

Characterizing Seepage Wetlands in Pennsylvania

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Pennsylvania Natural Heritage Program

PA Natural Heritage Program

Gathers and provides information on the location and status of important plants, animals, natural communities and geologic features to inform environmental and conservation decisions



In Cooperation With



www.naturalheritage.state.pa.us

Aquatic Resources Work in Pennsylvania

- PNHP has been involved in a variety of wetland focused projects over the last 25 plus years.
 - Assessment and monitoring
 - Long-term monitoring
 - Aquatic organism passage
 - Wetland assessments
 - Restoration related tools and active restoration
 - Vernal pools creation and restoration
 - Process based restoration of streams
 - Predictive plant tool
 - Classification and characterization
 - Floodplains
 - Vernal pools
 - **Seepage wetlands (aka seeps)**



What are seeps?

- Miniature wetlands
- Small in size (< 0.5 acres)
- Groundwater fed
- Extended hydrology
- Occur in a variety of settings
- **Vegetation differs compared to surrounding landscape**





Importance of seeps

- Biological islands in the forest (Morley and Calhoun 2009)
- Support a greater diversity of plants compared to surrounding forest
- Provide habitat for aquatic and semi-aquatic insects, amphibians, and crustaceans
- Used by birds and mammals
- Water source/constant aquatic environment during winter months
- Serve valuable ecosystem functions



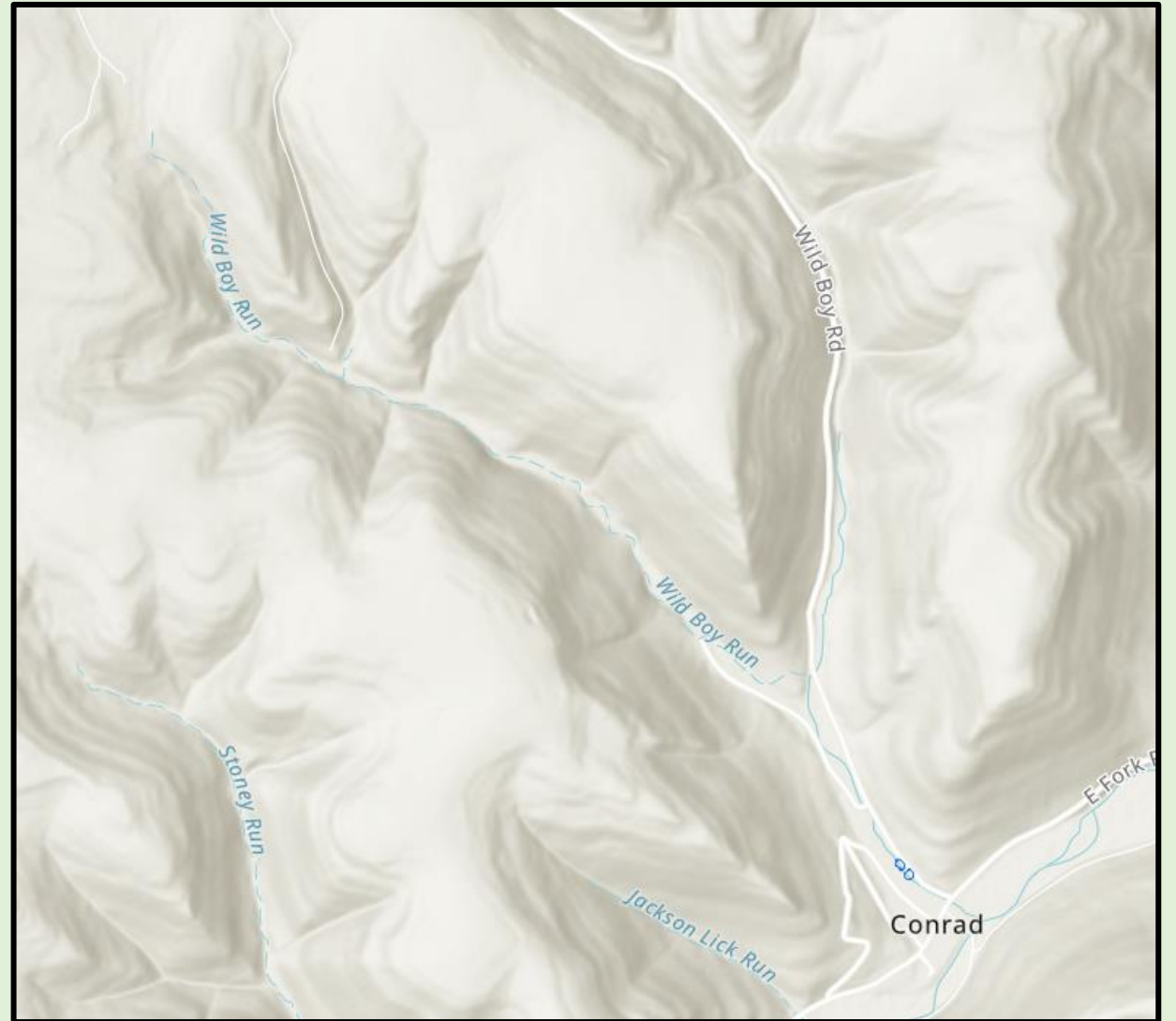
Threats to seeps

- Activities that affect groundwater like extraction and development
- Land-disturbing activities like logging and development
- Recreation
- Invasive species



Knowledge gaps

- Abundance and distribution unknown
- Poorly mapped due to size
- May be difficult to see on aerial imagery



Characterization of seeps

- Focus on vegetation associated with seeps
- Other states, like MD and VT, have developed plant community descriptions to characterize seeps
- Prior Pennsylvania classification work focused on calcareous and circumneutral seepage wetlands
 - Six of seepage wetland communities described

A STUDY OF SEEPAGE WETLANDS IN PENNSYLVANIA

Report To:

The United States Environmental Protection Agency
and
The Pennsylvania Department of Conservation and Natural Resources
Bureau of Forestry
Forestry Advisory Services

Submitted By:

The Western Pennsylvania Conservancy
209 Fourth Avenue
Pittsburgh, Pennsylvania

and

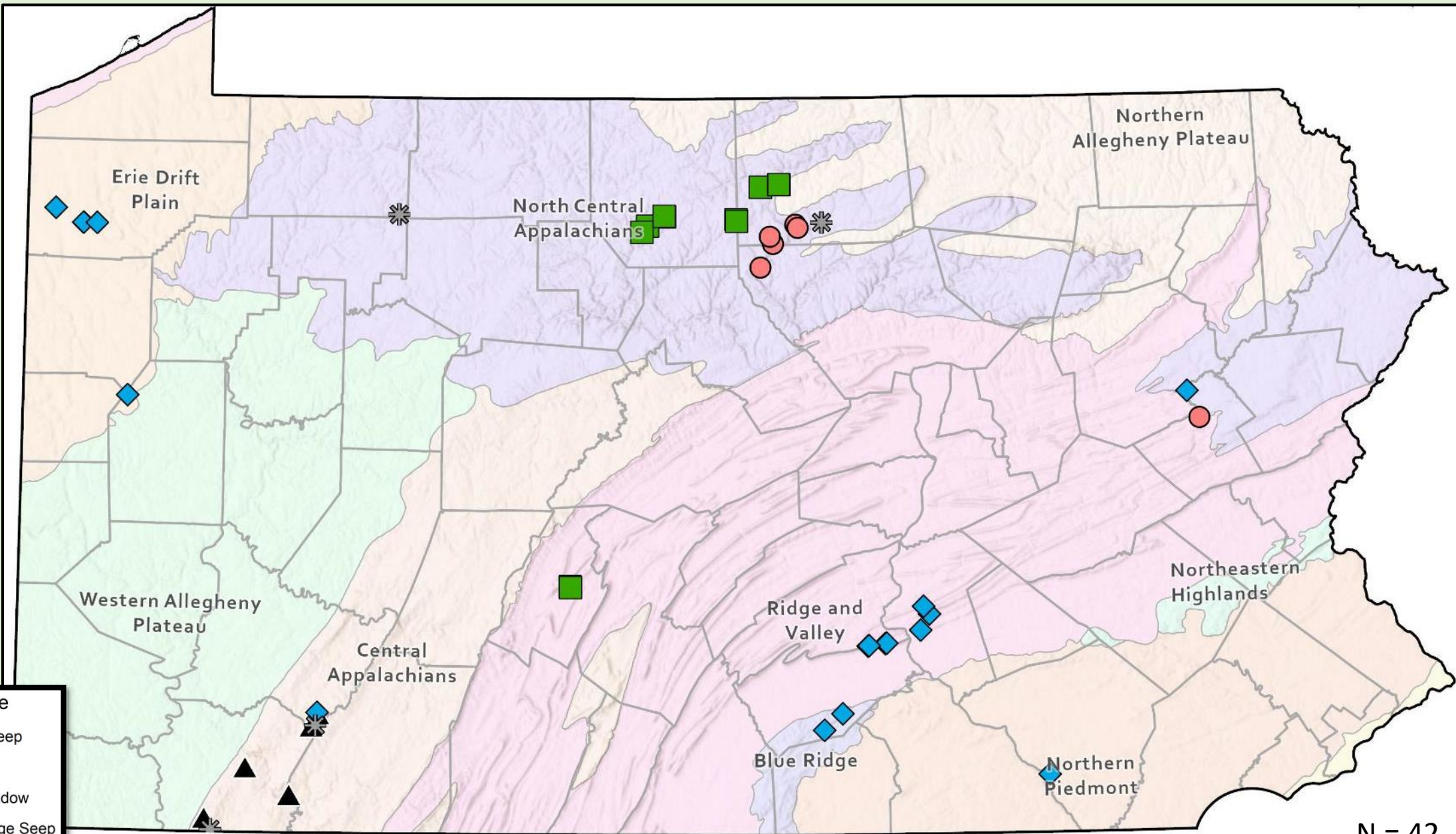
The Nature Conservancy
Pennsylvania Science Office
34 Airport Road
Middletown, Pennsylvania

30 March 1998

Seeps characterization project

- Current project focused on seeps in areas with acidic bedrock
- Several methods used to locate sites
- Standard Natural Heritage Methodology used to document plant species and environmental characteristics
- Condition assessments completed using EIA Level 1 and stressor checklist





Community Type

- ▲ Spring Run Seep
- Vertical Seep
- Seepage Meadow
- ◆ Skunk Cabbage Seep
- * Unassigned

N = 42

Golden Saxifrage – Pennsylvania Bitter-cress Spring Run

- Generally located on lower forested slopes (in the Laurel Highlands)
- Channels form that drain into adjacent runs
- Sandy to sandy loam substrate
- Diagnostic species include golden saxifrage (*Chrysosplenium americanum*), lettuce saxifrage (*Saxifraga micranthidifolia*), and watercress (*Cardamine* sp.)
- Bryophytes present and cover may be high



Skunk-cabbage – Golden Saxifrage Seep

- Widely distributed across the state
- Found in a variety of settings
- Mucky substrate
- Trees and shrubs may grow in this community on elevated hummocks
- Skunk-cabbage (*Symplocarpus foetidus*) dominant along with a highly variable mix
- Bryophytes present but with a lesser cover

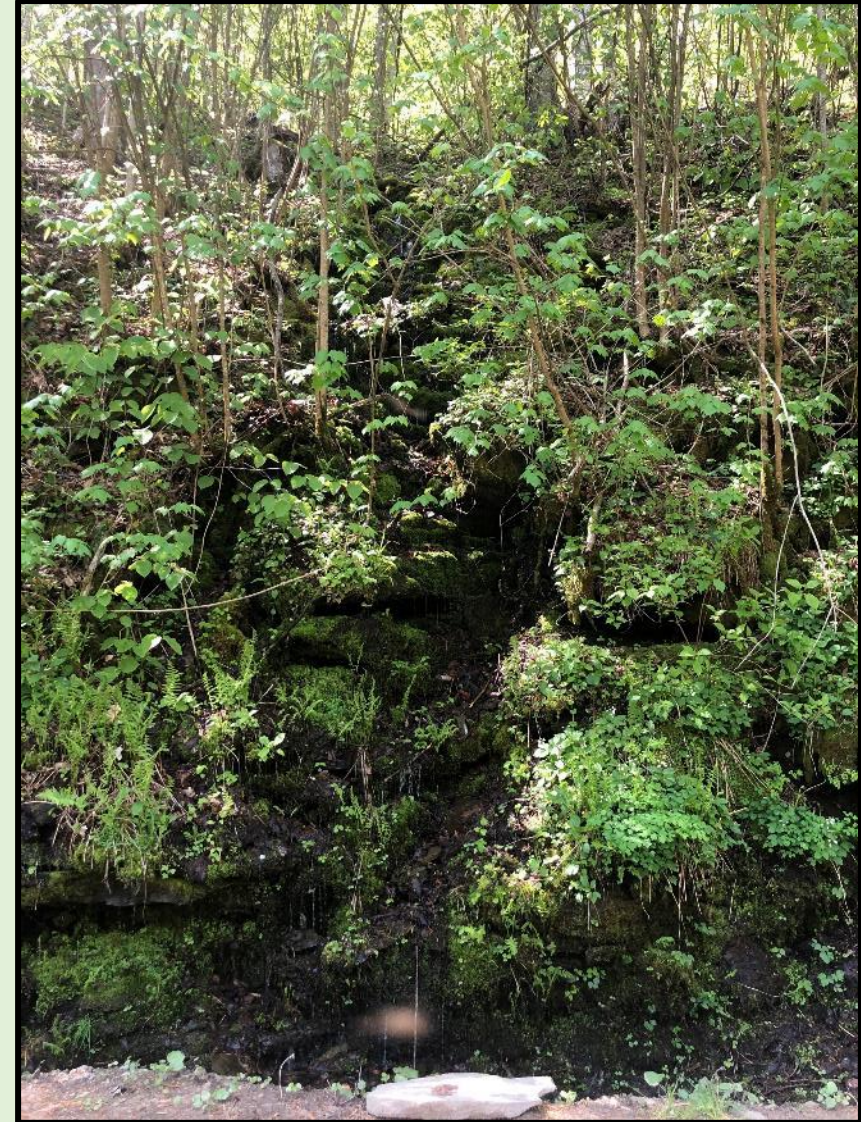
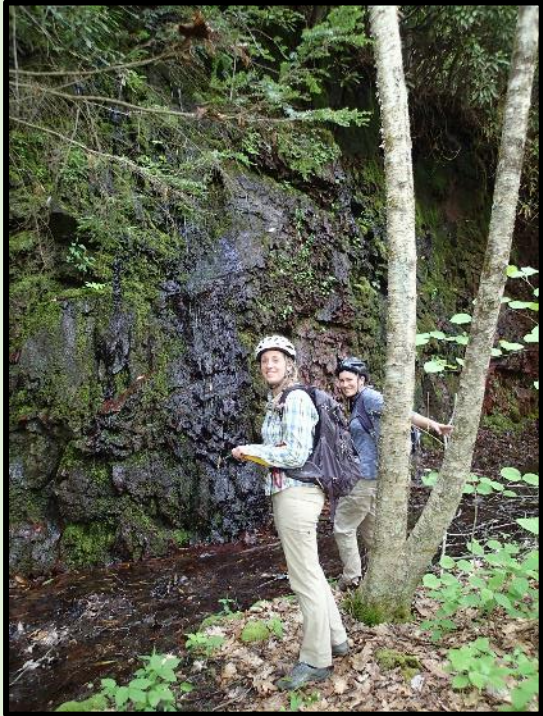


Seepage Meadow

- Located on forested slopes and the base of slopes on floodplain terraces
- Substrate mostly small pebbles with some soil accumulation
- Highly variable herbaceous assemblage
- Orange jewelweed (*Impatiens capensis*) and wood-nettle (*Laportea canadensis*) mostly dominant
- Scattered bryophyte layer
- Provisional type for Pennsylvania



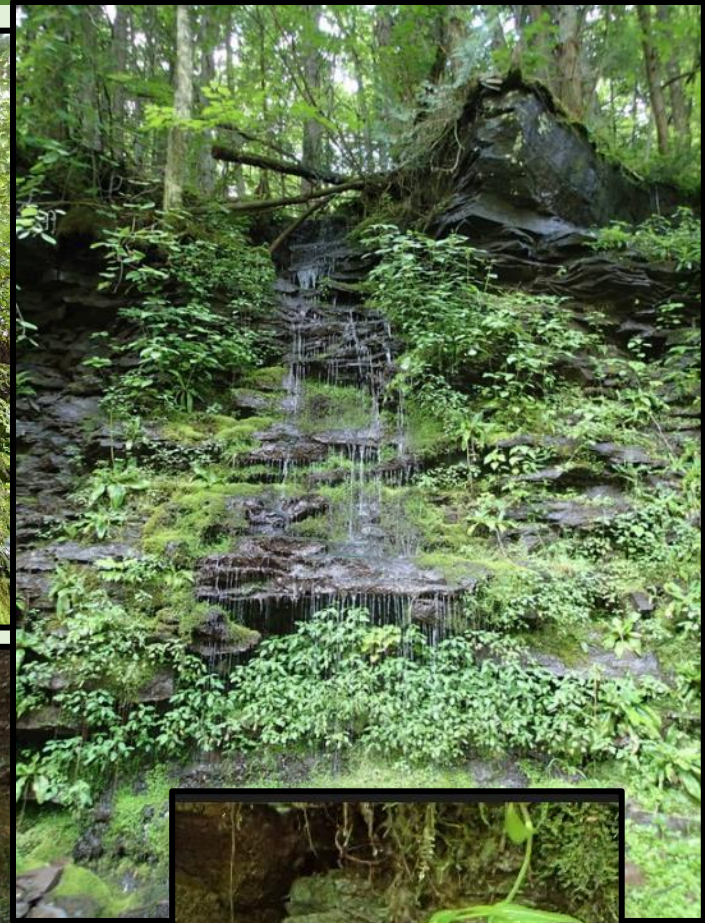
Vertical Seep



Wetted rock surfaces found in a variety of settings

Vertical Seep

- Associated with permanently wetted rock faces in a variety of settings
- Bryophyte cover may be extensive and can include uncommon species
- Vascular plants may be present as well
- A provisional type for Pennsylvania that requires more research



Conservation applications

- Bring awareness and increase our understanding of the importance of these wetland resources
- Seeps have vegetation signatures that can be used for on-the-ground identification
- A next step is sharing this information with resource managers



A photograph of a forest floor. In the foreground, there is a dense carpet of small, bright green plants. A large, fallen log is covered in thick, yellowish-green moss and runs horizontally across the middle ground. The background is filled with more greenery, including ferns and other forest plants, with some tree trunks visible. The overall scene is vibrant and lush.

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