

In the Spotlight: *Appalachian Seep/Bog Communities of Pine Mountain*

In Kentucky, one of the most unique and rarest types of wetlands, the Appalachian seep/bog, is found along the crest of Pine Mountain (KSNPC-listed as state endangered). Similar Appalachian seep/bog communities also occur along ridges of the Cumberland Plateau and a few are found along alluvial bottoms of Appalachian streams in the Cumberland Mountains region, but these are slightly different wetlands and not the focus of this article. Outside of Kentucky, headwater mountain bog communities occur scattered along the summits of the Appalachian Mountains, with similar types found from West Virginia to Georgia. Limited in distribution and size and occurring under specific geology, soils and hydrology, most types of mountain bog (or fen) communities in the southern Appalachians are rare (see [NatureServe Explorer](#) online; NatureServe is the international authority on the status of rare species and natural communities).

Along the upper elevations of Pine Mountain, the Appalachian seep/bog is a small and distinctive type of wetland community that has saturated soils (usually year-round) with characteristic beds of wetland ferns, sedges, forbs and mosses (sometimes sphagnum moss). This community has a dense herbaceous ground layer with few trees or shrubs and is found just below the mountain crest (within small basins where a stream begins). These headwaters are poorly drained and saturated due to flat or minutely sloped topography with sluggish water movement. As a result, water can accumulate through precipitation, groundwater seepage and surface runoff. Groundwater and surface runoff supply low nutrient inputs, resulting in slight to moderately acidic soils that are typically weakly to moderately minerotrophic and weakly organic. If present, the midstory and shrub layer is usually sparse and can include red maple, giant rhododendron and sourwood. The ground layer is distinctive with good populations of cinnamon fern, jewelweed, rough-leaved goldenrod, broadleaf arrowhead, golden ragwort, caric sedges and often carpets of several moss species. Many of the plants occurring in the ground layer are restricted to high-quality wetlands in Kentucky.

The small, boggy openings along Pine

Mountain provide suitable habitat for unique wetland-dependent animals and plants that are limited in distribution in Kentucky. A few of the unique or rare plant species include American golden-saxifrage, Carolina bugbane, and kidneyleaf twayblade. Unique or rare animals include Appalachian brown butterflies, gray petaltail and tiger spiketail dragonflies, and upland burrowing crayfish (please see below for additional species in our species-highlight section). The Pine Mountain bogs are a Kentucky treasure, supporting one of the most sensitive wetland complexes in the state.

Many of these wetlands have endured a history of disturbance, but in many cases, their natural quality has suffered. Often early homesites were on or adjacent to these wetlands since they were relatively flat areas, natural openings in the forest and provided a dependable water source. A few of these historic homesites have been documented on [Blanton Forest State Nature Preserve](#). Mountain bogs have

also been disturbed by logging, which has detrimental effects causing soil erosion, hydrologic changes and invasion by exotic species. Today, another concern is how sensitive these wetlands are to much less intensive disturbances. Even bogs protected from developments and logging on public land can decline. Human trails (by either foot or ATV) and wildlife trails that lead to or through bogs (and any additional trampling activities) can easily transport exotic plants into the bog community. Recent surveys have shown Japanese stilt grass has invaded and displaced native wetland species in many of the bogs on the mountain. KSNPC recommends providing

the most careful protection to the remaining bogs on Pine Mountain as there are only a few handfuls remaining, some of these already degraded and all are extremely sensitive and very small (usually less than two acres). [Written by Brian Yahn, Vegetation Ecologist](#)

References

[KSNPC] Kentucky State Nature Preserves Commission. 2009. Natural communities of Kentucky. Working draft. Frankfort, Ky.

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Messina, M. and W. Conner. 1998. Southern Forested Wetlands. Ecology and Management. Lewis Publishers. Pp. 379-403.

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Appalachian seep/bog on Pine Mountain dominated by rough-leaved goldenrod (autumn).
~photo by Thomas G. Barnes



Eastern Red Damsel *Amphiagrion saucium*

KSNPC Status: Endangered

USFWS Status: None

General Description: Small damselfly with mostly red abdomen belonging to the family Coenagrionidae.

Habitat: Spring-fed bogs or pond margins, sometimes with a deep peat layer, or seeps with a scattering of *Sphagnum* and algae over sand.

Flight Season: May to September.

Range: Eastern Canada and United States.

Reason for Protection Status: Habitat has been degraded and is limited in Kentucky; only three extant populations are known in the state.



Photo by Ellis Lauder milk, KSNPC

Golden Club *Orontium aquaticum*

KSNPC Status: Threatened

USFWS Status: None

General Description: This aquatic plant has elliptic shaped leaves with parallel venation that narrows to a stout petiole with a dilated base; leaves are all basal. The flowers are in a spadix (an elongated axis with flowers embedded) and the flowers are yellow. The spathe is a tubular sheath surrounding the base of the spadix.

Habitat: Seeps and bogs in the mountains; swamps and shallow water on coastal plain; and the backside of cobble bars or stagnant water on edges of creeks in river gorges.

Flowering Period: Early April to late May.

Range: Massachusetts to Florida, west to central New York, southwestern Pennsylvania, eastern Kentucky, western Pennsylvania, and Louisiana.

Reason for Protection Status: Habitats have been degraded due to hydrologic changes and habitat destruction.



KSNPC Photo by Kurt Emmanuele, TNPS

Baltimore Checkerspot *Euphydryas phaeton*

KSNPC Status: Watch list

USFWS Status: None

General Description: One of our most brilliantly colored butterflies. Upperside of wings is predominantly black with red-orange crescents and creamy white spots. Underside of wings is more boldly patterned with larger red-orange and white crescents and spots intermixed with less black. Wingspan up to 2.75 inches.

Habitat: In Kentucky, the Baltimore checkerspot is typically found in bogs, seeps, wet ditches or marshes where its caterpillar food plant, turtlehead (*Chelone glabra*), is found.

Flight Season: Late May to late June

Range: Locally distributed in most of eastern North America with populations as far west as Kansas and Oklahoma.



Photo by Ellis Lauder milk, KSNPC

