Joe Buckwalter 12/3/2014

Interview of stream habitat management specialist

I interviewed Seth Coffman (Trout Unlimited) by phone on November 26, 2014. With Seth's permission, I recorded the entire 65-minute conversation using Google Voice. Seth's responses to the following questions are summarized and paraphrased.

Background

1. What is your current position and major duties?

Position: Program Manager for Trout Unlimited's (TU) Shenandoah Headwaters Home Rivers Initiative.
Major duties: Coordinate and facilitate coldwater stream restoration projects in the Shenandoah Valley, with emphasis on brook trout habitat restoration; Identify limiting factors for brook trout and implement habitat restoration techniques to address those limiting factors; Assist private land owners in finding funds.

2. How did you get started in stream restoration, academically and professionally, and what were some major milestones in your stream-restoration career?

Education: 2002.–B.S. in Fisheries Science from Virginia Tech.
2005.–M.S. in Biology from JMU. Advisor: Mark Hudy (USFS). Developed a coarse filter to identify impassable culverts on USFS lands.

Experience: Gained initial experience in habitat monitoring and measurements for coldwater streams through summer employment with USFS-CATT while an undergrad at Virginia Tech. After earning his MS, Seth went back to work full time at USFS-CATT in Blacksburg for a couple years. Then he was hired by the Potomac Conservancy (Winchester) where he worked on land protection through conservation easements. In December 2008 Seth started his current position with TU.

3. Which aspects or sub-disciplines of stream restoration have you been most involved in?

Planning and implementing coldwater stream restoration projects involving in-stream habitat enhancement, pre-post monitoring, riparian buffers, cattle exclusion. Another staff person does NCD designs.

Mossy Creek restoration

4. Who was involved in the key steps of this restoration?

a. identifying restoration needs and objectives

Seth was the coordinator. He used data from the Eastern Brook Trout Joint Venture (EBTJV) assessment (2005) to identify watersheds for protection and enhancement of extirpated streams, which led to a focus on spring creeks in the Shenandoah Valley (e.g., Mossy and Beaver creeks). A TMDL for Mossy Creek identified sedimentation as a limiting factor. Seth walked the stream and spoke with other TU chapter volunteers and members to identify reaches with erosion problems. A land owner concerned about loss of property requested assistance with funding to fix the erosion problem. Seth did the fund raising and grant writing.

b. selecting techniques and evaluating alternatives

Seth, in partnership with the USFWS Chesapeake Bay Field Office.

c. project design

The USFWS Chesapeake Bay Field Office.

d. monitoring

Annual monitoring of restored stream channel dimensions and in-stream structures is done primarily by Seth. A baseline survey of fish species occurrence was conducted with VDGIF staff prior to restoration, and the trout population is monitored informally through communication with fishermen and occasional electrofishing to see if trout are reproducing.

5. What problems were identified here at Mossy Creek?

Mossy Creek has a TMDL for excessive sediment. The stream was lacking a riparian buffer and had unstable, incised and eroding stream banks. About 2000 ft of stream banks were contributing 140 tons of sediment per year.

6. What root causes were those problems attributed to, and what was the scale of the altered processes?

The stream had been impounded by a dam for ~150 years. After the impoundment was drained in the 1940s, the channel began to incise. The banks were also destabilized by riparian deforestation and overgrazing.

7. What was the goal and objectives for restoration?

The ultimate goal is to reestablish brook trout in the watershed, but that is a long-term goal. The goal for this project was to begin restoring and increasing some habitat components for trout at a reach scale. Objectives: To improve bank stability and reduce sedimentation.

8. Which restoration techniques were applied?

Natural Channel Design; reduce bank angle; create floodplain shelf; in-stream structures to protect banks and create pools (log-rock J-hooks, log cross veins, toe wood); establish a riparian buffer with native plants, willow stakes and native trees and shrubs; cattle exclusion.

9. What types of monitoring have been done (e.g., baseline, compliance, effectiveness, biological)?

3 years of post-monitoring (so far) of restored channel and in-stream structures. Monitoring will continue. Monitoring bank stability using EPA BEHI protocols. Surveyed longitudinal profile and transects (6) before and after restoration (every year). Pebble counts. Walk the creek to see how structures are performing. Waiting for a big storm event to see if sediment is deposited from bed onto reconnected floodplain (see www.spoutrun.org, series of videos about the project).

Eastern Brook trout

10. I've seen a Conservation Success Index (CSI) map produced by TU in 2007 that shows subwatersheds of the Eastern U.S. prioritized for protection and restoration of brook trout. Is the CSI still being used to prioritize brook trout restoration projects?

TU just redid the CSI for the Mid-Atlantic region with emphasis on watersheds overlaying Marcellus Shale deposits. The CSI can be used to prioritize watersheds for brook trout restoration. But, at the watershed scale, Seth is familiar with coldwater resources in the Shenandoah basin based on comprehensive brook trout distribution info from VDGIF (which was used to create the CSI), and from growing up in the area. At the reach scale, Seth relies mostly on local data and field info and connections with willing land owners to identify reaches for restoration. Of the many extirpated streams identified by the CSI, TU decided to target spring creeks because they have cold water and are resilient to climate change.

11. In prioritizing brook trout projects, has there been more emphasis on protecting healthy watersheds or restoring degraded watersheds? Any examples?

Overall, less effort is targeted on protecting healthy watersheds because most of them are located on protected lands (national parks and forests) where there are fewer threats. The Shenandoah National Park emphasizes air quality to reduce acid deposition. In national forests, it is important to keep pipelines, drilling, and road construction away from healthy brook trout streams. This is addressed in forest plans (e.g., 100-ft buffers, restricted timber harvest, keep roads out of floodplain). For healthy streams on private lands, TU seeks permanent land protection through conservation easements. Maintaining connectivity with downstream habitats is also emphasized. For example, when a flood washes out culverts on trout streams, TU makes recommendations via VDGIF to the USACOE and VDOT on what type of crossings to install. The US Forest Service has done a good job replacing impassible culverts on national forest lands.

Fish passage

Several studies in the VA and WV mountains have shown that the majority of culverts are impassable, even to moderate to strong swimmers (Coffman et al. 2005 USFS, Poplar-Jeffers et al. 2009 Rest. Ecol.), and there is evidence that impassable culverts can reduce upstream species richness and diversity by half (e.g., Nislow et al. 2011 FW Biol).

12. In your experience, to what extent do regulations and culvert design standards in Virginia ensure that newly installed culverts provide upstream passage for fish and other aquatic species?

USFS is well aware of aquatic organism passage (AOP) and is doing a good job replacing impassible culverts. VDOT designs more for water and sediment transport than fish passage. In some cases, TU has offered to help offset the increased cost of installing bottomless arch culverts.

13. Is fixing impassable culverts for passage of non-anadromous fish and other aquatic species high on anyone's agenda? (e.g., VDOT, VDGIF, or TU)

Fish passage is on TU's agenda, but, at least in the Shenandoah watershed, most brook trout streams are on USFS lands, where fish passage is already being addressed appropriately.

Stream restoration

14. What kinds of stream-restoration projects are getting funded in VA, and by whom?

TU projects in the Shenandoah Valley have been funded by: National Fish and Wildlife Foundation; VDEQ Water-Quality Improvement Fund; EBTJV; USFS Forest Stand funds;

VDGIF; Wildlife Conservation Society Climate Change Adaptation grant; Chesapeake Bay Stewardship Fund (from VA license plate proceeds), Chesapeake Bay Trust, private foundations.

15. Who identifies and prioritizes restoration needs for TU in VA? How does that process work?

Seth, in consultation with other TU staff and partners (e.g., USFS), sets TU's priorities for stream restoration work in Virginia.

16. In your experience, to what extent is the field of stream restoration transitioning from opportunistic to strategic restoration?

TU has always been strategic in targeting specific coldwater watersheds and reaches, but specific projects also depend on landowner participation (opportunistic).

Jobs

17. Who hires stream-habitat managers or restoration practitioners in the Eastern U.S.?

Non-profits such as TU and TNC; Chesapeake Bay Foundation; VDGIF; VDEQ; USFS Region 9; USFWS Chesapeake Bay Field Office; private consulting firms (mitigation, working with municipalities); local governments in Chesapeake Bay watershed.

18. Are there entry-level jobs in stream restoration?

A lot of consulting firms require a couple years of experience doing stream restoration, but may also have entry-level positions for someone with some training or related experience. Many practitioners start their career as a fisheries biologist then later move into restoration. A large office with multiple stream-restoration staff members (e.g., USFWS Chesapeake Bay Field office) may hire someone with less experience because they have senior staff to provide mentoring.

19. What are some core skills for a stream-restoration practitioner?

Stream surveys with rod & level or total station; understanding of hydraulics, sediment transport, monitoring & measuring streams; working with contractors (bid documents, etc.). Understanding of fish habitat is helpful but not necessary. Willingness to learn new techniques, learn from monitoring results. Relating to land owners and building personal relationships are also key.

20. How does a novice gain relevant experience and training in stream restoration?

Rosgen's trainings, university programs (NC State, Oregon).