

Rocky Mountain Network

Florissant Fossil Beds National Monument

National Park Service
U.S. Department of the Interior
Inventory & Monitoring Program
Rocky Mountain Network



Vegetation and Soils Monitoring Brief

2015

Importance

Meadows, shrublands and forests are integral components of the natural and cultural landscapes of parks within the Rocky Mountain Inventory and Monitoring Network. Because they may be impacted by a range of disturbances like invasion by exotic weeds, wildfire, accelerated erosion and climate change, we monitor vegetation and soils closely. Results from our monitoring program help park managers, scientists and visitors understand the ecological integrity or health of these ecosystems and how they may be changing over time.

Study Area

Florissant Fossil Beds National Monument is a 2427 hectare (5998 acre) park established in 1969 to preserve and interpret one of the richest and most diverse fossil deposits in the world. It lies 35 miles west of Colorado Springs in a mountain valley just west of Pikes Peak. At 2560 meters elevation (8400 feet), the landscape is typical of the Rocky Mountain montane zone with a mosaic of ponderosa forest, wetlands, and montane grasslands. Past agriculture use and livestock grazing, changing climate, invasive/exotic species, development, and altered fire regimes have caused changes to the landscapes.

NPS



Field crew monitoring vegetation and soils at Florissant Fossil Beds National Monument in 2015.

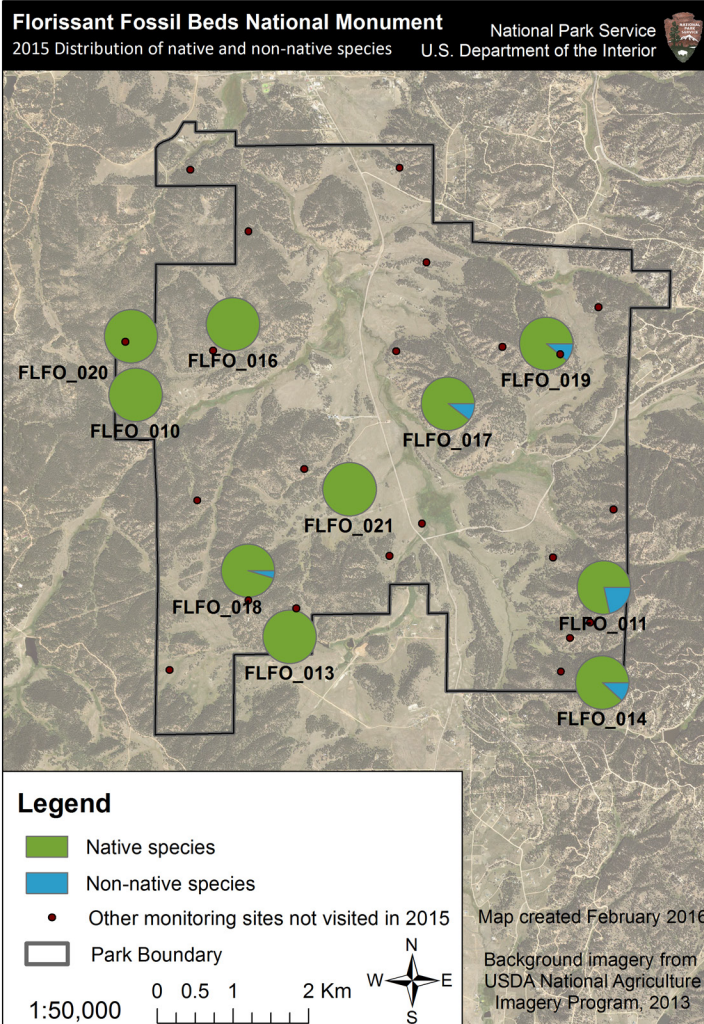


Figure 1. The distribution of native (green) and non-native (blue) plant species found at sites in 2015.

Sampling Methods

Our vegetation and soils protocol (<https://irma.nps.gov/DataStore/Reference/Profile/2170699>) provides detailed descriptions of the field and analytical techniques used for monitoring. We use a probability (“random”) sampling design with sites selected within five ecological site and soil types to allow us to understand conditions across the park. Sites are visited following a paneled structure over four years, with a smaller subset visited every year to determine inter-annual variation.

Objectives

The objectives of vegetation and soils monitoring are to quantify status and trend in:

- Vegetation structure, species composition and biodiversity
- Abundance of invasive/exotic plants
- Soil condition

2015 Monitoring Effort

At Florissant Fossil Beds National Monument, we visited 10 sites in early August 2015. We identified 85 plant species, 5 of which were non-native (Figure 1).

Of these species, 62.2% of the total foliar cover was from graminoids, 19.6% trees, 12.5% forbs, and 4.9% shrubs.

The most abundant species (based on average cover) were:

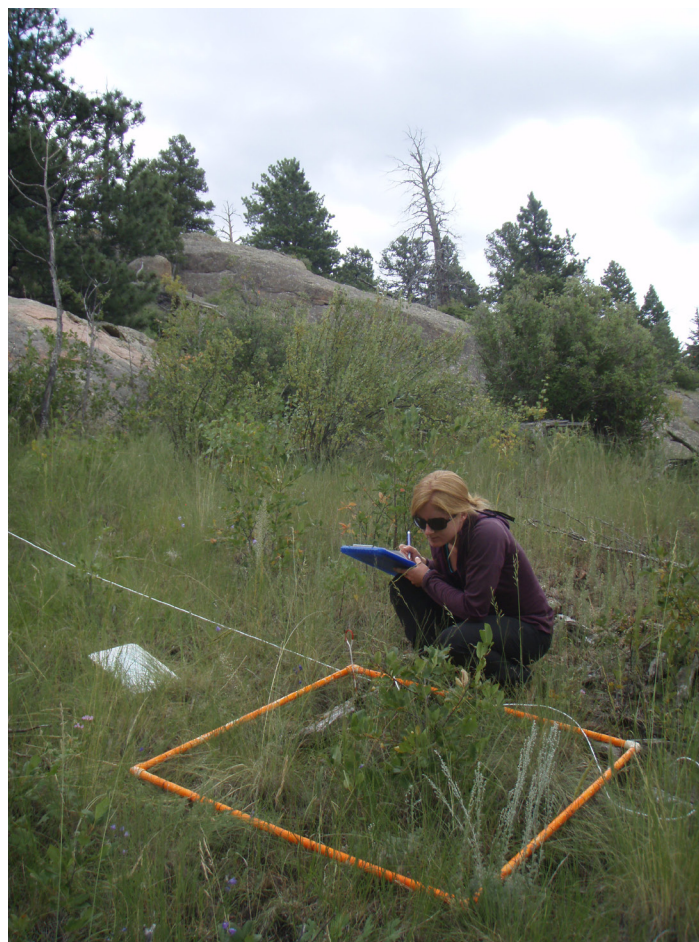
- mountain muhly (*Muhlenbergia montana*)
- Arizona fescue (*Festuca arizonica*)
- ponderosa pine (*Pinus ponderosa*)
- roundfruit rush (*Juncus compressus*)
- Douglas fir (*Pseudotsuga menziesii*)

We found no exotic invasive species (those listed on the Colorado list of noxious weeds) at sites.

We measured soil aggregate stability (the ability of soil particles to adhere to each other) and the percent cover of litter and bare ground to help determine the erosion potential at sites.

Our measure of soil stability ranges from 1 to 6, with lower values indicating lower stability (see protocol for full description). Mean surface soil stability was 5.45 (0.83 standard deviation) and mean subsurface soil stability was 5.03 (0.58) across all sites.

The mean cover of litter was 69.29% (14.67% standard deviation) while the cover of bare soil averaged 3.05% (4.09%).



Field crew member identifying plants within a 1m² coverplot.

About the ROMN

The Rocky Mountain Network is one of 32 vital signs monitoring networks across the National Park Service. We have been monitoring status and trends in upland vegetation structure, species composition, and soil condition in Florissant Fossil Beds National Monument since 2008. We also monitor status and trends in wetlands in the park.

For More Information

ROMN homepage:
<http://science.nature.nps.gov/im/units/romn/>

Download 2015 data via the Natural Resource Information Portal:
<https://irma.nps.gov/DataStore/Reference/Profile/2229262>

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