



Supporting Native Grasslands While Preserving History at Richmond National Battlefield Park



This grassland at the Gaines' Mill Battlefield evokes the agrarian landscape that existed at the site at the time of the Civil War, while also providing valuable wildlife habitat.

NPS / Kristen Allen

Introduction

Grasslands in the eastern United States are important habitats that support many bird and insect species (including pollinators) and plants that do not grow anywhere else. Because of this, grasslands play a unique role in protecting biodiversity (Latham 2012). However, these habitats are at risk from development, conversion to other land uses, and the natural process of slowly transitioning into forests.

At Richmond National Battlefield Park, staff have managed over 120 acres of the landscape as natural grasslands since 2006. Although these areas were used for agriculture at the time of the Civil War, native grassland habitat can produce the look and feel of agricultural land while providing valuable habitat for disappearing grassland communities.

In 2022, park managers wanted to understand the current condition of these grasslands. To do this, they conducted a two-year project with experts from Austin Peay State University's [Southeastern Grasslands Institute](#) (SGI). The project focused on studying the plants, birds, and insects living in the grasslands. The researchers (biologists) surveyed seven park grasslands (about 110 acres) for plant and insect species and used existing park data and other information to learn which birds were present.

Key Highlights:

- Managing areas as native grasslands today preserves the agrarian look and feel of the battlefields during the Civil War—a win for cultural landscapes and the vast diversity of native grassland species.
- Biologists surveyed for plants, insects, and birds between June 2022 and April 2024 at three battlefield units in the park.
- They observed a total of 307 types of vascular plants—241 native and 66 non-native.
- Biologists documented 48 bee species (including a rare bumble bee), 15 ant species, 11 grasshopper species (and 3 families), and 82 butterfly and moth species.
- A total of 57 non-forest bird species have been found in the park, including at least 17 grassland bird species at Malvern Hill Battlefield.
- The results provide information on how the grasslands are doing today and will help park managers determine how the grasslands are changing over time.

Background on Park Grasslands and NPS Stewardship

At Richmond National Battlefield Park, grassland patches ranging from 6 to 70 acres are found in the Gaines' Mill, Cold Harbor, and Malvern Hill battlefield units. Park managers established the grassland patches through various methods, including disking and seeding the soil, treating non-native hayfield species, and/or allowing native plant species to colonize naturally. Because natural forces like lightning-caused fires, Indigenous land management, and grazing by native herbivores no longer shape these areas, the park actively manages them. Park managers use

prescribed burns every 2–3 years, occasional mowing, and targeted herbicide treatments of woody plants and non-native species. These actions limit unwanted plants and help native grasses thrive. As these grasslands continue to mature, the number of plant and animal species is expected to increase.



NPS certified wildland firefighters safely ignite a grassland at Malvern Hill in order to foster native grasses and forbs (such as wildflowers).

NPS / Kristen Allen

How did Biologists Study the Grasslands?

To assess grassland condition, biologists looked at the available information on plants, insects, and birds.

Plants

To assess plants, biologists surveyed 10 field/grassland units at Malvern Hill (9 units) and Gaines' Mill (1 large unit) during the summer and fall of 2022. They walked the perimeter and interior of each unit, recording all species of vascular plants that were identifiable during each season. They also used plant occurrence data from the [NPS Fire Effects Monitoring](#) program for eight units at Malvern Hill; this information was collected from 2004 through the time of the study.

Insects

Biologists surveyed for insects in eight 66-ft by 66-ft (20-m by 20-m) plots across the three battlefields (Gaines' Mill, Cold Harbor, and Malvern Hill). They surveyed the plots a total of four times in 2023 and 2024. They collected insects using passive traps—devices that catch insects as they move—and by sweep-netting along transects.

Birds

To study grassland birds, biologists used three sources of data:

- park-run transects surveyed from 2010 to the present,
- [eBird](#) data for both Malvern Hill and Gaines' Mill locations, and
- their own observations during field visits in 2022 and 2023.

What did Biologists Find?

79% Native Plants

Biologists found that the park grasslands contain a mix of native and non-native, sun-loving, herbaceous species, along with some woody species (mostly native). Without management, the woody species would probably eventually dominate the grasslands. In total, they documented 307 types of vascular plants—241 native species and 66 non-native species (Figure 1). Among the non-native species, six are very difficult to control and eight are potentially severe but currently occur in low numbers.

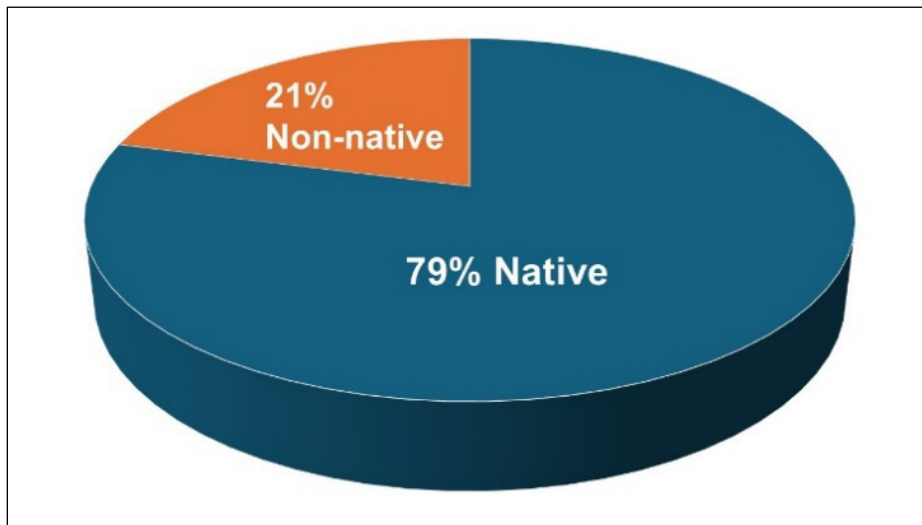


Figure 1. Of the 307 types of plants documented at Richmond National Battlefield Park during the study, 79% were native and 21% were non-native. These native and non-native groups include grasses and grass-like plants, forbs (wildflowers), ferns, and woody plants.

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More than 155 Insect Species

Biologists looked at the number of species in four different insect groups at each plot and site. In the one year of surveys, biologists recorded a total of 48 bee species, 15 ant species, 11 grasshopper species (and 3 families), and 82 butterfly and moth species. The insect species documented were common generalist species for the area. Given the low number of individual bees collected, biologists concluded that bee diversity is relatively high. One species considered vulnerable by [NatureServe](#) was found at Gaines' Mill—the [American bumble bee](#) (*Bombus pensylvanicus*).



American bumble bee (left and right) photographed while visiting flowers. This fuzzy, black and yellow bumble bee is an important pollinator of native plants and agricultural crops (U.S. Fish and Wildlife Service 2026). During the study it was found at Gaines' Mill battlefield. The American bumble bee flaps its wings at a hard-to-imagine rate—200 times per second (Center for Biological Diversity 2026)! The species is threatened by habitat loss and degradation, pesticides, changes in climate, and diseases from non-native bee species (U.S. Fish and Wildlife Service 2026).

NPS (left) and NPS / Logan Rowe (right)

116 Upland Bird Species, Including 17 Grassland Species at Malvern Hill

Using the eBird data for species reported at least five times, biologists identified 116 bird species at Malvern Hill and Gaines' Mill that are associated with upland habitats. Of these, 57 species that are considered to be non-forest species were recorded at both sites. These include Northern Harrier (*Circus hudsonius*), Northern Bobwhite (*Colinus virginianus*), and Eastern Meadowlark (*Sturnella magna*).

Biologists also focused on Malvern Hill, which has relatively large fields. Here they identified 21 species not found at Gaines' Mill; 17 of these species are primarily associated with grasslands and shrublands, including Horned Lark (*Eremophila alpestris*), Savannah Sparrow (*Passerculus sandwichensis*), and Grasshopper Sparrow (*Ammodramus savannarum*).



Have you seen or heard either of these birds singing from a fencepost or shrub? The main song of the Eastern Meadowlark (left) sounds like flutelike whistles (Cornell Lab of Ornithology 2026a), while the Savannah Sparrow (right) has a “high, thin voice” (Cornell Lab of Ornithology 2026b) that includes insect-like buzzing. Both species inhabit grasslands, eat insects, and forage and nest on the ground. According to the Cornell Lab of Ornithology (2026a,b), both species are common birds in steep decline. The Eastern Meadowlark was reported at both Malvern Hill and Gaines’ Mill battlefields, while the Savannah Sparrow was found only at Malvern Hill.

NPS / Betty Blanton (left) and NPS (right)

Use of the Study Results Now and in the Future

The results of this study tell managers which plant, insect, and bird species were present in the park during the time of the project. This information helps park managers understand the condition of the grasslands and make decisions about how to manage and conserve them. These and similar surveys in the future can be used to track how the grasslands are changing over time.

What’s Next for Grasslands at Richmond National Battlefield Park?

An upcoming project at the park will aim to reduce the occurrence of non-native plants and woody plants in the grasslands, as well as enhance native forbs (flowering plants) for pollinators. This project is part of a [larger project across 37 parks in 15 states](#). This landscape-scale restoration project will expand the range and connectivity of native grasslands across the eastern U.S., restore biodiversity and critical ecosystem functions, reduce pesticide use, and benefit people and wildlife.

For More Information

A number of other national park units in the eastern United States also protect and maintain grasslands for historic reasons and to preserve habitat for grassland birds and other species. Here are just a few links to articles that tell their stories:

- [Re-Growing Southeastern Grasslands](#)
- [Civil War Battlefields: A Haven for Grassland Birds](#)
- [Prospering Pollinators in Manassas Grasslands](#)
- [Meadows Resource Brief 2023](#)

Literature Cited

Center for Biological Diversity. 2026. American bumblebee. Did you know? Webpage. Available at <https://www.biologicaldiversity.org/species/invertebrates/American-bumblebee/> (accessed 7 January 2026).

Cornell Lab of Ornithology. 2026a. All About Birds—Eastern Meadowlark. Cornell Lab of Ornithology, Ithaca, New York. Available at https://www.allaboutbirds.org/guide/Eastern_Meadowlark/overview (accessed 7 January 2026).

Cornell Lab of Ornithology. 2026b. All About Birds—Savannah Sparrow. Cornell Lab of Ornithology, Ithaca, New York. Available at https://www.allaboutbirds.org/guide/Savannah_Sparrow/overview (accessed 26 January 2026).

Latham, R. 2012. Desired condition of grasslands and meadows in Valley Forge National Historical Park. Natural Resource Technical Report NPS/NER/VAFO/NRTR—2012/636. U.S. Department of the Interior. National Park Service. Natural Resource Stewardship and Science. Fort Collins, Colorado.

U.S. Fish and Wildlife Service. 2026. American bumble bee overview. Webpage. Available at <https://www.fws.gov/species/american-bumble-bee-bombus-pensylvanicus> (accessed 7 January 2026).

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Ludwig, J.C., P.A. Barlow, and T. Witsell. 2026. Richmond National Battlefield Park: Grassland inventory and assessment. Science Report NPS/SR—2026/374. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2315976>.
