

SPECIES PROFILE

Grasshopper Sparrow

Ammodramus savannarum

Federal Listing: Not listed

State Listing: Threatened

Global Rank: G5

State Rank: S1

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ELEMENT 1: DISTRIBUTION AND HABITAT

1.1 Habitat Description

In the eastern United States, grasshopper sparrows use dry fields with sparse grasses (usually bunch grasses) and weeds, few shrubs, and patches of bare ground. Although areas with more than 35% shrub cover are rarely used, a few scattered shrubs or other tall plants provide important song perches. Airports, abandoned agricultural fields, blueberry barrens, capped landfills, and sandplain grasslands provide suitable habitat (Vickery 1996). In many parts of the East, the species will also use reclaimed surface mines (Whitmore 1980).

The grasshopper sparrow prefers large fields over 40 ha (100 ac), although the species will use sites as small as 12 ha (30 ac). However, not all large grasslands may be used. In Maine, sparrows occupied only 50% of suitable sites over 100 ha (250 ac; Vickery et al. 1994), and in Massachusetts only 1% of hayfields and 8% of barrens over 64 ha (160 ac) were occupied (Vickery et al. 1994).

In the Midwest and Great Plains, grasshopper sparrows use smaller fields more regularly, but this may vary across regions (Helzner and Jelinski 1999, Heckert 1994, Davis 2004). Davis (2004) also determined that sparrows were less likely to occur in patches with a perimeter-area ratio less than 0.018 m/m². This result is corroborated by work in Minnesota where sparrow nests were more likely to be located at least 45 m from a forest edge (Johnson and Temple 1986).

Habitat in New Hampshire is generally of the sparse dry grassland type described above. It is possible that sparrow rarity, and the patchiness of available habitat in the Northeast, have been conflated with choosiness on the part of the bird. Indeed, near the core of its range, less suitable habitat is more often occupied.

1.2 Justification

Although never common in New Hampshire, grasshopper sparrows have declined significantly since the 1960s (Foss 1994, New Hampshire Bird Records (NHBR)). The species is now restricted to 5 sites, of which at least 3 are seldom used (table 1). Their peak distribution in the state probably corresponded to the height of forest clearing for agriculture. There are insufficient data from the Breeding Bird Survey (BBS) to evaluate grasshopper sparrow population trends in the last two decades.

The species is of conservation concern throughout the Northeast, where range contractions and declines have been observed since the mid-1900s (Laughlin and Kibbe 1985, Andrie and Carroll 1988, Zeranski and Baptist 1990, Veit and Petersen 1993). Breeding Bird Survey data indicate a range-wide decline of 3.9% per year, and a 4.9% annual decline in the Northeast (Sauer et al. 2004).

1.3 Protection and Regulatory Status

This species is federally protected by the Migratory Bird Treaty Act, which prevents the killing of most non-game birds and collection of their nests or eggs. The New Hampshire Endangered Species Conservation Act (RSA 212) protects grasshopper sparrows.

1.4 Population and Habitat Distribution

Since the 1960s, most of New Hampshire's grasshop-

per sparrows have been sighted in the Merrimack Valley south of Concord and in the Great Bay area (figure 1). Records are scant in the southern Connecticut Valley and Pemigewasset Valley/Squam Lake areas, and many are of single non-breeding birds. The state probably supports roughly 25 pairs of sparrows, with 80% of these at the Concord and Keene Airports. The regional population numbers approximately 500, with most at 2 locations in Massachusetts (Jones et al. 2001).

1.5 Town Distribution Map

Not completed for this species.

1.6 Habitat Map

A habitat map for grasshopper sparrow was based on the overall habitat map for extensive grasslands developed by New Hampshire Fish and Game (J. Oehler personal communication) (see Extensive Grasslands habitat profile). Potential grasshopper sparrow habitat within the population of extensive grassland polygons was selected as follows:

- Only the southern half of the state was considered (south of White Mountains and Vermont Piedmont ecoregions)
- Sites with a perimeter-area ratio greater than 0.02 m/m² were eliminated based on the work of Helzer and Jelinski (1999)
- Remaining patches were placed in 1 of 3 size categories, in order of increasing suitability: (1) < 40 ha, (2) ≥ 40 ha and < 100 ha, (3) >100 ha
- Sites within the lower Connecticut River Valley (2 towns east of river, north to Claremont), Merrimack River Valley (2 towns to either side of river, north to Concord), and Seacoast (roughly the Coastal Lowlands ecoregion) were given priority, based on more regular historic and current records of grasshopper sparrows

Ideally, such a habitat model would also consider the type of soil underlying a grassland, since grasshopper sparrows tend to occupy sites growing on sandy or otherwise poor soils. However, because digital soils data are not available for all parts of the state, this feature was not included.

1.7 Sources of Information

Basic natural history information in this profile was largely gathered from the literature cited in element 5. Data on grasshopper sparrow distribution in New Hampshire were compiled from NHBR, a database maintained by the New Hampshire Audubon.

1.8 Extent and Quality of Data

Because surveys of historic grasshopper sparrow locations have been conducted in recent years, our understanding of the species' abundance at known sites is relatively good. However, most of the state's airfields are closed to the public, and the "discovery" of the large population at the Keene Airport in 2003 is testament to the potentially large gaps in our knowledge of its statewide distribution.

1.9 Distribution Research

A comprehensive survey of suitable habitat (including area requirements)—particularly at airfields—in southern New Hampshire is needed. Such a survey should include ground inventories of potential habitat identified with maps and GIS. Sites identified using the habitat model described above should be given priority, as should airports, capped landfills, and other extensive areas of "disturbed" habitat that may not have been identified in the above model.

ELEMENT 2: SPECIES/HABITAT CONDITION

2.1 Scale

Based on the known distribution, it is reasonable to treat grasshopper sparrows at the scale of occupied (or potentially occupied) habitat patches. These are all discrete units on the landscape, and for known sites there is generally some information pertaining to the level and types of threats that occur there. Since these sites represent a wide variety of ownerships and management needs, they are best treated independently. The proposed conservation planning units for grasshopper sparrows in New Hampshire are as follows:

- Concord Airport, Concord
- Keene Airport, Swanzey
- Pease Tradeport, Portsmouth/Newington

- Manchester Landfill, Manchester
- Derry Landfill, Derry
- Cemetery Fields, Amherst
- Old Mill Road, Lee
- Anheuser-Busch fields, Merrimack
- Souhegan River Fields, Amherst

Two sites in the lower Merrimack River Valley that have been unoccupied since the early 1980s may still support suitable habitat and should be considered potential grasshopper sparrow sites. These sites are Manchester and Nashua airports.

2.2 Relative Health of Populations

Most grasshopper sparrow populations have not been sufficiently monitored to determine how they vary in size or productivity. Four sites (Concord, Pease, Anheuser-Busch, Cemetery Fields) have supported the species consistently for the last decade, and population estimates do not seem to vary (Hunt 2003). Although data are limited, it is suspected that the Keene Airport also fits in this category.

2.3 Population Management Status

Management is not occurring at the level of sparrow populations at any site in New Hampshire. See element 2.6 for status of habitat management activity at sites where the species occurs.

2.4 Relative Quality of Habitat Patches

Of the sites identified in section 2.1, Concord, Keene, and Pease airports are considered high quality. All contain extensive acreage of suitable grassland or grassy heath. Habitat management is already in place at Pease to benefit upland sandpipers, and the mowing schedule should benefit sparrows. As a result, the low numbers and sporadic occurrence of sparrows cannot be attributed to mowing. Mowing at the Concord airport does not currently occur during the sparrows' breeding season, nor does it occur at the most important sparrow areas at the Keene airport. However, alteration of the mowing regime in other areas of the Keene airfield would probably benefit the species. At 2 other reliable sparrow sites—Cemetery Fields and Anheuser-Busch—mowing does not interfere with sparrows. However, these 2 sites are rela-

tively small and not as critical as the large airfields. The remaining small sites would benefit from altered mowing practices, and these may be relatively easy to implement at the capped landfills.

2.5 Habitat Patch Protection Status

None of the units defined in section 2.1 is protected. Grassland habitat protected by Great Bay National Wildlife Refuge is adjacent to that at the Pease Airfield, but grasshopper sparrows have not been documented there. Management agreements or memoranda of understanding are in place at the Concord and Pease airports and at Cemetery Fields.

2.6 Habitat Management Status

Most of the sites currently known to support grasshopper sparrow populations are managed in either a beneficial or neutral manner. Such activities include late mowing (Anheuser-Busch, Cemetery Fields, Concord Airport, parts of Keene Airport) and partial mowing timed to benefit upland sandpipers (Pease Tradeport). At Cemetery Fields, there is a Memorandum of Agreement between the Town of Amherst Cemetery Trustees and NHFG that allows the latter to manage the site in a manner beneficial to grasshopper sparrows. Specifically, each half of the site will be mowed on alternate years and mowing will not occur between 15 May and 7 August. The management agreement for the Concord Airport (Fuller et al. 2003) stipulates that safety areas at the airport not be mowed until after 1 October, and that adjacent areas be mowed every 3 years. Because of the poor conditions at this site, such a mowing regime is sufficient to prevent excessive invasion by woody shrubs. At Pease, mowing of safety zones is initiated before 1 May, but all remaining areas are not mowed until August or later. At the smaller sites such as capped landfills and old gravel pits, mowing is not currently done in a manner compatible with maintaining grasshopper sparrow populations, although at least 1 land manager (Manchester landfill) is amenable to implementing such management. Although areas of the Keene Airport that support the majority of its sparrow population are not mowed until late in the season, sparrows do use areas that are mowed more regularly. Implementation of a mowing protocol similar to that at Pease may ultimately benefit birds at

Keene without detracting from the airport's need to comply with safety regulations.

2.7 Sources of Information

General data on habitat condition for grasshopper sparrows were compiled from the literature. Information on management activity at specific sites was obtained through site visits, discussions with pertinent parties, or existing management plans or agreements.

2.8 Extent and Quality of Data

At sites where grasshopper sparrows have been actively monitored in the last decade, the data on population size and habitat condition are of relatively high quality. A thorough assessment of grasshopper sparrow status in New Hampshire will require access to large areas of suitable habitat that have not been surveyed, particularly larger airfields in the southern half of the state.

2.9 Condition Assessment Research

At sites where grasshopper sparrows are known to occur, monitoring will determine if management affects abundance and productivity. Mapping singing locations or territories can inform managers of which areas are being used and may help determine if birds are breeding or simply wandering among patches of habitat.

ELEMENT 5: REFERENCES

5.1 Literature

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5.2 Data Sources:

NHBR. New Hampshire Bird Records, New Hampshire Audubon, Concord, NH.

ELEMENT 6: LIST OF FIGURES

Figure 1. Distribution of breeding season records of grasshopper sparrow in New Hampshire 1960-2004. Towns are coded according to the number of years in each period when sparrows were reported: yellow = 1, red = 2-5, black = > 5 (data from NHBR and Hunt 2003). Records of birds in late May but not later in the season are excluded as being possible migrants.

Table 1. Sites supporting grasshopper sparrows in at least 2 years during the period 1990 to 2004 (data from NHBR and Hunt 2003). Sites believed to support the species on a consistent basis are indicated with an asterisk.



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Town	Site	Occupancy	abundance
Concord	Concord Airport*	1997 onward	10± pairs
Merrimack	Anheuser-Busch fields*	1996 onward	1-3 pairs
Amherst	Cemetery Fields*	1996 onward	1-2 pairs
Newington/ Portsmouth	Pease Airfield*	1995 onward	single males
Amherst	Souhegan River fields	1994, 1999, 2003	male or pair
Derry	old landfill	1999 and 2003	single males
Lee	gravel pit on Old Mill Rd.	2001 and 2002	single males
Swanzey	Keene Airport*	2003 and 2004	10± pairs

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Distribution of Grasshopper Sparrow in New Hampshire

Distribution

- Known
- Potential
- ▨ Historic



Known = confirmed breeding observations as reported in the NH Natural Heritage Bureau's Element Occurrence Database and obtained from NH Bird Records and the NH Breeding Bird Atlas, Audubon Society of New Hampshire.
Potential = possible breeding and other observations from the same data sources.
Historic = observations greater than 20 years old.

