Date: Thurs Time: 3:35-5:00pm Session: Ecology
Moderator: Mateo Scoggins Note-taker: Liz Johnston
Notes From Discussion:

1. George Guillen: The influence of urban stream syndrome on freshwater fish stream communities: Implications for restoration.
    - Stream restoration goals: water quality, in stream habitat, biological integrity, urban fisheries.
    - Fish Habitat: What Fish Need. Flower water or ponds? Enough water or safe passage? Thermal refugia? Instream habitat? Food supply?
    - Stream morphology versus species guilds. Fluvial specialist fish need riffles, for example.
    - Hydrology. Urban streams have altered hydrology. Wrong levels of pulses at wrong times, etc. No place for spawning, etc.
    - Hard to accomplish restoration goals if the hydrology isn't there.
    - No place for fish to rest in a straight channel. Need pools, point bars, riffles, glides/runs, etc. Diversity of habitat creates diversity of fish species.
    - Introduced species populations can explode in urban environments.
    - Woody debris necessary for stream health and has direct effect on holding capacity. Removal will prevent successful restoration of the system.
    - Fish passage is big issue due to fragmented systems with reservoirs.
    - Base flows in Houston – higher due to wastewater effluent. Can't get nutrients out of system. Algal blooms.
    - Use indicator species for water quality.
    - Comprehensive restoration and monitoring.
2. Kyle Wright: Healthy Landscape and the soils they rest upon promote healthy stream and clean water.
    - Experience with farmers and agricultural areas.
    - We're on the same page and facing the same issues. Might be calling the work different things.
    - What is healthy? Beautiful does not equal healthy.
    - What do we value? Clean water, fish, natural scenic beauty, recreation, wildlife habitat, abundant forage for livestock, reliable water source?
    - Are we treating problems or symptoms of a problem? Problems we fix are often symptoms of what's happening elsewhere (upstream). Fixing a cut bank may be putting on a band aid of another, bigger problem.
    - Fixing the problem may cause more problems. Example: armoring one bank will speed erosion on downstream opposite bank.
    - Dynamics of a stable stream. Lateral migration and erosion do not necessarily indicate instability. Stream movement does not necessarily mean a problem is evident. Streams are dynamic.
    - Change in one variable causes adjustments in another.
    - Healthy soils are foundation of healthy ecosystems.

- It's complicated: Environment is one large, interconnected system. Address problems on watershed scale, not local scale.

3. Casey Williams: A Preliminary Plan for Riparian Restoration to Complement Habitat Improvement for the endangered Fountain Darter (Etheostoma fonticola).
    - No show.
4. Discussion:
    - Q: Not a lot of regulatory force to implement BMPs with landowners. A: K Wright – Promote bmps as much as possible, but right now participation is voluntary. About 20-25% buy-in to various federal programs. Sometimes a band aid is all we can do. Outreach is critical to solve overall problems.
    - Q: Important to use existing research instead of seat-of-pants projects. A: G Guillen – always going to be some "seat-of-pants" projects, but can use validation monitoring to document projects. Very little monitoring out there. A: K Wright – budget constraints in Federal Gov't means that you have to prove everything. Agencies are starting to do research projects. Do the projects cause improvements in the water quality. Five-six years before will see results. Might be able to prove individual projects.
    - Q: How to get onto land to do edge-of-field monitoring if working for a regulatory agency? A: K Wright - NRCS is non-regulatory and has an excellent relationship with landowners because not a regulatory agency? A: G Guillen – depends on person-to-person contact. Not always possible.
    - Q: Any opportunity to do validation monitoring on fish after restoration projects? A: G Guillen: Would love to be able to do so.
    - Q: What is your main message? A: G Guillen – if you are going to do restoration you need to know how the overall system works, not just the individual species you are studying. A: K Wright – Education about the complexity of the situation. We won't ever have it figured out completely. Environment is so complex, we don't always know everything. Plan that you probably messed up and be ready to document how. A: G Guillen – Reluctance to explore mistakes when there is a lot of money on the line.
    - Q: Because there is so much money involved, it's more important to do the validation step. A: M Scoggins – already pretty well established.
    - Q: Are there research gaps out there? A: G Guillen - Difficult for anyone to put themselves out there and no one wants to be the one to make an obvious mistake. Therefore innovation is difficult. Too much fear. A: K Wright – Bacteria research. Do restoration projects affect bacterial communities positively/negatively.
    - Q: Basic research versus applied research. People doing basic research should consider implications of applied research and vice versa. Proposals need basic literature reviews before projects are implemented to inform design.
    - Q: Limited pathways to get into this work for graduate students. Requires years of experience. How do we prevent experience gaps as people retire. A: M Scoggins – CoA hires interns. Some people work for free if there are no jobs available. A: G Guillen – start off as undergraduate, find internships, may not be paid, get grants, networking.

Pay your dues. A: K Wright – NCRS is full of people about to retire. Experience gap is a huge issue in some places. Took jobs that are foot-in-the door jobs. Flexibility and willing to relocate.

- Q: Applied versus basic research…Get people to step out of comfort zones. Think outside the box or look at the system wholistically. A: G Guillen – academia and scientific research can often prevent interdisciplinary projects.