

RENDEZVOUS ROOM

MONDAY AFTERNOON

ROOM: Rendezvous

TIME: Monday 1:00 PM

TITLE: River ailments prescriptions and expectations

AUTHOR(S):

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ABSTRACT: A wide variety of river projects have been labeled as "restoration" that affect an equally wide range of spatial and temporal scales. Likewise a variety of problems have been implicated as causes of impairment. Changes in land use, channelization, and fragmentation due to dam construction and road crossings are common culprits. Restoration activities are, by definition, attempts to reverse these impairments and generally involve channel work or dam removal and modification. Game fish are a common focus when quantifying success but populations are rarely defined in terms of spatial coverage and assessments generally measure local subsets rather than populations. Timescales of assessments are frequently inadequate to capture population change. Biological responses to channel restorations may be limited by watershed and land-use factors that determine hydrology, water quality and geomorphology, or by fragmentation that prevents recolonization. While habitat improvement projects may attract local individuals of species for which they are designed, restorations are most likely to have long-term population effects if they restore rare, critical habitats and, most importantly, the processes that form them. Case-examples will be provided.

KEYWORDS: restoration, response, processes

ROOM: Rendezvous

TIME: Monday 1:20 PM

TITLE: Artificial riffles as a remediation technique in three Illinois streams

AUTHOR(S):

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ABSTRACT: Large numbers of streams in the Midwestern United States were diverted, straightened, or deepened for flood control and agricultural drainage. This agricultural intensification has had qualitative effects on stream biological abundance, diversity, and biomass through the loss of foraging inputs, spawning habitat, and cover. Rivers and streams were channelized to increase agricultural productivity by quickly draining fields in the event of a flood. To mediate the results of channelization, streams must be restored. The IL Dept. of Agriculture installed thirty artificial riffles on eight streams between the years of 2000 and 2003. Three creeks chosen for their accessibility and stream order were used to 1) examine the biological response to artificial riffles in first through third-order streams located in East-Central IL, and 2) assess the feasibility of using artificial riffles as a stream remediation technique in these Midwestern streams. Fish and invertebrate communities on two artificial riffles and one adjacent downstream natural riffle were sampled using standard stream sampling techniques. Although differences in habitat variables (substrate size, depth, and velocity) were present between riffle types, no difference in species richness, diversity, IBI, or MBI scores was found. In contrast, Multidimensional Scaling (MDS) revealed a relatively distinct fish and invertebrate assemblage among streams but not within streams. Overall, biotic assessments indicate artificial riffles mimic natural riffles in study streams. However, drought stopped current in two of the three streams resulting in the overall conclusion that the benefits of artificial riffles are contingent upon permanency of flow.

KEYWORDS: riffles, streams, restoration

ROOM: Rendezvous

TIME: Monday 1:40 PM

TITLE: Biological responses to stream restoration activities in the upper Cache River Illinois

AUTHOR(S):

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ABSTRACT: Despite substantial resources dedicated to stream restoration practices, assessments of the success, or lack thereof of these efforts are relatively scarce, and we still know little about biological responses. Rock weirs were constructed in the Cache River to control channel incision and protect riparian wetlands as part of an extensive watershed-level, restoration. Construction of these weirs provided an opportunity to examine biological responses to a common in-stream restoration technique. We compared macroinvertebrate assemblages on previously constructed weirs and newly constructed weirs to those on snags and scoured clay streambed, the two dominant substrates in the river. We sampled macroinvertebrates on these substrata on 7 occasions during 2003-2004. Density and biomass of the insect orders Ephemeroptera, Plecoptera, and Trichoptera (EPT groups) were significantly higher on rock weirs compared to the streambed on most sample dates. Snags supported EPT densities and biomass that were intermediate between those of the weirs and streambed. Non-metric multidimensional scaling ordinations for 2003 and 2004 revealed distinct assemblages on weirs, snags, and the streambed. Analysis of similarity supported visual interpretation of NMDS plots. All pair-wise substrate comparisons differed significantly, except new weirs versus older weirs. Results indicate positive responses to in-stream restoration, and patterns observed suggest that weirs may serve as "hotspots" of aquatic insect production and emergence production. As such, we are now examining adult insect emergence from weirs and responses of insectivorous birds in an attempt to document landscape-level biological responses.

KEYWORDS: invertebrate, stream, restoration

ROOM: Rendezvous

TIME: Monday 2:00 PM

TITLE: Kickapoo Creek stream restoration project in central Illinois: national NPS monitoring program

AUTHOR(S):

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ABSTRACT: A stream restoration project on Kickapoo Creek, east of Bloomington-Normal in Central, Illinois was originally conceived in 2005. The project evolved into a final design that was approved in 2008. The first phase of the project was implemented during the summer of 2008 with a diverse source of funding from a group of developers, City of Bloomington, USEPA, and U.S. Fish and Wildlife Service. Upon completion, the project will remeander nearly two miles of stream channel and create several acres of wetlands. The naturalized stream corridor will be encompassed in an 80-acre park that will be owned and managed by the Bloomington Parks and Recreation Department, demonstrating unique approaches to stream conservation for urbanizing areas. Kickapoo Creek is a high quality stream of the Sangamon River basin, attaining "Biologically Significant Stream" (BSS) status and supporting populations of several "Species in Greatest Need of Conservation" for the state of Illinois. Several agencies recognized the magnitude and significance of this project and the opportunities it provided early in its development and are currently providing various forms of support for the project. After obtaining section 319 funding from the EPA, a monitoring program was developed and implemented under the National NPS Monitoring Program. A cooperative among several agencies is monitoring multiple aspects of the project through its development and post-implementation stages. Monitored parameters include water quality, hydrology, aquatic habitat, macroinvertebrates, fisheries, and floral quality. Details of this cooperative effort and preliminary data for the project will be presented.

KEYWORDS: stream, restoration, Illinois

ROOM: Rendezvous

TIME: Monday 2:20 PM

TITLE: In theory and in practice – a natural resource damage assessment restoration project monitoring program

AUTHOR(S):

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ABSTRACT: A monitoring program for determining success of restoration efforts is a suggested component of Natural Resource Damage Assessment restoration plans under the 1990 Oil and Pollution Act (NOAA 1996). The National Ocean Atmospheric Administration Restoration Center suggests that monitoring provides an evaluation process in which we can learn from our successes or correct our failures, making a monitoring program an essential component of restoration (Gayaldo 2005). The Illinois Natural Resource Trustees are currently involved in several NRDA restoration projects. A theoretical monitoring program was developed to monitor the success or need for corrective action of the restoration projects. The monitoring program includes the following steps: 1) selection of goals and objectives, 2) selection of hypotheses, 3) selection of performance criteria, 4) selection of a monitoring framework, 5) selection of ecological attributes to monitor, 6) implementation of Before/After sampling methods, 7) data collection and management decisions, 8) adaptive management decisions, 9) collaboration with restoration partners and practitioners, and 10) government accountability. The final design of the monitoring program was implemented at a case study site. This presentation will include an overview of how the monitoring program is working in practice, the lessons learned to date, and some thoughts of how the program will be utilized in the future.

KEYWORDS: NRDA, restoration, monitoring

ROOM: Rendezvous

TIME: Monday 2:40 PM

TITLE: Stream restoration: a reassessment opportunity and need

AUTHOR(S):

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ABSTRACT: To facilitate surface coal mining in southern Illinois during the late 1970s-1980s, temporary diversion and eventually restoration of perennial streams was required. Illinois first stream restorations incorporated geomorphologic and ecological designs during construction to enhance function and values of lotic and riparian habitats. IDNRs Land Reclamation Division required (Federal Surface Mining Control and Reclamation Act of 1977 (PL 95-87) pre-disturbance stream restoration designs as well as post-disturbance monitoring of physical, chemical, and biological components of the stream community. IDNRs Stream Restoration Committee reviewed plans and provided technical input to ensure compliance with regulations and maximization of habitat enhancement opportunities. The Cooperative Wildlife Research Laboratory-SIUC (CWRL) initiated stream restoration research in the early 1980s to evaluate restoration practices. CWRL, IDNR, and private biologists assessed 7 miles of diversions and 16 miles of restorations in a 40 square mile mining complex in Perry County during 1981 to 1994. These early pre and post restoration investigations provide a valuable benchmark to evaluate long-term geomorphologic and biologic recovery processes in previously restored streams, despite their short 5 year post construction monitoring. This presentation will highlight the extent, distribution, and establishment practices of stream restorations initiated >25 years ago. Reassessments of these Illinois streams that have undergone 10 to 20 years of geomorphological adjustment and biological recovery is needed to provide guidance for future stream restoration.

KEYWORDS: stream, restoration, mining

ROOM: Rendezvous

TIME: Monday 3:40 PM

TITLE: Biological and habitat development of a restored stream channel in northeast Indiana

AUTHOR(S):

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ABSTRACT: Approximately 580 feet of Concorde Creek in Steuben County, Indiana was restored in October 2008 by relocating the stream to its historic path. To complete the restoration of the first order stream, three earthen dams that were a part of a mill pond system were removed, a new channel was constructed, and the old channel was abandoned. The macroinvertebrate and fish communities were assessed twice during the 2009 summer using indices of biotic integrity (IBI) calibrated for the region and compared to data collected prior to the restoration and a reference reach upstream after restoration. Habitat was also assessed using the Ohio EPA Qualitative Habitat Evaluation Index (QHEI). Within one year of restoration, the macroinvertebrate community was similar to or exceeded other reference reaches within the Concorde Creek system. The fish community had an IBI score of 44 and was classified as "fair" while a reference reach upstream scored 32 and was classified as "poor". QHEI scores within the restored reach averaged 52.5 while the reference reach upstream had a QHEI score of 47. The restored reach has limited instream cover and poor pool/riffle development. As the channel evolves, habitat quality should increase due to natural processes such as stream side vegetation development and the recruitment of large woody debris. The fish community of the restored reach may be initially limited by local habitat quality. However, a short drainage (1.3 miles) may limit the long term potential of the fish community in the restored reach.

KEYWORDS: restoration, channel, Indiana

ROOM: Rendezvous

TIME: Monday 4:00 PM

TITLE: Evaluating stream restoration practices with limited resources: is some data better than none?

AUTHOR(S):

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ABSTRACT: Resources managers are often responsible for the funding, design, and implementation of instream restoration practices. However, due to time and resources constraints (i.e. still having to do your normal job), evaluating biological response to the project often goes begging. Comprehensive evaluation studies can be time consuming, expensive, and require multiple years of pre and post project data. In lieu of a full blown evaluation study, managers may be faced with basically doing whatever they can to demonstrate some level of response. Are these studies worthwhile? We will present evaluation of response to three dam removal studies which were done on a shoe string and discuss the value of these minimal evaluations. In all three cases we conclude that some data was in fact better than none, and provided credible information which lends some weight to discussions regarding success of the project. However, the caveat is that measuring biological response resulting from dam removals, especially in the upstream area, is easier than determining the response to many other instream practices.

KEYWORDS: stream, restoration, evaluation