



Grasslands

Habitat Stewardship Series

NEW HAMPSHIRE WILDLIFE ACTION PLAN

Recognizing grassland habitats

Grasslands are an increasingly rare sight in New Hampshire. More than 70 species of wildlife use these open areas of fields and wildflowers to meet their needs for food, cover, or breeding. Learn to recognize the habitat values of grasslands and discover what you can do to maintain and conserve these special habitats.



- The most common grassland habitats in New Hampshire are agricultural fields such as hayfields, pastures and fallow fields. Here, vegetation consists of a mixture of grass species, or a combination of grasses, sedges and wildflowers.

- Airports, capped landfills, military installations, and wet meadows may also function as grassland wildlife habitat if they support similar vegetation. Croplands are also used by many grassland wildlife species, and are also important as potential grasslands, since they may be easily converted to grow grass if crop farming practices are abandoned.
- Vegetation growing in grassland habitats may be tall (over four feet), short (less than 6 inches), or a combination. Vegetation height plays an important role in determining which wildlife species will use the habitat. A common trait of all grassland habitats is that they contain few (if any) trees or shrubs.
- Today, most plants growing in grasslands are non-native grasses, introduced by humans for agricultural uses. These include timothy, Kentucky bluegrass, orchard grass and perennial ryegrass. Two native grasses, big bluestem and little bluestem, as well as native wildflowers such as goldenrod and aster, are also common in our grasslands today.

Where are New Hampshire's grasslands?

Development and natural forest succession have combined to reduce grassland habitats in New Hampshire to the point that grasslands currently cover only about four percent of our landscape. However, large grassland habitats (those greater than 25 acres in size) still exist in every county in New Hampshire, with the highest concentrations in Grafton County (with 20 percent of our remaining grasslands), Merrimack County (13 percent), and Coos County (12 percent). Some level of conservation restriction protects about eight percent of New Hampshire's large grassland habitats.

Historical changes in grassland habitats

Historically, Native Americans and beavers were the primary forces responsible for creating and maintaining grassland habitats in New England. Native Americans created grasslands when they burned the land for agriculture and to improve forage for game species such as white-tailed deer. At the same time, ponds above abandoned beaver dams grew into grassy meadows after the water drained and the nutrient-rich soil was exposed to sunlight.

In more recent history, fire suppression and limits to where beavers are allowed to build dams has meant that grasslands are restricted mainly to agricultural areas. The peak of agricultural clearing in the state occurred in the mid-1800s. Since then, New England has been losing grassland habitats, which have grown back into forest. With their well-drained soils, tree-less fields, and ample road frontage, agricultural lands also offer attractive sites for development.

Today most grasslands in New Hampshire require maintenance by humans. If left alone, these habitats will grow back into shrubs and small trees, reverting eventually to forest.

Declines in grassland-nesting birds

Bird species that depend on grasslands have declined, along with their habitats, faster than any other group of birds in New England. Most grassland-nesting birds are “area sensitive,” which means they won’t nest in fields smaller than a certain size. The following list is a simplified guide to the required minimum field size and the preferred vegetation height in fields used by grassland-nesting birds:

Birds of smaller grasslands (<25 acres)

Bobolink	5+ acres	dense grass taller than 3 feet
Eastern meadowlark	15+ acres	dense grass and wildflowers taller than 3 feet
Savannah sparrow	20+ acres	prefers sites with both short and tall vegetation

Birds of larger grasslands (>25 acres)

Grasshopper sparrow*	30+ acres	prefers sites with short, sparse grass; uncommon
Northern harrier**	30+ acres	forages in short grass fields, nests in wet meadows
Upland sandpiper**	150 acres	prefers sites with short, spare grass; very rare

*state-threatened species

**state-endangered species

Agricultural practices and bird nesting

Without the work of farmers and other landowners, most grasslands would quickly revert to forest. However, the timing of mowing can affect a field’s ability to provide habitat for grassland-nesting birds and other wildlife. Farmers growing high-quality forage for livestock usually mow their fields two or three times during the summer. At least one of these mowings typically occurs between May and mid-July, a time that corresponds with the nesting season for most grassland-nesting birds. Mowing during this period can destroy nests and eggs, kill fledglings, or cause adult birds to abandon their nests.



Stewardship Guidelines for grasslands

- Grasslands of any size provide valuable habitat for wildlife in New Hampshire. If you own fields, maintain them by mowing in the fall at least once every three years to discourage trees and shrubs. It is much more difficult and expensive to create a new field than to maintain an existing field by mowing.
- Focus land conservation on large grasslands (greater than 25 acres in size), which benefit the greatest number of wildlife species and are increasingly rare in the state.
- In fields where intensive agricultural production is not an issue, mow fields after August 1st, the end of grassland-breeding bird season. Mowing even later (August-October) is ideal, since this allows late-flowering wildflowers such as aster and goldenrod to provide nectar for migrating butterflies. Areas where later mowing may be possible include airfields, capped landfills, fallow fields, edge habitats, marginal farmland, weedy areas, and fields producing bedding straw.
- In agricultural fields, modifications to mowing techniques can help reduce impacts on grassland-breeding birds during the breeding season (May through mid-July):
 - Raise mowing bar to six inches or more in areas with grassland bird concentrations.
 - Grassland birds roost in the fields at night, so avoid mowing after dark.
 - Use flushing bars on haying equipment (for more information, contact the Wildlife Division of the New Hampshire Fish and Game Department at 271-2461).
 - Delay mowing in wetter areas or in grasslands along rivers.
- Farmers are faced with many pressures during the growing season—variable weather, equipment demands, planting schedules—making it difficult for them to incorporate a refined mowing technique and schedule to accommodate grassland-nesting birds. However, interested farmers have a number of federal and state cost-share programs available to help pay for practices that benefit wildlife. Contact your county UNH Cooperative Extension office or the Natural Resources Conservation Service (NRCS) for more information about these cost-share programs.
- Where possible, remove all shrubs and trees growing in the middle of fields, as these decrease the useable acreage as perceived by grassland-nesting birds.
- Burning fields, particularly in areas with poor soil, can improve soil nutrients and mimic historical disturbances to grassland habitats. Burning will also help spread native grasses (see below) if they already exist in a field. Some New Hampshire landowners have established partnerships with their local fire departments to burn fields on an annual basis as training for firefighters.
- Warm-season grasses, many of which are native to the U.S., may be a viable alternative to (non-native) cool-season grasses as an agricultural hay crop. Warm-season grasses are more difficult to establish, but they offer some benefits to landowners willing to take on the challenge. They require less fertilizer, lime, and herbicides, and are more drought-tolerant. For wildlife, they offer better nesting cover (growing as in bunches, with space between for movement and nests), a more dependable food source, and better winter cover, since they don't mat down during heavy snows. The NRCS and UNH Cooperative Extension can provide advice and possible cost-share funds to plant warm-season grasses.



Tractor with flushing bar



A controlled burn

Species Focus

of conservation concern

Eastern meadowlark

These songbirds require fields larger than 15 acres, with tall grasses and a mix of wildflowers typical of fields that have gone un-mowed for up to five years. Meadowlarks will also breed in lush hayfields, but the fields must be of a sufficient size.

Bobolink

Bobolink, although not listed as a species of conservation concern, is the most common grassland-nesting bird found in New Hampshire fields. Ideal bobolink habitat is a lush hayfield larger than five acres, that is mowed once a year in September. Removing the hay from the field is also beneficial, as the birds prefer fields without thick thatch layers. A one- or two-acre border area might be mowed only every two or three years to provide a diverse mix of wildflowers such as milkweed, aster, goldenrod, and thistle. These plants attract a wide variety of insects that provide a rich food source for bobolinks and other birds.

Smooth green snake

Smooth green snakes live and feed in open habitats such as pastures, old fields, and wet meadows throughout New Hampshire. Edges of these habitats provide the rotting logs and mammal burrows in which smooth green snakes lay eggs in summer and hibernate in winter. They feed on insects, slugs, caterpillars and earthworms. Populations of smooth green snakes are in decline due to habitat loss. Frequent mowing and low mower blades can kill snakes. Insecticide spraying in agricultural fields (especially for slugs) may also impact smooth green snakes by reducing the amount of prey available.



Eastern meadowlark



Bobolink



Green snake

Managing Small Fields for Wildlife

Many landowners own fields smaller than five acres. These fields are still important for other wildlife species, and as foraging areas for grassland birds nesting in nearby larger fields or migrating songbirds passing through. Landowners can manage their fields to improve the overall plant and wildlife diversity by:

- Mowing fields only once every two or three years to increase wildflower and insect diversity.
- Mowing as late in the fall as possible (September-October) to allow late-blooming wildflowers to form and provide nectar sources for migrating butterflies.
- Maintaining some areas of bare ground (poor soils or heavily-grazed areas) for such species as killdeer and horned larks.
- Establishing a rotational mowing or grazing program in which different parts of a field are mowed/grazed at different times. This creates a patchwork of different grass heights that provides cover and feeding opportunities to the greatest number of wildlife. Contact your county UNH Cooperative Extension Agricultural Educator for more information on establishing a rotational mowing or grazing program on your land.

Wildlife found in grasslands

Grasslands of all sizes will be used by over 150 different wildlife species throughout the year. Below are some examples of species that depend on grassland habitats. Be on the lookout for these species, and follow the stewardship guidelines provided to help maintain or enhance grassland habitats in your area. Species of conservation concern—those wildlife species identified in the Wildlife Action Plan as having the greatest need of conservation—appear in **bold** typeface.

- American bittern
- American kestrel
- **Black racer***
- **Blanding's turtle****
- Bobolink
- **Eastern hognose snake****
- **Eastern meadowlark**
- **Grasshopper sparrow***
- **Horned lark**
- **Northern harrier****
- **Northern leopard frog**
- **Purple martin**
- Savannah sparrow
- Small rodents (important as prey species)
- **Smooth green snake**
- Turkey
- **Upland sandpiper****
- **Vesper sparrow**
- **Whip-poor-will**
- White-tailed deer
- **Wood turtle**

* state-threatened species

** state-endangered species

Where to get help

If you have information about a wildlife species of conservation concern, contact NH Fish & Game's Wildlife Division at 603-271-2461. Contact the UNH Cooperative Extension Wildlife Specialist at 603-862-3594 for technical assistance for landowners or your community.

Publications and assistance on forestry and wildlife topics are available through the UNH Extension Educators in Forest Resources in each county. Contact information for each UNH Cooperative Extension office is provided below. Additional publications, contact information, resources, and web versions of all brochures in the Habitat Stewardship Series are available on the UNH Cooperative Extension website at: nhwoods.org.

Belknap County	603-527-5475	Grafton County	603-787-6944	Rockingham County	603-679-5616
Carroll County	603-447-3834	Hillsborough County	603-641-6060	Strafford County	603-749-4445
Cheshire County	603-352-4550	Merrimack County	603-225-5505	Sullivan County	603-863-9200
Coos County	603-788-4961				

Authorship

The Habitat Stewardship brochures are produced by UNH Cooperative Extension, an equal opportunity educator and employer. University of New Hampshire, U.S. Department of Agriculture and N.H. Counties cooperating. Partial funding for this publication was provided by The Sustainable Forestry Initiative. New Hampshire Coverts Project volunteers Sam Doyle and Alan Johnson helped fund revisions and printing of the 2nd edition. Additional support came from the New Hampshire Fish & Game Department. Written by Malin Ely Clyde.

About the Habitat Stewardship Series

Much of the land in New Hampshire is privately owned. These individuals are the primary stewards of our wildlife and forests, and also our clean water, scenic views, fresh air, natural and cultural heritage, and recreational resources. The Habitat Stewardship Series has been created to help landowners and land managers recognize the habitats critical for wildlife species at risk, and to illustrate the role private landowners can play in sustaining those species through conservation, management, and sound land stewardship.

Photo Credits

Cover photo: Matt Tarr - UNHCE. Other photo credits: Brett Calverley - Ducks Unlimited, Canada; Michael Marchand - NH Fish & Game; Larry Master - masterimages.org; Debbie Stahre - webofnature.com; Carl Wallman; Pat Watts.

Rev. 10/08



UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION



SUSTAINABLE
FORESTRY
INITIATIVE