

APPALACHIAN

LANDSCAPE CONSERVATION COOPERATIVE



HABITAT TYPE:

Meadows and Marshlands

Meadows are open grasslands where grass and other non-woody plants are the primary vegetation. With no tree coverage, meadows are typically open, sunny areas that attract flora and fauna that require both ample space and sunlight. These conditions allow for the growth of many wildflowers and are typically important ecosystems for pollinating insects. Marshlands are like meadows in that they typically have no tree coverage and host primarily grasses and woody plants. However, a defining characteristic of marshlands is their wetland features.

Predicted climate change will largely impact changes in temperature and moisture availability in meadows and marshlands 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 meadows/ marshlands that managers can use to monitor such change are...



BALTIMORE CHECKERSPOT

Euphydryas phaeton

Distribution: Found in much of the eastern US, but its range appears to be declining. It ranges from the southern edge of Canada down into the eastern United States. From the mountains of VA and NC, west across the Great Lakes Region.

Habitat Requirements: Typically found in early-successional, stream-fed meadows or other boggy areas. In general they are found in “weedy” meadows where the water table varies from around 9-9 inches below the soil.

Interactions: The Maryland state butterfly can be found on a number of plants. The caterpillars feed in silk “nests” on false foxglove, plantain, turtlehead, and ash. White Turtlehead is the host plant that the butterfly uses, laying its eggs on the underside of the plant’s leaves.

Conservation Concern: A uncommon species. It is understood that habitat loss and degradation have had a significant impact on this species abundance. Deer browse on the caterpillar host plant and the succession of open wetlands to forest or dense shrub land may also have impacted their decline.



EASTERN HARVEST MOUSE

Reithrodontomys humulis

Distribution: This rodents range spreads across the eastern United States; from north MD down to the south tip of FL and as far west as TX, OK, and OH.

Habitat Requirements: Typically found in open grassy areas that are seasonally wet or flooded-- lowland grasslands, swamps, and pastureland. They require substantial ground cover and are seldom found in forested areas. Nests are composed of dry weeds or grass.

Interactions: Though their diets are not well known, but it is believed they eat solely on seeds, weeds, and small insects such as grasshoppers and crickets. Harvest mice are likely preyed on by a variety of snakes, hawks, owls, and mammals.

Conservation Concern: Populations have been impacted by forest clearing and the expansion of agriculture. These human adaptations at first expanded suitable habitat for the rodent.

Factors Contributing to Vulnerability from Climate Change for Meadows and Marshland species

Below is a synthesis of finding on key factors contributing to climate change vulnerability for two species found in meadows and marshlands 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.



Baltimore Checkerspot
Euphydryas phaeton



VULNERABILITY SCORE:
MV= Moderate Vulnerability



78%

of assessed range
4.5 to 5.1°F increase in temperature



98%

assessed range
5.7 to 9.6% decrease in moisture



Eastern Harvest Mouse
Reithrodontomys humulis



VULNERABILITY SCORE:
MV= Moderate Vulnerability



80%

assessed range
4.5°F increase in temperature



91%

assessed range
7.3 to 9.6% decrease in moisture

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.

Natural barriers **do not exist** OR barriers exist but **would not** likely significantly **impair distributional shifts** due to climate change.

Man-made barriers **do not exist** OR barriers exist but **would not** likely significantly **impair distributional shifts** due to climate change.

Natural barriers border the current distribution such that **climate change-caused distributional shifts are likely to be significantly** but not greatly or completely **impaired**.

Man-made barriers **do not exist** OR barriers exist but would not likely significantly impair distributional shifts due to climate change.

>90% of occurrence or range is restricted to relatively cool or cold environments that may be **lost or reduced** as a result of **climate change**.

Diet - **Completely or almost completely dependent on one species during any part of the year**, alternatives to this single-species food resource are not readily available.

Species has a **highly restricted movement capability**, almost never disperse more than 10 m per movement event.

Species has experienced **slightly lower than average variation in precipitation** in the past 50 years.

