Grasslands & Shrublands (L2)

Description

Grasslands are open lands dominated by grasses, sedges, and broadleaf herbs, with little or no woody vegetation. Grasslands include wetland natural communities, such as Sedge Meadow, and lands actively managed by people, such as hay fields. Shrublands are areas dominated by low, dense shrub vegetation such as dogwood, willow, tall grasses, and sedges. They are often associated with the margins of grassland habitats and are influenced by human activities such as agriculture or active land management, as well as by natural processes.

Birds that rely on grassland and shrubland habitats for their survival in Vermont include: Upland Sandpiper (endangered); Grasshopper Sparrow (threatened); Sedge Wren (endangered); Vesper Sparrow (uncommon breeder in Vermont); Savannah Sparrow; Bobolink; and Eastern Meadowlark (the last 3 are considered common but with declining populations). American woodcock is also associated with these habitats and is considered a species of greatest conservation need in Vermont's wildlife action plan. Other bird, mammal, and invertebrate species use grasslands and shrublands as well, but the above suite is commonly used for conservation planning purposes because these birds are rare or their populations are declining, and they require grassland and shrubland habitat to survive and reproduce.

Today, most of Vermont's grassland habitats occur in the Champlain Valley and, to a lesser extent, in the Connecticut River Valley and the area around Lake Memphremagog. Other grasslands of various types and sizes scattered across the rest of the state. Most are associated with current or past agricultural practices. There are, however, grasslands that are the result of other human activities and are maintained for specific purposes. These include grasslands associated with airports (commercial and private), landfills, utility rights-of-way, fairgrounds, and industrial complexes. Most of Vermont's grasslands are in private ownership, although the state and federal government own small areas of this habitat. Shrubland habitats are more widely distributed throughout Vermont, are associated with both upland and wetland conditions, and occur broadly on both public and private land.

Three separate input datasets are combined to form BioFinder's Grassland and Shrubland component dataset. The grassland patches identified in this work are distinguished as crop fields, including corn, hay, other crops, and fallow, or suburban pastures, including either agricultural pastures or large non-agricultural (suburban) fields. Together they represent the best available data for this contributor to biological diversity. Spatial data for shrubland habitats is limited and is best captured by extensions of the grassland habitat data and some of the Vermont wetlands data. A more complete assessment of shrubland habitat conditions throughout Vermont is needed to more carefully assess its influence on biological diversity.

Ecological Importance

Grasslands and shrublands, whether of natural origin or resulting from active land management, are critical to the survival of a suite of bird species in Vermont. Most of these species will continue to decline in Vermont if grassland habitat is not maintained.

Since a probable historic high during the agricultural boom of the 1800s, populations of grassland birds have declined substantially in Vermont, primarily as a result of habitat loss. Habitat loss has

resulted from forest succession after farm abandonment, changes in current agriculture practices, and residential, commercial, and industrial development. Other potential threats include the extensive use of agricultural pesticides and changes in wintering habitats outside of Vermont.

Conversion of natural grasslands elsewhere in the Northeast and especially the Midwest has led to the decline of grassland birds in their historic natural habitats. This has given Vermont, and the Northeast in general, greater importance for the conservation of grassland birds. The North American Bird Conservation Initiative (NABCI) has designated grassland birds as a priority suite of species in Vermont.

Grassland and Shrubland Conservation Goal

Conserve and manage grassland habitats of adequate size and distribution to support viable populations of all grassland bird species in Vermont. Conserve and manage important areas of shrubland habitats associated with grasslands, wetlands, riparian habitats, and other habitats to support birds and other wildlife that depend upon that type of habitat association.

Component Mapping Goal

To identify the best examples of grassland and shrubland habitat across Vermont.

Data Source and Selection Criteria

1. **Grassland patches in Grand Isle, Chittenden, Franklin, & Addison Counties VT.** F. Sutti, 2011.

   Description

   A modeled product of productive patches of habitat for grassland bird species.

   Selection Criteria

   Champlain Valley grassland patches with priority ranks 3-5 aggregated into 200 hectare units. All Grassland datasets were combined into a single unit for weighting purposes.

2. **Grassland patches in the southern Champlain Valley, VT**. K. Puryear, 2004

   Description

   A modeled product of productive patches of habitat for grassland bird species.

   Selection Criteria

   Champlain Valley patches with priority ranks 11-13 aggregated into 200ha.

3. **Expert Panel- Grassland patches near Newport, VT.** Landscape Working Group, Grasslands subcommittee 2012

   Description

   Includes three patches of habitat for grassland bird species selected using aerial photos and expert knowledge of grassland habitat.

   Selection Criteria

   Included all sections of the three patches provided by the subcommittee

Component Strengths

Grassland and shrubland habitats are difficult to model, as their ephemeral nature makes field data quickly out-of-date. The Sutti data includes attributes to screen for the presence of some active agriculture allowing for greater certainty that the model is focused on the desired land cover being present.

This component includes grassland to early shrubland habitats in its focus. This means that the combined dataset achieves a longer lifespan since unmaintained grasslands grow into shrublands. So, even as the species composition changes from grassland birds to shrubland birds the modeled area remains relevant to the target. Given this, we estimate this data to be relevant for 10 years from time of publication (until 2022) but land use changes in the mapped grasslands during this 10-year period may alter their wildlife habitat value significantly

Component Limitations

Grasslands and shrublands in Vermont are inherently ephemeral. Without regular cutting they convert to shrubland and eventually forest. This makes it difficult to model for likely grasslands locations and very few datasets were available for inclusion in BioFinder. The two principal grassland datasets that we used in BioFinder (Sutti and Puryear) are limited to the Champlain Valley. Sutti's model used political boundaries of Franklin, Chittenden and Addison's counties. Puryear's included the remainder of the Champlain Valley biophysical region into Rutland county. There are slight differences in how the two models were put together and thus there is potential for differences between Rutland County and the rest of the Champlain Valley. While there is some concern about the lack of geographic representation from across the state, the Champlain Valley includes an estimated 80% of the overall grassland species diversity in the state. Both of these datasets include lands in row crop which do not support grassland birds. Also, some crops, such as corn and hay, are rotated year-to-year on many farms, so one year the habitat may be potentially good, and another, not.

An expert panel was convened to identify grassland patches outside of the Champlain Valley of the same level of species diversity found in the Sutti and Puryear datasets for inclusion as a separate dataset (See Expert Panel- Grassland patches near Newport, Vermont (2012)). Three additional grassland patches in the Newport area were identified. Other potential patches, especially along the Connecticut River, were thought to include significantly fewer species and thus not included in the third input dataset. Despite these geographic inconsistencies, we believe the three input datasets were the best data available at the time. Future versions would benefit from a more geographically consistent identification of grasslands statewide.

Shrublands are not adequately addressed by any existing datasets given the difficulty in identifying them through remote sensing. None of our input datasets specifically identify shrubland habitat, so they are included in this component to the extent to which grasslands grow into shrublands with new species composition.

Component Weight and Justification

Grassland/Shrubland dataset is weighted a 3 on a scale of 1-10 (with 10 as highest contribution to biological diversity). This low weighting is based on the ephemeral nature of most grassland habitat

(both as a result of natural succession and land use changes) and the lack of site specific data and monitoring for most grassland habitats mapped. Even with this low weighting based on data limitations, it is acknowledged that grassland bird species will continue to decline in Vermont if viable grassland habitats are not conserved and managed appropriately.

Summary Statistics for Grasslands & Shrublands

Table 2. BioFinder component datasets, component weights, and the distribution (%) of components across tiers

Data #	Weight	Component	Tier 1 Greatest	Tier 2 Very High	Tier 3 High	Tier 4 Moderate	Tier 5 Low
Landscapes							
L1	7	Habitat Blocks	12.7%	18.1%	30.1%	39.1%	0.0%
L2	**3**	**Grasslands & Shrublands**	**4.3%**	**20.8%**	**22.7%**	**10.9%**	**41.3%**
L3	9	Rare Physical Landscape	15.7%	53.9%	11.0%	19.4%	0.0%
L4	4	Representative Physical Landscape	17.2%	19.1%	43.4%	13.7%	6.6%
L5	7	Connecting Lands (<2000ac)	10.1%	23.4%	19.1%	47.4%	0.0%
L6	4	Connecting Blocks	9.2%	12.2%	24.0%	51.8%	2.7%
L7	3	Anchor Blocks	12.1%	19.7%	35.3%	32.7%	0.1%
L8	8	Riparian Connectivity	36.4%	52.9%	10.8%	0.0%	0.0%
L9	4	Wildlife Road Crossings	12.8%	28.1%	20.9%	26.8%	11.4%
Aquatics							
A1	6	Surface Waters & Riparian Areas	31.1%	48.6%	12.9%	7.4%	0.0%
A2	4	Representative Lakes	10.3%	84.5%	5.3%	0.0%	0.0%
A3	8	Important Aquatic Habitats & Species Assemblages	19.9%	75.2%	4.9%	0.0%	0.0%
Species & Natural Communities							
SN1	Tier 1	Rare Species	100.0%	0.0%	0.0%	0.0%	0.0%
SN2	6	Uncommon Species	62.1%	21.7%	10.0%	6.1%	0.0%
SN3	Tier 1	Rare Natural Communities	100.0%	0.0%	0.0%	0.0%	0.0%
SN4	6	Uncommon Natural Communities	57.4%	31.0%	11.4%	0.2%	0.0%
SN5	3	Common Natural Communities	9.8%	52.9%	37.1%	0.2%	0.0%
SN6	7	Vernal Pools (Confirmed)	20.5%	57.0%	8.3%	14.1%	0.0%
SN7	5	Vernal Pools (Potential)	6.0%	30.1%	52.3%	2.4%	9.2%
SN8	8	Wetlands	60.9%	31.0%	5.1%	3.0%	0.0%
SN9	4	Mast production areas	10.3%	49.3%	35.2%	4.0%	1.2%

The sum of percentages for each component is 100.

References

Puryear, K. 2004. Landscape-level grassland bird conservation in the southern Champlain valley, Vermont. The University of Vermont.

Sutti, F. 2009. Identifying Priority Conservation Areas for Grassland Birds in the Champlain Valley of Vermont. The University of Vermont.

For more information

A complete report on BioFinder development, methods and findings, including all 21 component summaries can be found at www.BioFinder.vt.gov. For more information specific to this component, contact Jens Hilke, Vermont Fish & Wildlife Department, 802-879-5644, jens.hilke@state.vt.us.