Golden Saxifrage – Pennsylvania Bitter-cress Spring Run

System: Palustrine
Subsystem: Herbaceous
PA Ecological Group(s): Seepage Wetland

Global Rank: GNR
State Rank: S3S4

General Description

This community occurs in and immediately adjacent to springs. Springs are places where groundwater flows to the surface, and eventually coalesces into a channel of flowing water. Water flow is relatively constant and uniform in temperature. Golden saxifrage (*Chrysosplenium americanum*), Pennsylvania bittercress (*Cardamine pensylvanica*), and the exotic species watercress (*Nasturtium officinale*) are often the most dominant plant species. Other species may include horsetails (*Equisetum sp.*), lettuce saxifrage (*Saxifraga micranthidifolia*), mountain watercress (*Cardamine rotundifolia*), and spring cress (*Cardamine bulbosa*). There is often high cover of bryophytes (mosses and liverworts) in and around the spring.

Rank Justification

Uncommon but not rare; some cause for long-term concern due to declines or other factors.

Identification

- Presence of a spring (ground-water fed upwelling of water coalescing to form a channel)
- Vegetation surrounding the spring is dominated by golden saxifrage (*Chrysosplenium americanum*), Pennsylvania bittercress (*Cardamine pensylvanica*), and/or the exotic species watercress (*Nasturtium officinale*).

Characteristic Species

Herbs

- Golden saxifrage (*Chrysosplenium americanum*)
- Pennsylvania bittercress (*Cardamine pensylvanica*)
- Lettuce saxifrage (*Saxifraga micranthidifolia*)
- Mountain watercress (*Cardamine rotundifolia*)
- Bittercress (*Cardamine bulbosa*)

International Vegetation Classification Associations:

Golden-saxifrage Forested Seep (CEGL006193)

NatureServe Ecological Systems:

None

Origin of Concept

Fike, J. 1999. Terrestrial and palustrine plant communities of Pennsylvania. Pennsylvania Natural Diversity Inventory. Harrisburg, PA. 86 pp.

Pennsylvania Community Code

HS : Golden Saxifriage – Pennsylvania Bitter-Cress Spring Run

Similar Ecological Communities

Seep communities are differentiated from this spring run community because seepages are diffuse groundwater flow, while at a spring the groundwater flow coalesces into a recognizable channel. Generally the volume of springs is higher.

Fike Crosswalk

Golden Saxifrage – Pennsylvania Bitter-cress Spring Run

Conservation Value

The springs where the Golden Saxifrage – Pennsylvania Bittercress Spring Run community is found are valuable to aquatic habitat and water quality in-streams. Springs, which are fed by groundwater, are usually a source of clean water that flows at a relatively constant rate and temperature throughout the growing season. Springs help to maintain cool water temperatures, water quality, and constancy of flow in streams, which is valuable for aquatic ecosystems and human use.

Threats

The greatest threats to these communities are groundwater extraction and bedrock disruptions such as drilling or mining in nearby areas, which can contaminate or alter the flow patterns of the groundwater that feeds the seepage. Groundwater pollution can also occur from improperly installed septic systems, improperly lined underground waste disposal, and in agricultural areas, infiltration of pesticides, fertilizer, and bacteria from animal wastes. Removal of natural vegetation cover adjacent to the wetland can affect water levels and temperatures by increasing solar heating, surface run-off, and sedimentation. Invasive plant species can threaten the biological integrity of the community.

Management

Extraction, drilling, mining, or other activities that impact the bedrock or flow of groundwater should not be undertaken within half a mile of a spring run wetland without a thorough understanding of bedrock layers and groundwater flows. Groundwater flow patterns do not always mirror surface watersheds, and in some cases aquifers may be contiguous over large areas. Seepage wetlands are also sensitive to trampling and other physical disturbance from recreational activities; trails should be sited away from the wetland, or elevated structures employed to prevent traffic in the wetland. A natural buffer around the wetland should be maintained in order to minimize nutrient runoff, pollution, and sedimentation. The potential for soil erosion based on soil texture, condition of the adjacent vegetation (mature forests vs. clearcuts), and the topography of the surrounding area (i.e., degree of slope) should be considered when establishing buffers. The buffer size should be increased if soils are erodible, adjacent vegetation has been logged, and the topography is steep as such factors could contribute to increased sedimentation and nutrient pollution. Direct impacts and habitat alteration should be avoided (e.g., roads, trails, filling of wetlands) and low impact alternatives (e.g., elevated footpaths, boardwalks, bridges) should be utilized in situations where accessing the wetland cannot be avoided. Care should also be taken to control and prevent the spread of invasive species within the wetland. Alterations to groundwater sources should be minimized.

Research Needs

Groundwater flows are not well understood in many areas, and this information is very useful in managing seepage wetlands. Management may also be improved with a better understanding of natural successional pathways in these wetlands.

Trends

Specific information on the loss and degradation of springs is not available. Because springs generally provide a constant source of clean water, many have been developed for human use by the construction of a spring house or water spout. These modifications often result in vegetation removal, channelization or elimination of surface water flow.

Range Map

Pennsylvania Range

Statewide

Global Distribution

New Jersey, New York, and Pennsylvania

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