Dam Removal

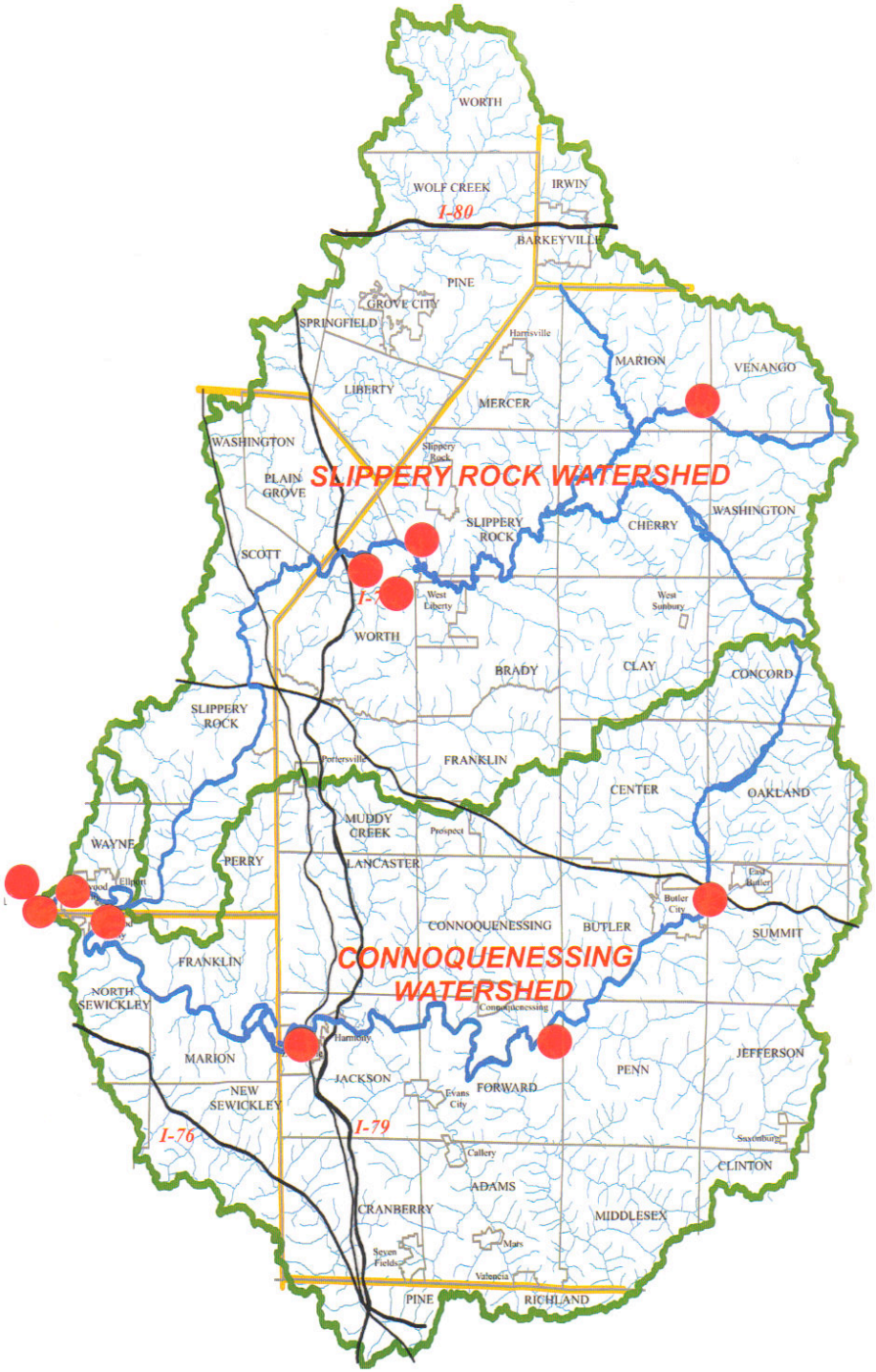
A Tool for Achieving Multiple Conservation Goals

Wild Waterways Conservancy, Inc.

Wild Waterways Conservancy

- Protects lands in vicinity of Moraine and McConnell's Mill State Parks
- Slippery Rock Creek, Connoquenessing Creek watersheds in Beaver, Butler and Lawrence Counties in western Pennsylvania

Connie and Slippery Rock Watersheds



- Population by watershed
  - Connoquenessing – 155,304
  - Slippery Rock – 47,036
- Total stream length
  - Connoquenessing – 849 miles
  - Slippery Rock – 773 miles
- Acreage by watershed
  - Connoquenessing – 275,682
  - Slippery Rock – 261,817
- Total floodplain Acreage
  - Connoquenessing —18,221
  - Slippery Rock – 15,833

Pennsylvania’s Wild Treasures

- Some of the State’s finest wild resources exist in the area near Moraine and McConnell's Mill State Parks

Why Protect Wild Resources?

- Some obvious reasons: natural areas add value through recreation, which has economic and societal benefits
  - Canoe and Kayaking
  - Hiking
  - Birding
  - Fishing
  - Hunting

Why Else?

- They sequester carbon
  - Carbon monitoring at the Harvard Forest show that mid-latitude forests, like ours, are reducing the global increase in carbon by more than 10%
  - "Leaf-out" in the Northeast produces measurable carbon reduction as far away as Hawaii.
- They favor biodiversity
  - Multiple benefits too numerous for today's discussion
- In short, there are many good reasons to protect wild resources, but what methodology works?

Wildlands and Woodlands

- A methodology for conservation
- Two-pronged approach
  - Large tracts—Wildlands—kept as untouched as possible
  - The rest of the protected forests—Woodlands—connect to and enhance Wildlands.

Wildlands

- Drawn from land already set aside
- Ecologically vibrant
- Core forests
- State and Federal areas publicly owned
- Rigorously protected from all development
- Lowest impact use only

Woodlands

- Connect to and enhance Wildlands
- Facilitate movement of animals
- Allow propagation of plants
- Improves forests' carbon sequestering
- Managed in an ecologically sustainable manner to allow higher impact uses, i.e., controlled logging, hunting, horseback riding, etc.
- Privately owned, protected by easements

Moraine and McConnell's Mill

- West-central Pa.'s Wildlands
  - Lake Arthur flows into Muddy Creek
  - Which flows into the Slippery Rock creek, creating Slippery Rock Gorge at McConnell's Mill,
  - Which flows into the Connie near Ellwood City
  - Which flows through Harmony, Pa., and into the Beaver River
  - Which flows into the Ohio

Slippery Rock Creek

- Threatened by open-pit gravel mining

Connoquenessing Creek

- Threatened by Pittsburgh exurb growth
  - Southern Butler County is the fastest growing area in the State
  - Once considered one of the state's most polluted waterways

What Protection Tools Are Available for These Two Streams?

- Acquisition
  - Not feasible for large-scale protection
  - Too many small fragmented ownerships
- Easement
  - Probably best way to protect larger areas, but
    - Smaller parcels make easements complicated
    - Land owners not comfortable with process
- Special Conservation Projects
  - AMD remediation
  - Conservation Plans
  - Environmental science projects, i.e., inventories surveys, studies, etc.
  - Dam Removal

Dam Removal
A Powerful Strategic Tool

- For a small land trust or conservation organization, removing a defunct dam can be an opportunity to achieve multiple conservation goals and move forward with other organizational objectives at the same time.

Our Project:
The Harmony Junction Dam

Dam Removal Projects

- Improve Stream and Environment Health
- Benefit the Community
- Increase Environmental Awareness
- Build Relationships

Improve Stream and Environment Health

- *Problems Caused Both Upstream and Downstream of the Dam*
  - Constant water level prevents sediment from consolidating, turning banks mucky.
  - Dissolved oxygen may fall, harming fish and shellfish.
  - Water may warm, injuring or killing fish that need colder water.

Improve Stream and Environment Health

- *Problems Caused Upstream of the Dam:*
  - Wildlife habitat is flooded.
  - Fish are blocked from migrating and spawning.
  - Silt in the dam impoundment can damage or destroy fish spawning grounds.

Improve Stream and Environment Health

- *Problems Caused Downstream of the Dam:*
  - By regulating river flow, the dam destroys habitat for organisms adapted to rising and falling water.
  - The dam blocks sediment flow, causing many changes downstream:
    - The downstream river bottom becomes rockier, as sediment no longer fills gaps between larger stones.
    - By blocking sediment flow, the dam deprives wetlands of sediment.

Benefits the Community

- Restoration of riverine habitat and ecology;
  - Provision of unrestricted passage for fish and other aquatic organisms (over 15 miles of main-stem Connoquenessing Creek will open for upstream passage following the dam removal as well as access to nearby major tributaries);
  - Support for the Pennsylvania Fish and Boat Commission's Fisheries Management Plan for this reach of the Connoquenessing; and
- Elimination of public safety hazards and sources of localized flooding.
  - A surveyor hired by Wild Waterways determined that the existing structure is backing up water for a distance of 2.25 miles at approximate normal pool. The inescapable conclusion is that the dam has exacerbated flooding.

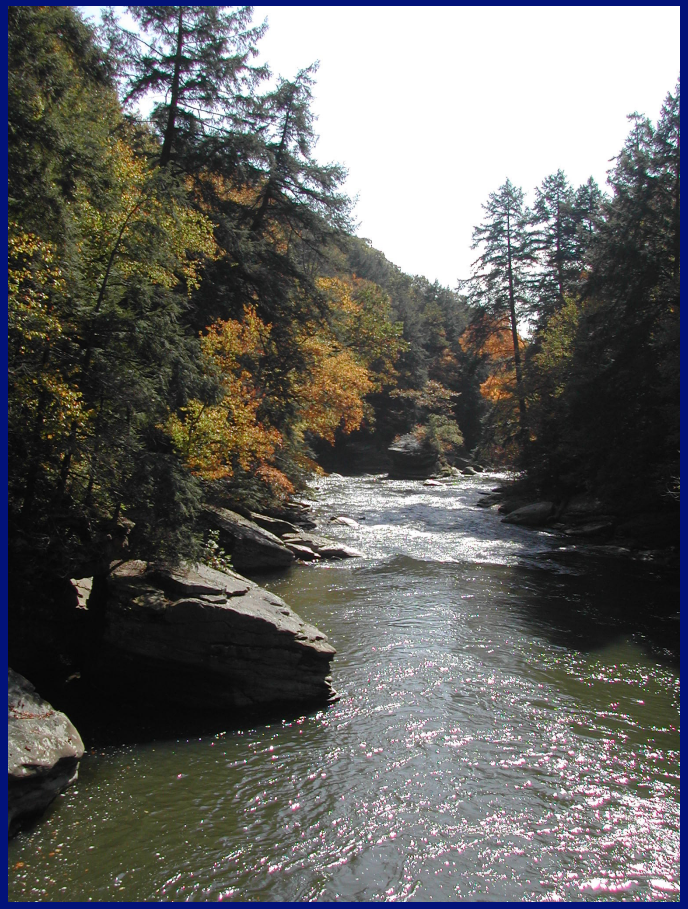
Increase Awareness

- Media is very interested in dam removal projects!
  - Opportunity for multiple messaging
  - Provides a focus to mobilize community leaders and stakeholders.
  - Increase conservancy's visibility to funders and public officials as well as citizens
- Citizens are more likely to protect what they know and cherish

Build Relationships

- Use a Dam Removal Project to attract new potential partners, funders, constituents, and stakeholders.
  - Media
  - Foundations
  - Governmental Agencies
  - Corporations
  - Outdoor enthusiasts/clubs
  - Local residents, influential individuals, community leaders

Relationships Being Built!

In Conclusion

- Dam Removal projects are <u>powerful tools</u> for a small land trust or conservancy
  - Improve Stream and Environment Health
  - Benefit the Community
  - Increase Environmental Awareness
  - Build Relationships