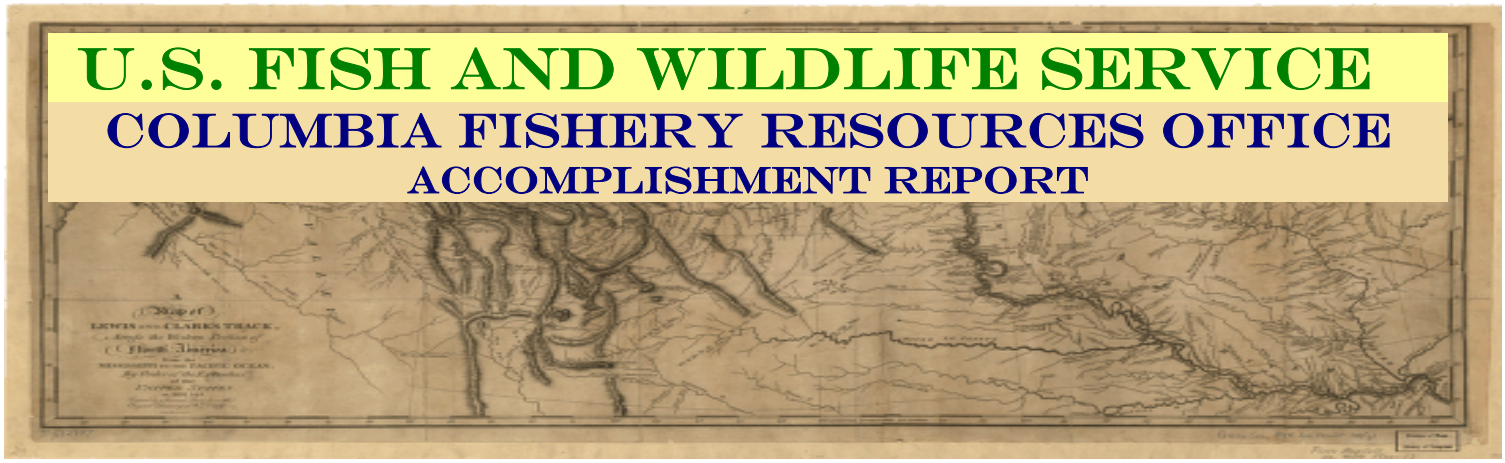
U.S. FISH AND WILDLIFE SERVICE
COLUMBIA FISHERY RESOURCES OFFICE
ACCOMPLISHMENT REPORT



...Dedicated to Conserving Big River Ecosystems in America's Heartland.

Feature Article

Finley Developing New Experimental Shallow Water Trawl

Large Rivers have habitats unique to them. Silt banks, quickly eroded sandy swifts, secondary and tertiary side channels and other habitats less than one meter deep can be very difficult to sample with traditional means.

The problem.

Much of the Missouri River's shallow water habitats were lost over 50 years ago and there is little or no information describing the fish communities that inhabit them. Simply stated, we do not yet understand the exact significance of these habitats to riverine fish. Biologists do know that since the loss of these habitats there has been a drastic decline of certain riverine fish species. Recent emphasis on the creation of shallow water habitats has resulted in the initiation of multiple projects by the U.S. Army Corps of Engineers. The Habitat Assessment and Monitoring Program, Pallid Sturgeon Population Assessment Program, Pallid Sturgeon and Associate Fish Communities and Mitigation Program all sample fish communities associated with existing and newly created shallow water habitats.

Secondary and tertiary channels associated with Jamison Island.

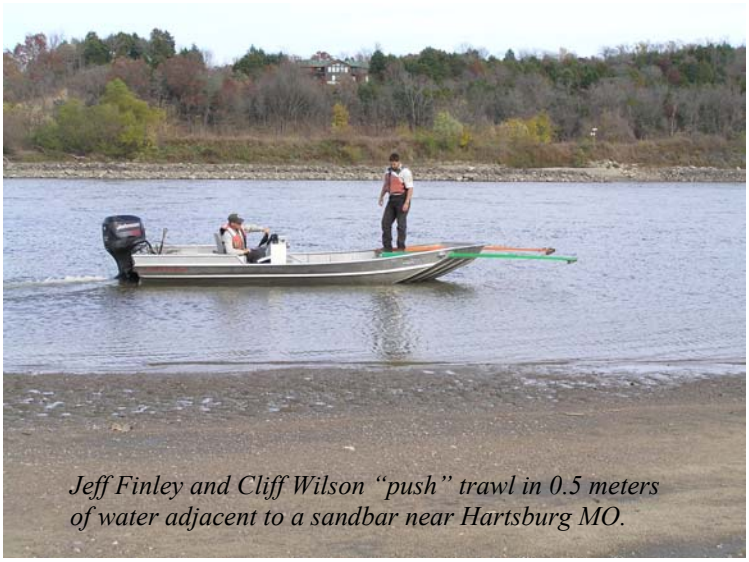
Silt banks are very productive areas that have not been adequately sampled. The silt substrate has the consistency of pudding and can often be waist deep making it impossible to seine. Mini-Fykes have

been successful in some of these areas, however if the water is too shallow the net will not catch fish.

Secondary connected side channels create a braiding effect and ever-changing tertiary channels. These channels braid, meander and migrate much like the river once did. The side channels can eventually create multiple tie channels back to the main river resulting in a series of islands. These various channels are often very swift with velocities exceeding 1 meter per second and have shifting sand, gravel and organic substrates that quickly fill mini-fykes with debris, roll them over, wash them to the bank or carry them off altogether. When walked upon the sand quickly erodes away leaving a person sinking or stuck in the sand as it re-deposits around your feet. This makes seining virtually impossible and, at times, hazardous to conduct. Due to the aforementioned challenges derived from their unique characteristics these habitats have not been adequately sampled either.

A solution?

The desire to explore these habitats has resulted in the creation of a new sampling technique. The "Push Trawl" was developed to be used to sample these areas with the aid of an outboard jet operated boat and forward facing outriggers. The trawl is pushed rather than pulled due to the disturbance of the jet wash and reverse bow trawling is not possible due to the lack of reverse power in an outboard jet. Based on previous experience trawling in the Missouri River and relying on the expertise of our trawl maker, it has been noted that stern trawling in water less than 1 meter deep is ineffective due to the jet wash of the boat. Therefore by pushing the trawl we can sample undisturbed areas rendering the sampling effort more effective. The ideal depth for the push trawl is between 1 meter and 0.5 meters. Any deeper and the net and boards will not keep in contact with the bottom. Any shallower and the sample can be crushed by the hull of the boat.



Jeff Finley and Cliff Wilson "push" trawl in 0.5 meters of water adjacent to a sandbar near Hartsburg MO.

How does the Push Trawl work?

The push trawl technique uses telescoping outriggers attached to the splash board of the front deck. When extended, the outriggers deploy the trawl from 8 feet in front of the boat. Ropes are affixed to two 18' high x 22" wide otter boards which spread trawls ranging from 6' wide to 12'. Currently, the optimum trawl sizes are 8' to 10', although we are still experimenting with board and net combinations. The ropes are attached to the otter boards and strung through sailing pulleys that dangle off the end of the outriggers and then through a deck organizer affixed to the splash board. The organizer

allows both ropes to be simultaneously retrieved and makes even deployment of the boards easier. When deployed, the trawl is sampling fish under the bow of the boat as it is pushed along. The boards can often be seen from the boat as they dig and stir up the substrate along side the boat and sometimes break the surface of the water.

To retrieve the trawl the ropes are pulled in until the otter boards reach the pulleys. The operator can then retrieve the cod end of the net using a gaff and place it on the deck of the boat. The trawl can now be cleared of fish and foreword momentum has not been lost reducing the possibility of loosing fish that may swim out of the net.

Restrictions?

Due to the short length of rope, the otter boards will not fish correctly in water deeper than 1.3 meters. However, as mentioned earlier, standard stern trawling is already effective at these depths. Careful consideration of trawl length and trawl material must also be well thought-out. Longer nets place the cod end beneath the intake of the jet unit. Many of our trawls have chaffing material protecting the cod. This material has a larger bar measurement and can hang up on bolts, screws, drain plugs, transducers or anything else on the back and underside of the boat. To solve this problem, the ropes are shortened, a shallower net is used or chaffing material is removed and the boat is cleared of hanging points. The final restriction we have found is water depth. It is possible to run the boat aground and trap the net between the hull and the substrate as it is very difficult to obtain a reading from depth sounding electronics in water less than 0.5 meters and transducers are typically mounted on the transom.

What's next?

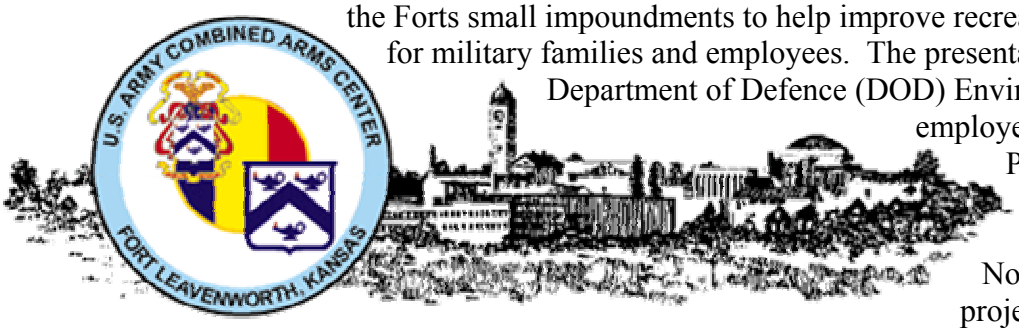
Columbia FRO will continue to develop this technique. We feel Push Trawling will have future applications in the upper reaches of the Missouri River, tributary confluences as well as existing and newly created shallow water habitats. We are planning on presenting the results of this technique at future workshops and conferences. Working to overcome sampling challenges and working to understand the significance of recreated shallow water habitats answers the call to develop, apply and disseminate state-of-the-art science and technology to conserve and manage aquatic resources outlined in the 'Fisheries Program Vision for the Future'.

Jeff M. Finley

Partnerships and Accountability

Columbia FRO Presents Results to Fort Leavenworth

Fishery Biologists Geno Adams, Andy Starostka and Project Leader Tracy Hill traveled to Ft. Leavenworth, Kansas on October 25, 2005 to present preliminary results from our spring and summer sampling. Columbia FRO conducted surveys to determine the presence/absence of the federally Endangered pallid sturgeon in the section of the Missouri River that borders Fort Leavenworth. Sampling was also conducted on two of the Forts small impoundments to help improve recreational fishing opportunities for military families and employees. The presentation was attended by Department of Defence (DOD) Environmental Division employees including Environmental Protection Specialist Judy Wimberg and Natural Resources Specialist Matt Nowak. Future cooperative projects between the U.S. Fish and Wildlife Service and the Department of Defense were discussed. Outreach and aquatic educational programs were determined to be a key component of the DOD environmental program. Fort staff and families would greatly benefit from the presence and expertise of the U.S. Fish and Wildlife Service at these events. Columbia FRO is currently finalizing a report summarizing sampling data from 2005 and providing proposals for 2006 projects.



This action fulfilled objective 1.1, action 1.1.1: Facilitate annual meetings in each Region with State Fish and Wildlife Agencies, Tribal representatives, non-governmental organizations, other federal agencies, and Service counterparts to identify and resolve aquatic resource management problems, explore new management opportunities, and maintain productive working relationships.

W. Geno Adams

Public Use

Service Biologists Participate in the Missouri River Natural Resources Conference

Project Leader Tracy Hill, Fishery Biologist Wyatt Doyle and Fishery Program Supervisor Mike Oetker traveled to St. Charles, Missouri to attend the fall meeting of the Missouri River Natural Resources Committee. Meeting participants were given the opportunity to hear reports from State and Federal agencies regarding their river activities during the previous field season, were treated to a field trip and Missouri style BBQ at the Columbia Bottoms Conservation Area and discussed monitoring protocols that would be necessary to evaluate a Spring Rise from Gavins Point Dam. One additional point of interest from the meeting was the introduction of Wayne Nelson-Stastny in his new role as the new coordinator for the group. The final written report from the meeting will be available in early January.

Columbia FRO participation in the MRNRC meeting is an example of inter-regional collaboration to improve information sharing and optimize fishery management and protection on the Missouri River in both Region 3 and Region 6. This effort assists the Columbia FRO in fulfilling the Fisheries Program's Strategic Vision priorities for "Public Use" and "Partnership and Accountability".
Body

Tracy D. Hill

Leadership in Science and Technology

Bergthold Presents Catfish Poster at SEAFWA

Columbia FRO Fisheries Technician, Casey Bergthold, attended the 59th annual Southeastern Association of Fisheries and Wildlife Agencies (SEAFWA) conference in St. Louis, Missouri on October 16th. SEAFWA is an organization composed of 16 state fish and wildlife agencies from the Southeastern United States, Puerto Rico and the U.S. Virgin Islands.

Bergthold presented his poster "Evaluation of Potential Environmental Factors Influencing Blue Catfish and Channel Catfish Abundance and Growth at Early Life History." The poster, co-authored by Branch Chief Wyatt Doyle, Fishery Biologist Nick Utrup, and Project Leader Tracy Hill, used data collected from the Missouri River under the Pallid Sturgeon Recovery Program. Juvenile catfish data was extrapolated to evaluate blue and channel catfish growth and abundance as a function of water temperature and flow rate. Thus far, the data suggests a positive correlation between spawning success of channel catfish and a spring rise. This information will serve as a baseline to be combined with impending data and analyzed to make more conclusive judgments in the future.
These efforts fall under the Fish and Wildlife Service's goal to use 'scientific and technologic tools in formulating and executing fishery management plans and policies' as outlined in the 'Fisheries Program Vision for the Future'.

Casey L. Bergthold

Aquatic Habitat Conservation and Management

Exploring Southwest Iowa's Erosion Control Stuctures

Fishery Biologist Nick Frohnauer toured several stream grade control structures (GCS) in southwest Iowa in connection with Columbia FRO's fish passage program. There were several objectives for the trip:

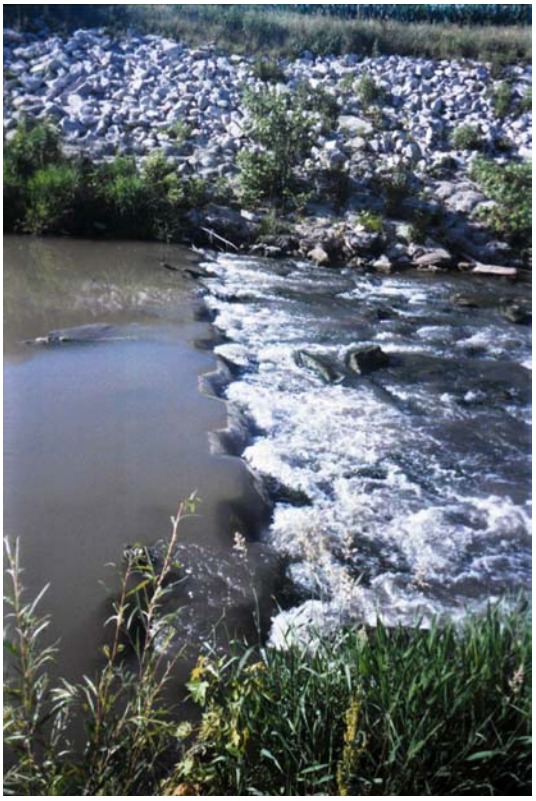
1. Learn about the history, ecology, and current happenings on SW Iowa streams
2. View a variety of grade control structures
3. Visit past projects that the USFWS has helped to fund
4. Strengthen current relations and develop new partnerships
5. Seek out potential future projects.

The meeting began with Chris Larson, the Iowa Department of Natural Resources (IADNR) Regional Biologist, and resulted in a tour of various GCS's on several South West Iowa streams. Southwest Iowa is unique in that it is made up of loess soils. They can be highly productive, but are very susceptible to erosion. Many of the streams in this region are experiencing erosion problems. This not only causes problems for landowners, but also has put approximately 800 bridge crossings at risk for structural damage. This became readily apparent after flooding events in the early 1990's. The region received Emergency Watershed Protection (EWP) Program funds to build GCS to protect these crossings. These structures were constructed of a concrete sheet-pile and grout riprap with a 4:1 (rise/run) slope. An unanticipated consequence of these 4:1 structures was the inability of fish to pass over the structure. This has caused population declines in numerous fish species. Over 400 of these structures have been built since the early 1990's. Over the past several years, the IADNR has worked with the local non-profit organization, Hungry Canyons Alliance (HCA), which oversees construction of GCS and to develop a protocol for structures to migration of fish. These new structures, called weirs, are built with a 20:1 slope. Past studies have shown that their gentler 20:1 slope allows for fish passage beyond the structure whereas the steeper 4:1 slope impeded fish migration.

Numerous structures with the old 4:1 GCS were viewed and it was agreed that there was a need to systematically replace them. Older 20:1 structures were also viewed. These structures allowed fish passage, although some had been damaged and were in need of repair. The most common problem was loss of material at the bottom of the weir. Chris demonstrated what they are doing now to reduce the amount of future maintenance by grouting together all the rock in the structure. This forms one big structure that is more capable of withstanding nature's destructive forces. The largest rock is now being placed in the center third of the stream channel to reduce the energy of the stream and provide temporary current refuge for fish moving over the structure. Several GCS were toured that already have these modifications. Initially these structures are not as aesthetically pleasing as the older structures. However after a year they look like a natural part of the stream.

An alternative to these weirs was also showcased. The alternative is very similar to the fish ladders seen on large dams out west but on a much smaller scale. It was agreed that the current 20:1 structures are a better option as they allow fish to pass more easily, were less expensive to construct, were more aesthetically pleasing, and a better hydrologic fit for the area.

The visit included several sites the USFWS helped fund. Several of these are on Turkey Creek, Cass County, Iowa where Iowa State University graduate student Mary Litvan is doing monitoring and assessment. These structures were built with a 15:1 slope in response to the expense of 20:1 structures. She is comparing the 15:1 slope with 20:1 slope structures to see if they are passing fish at the same rates. She is also looking at macroinvertebrate use of GCS. Her final report is due in late spring of 2006.



Turkey Creek before(left) and after(right) fish passage improvements.

Larson and HCA recently prioritized GCS structures to help decide which projects will be funded in the next few fiscal years. Chris explained and provided documentation on the ranking system and other factors used in prioritizing the structures. When proposals for GCS projects are submitted, the highest scoring ones are typically funded first. Special circumstances like non-typical funding sources (e.g. private landowners or city government) make a project more appealing and move it up on the funding priority list.

Potential future projects that qualify for USFWS funding are currently being sought. Chris mentioned one such project currently in the works. The Natural Gas Pipeline Company of America (NGPC) has a pipeline across Seven Mile Creek, Montgomery County, Iowa that is exposed and at risk of damage due to streambed erosion. NGPC was teaming up with HCA to build a new weir to protect the pipeline and at the same time replacing a nearby EWP 4:1 structure.

Overall, the trip met our objectives and Columbia FRO is looking forward to further cooperating with multiple agencies on these fish passage projects in SW Iowa. The trip to SW Iowa and meeting with partners is helping to promote the Service's goal of working with partners to identify and provide access beyond barriers to fish migration.

Nicholas K. Frohnauer

Field Work Completed for the Habitat Assessment

Columbia FRO completed its portion of field work for the Habitat Assessment and Monitoring Program (HAMP) 2005 season in early October. The program is intended to monitor man made aquatic habitat improvement sites on the channelized portion of the Missouri River. These sites are constructed by the Army Corps of Engineers (ACOE) and are intended to increase the diversity of aquatic habitats found in the Missouri River. The river is currently lacking specific habitats critical to the federally endangered pallid sturgeon. Sampling was comprised of two major components: biological and physical. The biological sampling, primarily targeting fish, was conducted by the USFWS Columbia FRO along with other state and federal agencies. The physical mapping of these sites was conducted by USGS and ACOE hydrologic crews. Columbia FRO's field work for 2005 consisted of 500 "sets" or gear deployments of eight different gear types on six selected bends. The different gear types were selected to sample multiple habitats found at a constructed site. Testing new gears and deployment techniques will continue during the 2006 field season. Sampling for the 2006 field season will be substantially more robust for both sampling gears and quantity of habitats sampled. Our monitoring will also provide ACOE construction engineers with feedback information on how fish are responding to these constructed sites and how to get the best biological response from each location.

These results of the HAMP will lead to our vision in leadership in science to recover an endangered species and protect sensitive communities. This project will assist the Service's Fishery Program with meeting its Partnership and Accountability goal of developing collaborative conservation strategies for aquatic resources. The final result will be the creation of critical lost habitats of the Missouri River and best management for sustaining fish populations into the future.

Andrew B. Starostka

Workforce Management

MU Student Shadows Columbia FRO Biologist on the Missouri River

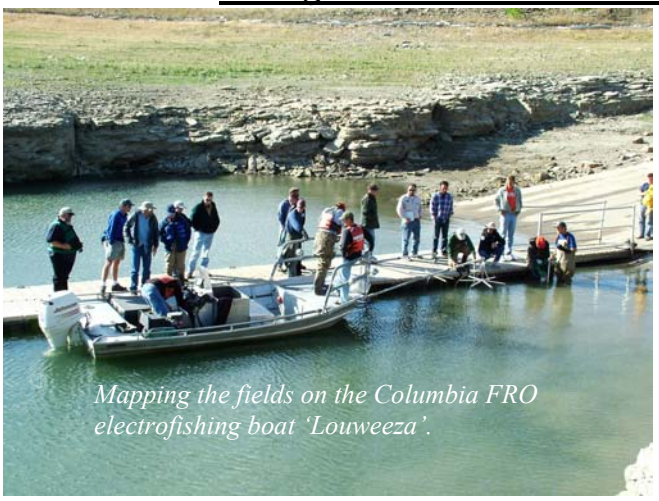
Joni Vanderflught, a student in the Techniques for Fisheries Management and Conservation class at the University of Missouri, spent a day on a job-shadow and interview assignment to experience what fishery biologists do on a typical day. The Techniques course is taught by Dr. Douglas Noltie and has been offered by the University since 1998. In the past students have job shadowed other biologists at this station including Louise Mauldin, Jeff Finley and Joanne Grady. Joni's main focus is in wildlife so a day on the river was quite a change for her. Joni spent her day with Fishery Biologist Jennifer Johnson and Biological Science Technician

Ryan Tilley of the Columbia FRO. The crew spent the day seining for the Pallid Sturgeon Assessment Program near Glasgow, Missouri. Joni assisted with seining, collecting habitat information, and identifying and measuring captured fish. By the end of the day, Joni could easily identify at least five of the common species captured that day. Joni also got a first hand glimpse of the "flying carp" she had heard about, with several silver carp landing in the boat. As part of her assignment, Joni's interview included questions about a fishery biologist's education, experience and job duties. Joni enjoyed her day on the river and expressed interest in volunteering with the Fish and Wildlife Service in the future. The Columbia FRO was happy to have Joni for the day and looks forward to future outings with students in the Columbia, Missouri area.

The Fisheries Program depends on a range of professionals to accomplish its mission and career exploration opportunities such as this may help recruit potential employees. Our cooperative effort with the University of Missouri helps to fulfill the "Workforce Management" goal of the Fisheries Program Vision for the Future.

Jennifer L. Johnson

Biologists Attend Electrofishing Course in Colorado



Mapping the fields on the Columbia FRO electrofishing boat 'Louweeza'.

Nick Frohnauer, Corey Lee, Nick Utrup, and Andy Plauck attended a five-day electrofishing certification course in Trinidad, Colorado. The USFWS requires that all electrofishing crews have at least one electrofishing certified person. Columbia FRO has a variety of projects that utilize electrofishing techniques: Mitigation monitoring, refuge monitoring, Department of Defense pond monitoring and management, and collecting fish for stocking purposes. The foundation of the class is the understanding of electrical principles and power transfer theory. These concepts provided a basis for the students to learn skills needed to build their own electrofishing unit, troubleshoot problems, increase sampling efficiency, reduce fish injury/mortality, and develop a safety protocol. The class included both classroom and field sessions.

This and all training helps fulfill the 'Workforce Management' goal of the 'Fisheries Program Vision for the Future'.

Nicholas K. Frohnauer, Corey W. Lee, Nicholas J. Utrup, and Andy T. Plauck

Bathed in the warmth of the setting autumn sun overlooking the Missouri River, Nick and Jill begin a life together.

Blufftop Wedding

The Staff at Columbia FRO congratulate Fishery Biologist, Nick Utrup. Nick wed Jill Sporrong on Saturday, October 29 at the LesBourgeois Bluff-top Bistro overlooking the Missouri River near Rocheport Mo. Nick met Jill in graduate school at Oklahoma State in 2002 where their love for the outdoors grew as did their love for one another. Jill is currently working for the Missouri Department of Conservation conducting quail research near Chillicothe Mo. Ironically, the breathtaking view of the Overton Bottoms Unit of the Big Muddy National Fish and Wildlife Refuge which served as a backdrop for the beautiful fall wedding is also one of the study sites Nick works at for the Mitigation Project. In addition to family and friends, several staff members from Columbia FRO shared in this glorious occasion.

Jeff M. Finley

Columbia FRO Staff

Tracy D. Hill– Project Leader
Joanne M. Grady – Branch Chief, Fisheries Conservation
Wyatt J. Doyle – Branch Chief, Corps Operations
Andrew B. Starostka – Team Leader, ANS/Habitat Assessment
Jeff M. Finley – Team Leader, Outreach/Mitigation
Corey W. Lee – Fishery Biologist
(Geno)Wells E. Adams – Fishery Biologist
Nicholas K. Frohnauer – Fishery Biologist
Nicholas J. Utrup – Fishery Biologist
Andy T. Plauck – Fishery Biologist
Cliff D. Wilson – Fishery Biologist
Jennifer L. Johnson – Fisheries Biologist
Casey L. Bergthold – Fisheries Biological Sciences Technician
Ryan P. Tilley – Fisheries Biological Sciences Technician