

Grassland Fidelity Spreadsheets Best Practices



The results from the Grassland Fidelity Project can be used by NPS park staff, stewards, and managers to better understand, monitor, manage, restore, and reconstruct grasslands (prairies, savannas, meadows, glades, barrens, balds, riverscours) and grassland-related ecosystems (fens, bogs, open woodlands) on 48 national parks in the Southeast Region. The results can also be used to inform similar work on other public lands or private lands near these parks.

We believe that better understanding of grasslands and restoration dynamics begins by communicating basic ecological information to National Parks staff, including resource managers, burn bosses and biologists who will benefit from our short, targeted conservation (workhorse) lists. These lists were compiled to highlight the native grassland species most appropriate for each grassland type within each park. Also, our data explorer helps to “demystify” aspects of botany, conservation, and grassland ecology, which we hope will help better communicate grassland conservation efforts within park staff and to the public.

Managers and biologists across the southeastern National Parks have vastly different ecosystem management and restoration needs. The grassland habitats, elevations, fire regimes, seasonality, and even staff support varies drastically from Cape Hatteras to Obed River and from Jean Lafitte to Mammoth Cave. A burn boss or fire effects crew in the Everglades will have a different prerogative and set of restoration roadblocks than those in the Smokies. Prescribed burning, ecological management, visitor experience and interpretation, data management, resource planning, structural maintenance and historical preservation are among the many demands of modern Park staff.

Grassland restoration and reconstruction in the Southeast U.S., compared to the Midwest, is still in a relatively young state. Because of the diversity of grassland types and landscapes and complex histories of their degradation and loss, there is no *one* universal strategy to restore or reconstruct grasslands and related grassy ecosystems.



Left: Grassland reconstructions involve taking sites that were likely historically grassland that have been altered over 250+ years, transforming these landscapes into culturally important landscapes such as farm fields. Right: grassland reconstruction with the purposeful reintroduction of native seeds, plugs, etc., can help to transition some of these sites into healthier landscapes for plants and animals while supporting cultural needs of parks.

Many landscapes on the parks may be viewed in a primarily cultural lens, such as farm fields, yet these present great places for grassland reconstructions that can help them both resemble the cultural landscapes of the 18th and 19th centuries and help them to better serve plants and animals that need healthy open grassland ecosystems. Such sites often lack the basic ecological ingredients, such as existing seed or bud banks, and these

sites must be purposefully rebuilt in order to transition them into functional native grasslands. Some culturally-focused parks may not have any intact native grasslands remaining, but through reconstruction or building grasslands into landscaping near buildings or developed spaces they can have diverse native grasslands again in a way that serves the needs of grassland plants and animals while also meeting cultural and educational needs of parks.

Other parks may still contain healthy or minimally degraded native grasslands and related ecosystems that just need more focused attention from restoration and management crews. For these, woody plant management, prescribed burning, and invasive species control may be key to restoring native grassland ecosystems. Sometimes, these need to be supplemented with native seeds, plugs, or even sapling plantings of grassland-obligate shrubs and trees.



Oak savanna-woodland restoration (A is pre-treatment, B is post-treatment) at Catoosa WMA near Crossville, TN, USA. Merely thinning the overgrown (artificial forest) canopy and re-introducing fire caused a dramatic transformation in the formerly dormant, but now conspicuous ground-layer diversity, which includes many conservative grassland species. Photo by A. Vander Yacht from Vander Yacht et al. (2020).

In the case of both reconstructions and restorations, it is important that land managers and stewards have a tool to help better gauge the effectiveness of their actions in improving native grasslands on parks. For decades, ecologists have relied on various metrics such as overall species richness and native plant diversity, or proportion of major functional groups (e.g. woody plants or perennial grasses), to gauge whether a site is being successfully restored. It has become clear that two missing ingredients that ecologists have not had are *conservatism* (C-values) and *heliophily scores* combined. This is the primary value of the Grassland Fidelity Project. It allows users to track whether their management and restoration actions are trending toward more stable grassland systems, judged from increased coverage of conservative heliophytic (sun-loving) plant species. As this group of plants increases, it is evidence that the right forces are at play in managing native grasslands. And this should also translate into benefits to other organismal groups, such as pollinators, grassland birds, small mammals, and visually it should look more appealing, as shown in the table of 12 broad classes of diverse and scenic grasslands below.

As we look to the future of the southeastern parks where grasslands and grassland-related ecosystems receive more conservation focus, we would be remiss if we didn't highlight the continued need for native plant materials development in the form of seeds, plugs, and saplings of grassland obligate species. These are essential to restoring and reconstructing vitally important grasslands of our Parks for both flora, fauna, cultural needs, and key services.

		
Balds	Canebrakes	Dunes
		
Fens, Bogs, Seeps	Glades, Barrens, Outcrops	Gravel & Sand Bars
		
Freshwater Marshes	Salt Marshes	Meadows
		
Prairies	Riverscours	Savanna-Woodlands

The twelve major classes of grasslands within the Southern Grassland Biome. A key to these classes is available here: <https://fsus.ncbg.unc.edu/cust/gfi/>

Navigating the Spreadsheet for a Park

The process for navigating the spreadsheet data is similar to the Grassland Fidelity Explorer

(<https://go.unc.edu/GrasslandFidelity>).

- Open the spreadsheet matching the Park Code box of the park of interest (parks are listed by their acronyms and full names, [see here](#) for a full table of park codes with their full park names).
 - If you like, you can browse the full list of species on the Parkwide species list tab.
- Next, browse the alliance list and note one or more alliance codes. Links to NatureServe Explorer are available for standard alliances by clicking the alliance code. Click on the corresponding tab marked “(Alliance Code) Species”
 - Choosing an alliance can be challenging. The 12 broad grassland classes can be helpful to get to a single category. Is the site in dunes? Is it a rocky glade? The site’s expected hydrology will help determine whether a wetter or drier alliance is chosen (see above table). A key: <https://fsus.ncbg.unc.edu/cust/gfi/>
- On the (Alliance Code)-Species tab, the full name of the alliance and links to NatureServe Explorer (where available) are at the top of the page. Key NatureServe descriptions are included below and to the right of the name and link.
- The conservation list of workhorse species is shown below the alliance information, with each workhorse listed alphabetically by scientific name. Click on a species to be directed to its Flora of the Southeastern United States (FSUS) page. Each species has additional information about it on its row: family, common name, growth form, native status, heliophily, C-values, conservation status, wetland status, commercial availability, and source for its inclusion.
- Optional filters for the conservation list are included on each field, including these three key filters:
 - Growth form: filter here to select Forbs, Graminoids, Shrubs, Subshrubs, Vines, Ferns, Fern Allies, Trees
 - Heliophily: filter here to construct a workhorse list on specific heliophily scores (e.g., only those workhorses with the highest heliophily scores).
 - Commercial Availability: these data are provisional, but will filter for species with commercial availability in the nursery trade.

Name				Alliance List for CANA			
GFI NPS Species Report - BICY.xlsx	1,177 KB	4/29/2025 4:11 PM	Microsoft Excel W	1	SOUTHEASTERN GRASSLANDS INSTITUTE		
GFI NPS Species Report - BISC.xlsx	339 KB	4/29/2025 4:11 PM	Microsoft Excel W	2	CANAL: Canaveral National Seashore		
GFI NPS Species Report - BISO.xlsx	1,304 KB	4/29/2025 4:11 PM	Microsoft Excel W	3	State(s): FL		
GFI NPS Species Report - BLRI.xlsx	2,871 KB	4/29/2025 4:11 PM	Microsoft Excel W	4	EPA Level IV Ecoregion(s): 75d		
GFI NPS Species Report - CAHA.xlsx	793 KB	4/29/2025 4:11 PM	Microsoft Excel W	5	FSUS Province(s): CpPen		
GFI NPS Species Report - CALO.xlsx	748 KB	4/29/2025 4:11 PM	Microsoft Excel W	6	Alliance	Alliance	Alliance Vegetation Class
GFI NPS Species Report - CANA.xlsx	188 KB	4/29/2025 4:18 PM	Microsoft Excel W	7	A1199	Accepted	Beach
GFI NPS Species Report - CANE.xlsx	345 KB	4/29/2025 4:12 PM	Microsoft Excel W	8	A2345	Accepted	Salt Shrubland
				9	A2346	Accepted	High Salt Marsh
				10	A2347	Accepted	High Salt Marsh
				11	A3305	Accepted	Savanna, Woodland
				12	A3401	Accepted	Interdunal Marsh
				13	A4497	Accepted	Low Salt Marsh

Species List for NVC Alliance A4497										
CANAL: Canaveral National Seashore										
State(s): FL										
EPA Level IV Ecoregion(s): 75d										
Alliance A4497: Spartina alterniflora South Atlantic-Gulf Low Salt Marsh Alliance										
Alliance Concept Sentence: This alliance includes low, regularly flooded tidal salt marshes of the South Atlantic and Gulf coasts, from North Carolina to Texas and adjacent Mexico, and dominated by Spartina alterniflora.										
Alliance Floristics: Vascular plant species composition shows little variation across the range. It occurs in nearly pure stands of Spartina alterniflora, with occasional low-growing species such as Spergularia salina, Salicornia spp., Suaeda maritima, and										
Species (Link to iNaturalist)	Family	Common Name	Growth Form	Native Status	Heliophily	Coefficient of Conservatism (CoC) in Peninsular Coastal Plain	Coefficient of Conservatism (CoC) Avg Across Southeast	Conservation Status	Wetland Status / Indicator	Commercially Available? (as of Spring 2024)
Bolboschoenus robustus	Cyperaceae	Saltmarsh Bulrush	Grassoid	Native	5a	9	6	6 G5	Non-upland OBL	5c
Distichlis spicata	Poaceae	Saltgrass, Spike Grass	Grassoid	Native	5b	9	8	5 G5	Non-upland FACW	
Juncus roemerianus	Juncaceae	Black Needle Rush	Graminoid	Native		9	7	7 G5	Non-upland OBL	
Spartina alterniflora	Poaceae	Saltmarsh Cordgrass, Smooth	Graminoid	Native		9	6	6 G5	Non-upland OBL	
Spartina cynosuroides	Poaceae	Giant Cordgrass	Graminoid	Native		9	7	7 G5	Non-upland OBL	
Spartina patens	Poaceae	Small Saltmeadow Cordgrass	Graminoid	Native		9	8	7 G5	Non-upland FACW	
Sporobolus virginicus	Poaceae	Seashore Dropseed, Coastal	Graminoid	Native		9	6	6 G5	Non-upland	

Screenshot of spreadsheet for one park, Canaveral National Seashore (CANA). 1. Navigation to spreadsheet for park, 2. Alliance list (with links to NatureServe Explorer), 3. A conservation list of workhorse species for one alliance (here, a Low Salt Marsh Alliance A4497) with alliance information at top and a link to NatureServe Explorer, 4. the list of species, with scientific names linking to Flora of the Southeast (FSUS) and other species attributes, and 5. filters for all fields, with a few key fields highlighted.