

MOAFS RIVERS AND STREAMS TECHNICAL COMMITTEE MEETING

Summer/Fall meeting – 8/11/2009 at Bennett Springs

The meeting was called to order by Chairperson Chris Riggert at 10:01 AM.

Attendees included: Ann Allert, Paul Blanchard, Adam Bowman, Andrew Branson, Amy Buechler, Paul Calvert, Pam Collara, Dale Cornelius, Ange Corson, Wyatt Doyle, Brian Elkington, John Fantz, Sherry Fischer, Kenda Flores, Jen Girondo, Nate Gosch, Mike Kruse, Mary Litvan, Matt Matheney, Amy Meier, Phil Pitts, Tom Priesendorf, Chris Riggert, Laura Ruman, Mike Smith, Bob Temper, and Mark VanPatten

Minutes from the winter meeting were offered up for review by the committee. Matt Matheney made a motion to accept the minutes from the winter meeting. Sherry Fischer seconded the motion and the motion passed.

Chris Riggert: the presentations today will touch on the chemical, physical, and biological aspects of streams and also provide information about current regulations and input about partnerships that we can work on within the committee.

Guest speakers

Restoring Clean Water Act Protections. Waters at Risk: SWANCC, Rapanos, and the Clean Water Act in Peril. Amy Buechler (Conservation Federation of Missouri)

Amy is the Teaming with Wildlife coordinator with the Conservation Federation of Missouri (CFM). Amy thanked MOAFS for being a member of the Teaming with Wildlife Coalition. Teaming with Wildlife supports additional federal funding for fish, forest, and wildlife conservation and outreach and education. Amy works on national legislative issues and building partnerships for involvement with Missouri's Comprehensive Wildlife Strategy and Conservation Opportunity Areas (COAs). MOAFS is also an affiliate member of the CFM.

CFM supported a Clean Water Summit at Bass Pro Shops in Columbia in January 2009 where presentations were given about the Clean Water Act and how we might act to restore its original intentions.

The Clean Water Act was passed in 1972. It was written to restore and maintain the chemical, physical, and biological integrity of the nation's waters and required a permit to pollute "navigable waters of the U.S." Originally this definition was interpreted broadly to include all surface waters, including isolated waters, intermittent and ephemeral streams. However, in 2001, the SWANCC decision ruled that the Army Corps of Engineers (ACE) cannot regulate isolated ponds based on migratory bird use alone, basically removing protection for isolated ponds. In 2006, the definition was further narrowed by the Rapanos vs. U.S. decision which defined jurisdictional waters as relatively permanent waters and wetlands with continuous connection to relatively permanent waters, or traditionally navigable waters. Wetlands that had significant nexus to navigable waters (affect on water quality of navigable waters) were also defined as jurisdictional. In 2007 the EPA and ACE gave additional clarifying guidance on the definition of jurisdictional waters; their definition included traditionally navigable waters, relatively permanent waters, wetlands adjacent to traditionally navigable waters, and wetlands directly connected to permanent waters, but excluded some intermittent streams and isolated waters.

These new definitions removed approximately 20 million acres of jurisdictional waters in the U.S. In Missouri, this removes protection for 35% of Missouri's wetlands. Nationally, it removes protection for approximately 60% of stream miles. In Missouri, approximately 82.5% of permitted facilities discharge to streams without permanent flow, so these facilities may not fall under CWA jurisdiction.

The Clean Water Restoration Act proposes to restore the Clean Water Act to pre-SWANCC decision levels of protection and remove the word "navigable" from the definition of jurisdictional waters. The bill was introduced on April 2nd and passed by the Senate Environmental and Public Works committee on June 18th.

What can we do? Schedule lobby visits with your congressional representatives urging them to support the Restoration Act, write letters to representatives, and letters to the editor in local newspapers.

For more information you can go to the National Wildlife Federation's website at <http://nwf.org/waters> or the Missouri Conservation Federation's website <http://www.confedmo.org/> and click on the Clean Water Summit link under the Programs/Activities tab. At this link, you can also sign up for a Listserv to receive updates.

Chris Riggert: There is also a link to the Conservation Federation's site on the Stream Team website.

Questions/Comments

Paul Calvert: This process has been going on for two years and was brought to the Stream Unit's attention by the Conservation Federation. I want to express my appreciation to CFM for hosting the Clean Water Summit in Columbia last January and for their information on the issue.

Bob Temper: Missouri is one of three states that has not classified their streams. DNR is working on this. I am on a committee looking at intermittent/ephemeral streams to determine what are classified as waters of the state. Our committee has not discussed isolated waters.

Chris R: John Hoke was going to provide an update on this but had too much work come up to attend the meeting.

Paul Blanchard: Are they using a 1:100,000 or 1:24,000 scale to classify streams?

Bob T: They are getting away from using a particular scale but are looking more at uses of the stream. Some communities cannot afford to fix/update their wastewater treatment facility, but we all live downstream. The stream classification process is a three year review cycle, and we are working on being in compliance for 2011.

Chris R: See the MODNR handout about the Water Classification Workgroup (available at <http://www.dnr.mo.gov/env/wpp/cwforum/adv-uncl-waters-wetlands.htm>)

Bob T: There is still confusion about what whole body contact is, EPA has been asked to provide a definition for whole body contact.

Laura Ruman: At my work at MODOT, I am seeing the effect of this. Small streams are not jurisdictional like they used to be. If someone argues that a water body is non-jurisdictional, the EPA has been stepping in on the decision.

Tom Priesendorf: Most of the discussion has focused on discharges to streams. What about in-stream activities, excavation, etc.?

Paul C: The Army Corps district makes the determination on these activities.

Matt Matheney: The 5 Corps districts in Missouri are very different in their interpretation.

Paul C: The EPA is handling most of the legal decision making process, rarely do cases go to court. It is critical that the Clean Water Act is restored to its original purpose and water of the U.S. are clearly defined.

Amy B: The National Wildlife Federation's website has clear instructions about how to write your Congressmen.

Stream Team 20th birthday video

Chris R: This year was the Stream Team program's 20th anniversary and they signed up their 4000th team.

Paul C: The Stream Team program has about 80,0000 volunteers, 40% of which are currently active, which is a great rate. I commend the volunteers on their passionate work. Annual reports on the Stream Team website shows up to date volunteer numbers and hours. A great amount of time is volunteered and many more activities go un-reported. Jim Barbowitz is a cinematographer and a stream team volunteer. He did a great job and the video shows the passion of stream team members. The video is going to be shown on public television in a number of cities: Columbia, Springfield, Cape Girardeau, Joplin, Warrensburg, possibly Kansas City and St. Louis.

The video was shown and is available on the stream team website
http://www.mostreamteam.org/ST_Videos.asp

Questions/Comments

Tom P: The video was outstanding. Well done.

Paul C: I have been impressed by Stream Team members being able to defend their points when speaking with the industry/private sector. The Stream Team volunteers are well educated about stream issues. Legislators need to hear from the Missouri citizens, they don't want to hear from MDC professionals. Our Stream Team members are valuable advocates for streams in Missouri.

The meeting broke for lunch at 11:23 am.

The meeting was called to order at 12:31 pm.

Impacts of mining derived metals on riffle-dwelling crayfish in two mining districts of southeast Missouri, USA. Ann Allert (United States Geological Survey)

Ann presented the methods and results for a series of studies investigating the effects of metals on crayfish density and survival and leaf decomposition. The study was conducted following proposed mining in the Eleven Point River and the Ozark National Scenic Riverways.

Crayfish play an important role in aquatic ecosystems processing organic matter, are prey for at least 200 species, and have a top-down influence in stream ecosystems.

The first study discussed evaluated crayfish density in tributaries to the Black River (in the Viburnum Trend or New Lead Belt). In 2004, 17 sites were sampled to determine crayfish density in riffle habitats. Five sites were located upstream from the mining disturbance, and 12 sites were located downstream from mining. Downstream sites were grouped into sites <7 kilometers downstream from mining and >7 kilometers downstream from mining. *Orconectes hylas* was the crayfish species evaluated. This study found no crayfish directly downstream from the mining site and low densities of crayfish at the recovery sites.

The second study presented was a lab toxicity test that used *O. hylas* and a mixture of 5 metals (Pb, Zn, Cd, Ni, and Co). The study tested trout, sculpin, crayfish, and amphipods to calculate the LC₅₀. Some sites studied previously in the Black River tributaries had metal concentrations greater than the LC₅₀ for crayfish.

Next, an in-situ toxicity test was conducted. Crayfish were placed in holding chambers at 7 sites in the Black River tributaries and crayfish were held for 28 days. "Peepers" were deployed in the sediment to measure metal concentrations. The study found a negative relationship between crayfish survival and metal concentration.

The next question of the study was whether metals associated with mining alter the processing of organic matter in Ozark streams. A lab study was conducted evaluating crayfish survival, crayfish weight change, and the weight loss of three leaf species (cottonwood, willow, and sycamore) at various metal concentrations and with and without the presence of crayfish. The study found a difference in leaf decomposition rates of the three species and that metals were affecting the microbial and crayfish decomposition of leaves. Crayfish experienced weight loss and highest mortality in the high metal concentration treatment, which was the mean concentration of metals of the mining sites from the field study.

This question was then evaluated in the field using in-situ chambers during a 56 day study. The in-situ study found a difference in microbial decomposition between the 3 leaf species, the average % crayfish survival and growth was lowest at the mining site, and metal concentration affected leaf decomposition by crayfish.

After presenting the Black River study, Ann presented the methods and results of a 2008 study in the Big River system (Old Lead Belt). The objective of the study was to determine density of crayfish in riffles, measure metal concentrations, and evaluate crayfish densities in relation to metal concentrations. A 56 day in-situ toxicity test was also conducted with two species, *O. hylas* and *O. luteus*. The study found that crayfish densities are negatively correlated with metal concentrations, lower survival of crayfish at mining sites, and that crayfish are bio-accumulating metals.

Ann also presented the methods for a study that was conducted during summer 2009 in the Tri-State Mining district in southwest MO. The study had 15 sites and evaluated Neosho midget and ringed crayfish. Ann is working on the analysis but thinks they will show similar effects of metals on crayfish as the previous studies have shown.

Questions/Comments

Phil Pitts: Is there any information on metal concentrations in crayfish in respect to people eating them?

Ann A: There has been some work done in Oklahoma looking at crayfish concentrations and consuming crayfish, focusing on some Native American tribes that commonly consume crayfish in the region. My studies are trying to tie in food web effects, some bird species would likely be affected by metals in crayfish.

Bob T: What about raccoons, otters, etc. that eat crayfish? What are the effects on these animals?

Ann A: Since these aren't protected species, they haven't been studied by federal agencies, but crayfish make up a large part of their diets, so it is likely they are affected by metals in crayfish.

Brian Elkington: In the Big River lowhead dams may trap sediments. Did your study find any trends in metal concentrations in relation to proximity to lowhead dams?

Paul B: A group of agencies (DNR, EPA, USFWS, and MDC) is looking at effectiveness of using some of these lowhead dams as trapping tools for metal contaminated sediment. There are two lowhead structures in the upstream part of the Big River, and also old mill dams downstream, but these are mostly filled in with sediment, the current sediment would need to be removed first before they could act as traps for new sediment.

Jen Gironde: The sites for the study were not picked to look at concentrations in relation to lowhead dam location, the sites were picked based on past data with known metal concentrations for the sites.

Ann A: There is not enough data and sampling at this time to answer those questions about metal effects in relation to lowhead dam location.

The Hydroecological Integrity Assessment Process: Natural Flow Regime and how HIP, MOHAT, and MOSCT fit in. Paul Blanchard (Missouri Department of Conservation)

When classifying streams, there are five main items that need to be addressed: hydrology, geomorphology, biology, water quality, and connectivity. Guidelines for establishing in-stream flow requirements should try to remove the term "minimum flow concept" from stream flow management because this is not a natural flow regime. Planning must include inter- and intra-annual hydrologic variability. A method for analyzing the variation of the flow regime (i.e. magnitude, frequency, and duration of flows) is needed. There are important ecological roles of extreme low flows and high flow pulses.

Paul presented work completed as part of the USGS report "Application of the Hydrological Integrity Assessment Process for Missouri Streams". HIP or the Hydrologic Integrity Assessment Process uses classification and assessment tools to characterize the least altered

flow regime and to identify stream types. To build the Hydrological Integrity Assessment Process, the workgroup wanted data from streams with 10+ years of gage data, no significant regulation by dams, and no major water withdrawals. HIP consists of three tools: 1.) HIT (Hydrologic index tool) which calculated 171 ecologically relevant indices; 2.) MOSCT (MO Stream Classification Tool) which classifies previously unclassified streams; and 3.) MOHAT (MO Hydrologic Assessment Tool) which is used to establish flow standards.

The first part of HIP is to classify streams using HIT. Data from over 100 USGS gage stations were used (gages in the bootheel and ephemeral streams were dropped because bootheel streams are highly altered systems and ephemeral stream flow is dependent on rain events). A redundancy analysis was completed looking at 11 flow components (magnitude, frequency, duration, timing, rate of change, etc.) for which aquatic biota in streams have adapted to for specific stream types. Different stream classification types that were identified by the analysis were: intermittent streams which were scattered around the state, perennial runoff dominated streams which were in northwest Missouri and some other rivers in Missouri (i.e. the Bourbeuse), and perennial groundwater dominated streams which were Ozark streams and spring-fed streams.

The second part of HIP uses MOHAT to establish hydrologic baseline and flow standards for streams and MOSCT to assign stream type. MOHAT can be used to quantify flow effects of past alterations and to examine alternatives for alterations such as urbanization, impoundments, and withdrawals. If a municipality or industry has the ability to pump a certain amount of water, they need to register with DNR so that their withdrawal can be tracked. Irrigation use is an unknown variable. The tool can be used for trend analysis to examine long term patterns and flow patterns before and after a proposed alteration. The limitation of the tool is that it does not address ephemeral or large rivers and 10+ years of data is needed for MOSCT and MOHAT.

Comments/Questions: none

1:45-1:50 Break

New Business

Water Classification Workgroup

Chris R: we discussed the Water Classification Workgroup this morning. DNR is working on coming up with nutrient standards for streams; they have already established nutrient standards for lakes and reservoirs. Lakes/reservoirs had more data than streams so was easier to work on first. The rule has been written and needs to be signed. For nutrient standard establishment on streams, this process has been slow because there is not as much data for streams and the methods for measuring nutrients in streams is in question. Mark Osbourne at DNR has pulled information from other states to see how other agencies have done this. The process has been tabled since the last meeting in February.

Stream Team Associations and Grants

Mark VanPatten: provided an update on Stream Team Associations and grants for these Associations. Mark provided a handout with frequently asked questions about Missouri Stream Team Associations. A Stream Team Association is a group of Stream Teams that join together to work on projects that affect their adopted streams or adjoining watersheds. This partnership allows the Associations to work on larger projects. A need for funding for the Associations arose in order to help them obtain their non-profit organization status, to recruit more Stream Teams to the Associations, and to complete larger projects. Three Stream Team Associations

received grants from the Missouri Conservation Heritage Foundation and the Stream Team Program in 2009: the South Grand River Watershed Alliance, the River des Peres Watershed Coalition, and the La Barque Watershed Stream Team Association. The Associations have recently established an alliance, the Missouri Watershed Coalition (MWC) to address statewide issues.

Sherry Fisher: works with the South Grand River Watershed Alliance. They are using their money to become a more professional organization and to reach out to the community.

Amy Meier: the group has also made a brochure and had media contacts regarding their alliance.

Mark VP: The River De Perre Coalition used some funds to attend a conference and then gave a report about the conference at a Watershed Coalition meeting. They came back with good ideas about fund raising and association work. The Watershed Coalition is made up of representatives from the Associations. The Coalition may eventually become one of the Stream Team sponsors, which would make the Stream Team program a truly citizen led effort.

MNRC Rivers and Streams workshop ideas for 2009

Chris R: Joanne Grady has reserved a workshop spot for the Rivers and Streams committee, but we need a workshop theme. I have asked John Hoke with DNR to do a workshop on the TMDL process, and John has agreed to do this, but John could not be here today. Phil Pitts has also suggested a workshop idea.

Phil Pitts: My idea consists of having a river/stream related workshop similar to the confab that Paul Michaletz has hosted in the past for impoundment/reservoir topics. Also, the topic of standardized sampling may be of interest.

Jen G: Standardized sampling methods or just what sampling needs to be done would be a good topic.

Ann A: there was a recent article in *Fisheries* about standardized sampling.

Mike Kruse: the article did not have much meat to it, but it had a lot of references about the AFS standardized sampling book that he has not seen yet.

Tom P: we wouldn't want our workshop to conflict with the impoundment confab.

Mike S: MOAFS is the conference sponsor this year. The key is having a relevant workshop topic. Attendance at the conference may be down this year because of the budget, so we need to make the workshop relevant to who is going to be there. The topic should try to deal with the conference theme, making decisions and taking risks. As far as timing, we may have Wednesday to have the workshop, or the plenary session may be shortened so that we could have the workshop before lunch on Thursday.

Paul B: David Gwaze may organize a workshop about water quality issues in relation to forestry and watersheds. Paul has invited David to attend the Streams 101 course; our foresters have not been exposed to Streams 101 information. We don't want to conflict with David's potential workshop.

John Fantz: Do other agencies present have any ideas?

Ann A: Standardized sampling would be a good topic. Effects of climate change on water flow, and water quality and quantity are currently important topics at USGS. The meeting today has been great to know what other groups are doing.

Wyatt Doyle: USFWS has its own conference with its sister office. A few people from the Columbia Ecological Services office attend MNRC.

Brian E: USFWS would be interested in many stream/river related topics.

Ann A: the Big River data may be presented at the meeting.

John F: it is important to make the MOAFS workshop interesting to others outside of MDC and give other folks the chance to present.

Ann A: There is a need to exchange info between agencies. She has heard the terms NFHI and COAs and these are new terms that she would like more information on.

John F: There is a need to exchange information between agencies about what other agencies are working on.

Paul B: We need to invite ourselves to USGS and FWS meetings to find out what work they are doing.

Tom P: there are two main ideas emerging: 1,) interagency interaction and 2,) standardized sampling.

Wyatt D: The USFWS is forming a watershed management approach to fisheries resource management and beginning to look at where funding should be spent.

Paul C: We are not at a point to present the watershed management approach. This discussion is ongoing.

Wyatt D: USFWS has regional coordinators that may be able to give a talk about the USFWS watershed management approach.

Paul B: What strategies are various agencies doing? We need to know what other agencies are doing.

Mike Kruse: Attempt to summarize discussion. Possibly a panel presentation from various agencies with people talking about NFHI, COAs, and the federal watershed management approach, stream classification.

Wyatt D: USFWS has various people working on fish passage, contaminants, etc. The panel idea is a good idea. USFWS staff would need to be invited to the meeting in order to participate.

Mike S: it seems that the Wed. night social is where a lot of interagency networking gets done.

Chris R: So where are we for getting a topic idea for February?

Sherry F: the interagency panel idea is a good idea.

Tom P: there are a lot of standardized sampling tools available, some we know, but others we need information on. We need to determine the inadequacies of sampling techniques that we need to address.

Phil P: We need more discussion about stream sampling. Not much river sampling is done in his opinion. They are open systems and hard to manage.

Mike K: There is probably more stream sampling done in southern Missouri than the central and northern regions.

Chris R: Let's table the discussion at this point. Should we figure this out over email?

Phil P: Made a motion that he will head up a committee to figure out the workshop topic.

The motion passed.

Kenda F: We need to pull together agencies and find out what other agencies are doing.

Mike K: As past AFS president I am chair of the MOAFS nominating committee. Next year we will need a continuing education chair, an MNRC chair, a President elect, and a Treasurer elect. Mike asked the attendees to give the positions some thought. I am also chair of the awards committee and ask for everyone to think about award nominations.

Matt M: I am working on the August newsletter, so please send any updates to me.

Chris R: I encourage the workshop committee to think about people from other agencies.

Chris R: Motion to adjourn.

Paul B: Seconded the motion.

Motion passed.

Meeting adjourned at 3:17 pm.