

# APPALACHIAN

## LANDSCAPE CONSERVATION COOPERATIVE



### HABITAT TYPE:

## Open Woodlands

Used generally to describe low density forests, open woodland ecosystems contain widely spaced trees whose crowns do not touch, causing for an open canopy, insignificant midstory canopy layer, sparse understory and where groundcover is the most obvious feature of the landscape dominated by diverse flora (grasses, forbes, sedges). Open Woodlands provide habitat for a diverse mix of wildlife species, several of which are of conservation concern, such as Red Headed Woodpecker, Prairie Warbler, Kentucky Warbler, Northern Bobwhite and Eastern Red Bat.

Predicted climate change will largely impact changes in temperature and moisture availability in open woodlands systems, likely having a cascading effect on a species habitat and increasing stress to many of these species. The Appalachian LCC funded NatureServe to conduct vulnerability assessments on a suite of plants, animals, and habitats within the Appalachians. These assessments can be used as an early warning system to alert resource managers about changing conditions.

Two such organisms within Open Woodlands that managers can use to monitor such change are...



### SIDEOATS GAMA

*Bouteloua curtipendula*

**Distribution:** Found throughout Appalachia, ranging from Canada south through South America. Typically found in prairies or open, rocky woodlands.

**Habitat Requirements:** Grows in average, dry to medium moisture in full sun. Is able to tolerate a wide range of conditions including: drought, erosion, shallow planting, and well-drained sandy soils to heavy clays.

**Reproduction:** Typically pollinated by moths. Seeds often cling to and are dispersed by the coats of large mammals.

**Interactions:** Used for mammalian grazing. Upland gamebirds feed on the seeds. Often consumed by insects such as grasshoppers, moths, and stinkbugs.

**Conservation Concern:** Often outcompeted by taller grasses, this plant is currently considered threatened or noted as a species of special concern in three Appalachian states.



### ROYAL CATCHFLY

*Silene regia*

**Distribution:** Typical to rocky prairies, open woods, and rocky glades, this flower can be found throughout Appalachia's Interior Low Plateau.

**Habitat Requirements:** Grows in average dry to medium moisture. Prefers full to part shade and sandy or gravelly soil. Drainage is essential for growth. Resists excessive shading.

**Reproduction:** Flowers are typically pollinated by the ruby-throated hummingbird. Seeds tend to drop near mother plant.

**Interactions:** The showy flower is known to attract wildlife, with hummingbirds particularly enjoying the tubular flower.

**Conservation Concern:** Though not considered federally endangered, this plant is listed as threatened or endangered in three Appalachian states. It is considered a conservation concern do to threat of habitat loss for agricultural use.

## Factors Contributing to Vulnerability from Climate Change for Open Woodland

Below is a synthesis of finding on key factors contributing to climate change vulnerability for two species found in Open Woodlands in the Cumberland and Southern region of the Appalachians. Results from these assessments can help natural resource managers identify other species of conservation interest that share similar habitat requirements, develop research and monitoring needs, and guide prioritization and the development of adaptation strategies.



### Sideoats Goma

*Bouteloua curtipendula*



VULNERABILITY SCORE:  
EV= Extremely Vulnerable



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#### DIRECT EXPOSURE TO LOCAL CLIMATE CHANGE:

Assessed using predictions of future changes in temperature and moisture availability based on averages of global circulation models.

#### INDIRECT EXPOSURE TO LOCAL CLIMATE CHANGE:

Considers predicted sea-level rise, existence of barriers to movement, and effects of alternative energy development.

#### SENSITIVITY AND ADAPTIVE CAPACITY:

Assessed using a variety of factors, including dispersal capability, known sensitivity to changes in temperature and moisture, reliance on interspecific interactions, genetic diversity, and expected phenological shifts with changing climate.



100%  
of assessed range  
**.9 to 4.5°F increase in temperature**



96%  
of assessed range  
**7.3 to 11.9% decrease in moisture**



95%  
of assessed range  
**4.5 to 5.1°F increase in temperature**



100%  
assessed range  
**7.3 to 9.6% decrease in moisture**

Natural barriers are likely to **greatly impair potential distributional shifts** in response to climate change.

Man-made barriers are likely to **significantly, but not greatly, impair potential distributional shifts** in response to climate change.

Natural barriers are likely to **significantly, but not greatly, impair potential distributional shifts** in response to climate change.

Man-made barriers **completely or almost completely surround current distribution**, such that **significant distributional shifts**, in response to climate change, **will not likely occur**.

Species has a **highly restricted dispersal capability**.

**Highly dependent on an uncommon landscape** in the Appalachians.

Species has a **highly restricted dispersal capability**.

**Experienced low variation in precipitation** in the past 50 years.

### APPALACHIAN LANDSCAPE CONSERVATION COOPERATIVE

National Conservation Training Center  
698 Conservation Way, Shepherdstown, WV 25443  
communications@applcc.org

To learn more about the Appalachian LCC, visit <http://applcc.org>



LANDSCAPE CONSERVATION COOPERATIVES  
For information on the national network of LCCs, visit <http://lccnetwork.org>