

Appalachian Gametophyte Fern

Vittaria appalachiana

Description

Appalachian gametophyte fern is a unique type of fern that lacks true leaves, stems, and roots. Individual plants are only about 1/8 inch (3 mm) long, but may grow in mat-like colonies that can be several inches or more. This species greatly resembles a liverwort or moss, and often grows in association with those plants. The fern reproduces itself by producing tiny, bud-like structures (gemmae) that are able to give rise to new individuals.



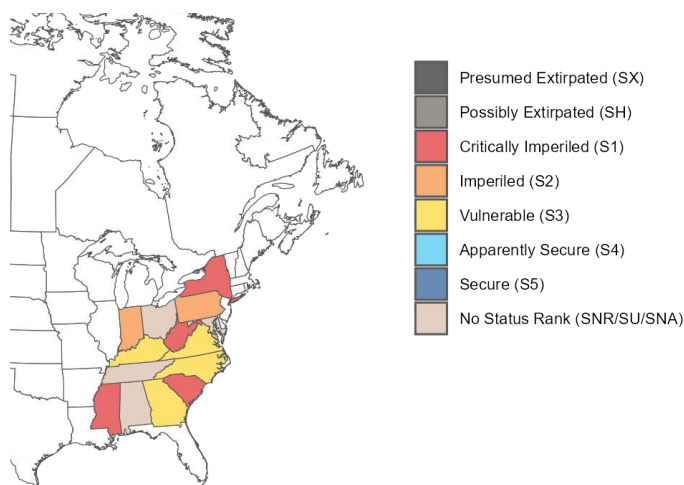
Photo source: John Kunsman (PNHP)

Distribution & Habitat

Appalachian gametophyte fern has a range in the Appalachian Mountains region from New York west and south into Indiana, Alabama and Georgia. In Pennsylvania, this species has been documented in scattered locations, especially in the mountainous counties. It grows on cool, damp, shaded rock outcrops and cliffs, particularly on sandstone, in forested areas.

North American State/Province Conservation Status

Map by NatureServe 2025



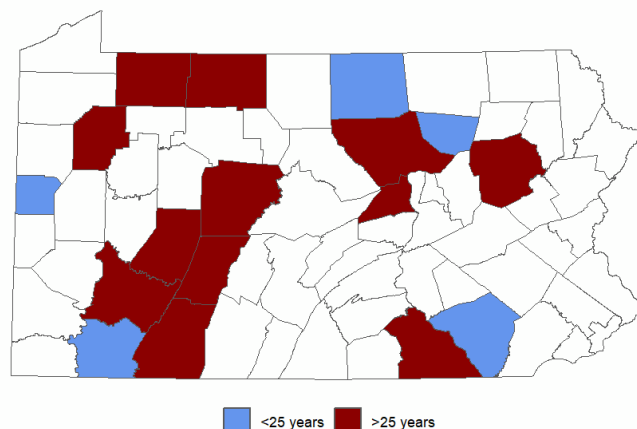
Current State Status

The PA Biological Survey (PABS) considers Appalachian gametophyte fern to be a species of special concern, based on the few occurrences that have been recently confirmed and its extremely specialized habitat. It has a PA legal rarity status and a PABS suggested rarity status of Threatened. Because of its minute size, this fern may be more frequent than the current records suggest.

Conservation Considerations

The viability of the known populations of Appalachian gametophyte fern and its habitat can be enhanced by maintaining a buffer of forest immediately surrounding the rock outcrop that supports the population. Since hemlock (*Tsuga canadensis*) is often a major constituent of the forest at populations of this fern, the loss of hemlock due to the hemlock woolly adelgid (*Adelges tsugae*) represents a threat.

Appalachian Gametophyte Fern (*Vittaria appalachiana*)



NatureServe conservation status ranks

G4 – Apparently globally secure; S2– Imperiled in Pennsylvania

References

- NatureServe. 2025. NatureServe Explorer [web application] NatureServe, Arlington, Virginia. Available at <https://explorer.natureserve.org> (Accessed: May 8, 2025)
- Rhoads, A.F. and T.A. Block. 2007. The Plants of Pennsylvania: An Illustrated Manual. 2nd edition. University of Pennsylvania Press, Philadelphia.