

Project

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Stream Banks and Floodplains Roundtable Discussion

Tamminga: You didn't mention bio-regions and artists' role.

Riley: Artists tend to be the first involved in environmental efforts. Friends of the Ohio River was started by artists making a concrete sculpture of a sycamore tree in a concrete lined river. Friends of the Chicago Rivers started with making elaborate floats down the river in boats to publicize it. In Chicago, artists asked people to photograph their favorite parts of the river and made collages out of them which were printed in the newspaper. Gary Snyder and other poets started making one-line bumper stickers, "Think globally, act locally." It captures people's imaginations.

Tamminga: In Toronto and the Don River, the first thing we did was to get business people to give away some throw-away cameras, and a local photographer knew a place in a river that was so polluted, he developed the film in it.

Ridenour: Do you have an update on the Platte River in Denver? Is it still successful?

Riley: Yes, very. One community opted for a floodplain restoration trail channeled for flood control. Bob Searns, Urban Edges and community groups got together and did massive treatment, now people visit and jog. The idea of trails really caught on in Denver. I understand that it's a real hook here. If you are looking for a model, use Denver. They started making trails everywhere.

Ridenour: Boulder and Denver are about 50 miles apart; are they connected via trails or greenways?

Riley: I'm not sure.

Ridenour: I remember some reference to the Army Corps Act in '96.

Riley: It's called the Water Resources Redevelopment Act section 206, Aquatic Ecosystem Restoration, also, Section 305 or 503...possibly 305, which is the watershed planning section, and the Army Corps can partner with locals, like watershed council type things, and you can

come up with comprehensive watershed plans which can be funded 50/50. So, you would work with the Pittsburgh district.

Ridenour: The Corps has a major office right here; it covers a big area, maybe 100 miles down the Ohio.

Riley: Each different district in the Army Corps has a different nature, a different character. The Pittsburgh district may or may not have personnel that you think are good. If you don't think that the personnel is together, forget it.

Riley: Planning. Baltimore is a really good district. I don't know about Pittsburgh.

Ridenour: They're marginal.

Riley: The best programs to use if you are looking for government partners is the Natural Resources Conservation Service, which is the new name for the SCS. Those guys will help. Again, locally it will depend upon the personalities there and the talents. When we get together nationally all in one room, they get very high marks. They have landscape architects, they have hydrologists, they have conservationists. They can send you a technical person.

Ridenour: But the problem is that they mostly work in agriculture and when you get into an urban county, like Allegheny, you can forget about it.

Riley: Sometimes that's true and sometimes it isn't. I work in very urban counties in California and NRCS is very successful with that transition, and they've been very good in Chicago and Seattle. It really depends on the staff.

Ridenour: They depend on local funding and we've consistently had a bad situation here. There's been hardly any money spent in Allegheny County. Once you cross the county line into Westmoreland, Cambria etc., it is a different story.

Riley: You are right that a lot depends on very local issues. A new federal program has been established in fifteen cities called the Urban Resources Partnership. It combines the EPA, NRCS, and the Fish and Wildlife Service and other groups. You don't have this in Pittsburgh. They can direct you to grants and technical assistance. The EPA is kind of lost in the wilderness. They want to help and promote watersheds. Their weak point is that the staffs vary. There doesn't seem to be an agency consistency or personality. They are starting to improve, however, with a sustainable communities program, which is kind of replacing its watershed program. It does get kind of fad-ish. Trying to get

Racham: What branch in the Corps is responsible for the watershed planning program?

resources to cities and impoverished communities. It can be bureaucratic. Have you tried section 309 grants? There are grants available for non-point pollution. You can ask the state to consider you for non-point pollution problems like stormwater. The grants can also be used for riparian restoration.

Ridenour: Have you done restoration for storm channels?

Riley: Speaking of which, that issue is being considered by Congress right now. Talk to a local congressman about the Brownfields Act. I am a big fan of this. Make sure the Brownfields Act includes some waterway restoration grants and is user friendly.

Bingham: Is this speaking directly to water issues?

Riley: Yes, because there is so much toxicity in the rivers. It is often hard to separate the river pollution from the toxicity. I am personally involved with the Napa River in California. The group working on the river gets a team of experts to work with them. There is a group of people working on a creek in St. Paul doing the same. You must start raising money.

Bingham: How much?

Riley: This depends. You could start with a small demonstration project and bring in a local expert. Plant trees by your trailer and call it a restoration project. [Ann draws a diagram of possible restoration.] You may want to make space near the trailer and excavate two or three feet. Bring in experts, do a little bit, and see how it works. Why hasn't the floodplain become reforested?

Bingham: There was much rock and concrete dumped on the site.

Tamminga: It has started to revegetate with clover and vetch. Nancy, do you think this area, dropped a few feet, would be considered a wetland? I am trying to understand what could happen there, and what should happen there contextually.

Tamminga: I've had an opportunity to see the area, and I agree that it cannot be sustained on stormwater.

Lightfoot: For our purpose, is that distinction important?

Tamminga: When one is thinking about semantics: if hydric soil is not originally there can it be created?

Racham: There are streams going across the area. The overflow of storm events is not enough to support a wetland.

Racham: In a lot of places with a riparian buffer, it looks like a wetland but it is not.

Riley: The background document goes into the 1800s and states that Nine Mile Run was previously forest. We must take history into consideration.

Tamminga: But this may not make a difference.

Riley: This puzzles me...if it is not a wetland by definition, what is it?

Ridenour: I'm confused about the difference between riparian buffers, wetlands, and floodplains.

Ridenour: Not all floodplains are wetlands. Do riparian buffers pretty much correlate to the floodplain?

Riley: A friend of mine refers to "God's floodplain" Banks were probably two feet high and things periodically flowed over. And the species would be different across the spectrum. If we were to go to the trailer and try to appreciate the species differentiation, it would be cool to try to visualize this.

Lightfoot: In our stream with no floodplain, are our trees in a riparian zone?

Tamminga: The floodplain is very narrow.

Ridenour: There are places where the 100 year floodplain is on the bank.

Tamminga: I wanted to add that I am interested in the meandering of the stream. If we were to make projects [draws]...Some jurisdictions are beginning to limit development in the meander corridor so the stream is given a natural opportunity to meander.

Lambert: Of course, in Nine Mile Run we have two bottlenecks, upstream, the urban buildup and downstream, the slag pile.

Racham: If we are creating wetlands as a benefit for some other project, regulations say that if a wetland was not naturally created, it cannot be regulated as such.

Racham: The floodplain is the area that becomes inundated by water during flood events, the 100 year flood. A floodway is the area that carries the flow. A floodplain gets inundated but it doesn't carry flow.

Staples: Like farms out west.

Racham: We regulate floodways for flooding impacts and the impacts on the stream. We regulate the floodway as public entities. If we are filling a wetland, it is a wetland impact and also a floodway impact.

Racham: Yes.

Staples: The stream digs deeper.

Tamminga: At Penn State's Watershed Cooperation Center, they are using cesium and its radioactive decay rate and can relate to nuclear bomb testing.

Ridenour: It's like counting the rings of a tree or ice layers in a glacier.

Lightfoot: People are looking at the maps, drawing the floodplain.

Riley: That one did have a date on it— from the 1930s. About how many feet is it up from the stream?

Bingham: Six feet, exposed.

Riley: May we have a construction date or a map giving elevation information?

Lightfoot: John Schombert would be the one to ask.

Tamminga: What failures do you know about, specifically when it comes to the pilot projects? Have they always been so carefully designed, especially on such flashy streams, where they may get blown away? What was the outcome if the bank was torn away after being "restored"? Was it a setback?

Riley: Great question! We learn more from the failures than from our successes. All restoration projects are not designed with such great knowledge that they are infallible. Adaptive management is another buzz word, it is a wonderful concept. All you can do is get your historic records, interview people, measure distances from old sewer lines and what they are now, and you become a detective. You always act with imperfect information. That's part of the business. There is an art to this. Make adjustments and watch them, and they usually adjust accordingly. This is very different from the paradigm we're used to in the public works world. If you think you need to excavate to restore the flood plain, then go ahead. Try it.

Tamminga: Test depth to groundwater. There's a copper-wire technology where you stick it in the ground water and the HP calculator takes an infrared reading, then you download it on the computer. Costs about \$900 each.

Staples: Is it possible to use core drillings to see how far down the floodplain was?

Racham: What part of the sewer line are you talking about?

Racham: We don't know where it was to begin with.

Racham: It seems like the city's maps are just atrocious....

Lightfoot: What about places where there is no hope to repair the stream bank?

Riley: Not politically and economically feasible to alter slag. It is okay to work with a modified environment. Instead of this channel geometry, which is natural, you have a new stream type essentially which is a confined stream channel you can work with that. And right now, you have a forest trying to occur in this crappy stuff. Is there something we can do to hasten the succession or get a more climax forest?

Tamminga: Your stream setting [while drawing] and channelized section, it would have had a meander pattern, you would have had pools and riffles, right? Straight-aways at the tangent points are generally pool and riffles. You can generally translate that across if you know the sort of theoretical design size of that corridor. And come up with a pool-riffle sequence in that channel.

Lightfoot: Is it shallow, deep, shallow, deep?

Tamminga: Right. It brings around a lot of these aquatic dynamics. They are hydraulic jumps, you know where water goes over rocks, while little critters hang on. Even though you can't restore the meander pattern, you can easily restore the pool-riffle sequence.

Tamminga: It would take up flow and reduce downstream impact.

Riley: Sometimes, the best restoration is no restoration at all. One of my key recommendations is the sewer line condition. A public works project can turn into a restoration project. If a culvert is really in bad shape, that is your first opportunity to try it a different way. If you get your fluvial geomorphologists to spend some time at the site, they can inventory your meandering path and see how far off you are. The gradient - it has to meander over time differently than it does historically because its gradient is changed, because it has been confined and because its gradient is steeper, its meander will be narrower. So, dealing with your confined environment, the slope is x amount, read some of the river classification systems to determine what meander will be in this new river type. Then if it is really far off, you might want to do the kinds of things Ken was talking about. I have a feeling it is doing a kind of decent job meandering on its own. Rivers adjust on their own. Sometimes, we discover we have thrown a lot of money at a project which wasn't necessary.

Staples: What is the effect of restoring floodplain upstream?

Ridenour: What was the EPA term?

Riley: Adaptive management. Divide your watershed up into regions and set your goals. Restoration goal may be a historic floodplain experiment as a demo and maybe you'll find how much it has adapted. Sometimes, you may find that if you lower the floodplain, the stream may just want to fill it in again.

Tamminga: If we have an urbanized upper watershed, and controlled sedimentation, it should be okay, probably?

Ridenour: (to Nancy) If we were going to use a wetland to help clean up the pollution, where would you put that, beside the main channel? Or otherwise it won't collect the pollutants.

Ridenour: The CSO storm effect would be in the channel, so you could have wetlands raised up?

Lightfoot: Our fecal coliform levels are through the roof during storm events, but not as bad for low flow.

Lightfoot: What about stormwater wetlands to control the flooding and high flows? As opposed to treating it as wastewater.

Ridenour: Do you feel in man-made wetlands that we have arrived to a point where we know a lot about how to make these things? And make them work and be successful?

Racham: Obviously, you have to get the water from the stream into the wetland, wherever it is. You may not want it in the channel, because then you may not have a way to divert around it during the high floods—you'd lose all your work.

Racham: Right, but you need to keep the higher flows out of there, which means you are bypassing a lot of the stuff you are trying to get out. You have more dilution during a storm event, so its moving and it keeps on going. So, it gets to the Mon real quick.

Racham: How long did you have those elevated levels? Those are short-term, then you are back down to base levels.

Racham: Yeah, but you're going to be limited by space to control all that water.

Racham: A lot is a relative term. There have been a lot of failures. We will learn from them. There are people out there who are very good. They know what data needs to be collected in order to determine what they're going to have to do to a particular site for it to hold water. There is a wetland constructed as mitigation, and they had 17 acres there. They went through some nightmarish techniques. You can go to great lengths to get there, but the bottom line is how to keep water. The rest is easy after that; then you have choices.

Tamminga: There are seven wetland types, with ascending difficulty to achieve. Coastal salt marshes being the easiest to restore and freshwater wetlands as one of the most difficult to restore (because of the difficulty to return species diversity).

Ridenour: Somerset and Cambria County use passive treatment wetlands to treat the acid mine drainage.

Tamminga: Those are constructed and are really living sewage treatment plants.

Ridenour: So you have constructed wetlands and sometimes they may also act as natural wetlands, but not always?

Tamminga: Some of the jargon is that if they are man-made, they are created wetlands, imaginatively restored wetlands, some of which are because of mitigation. If it's putting a wetland where there never was a wetland, that is a constructed wetland.

Riley: It seems to be a flood plain restoration—best for our site—get the wetland language out of there, creating a historic flood plain, use as much information as possible.

Tamminga: Probably, there was not an open water system, very likely there was no standing water, it might have been swamp.

Lightfoot: There are two sections we are not sure about, one with standing water and one without.

Riley: Try the demo site and see what happens. With interest level—more urban realities.

Lightfoot: Is streambank restoration necessary? What about letting Nine Mile Run run its course?

Riley: Sometimes where there is a conflict.

Racham: There is no magic to getting wetlands plants (cattails) to grow. In a constructed or contained environment, not as much goes on compared to a naturally functioning environment. DEP is trying to identify what works and what doesn't. Overbank flow from streams and stormwater collection does not work as a hydrologic source—not reliable enough. It's hard to keep them where you want them and it's hard to know when they'll come back. They may be used as secondary sources.

Racham: Yes, you have to go out there and make a determination of how the wetland is performing.

Staples: We need access to the stream.