterway System (CAWS) during the month of October. The Asian Carp Monitoring Program is a collaborative effort between Region 3 USFWS, Illinois Department of Natural Resources (IDNR), US Army Corps of Engineers (USACE), Illinois Natural History Survey (INHS), and the US Environmental Protection Agency (EPA) to monitor the Chicago Sanitary and Shipping Canal for presence of the invasive Asian carps (both bighead and silver carp). Brett Witte, Hilary Meyer and Chris Burrows traveled to Chicago during the first week of October to conduct standard electrofishing surveys in the CAWS, as well as to collect the standard 250 2L eDNA water samples with the help of Peg Donnelly from the EPA. Lucky for the electrofishing crew, "The Windy City" showed us mercy in terms of weather with minimal wind and no precipitation. There were some long days on the water, but we were able to complete all of

the standard work, and even collect extra eDNA samples for Emy Monroe of the LaCrosse Fish Health Lab. These were used as training samples as the LaCrosse staff become familiar with the eDNA filtering process. Lake Calumet has given us positive eDNA results many times in the past and Emy needed water samples from



Satellite image of Lake Calumet, Illinois. In this image, shallow areas of lake appear as a beige color while deeper water appears green or blue. Satellite image courtesy of: GoogleEarth.

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this site for that reason. The lake is never more than a few feet deep over a large portion of its area. Our dry summer left it especially shallow in the fall and we were only able to access about half of the sample sites; however, Emy was able to make due with the reduced sample number.

Two weeks after the first jaunt up to Chicago, Hilary Meyer, Patty Herman and Lloyd Dugan traveled back up to assist IDNR, INHS and USACE with a concentrated sampling event. During the event, Region 3 had three USFWS boats on the water. Columbia FWCO was joined by the LaCrosse and Carterville FWCO's. The concentrated sampling effort lasted for four days and involved seven boats. All three of the Region 3 FWCOs were on a "team" together, with one net boat and two electrofishing boats. The Columbia FWCO crew electrofished approximately 13 miles of the CAWS! Crews caught mostly gizzard shad and sunfish, but our crew also caught a Chinook salmon and a white perch, two fish that we don't typically see in Missouri streams. We even caught a few nice largemouth bass in the North Shore Channel (upstream of downtown Chicago). One unique aspect of this trip was the opportunity for crews to spend a significant amount of time sampling in downtown Chicago amongst the high-rise buildings. When it comes to downtown, the world of the CAWS is much different than the Missouri River, with tour boats, yachts, barges and water taxis constantly buzzing by. The trip was a success! No Asian carp were collected, and despite all of the hazards of high traffic and lots of submerged obstacles, everybody and every boat went home in one piece.

The third carp sampling trip of the fall took place during week of November 4th. This time Brett Witte, Zack Brock and Jeff Muchard comprised the electrofishing crew. For this trip no eDNA sampling was scheduled, so the only CAWS

water that came into the boat either filled the livewell or dripped off our dip nets. Once again we had a very successful fishing trip, finishing each day empty-handed. Of note, on Wednesday the crew discovered an abandoned length of heavy, old, rusty chain full of character that was left to oxidize on the riverbank - much to Brett's dismay. Though our crews make every effort to tidy the banks of the rivers we work on, this chain proved too heavy for us to remove. It is likely still lying in the same place on the bank of the Calumet River, quietly rusting away, as it has for years. For the last time in 2012, the Columbia crew pulled Roman 6 out of the CAWS on Wednesday afternoon and drove home.

Columbia FWCO is proud to be a part of the Asian Carp Monitoring Program team, and is grateful to be part of this region-wide, multi-agency effort to protect our Great Lakes!



*Discarded chain found on a bank of the Calumet River.
Photo credit: Zack Brock, USFWS.*

*Hilary Meyer and Brett Witte
Fisheries*

Public Meeting Held on the Proposal to List the Grotto Sculpin under the ESA

The Columbia Missouri Field Office held a public meeting in Perryville, Missouri on October 30th to provide information and answer questions on the proposed listing of the grotto sculpin under the Endangered Species Act. Shauna Marquardt, Paul McKenzie, and Amy Salveter represented the U.S. Fish and Wildlife Service (Service) and the Missouri Department of Conservation was represented by staff from the Fisheries Division. More than 120 citizens from Perry County and surrounding areas were in attendance. The grotto sculpin is a small cave-dependent fish that exists in only five cave systems in Perry County, Missouri. The grotto sculpin is threatened predominately by water quality issues that occur in the complex karst system in which it lives. Aquatic habitat of the grotto sculpin occurs on both private land and land owned by municipal government. The Service hopes to establish a conservation partnership with the citizens and

local governments of Perry County that includes other State and Federal agencies. Such a partnership could work to find solutions and implement measures to address water quality concerns - these measures not only would benefit the well-being of the grotto sculpin, but also the citizens of Perry County.



Grotto Sculpin. Photo credit: USFWS.

*Shauna Marquardt
Ecological Services*

Intersex Sturgeon Sampling: Update 3.0



In October, Columbia FWCO continued a collaborative research project with Dr. Diana Papoulias of the USGS Columbia Environmental Research Center (CERC), USFWS Nebraska Ecological Services Field Office (ESFO) and the Columbia ESFO to study intersex shovelnose sturgeon. This was the third of four sampling and necropsy events completed for the two-year study. During the second week of October, two field crews from the Columbia FWCO set out to capture 10-20 shovelnose sturgeon from each of three sites on the Missouri River.

Zack Brock (l) and Adam McDaniel (r) perform necropsies on shovelnose sturgeon captured from the Missouri River. Photo credit: Patty Herman, USFWS.

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The sampling sites were: Jackass Bend, just downstream of Kansas City, Missouri; Eagle Bluffs, which is where the city of Columbia's waste water treatment plant is located; and a reference site at the confluence of the Missouri and Gasconade rivers. Both Jackass Bend and Eagle Bluffs sites are

located near large metropolitan areas, whereas the Gasconade River is an unregulated river that flows through a number of smaller towns in central Missouri. Personnel from Columbia FWCO including: Zack Brock, Heather Calkins, Anna Clark, Lloyd Dugan, Patty Herman, Adam McDaniel, Hilary Meyer, Jeff Muchard and

Jennifer Gorman from Columbia ESFO dissected and examined 46 shovelnose sturgeon. The CERC Biochemistry/Physiology Branch staff, once again, graciously allowed Columbia FWCO crews to use the USGS CERC facilities (and their collective knowledge) to perform the dissections. Thanks in part to our hard-working crews; we



Hilary Meyer (r) carefully removes the brain of an intersex shovelnose sturgeon for histopathology. Photo credit: Patty Herman, USFWS.

were able to complete the fish collections and the dissections in less than four days, a new record!

Sampling efforts identified 25 male, 20 female and one intersex shovelnose sturgeon during the visual examination portion of the dissection. That makes for a total of three intersex fish that have been identified by visual observation, all of which

have come from the same sampling location. Tissue samples from both the male and female portions of the gonads, liver and brain were preserved for further analysis with the aid of a microscope. Because some intersex fish cannot be identified by the naked eye,

researchers at USGS CERC use histological techniques to look for abnormalities at the cellular level. Stay tuned to the Columbia Conservation Chronicle for more updates once the lab results come back!

Hilary Meyer and Patty Herman
Fisheries

Fins and Feathers Come Together

After 4 years of planning, discussion and development, the anticipated transition to electronic field data collection has finally arrived. In October 2012, Columbia FWCO field crews began using Xplore Technologies tablets to record data collected as part of the Pallid Sturgeon Population Assessment and Monitoring (PSPA) Program. These rugged military-grade

PC's are designed to withstand shock, temperature extremes, water and... fish slime (currently being tested).

Coral Huber, an avian wildlife biologist for the Piping Plover and Least Tern Monitoring Program with Army Corps of Engineers, has been working very closely with field crews up and down the Missouri River to design a data entry interface

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Adam McDaniel retrieves pallid sturgeon monitoring datasheet files from the Xplore Technologies tablet. Photo credit: Patty Herman, USFWS.

that will improve efficiency and data quality. In early November, Coral visited Columbia FWCO and spent some time with crews - in the field and in the office, to work through a few logistical challenges that had been encountered. The informal training day was extremely productive for everyone involved. As any good host would, Columbia FWCO crews rolled out “chamber of commerce” weather for our visiting scientist and even provided her with a “lifer” - her first pallid

sturgeon. We presented Coral with the opportunity to field test the tablets and the software as an honorary fisheries crew leader. This was an invaluable experience for her to test the technology in real-time conditions; where she experienced the joys and aggravations but also gained creative inspiration for improving features. Coral answered our endless questions with great patience and had much enthusiasm for innovative ideas to incorporate into this new technology. Though less glamorous than field data collection, Coral also dedicated several hours to questions and answers about data QA/QC, uploading, troubleshooting and database storage.

Informal training sessions like this one have proven very beneficial to the overall quality and efficiency of the PSPA Program and allow crews to strengthen working collaborations and relationships with our partners. Columbia FWCO crews look forward to fully implementing this new technology and to the learning opportunities, challenges and improvements that electronic data collection will provide.

*Patty Herman
Fisheries*

William Woods, Meet Muddy MO

The Columbia Fish and Wildlife Conservation Office hosted a small class of vertebrate anatomy students from William Woods University for a lesson in what the U.S. Fish and Wildlife Service does on a daily basis. While riding the boats, the students could observe the Missouri River up close and engage in a small group discussion with biologists. The students were very curious about our work and asked great questions to

Right: Students get a good look at the external features of a shovelnose sturgeon as described by Brett Witte. Photo credit: Anna Clark, USFWS.



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Columbia FWCO employees. They jumped right in to pull trammel nets and handle fish. Several Big Muddy fish species and a turtle made an appearance and almost all were new to our guests. Many of the students wanted information on volunteering for our brood stock season in the spring.

In a follow up e-mail on the event, their teacher, Assistant Professor of Biology, Robin Hirsch-

Jacobson wrote, "I wanted to thank you and the rest of the crew for taking us out last Tuesday. The class had such a great time, and it was a great experience for all of us. It was an interesting drive back, as some of the students were rethinking their career plans, they enjoyed it so much." Well Robin, we enjoyed your crew too.

*Anna Clark
Fisheries*

2012 Mark Twain Lake Managed Deer Hunt for Persons with Disabilities

Columbia FWCO Biologists Clayton Ridenour, Wyatt Doyle, and Biological Science Technician Hilary Meyer participated in the 24th Annual Deer Hunt for Persons with Disabilities held on U.S. Army Corps of Engineers (St. Louis District) property at Mark Twain Reservoir in northeast Missouri. The

hunt is an important land management tool used by Corps Park Rangers to reduce damage to forest lands by the abundant deer population at Mark Twain Lake. A total of 28 hunters harvested 62

whitetail deer on the 3,200 acre managed hunt area during the two day event. The hunt was supported by over 100 volunteers and donations from local businesses and organizations, including food plot seed, game trail cameras, all-terrain vehicles, trailers, blinds, and excellent home cooked food. First time hunters were afforded this positive outdoors experience

in a safe hunting environment, and all participants shared in the stories, pictures, and youthful anticipation that is deer camp. This unique outreach event gives Columbia FWCO the opportunity to communicate our conservation message to a demographic that is passionate

about our Nation's natural resources. It illustrates the Service's Mission to *work with others* and our commitment to *the continuing benefit of the American people*. This activity supports the "Partnerships and



Deer are well hidden in their natural environment. Photo credit: Clayton Ridenour, USFWS.

Accountability" priority of the Service's Fisheries Program Vision for the Future and facilitates a critical communication between the Service and the public we serve.

*Clayton Ridenour
Fisheries*

A Day in the Life of the USFWS

On October 3, 2012 the Columbia Fish and Wildlife Conservation Office hosted 60 students from Pettis County R-V agriculture and science classes. They came to learn about the Missouri River and the U.S. Fish and Wildlife Service's work studying the endangered pallid sturgeon. The Columbia FWCO staff met the students,

USFWS biologist or University of Missouri instructor, giving them a one-on-one connection to inside knowledge of biological field work. The students ranged from grades 8 through 12, were attentive and asked many thoughtful questions. After the program, USFWS employees sat down with students to have a picnic style lunch and



Heather Calkins wades into the Big Muddy to demonstrate seining with a student. Photo credit: Ashley Spratt, USFWS.

teachers and parents at Katfish Katy's campground and boat ramp. After an initial safety briefing, each participant was outfitted with a life jacket. They were split into groups and each visited six hands-on stations after riding in sampling boats to a large exposed sandbar on the Big Muddy. They visited stations that included seining, pulling mini-fykes, fish anatomy, trammel netting, push trawling and turtles with the Big Muddy National Fish and Wildlife Refuge. Each group was personally guided to each station by a

further discuss the day as well as future careers and volunteer opportunities.

This event was an extensive effort by the Columbia FWCO and we would like to thank the Columbia Ecological Services Field office, Big Muddy NFWR and our two volunteers from the University of Missouri for helping us execute this educational event so successfully.

*Anna Clark
Fisheries*

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