

Facilitated Discussion

Current and Future Studies on the Character & Performance of Mitigation

Suggested research directions

- George Kelly, Environmental Bank and Exchange: Suggested a scientific analysis comparing impacted sites with mitigated sites to see how they compare and whether or not there is improvement; To add to that Van Ness Feldman has begun to do a little of that, by taking photos of sites etc., and is finding that incredibly degraded impacted systems are being replaced by significantly restored systems. This is a key study when talking about ‘no net loss’.
- Mike Rolband, Wetlands Studies and Solutions, Inc.: Suggested a study that focuses on the effects of adding organic matter to a mitigation project, will it increase likelihood of achieving performance standards. For example, farming activity has totally changed the soil (removing organics), which will affect all restored wetlands on these sites—causing some to fail. The question is what will improve performance/success on these sites; need to know what you need to begin with, and if you don’t have it, what is the best method to reach it the desired levels over time.
 - George Howard, Restorations Systems: If they fund such a study, will it be considered valid by the rest of the community?
 - Julie Sibbing, NWF, These are studies to look at how to do mitigation better, not studying success of mitigation, and may want to know if we can build wetlands that sequester carbon. So shouldn’t be a problem.
 - Mike Rolband, Wetlands Studies and Solutions, Inc.: Should also look at nitrogen and phosphorous levels, as well as the ratios of these nutrients.
 - Siobhan Fennessy, Kenyon College: The issue is that there are many descriptive studies showing differences between mitigation sites and natural wetlands, but there are not a lot of mechanistic studies to get at why mitigation sites are different, and how to improve them.
 - Dan Spethman, Temple-Inland: But, there are many studies in silviculture literature that are addressing exactly these issues, which could add to the body of knowledge.
- Steve Martin, Corps: Suggests a need for research on soil bulk density.
 - Mike Rolband, Wetland Studies and Solutions, Inc.: Also, in relation to studying bulk density should also look at restoration practices used at the site (so can look at effect of construction practices).
- Sue Elston, EPA: (Question Fennessy): Are the soil tests you described difficult and time consuming (if this was made a performance standard), and who will do the studies and are they qualified?

- Siobhan Fennessy, Kenyon College: These tests are not that hard and they are inexpensive. And there are standard procedures for these tests. Carbon and Nitrogen test for about \$10 a sample.
- Robin Mann, Sierra Club: Suggests that there is a need for stream analyses for stream mitigation that are similar to Siobhan's study on wetlands.
- George Howard, Restorations Systems: Suggested a study that examines the performance of mitigation by type of mitigation provider (or motivation for providing mitigation); Suggested that there may be a range of performance based on the motivation of the mitigation provider.
 - Rich Mogensen, EarthMark's Mid-Atlantic Mitigation, LLC: Response: suggested that for any type mitigation study there be a distinction made between private/entrepreneurial and other types of mitigation providers; this may be accomplished by coming up with new terms (e.g. define as commercial (for private) and non-commercial banks (everything else))
 - George Howard, Restoration Systems: prefers term "entrepreneurial" for private banks
 - Rich Mogensen, EarthMark's Mid-Atlantic Mitigation, LLC: There is a need to come up with standard terminology
- George Kelly, Environmental Bank and Exchange: Suggests a need for a study comparing whether you get more bang for your buck by using acreage as a measure or function. Finding that using acreage as a measure may yield more mitigation than does using the functional approach.
- George Howard, Restoration Systems: Suggests that the same types of studies be applied to other restoration projects (e.g. Conservation Reserve Enhancement Program, Wetland Reserve Program, Duck's Unlimited) which receive federal money;
- George Howard, Restoration Systems: In NC, when regulators require in-kind mitigation, the result is more stream restoration because it is where most impacts occur and this may be the direction of mitigation in NC into the future.

Concerns about specific studies

- Bob Brumbaugh, Corps: Clarification on Brown, 1999 citation (American Water Resources Association) in Fennessy's talk. This study was a paper exercise and used a lot of Brumbaugh's data from 1992-1994 for the national banking study, but it includes many assumptions based on data from all sorts of extraneous sources that are not verified, and definitions also have problems.
- Mike Rolband, Wetlands Studies and Solutions, Inc.: Suggest that the blame for the trend for wetlands to migrate from urban areas to rural areas is not caused by the bankers (as suggested in *National Wetlands Newsletter* article), but is instead caused

by the regulators who are pushing mitigation into rural areas, because more area of wetland and streams in rural area can be restored with money collected in urban areas

- Steve Martin, Corps: while in northern Virginia that may be true, but in southeastern Virginia the bulk of their banks are in urban areas; As a regulator, the push to move mitigation into rural areas may depend on what functions are being compensating for; may compensate for specific services on-site or near-site, but if you are concerned about habitat for neotropical migrants or other specific species, for example, then an urban setting may not be appropriate
- Mike Rolband, Wetlands Studies and Solutions, Inc.: agree; but the NWN article was pinning blame on bankers.

Concerns about data dissemination and accessibility

- Ann Redmond, WilsonMiller Inc.: She did study in 1990 mandated by FL legislature that was very similar to Fennessy's study showing mitigation site failures; The rule is attempting to address 23 of 29 recommendations from the NRC report in the rule, but training, data management, and recommendations that deal with information dissemination should also be included in the proposed rule, this is needed so that data collected in one district is shared with other districts; Must be some way to effectively disseminate all of this information and possibly integrate this knowledge into RIBITS or another database.
- Mike Rolband, Wetlands Studies and Solutions, Inc.: In terms of open water, banks sometimes create (and sell credits for) open water areas to mitigate only for open water impact and specific goals, i.e. wildlife diversity, There is a need for monitoring data that could lead to research; Collect a lot of monitoring data that are not useful and don't relate to anything, instead could be putting the time into collecting and sharing useful data needed for research as part of monitoring report process (e.g. monitoring soil organic and N levels over time to see how things are changing), monitoring reports should have data requirements that add to the knowledge base (e.g. should monitor and share these things nationwide or at a regional level, scientists could decide a research strategy and that could be implemented through Corps and states mitigation instruments and permits).
- Peggy Strand, Venable LLP: (Response Redmond, Rolband) Should be a way to access grey literature studies (environmental impact statements, monitoring reports, mitigation plans, section 7 consultations) because these things are collected and then unused or inaccessible. Suggest a need for studies on how to better manage data from the "grey literature", so that there is no duplication or wasted resources, and so it can actually be accessible.
 - Siobhan Fennessy, Kenyon College: (Support Strand) Suggests there should be a way to put more of the knowledge and expertise into practice; Should be a better way to disseminate scientific knowledge and knowledge in the grey literature -- there is a lot of data we need to take

advantage of, mitigation providers could help to inform the scientific community as to what is working and what is not.

Concerns about reference sites

- Steve Martin, Corps: Suggests that when looking at actual areas the study should choose reference sites in same successional states as the site you are measuring (e.g. created wetlands);
 - Sue Elston, EPA: (Support Martin) on successional state of reference and mitigated wetlands; should also then be looking at the successional state of impact site, when comparing it to mitigated site;
- Morgan Robertson, EPA: Relates that Joy suggests that another forbidden word is “trajectory” (along with “success”); Suggests that when selecting regionally reference sites, and sites appropriate for successional stage, for these types of studies, we have to be careful about exceeding expectations of what to expect from a reference site and careful about our definition of “pristine”. Can’t expect to restore pristine wetlands in urban areas.
 - Siobhan Fennessy, Kenyon College: agree, Need to be careful about how you are using range of reference wetlands to set goals for restoration.

Concerns about performance standards

- Ellen Gilinsky, VA DEQ: Siobhan’s study affirms the work that banks are doing; shows why good performance standards are needed to cut off banks allocating credits when criteria and standards are not met, and also with banks have to consider a goal when designing mitigation and performance standards up front, which helps to ensure successful project.
- Steve Martin, Corps: Development of performance standards has to be an iterative process, have to be able to learn from what works and what doesn’t work. Siobhan’s work is very helpful in that direction.
- John Ryan, Land and Water Resources Inc.: In Ohio Wetlands Study, referenced by Fennessy, if mitigation meets performance standards set in permit they can call their work a permit success, this is why getting good, equivalent performance standards that are tied to ecological success and are achievable laid out in the proposed rule is critical.
- Royal Gardner, Stetson University: Suggests a shift from language about “success” (Zedler banned word) and instead focus on being clear about what we’re measuring, such as compliance with legal standards, or meeting ecological standards; this will lead to more productive conversation

Concerns about impact sites

- George Kelly, Environmental Bank and Exchange: the banking/mitigation industry focuses most of the analysis on the backside or mitigation side, but on the front side/impact side a small amount of time is spent on a JD; do we have the political will to do it on the front side and invest more into functional assessment of impacted wetlands
- Sue Elston, EPA: thinking of studies comparing impact sites and mitigated sites, need to keep in mind the consideration of the site itself (e.g. wetlands in urban areas may have low diversity, but high productivity);