



Audubon NEW YORK

Monitoring the Effectiveness of Grassland Bird Conservation

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Note: the work described in this report is one component of a multipart trial to coordinate and implement a robust monitoring program for grassland breeding birds across the Northeast. Three separate grants funded through the American Bird Conservancy are supporting this program, and as the grants were awarded at various stages of the program's development, the deliverables and reports vary slightly in scope and objectives. The three complementary reports include Tsipoura et al. (2008), Morgan and Burger (2008a), and Burger et al. (2008). The problem statements and backgrounds for these separate reports are nearly identical, along with some descriptions of protocols and standard operating procedures, in an effort to allow each report to stand alone if necessary. To differentiate between the three reports, an overly simplistic comparison of the key messages of the three reports is:

1. Burger et al. (2008; “Developing a Regional Monitoring Framework Applicable to Patchily Distributed Bird Species in Grassland, Scrub-shrub, and Forest Habitats”) – Concepts for (and the 2008 trial effort) incorporating a spatially explicit sampling framework into the grassland monitoring program in partnership with a similar monitoring program for Golden-winged Warblers.
2. Morgan and Burger (2008a; “Monitoring the Effectiveness of Grassland Bird Conservation”) – Efforts and perspectives from New York on developing a grassland bird monitoring program.
3. Tsipoura et al. (2008; “Development of avian indicators and measures for monitoring threats and effectiveness of conservation actions – Grassland Birds”) – Guidelines (following Oakley et al., 2003) to direct future collaboration on an expanded monitoring program for grassland birds in the Northeast.

1. Background and objectives

The Breeding Bird Survey (BBS) shows many grassland bird populations as rapidly declining and even approaching extirpation throughout significant portions of their ranges. As a result of these declines, 15 grassland bird species are listed by State Wildlife Action Plans in the Northeast as high priorities for conservation action (see Table 1), and many other species will benefit from relevant conservation efforts. Habitat loss, fragmentation, and deterioration are the main culprits in the loss of this important habitat. Needs pertaining to the conservation of

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grassland birds, include 1) increasing the amount of grassland habitat on public and private land in regions with the highest concentrations of grasslands, 2) implementing the new LIP and supporting existing private lands cooperative management programs to improve habitat for grassland birds on private lands, 3) working with public land managers, including NRCS, USFWS, and state wildlife agencies, to better direct funding and other resources to the highest priority areas and projects for grassland habitat management, and **4) developing and implementing a monitoring program to determine population trends and evaluate effectiveness of existing conservation efforts.** This project focuses on the fourth objective (monitoring), which must be intimately linked to any efforts addressing the other three.

As various strategies and techniques are implemented, assessing their effectiveness of requires additional effort, and is often overlooked. While the trends documented by the BBS demonstrate the need for conservation, it is rapidly losing its ability to track changes in ever-smaller grassland bird populations. In addition, the need exists for a coordinated and uniform approach to assessing the effectiveness of conservation actions. As a result, developing and implementing a monitoring program to determine population trends and evaluate effectiveness of conservation efforts has been identified as a critical need.

Table 1. Bird species listed as grassland Species of Greatest Conservation Need (SGCN) by states in the northeastern US.

Species	States listing species as SGCN
<i>American Kestrel*</i>	CT, MA, NJ, RI, VT
<i>Barn Owl*</i>	CT, DE, MA, MD, NJ, NY, PA, RI, VA, VT, WV
Bobolink	CT, DC, DE, MD, ME, NJ, NY, PA, RI, VT, WV
<i>Dickcissel*</i>	NJ, NY, PA, WV
Eastern Meadowlark	CT, DC, MA, MD, ME, NH, NJ, NY, PA, RI, VT, VA
Grasshopper Sparrow	CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, VA, WV
Henslow's Sparrow	DE, MA, MD, NJ, NY, PA, VT, VA, WV
Horned Lark	CT, ME, NH, NJ, NY, RI, WV
Loggerhead Shrike	DE, MD, ME, NJ, NY, PA, VA, WV
Northern Harrier	CT, DE, MA, MD, NH, NJ, NY, PA, RI, VA, VT, WV
Savannah Sparrow	CT, DE, MD, NJ, RI
Sedge Wren	CT, DE, MA, MD, ME, NH, NJ, NY, VT, VA, WV
Short-eared Owl	CT, DE, MA, MD, ME, NJ, NY, PA, RI, VT, WV
Upland Sandpiper	CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, VA, WV
Vesper Sparrow	CT, DE, MA, MD, ME, NH, NJ, NY, VT, WV

*Not finalized as members of the target population.

To maintain an effective scale for these efforts, very similar conservation and monitoring strategies are developing on a state-by-state basis across the Northeast. Initial partners in the collaborative monitoring component of the grassland conservation community include New Jersey (led by New Jersey Audubon Society), New York (Audubon New York) and Connecticut (Connecticut Department of Environmental Protection). The results of the collaboration are described in the joint report “Development of avian indicators and measures for monitoring threats and effectiveness of conservation actions – Grassland Birds” (Tsipoura et al. 2008) which includes the framework for progressing with a closely coordinated monitoring program across the Northeast, and will not be repeated in detail in this report. The approach for coordinating

grassland bird monitoring across the Northeast (e.g. expanding beyond the three states participating in 2008), while also discussed by Tsipoura et al. (2008), will be described in this report.

2. Deliverable Products

A. A draft protocol for monitoring grassland birds for site level response to management actions and regional population trends.

The following protocol describes the process for conducting monitoring at selected sites. The process for site selection is described in some detail in Burger et al. (2008), but, in brief, a robust protocol ideally allows for uniform data collection that facilitate analyses associated with distinct (but linked) objectives of the monitoring program:

1. Site specific monitoring to document compliance with contractual obligations established through incentive programs or regulatory protections.
2. Site specific habitat assessments (used for adaptive management of controllable habitat/vegetation characteristics).
3. Assessment of conservation program contributions to regional population objectives (e.g. assessment of the ability of LIP, WHIP, CRP, and related programs to provide stable, source populations that subsequently affect regional grassland breeding bird population trends).
4. Regional (state and northeastern US) trend monitoring of grassland breeding bird population trends (to supplement existing, increasingly-limited information available from the Breeding Bird Survey for these rare species).

As the scale of the intended survey program requires many observers, standard training in the identification and observation of grassland birds will assist with a homogenous survey effort. However, some variation in observer skill and ability is expected, and so the final protocol will include a combination of distance and repeated sampling (Buckland et al. 2001, 2004; Royle and Dorazio 2008) to ultimately allow for density modeling at each surveyed point and/or habitat patch.

Protocol for the 2008 pilot season in New York

1. Timing of surveys.

The approximate survey period is 23 May to 10 July. Each point will be surveyed twice during this period (> 10 days between surveys), and all points should be initially surveyed no later than the midpoint of the survey period (16 June).

Vegetation characteristics are simple measurements should a more rigorous assessment not be conducted. Average several measurements around the point location, while estimating cover of shrubs (woody vegetation), grass, and forbs within 100 m of the point location (and within the boundaries of the habitat patch).

1. Environmental conditions within prescription for conducting grassland bird monitoring.

<u>Condition</u>	<u>Acceptable Range</u>
Time	½ hr < sunrise → 4 hrs > sunrise*
*Temperature	< 85 degrees F
Cloud cover	0-100%

Wind	Beaufort 0 – Beaufort 3 (0 to ~ 12 mph)
Rain	None, slight fog or mist (datasheet stays dry during count)
Visibility	Clear to 300 m
Traffic (roadside counts)	<i>If unsafe conditions exist (no shoulder or no suitable parking), do not depart vehicle.</i>

2. Travel to the point location.

Predetermined points

- A. Utilize GPS to navigate to the point locations provided (entering the point locations as waypoints in your GPS prior to beginning surveys for the day can facilitate navigation).
- B. Navigate to within 5-10 m of the point location. Needless backing up and moving left and right to arrive within 1 m of the point wastes time and unnecessarily tramples a large amount of vegetation (and is not good for landowner relations when surveying alfalfa or clover fields).

Other points (e.g. randomly selected habitat patches)

- A. If landowner permission for access is not provided, move to the roadside bordering or bisecting the habitat patch. If road frontage is < 400 m (i.e. not allowing multiple points 400 m apart), center the point location on the road frontage.

3. Wait 2 minutes for the initial burst of activity by territorial birds to subside. Fill out relevant data sheet fields while waiting (see Appendix A).

- Distance to trail/road will be zero (0) for roadside counts. For in-field counts, use rangefinders to get distance to road.
- The other general point fields are self-explanatory.

4. Conducting the count.

- A programmable, audible “countdown and repeat” timer is useful for tracking the count periods.
- Record each grassland species observed (see table of targeted grassland species) using either 2 or 4 letter Alpha codes. Each new individual should be entered on a new row on the datasheet.
- For each individual recorded, additionally record sex (if possible), the actual distance of first observation (using range finder), observation code (within each time period during which the individual is observed), and any breeding activities.
- balancing binoculars, rangefinder, clipboard, and pencil while trying to count grassland birds is tricky, but gets easier with practice.
- if a target species is observed outside of the count period, DO NOT ENTER AN OBSERVATION CODE in the associated field, but list the species, while including a note in the margin of the sheet indicating when the bird was observed (e.g. before count, after count, en route to point, in adjacent field, etc.).

5. Recording habitat information.

Fill out all possible fields within the habitat evaluation section.

- Evidences of disturbance include tire tracks, freshly cut hay/hay bales, drastic differences in vegetation (or tilled soil).
- Distinguishing between pasture and hayfields can be tricky. Presence of cowpies, established trails, or well maintained fencing can indicate use (or planned) use of a patch as pasture.

6. Submitting datasheets.

- For 2008, an Excel spreadsheet was created to guide data entry. Each individual is responsible for entering their own data to minimize transcription errors.
- The development of an online database for New York's survey effort is being planned, but will not be finalized until the 2009 protocol is established.

B. A defined hierarchical approach to coordinating grassland bird monitoring in the Northeast.

As mentioned previously in the background, the objective for a standardized monitoring program is to allow those participating in grasslands conservation at various scales (e.g. from site managers up to regional conservation planners) to collect standardized data. A robust sampling and protocol design will facilitate analyses at the various scales, while providing feedback to the various participants on the success of their contribution to the overall effort. Moreover, the forum established by coordinating monitoring on a multi-state scale also provides an ideal opportunity to integrate communication on new developments and additions to best management practices associated with grasslands conservation.

The majority of organizations and agencies associated with grassland bird conservation identify their "spheres of influence" according to geopolitical boundaries (i.e. state lines), such as state wildlife agencies or state programs of national organizations (e.g. Audubon New York or New Jersey Audubon Society). In addition, many states contain existing initiatives that deliver coordinated conservation projects as organized partnerships or ad-hoc collaboration. Bringing together every single participant in regional grasslands conservation and soliciting their participation in planning and protocol development would be quickly overwhelming.

The existing hierarchical approach appears to be most efficient at the current stage of the monitoring program. The following describes New York's and New Jersey's grassland conservation initiatives (charter members of the collaborative project) which are providing the impetus for developing a management-focused monitoring program:

Audubon New York – With support from the New York State Department of Environmental Conservation (NYSDEC), Audubon New York is coordinating a comprehensive grassland bird conservation effort in New York State. A significant portion of this initial effort culminated with the drafting and implementation of a grassland bird conservation plan (Morgan and Burger 2008b). A New York grassland bird partnership group has been formed to help determine the approach and strategies for this effort (Table 2).

Table 2. Members of the New York grassland bird conservation partnership (in alphabetical order).

Audubon New York (ANY)
Cornell Lab of Ornithology (CLO)
Ducks Unlimited (DU)
Finger Lakes Land Trust (FLLT)
Fort Drum-US Department of Defense (Ft. Drum)
Gerry Smith-Independent consultant
New York Natural Heritage Program (NYNHP)
New York State Parks, Recreation and Historical Preservation (NYSOPRHP)
New York State Department of Environmental Conservation (NYSDEC)*
State University of New York at Brockport (SUNY Brockport)
The Nature Conservancy (TNC)
Thousand Islands Land Trust (TILT)
US Department of Agriculture-Natural Resource Conservation Service (USDA-NRCS)
US Department of Agriculture-Farm Service Agency (USDA-FSA)
US Fish and Wildlife Service (USFWS)

*The NYSDEC provided financial and intellectual support for the development of the conservation plan.

The primary objective for this effort is to stabilize or reverse the declining trends of New York's grassland birds. Because the vast majority of grasslands in New York are privately owned hayfields and pastures, it would be impossibly expensive to protect all of them through conservation programs that focus on acquisition and management of public lands. Furthermore, the NY grassland group determined that spreading existing grassland conservation resources over too broad an area was unlikely to result in landscapes sufficient to support viable grassland bird populations. Therefore, regions of the state where grassland birds are most likely to persist, i.e. focus areas, have been identified and will be targeted for surveys and monitoring and serve to focus conservation resources—particularly incentive programs that encourage proper management of private lands, although proper management of publicly-owned lands in these areas is also important to this effort.

The conservation plan describes the identification of these focus areas, techniques for habitat management, steps for creating site-specific habitat management plans, and summaries of the habitat requirements for the targeted species. In addition, the plan identifies strategies (and methods for evaluating their success) for its implementation.

New Jersey Audubon Society – NJAS coordinates the New Jersey Habitat Incentive Team (NJHIT), a coalition of conservation organizations, and state and federal agencies and sportsman groups. NJHIT identified an important focal grassland area in Warren, Somerset and Hunterdon Co. that supports over 25% of the remaining agricultural land in NJ. This area, which includes Duke Farms, the historic grasslands of the Amwell Valley and Six-Mile Run, is in critical need of additional permanent land preservation and wildlife habitat enhancement. Within this focal area, the Raritan Piedmont Wildlife Habitat Partnership (RPWHP) was formed in 2005 to increase wildlife habitat connectivity and to implement action items detailed within the NJ Wildlife Action Plan. The Partnership consists of public and private agencies, including representatives of Somerset County, and Hillsborough Township, NJ Audubon Society, Conserve Wildlife Foundation, the D & R Greenway Land Trust, the New Jersey Conservation Foundation, the Sourland Planning Council, Watershed Association, Stony Brook Millstone Watershed Association, and Duke Farms.

To date the Partnership has jointly prepared a Grassland Conservation Plan which is scientifically based and spatially explicit (Ettel 2006). Since 2006, New Jersey Audubon Society's (NJAS) Citizen Science program, in collaboration with the NJ Division of Fish and Wildlife, Endangered and Nongame Species Program, has been monitoring bird responses to conservation-based grassland management.

The following list describes current monitoring/conservation projects in other states (beyond New Jersey and New York) that have expressed intentions or actively begun to develop plans to participate in the regional monitoring program:

Connecticut – Connecticut Department of Environmental Protection participated in a collaborative grant with NY and NJ through the NE Regional Conservation Needs grant program to pilot monitoring protocols in 2008. Connecticut has initiated a LIP program and a detailed survey of existing grassland habitat in the state, but limited the 2008 survey effort to publicly-managed grasslands.

Vermont – An existing partnership is well-developed among researchers at the University of Vermont, Audubon Vermont, the NRCS state programs, and many private landowners. The partnership's primary focus has been research on management strategies (much of the research has recently concluded and was presented in the dissertation of Noah Perlut), and the partnership is well positioned to transfer to monitoring the long-term effectiveness of the proposed strategies.

The Nature Conservancy Canada – Directly north of Lake Ontario is a focus area identified by TNC Canada that historically supported a large expanse of remnant prairie (several thousand hectares dominated by native warm season grasses). This remnant patch has persisted for centuries following the reforestation of the northeast following the retreat of the prairie that covered the northeast region following the disappearance of the most recent ice-sheet to impact the region. However, during the past century, much of the area was planted with conifer plantations to provide timber and other forest projects. TNC Canada has embarked on an ambitious project to remove many of these stands and replant native warm season grasses, and would like to contribute to regional grassland bird monitoring, while actively assessing the success of the restoration project.

Audubon Eastern States Alliance – This partnership among the state programs of the National Audubon Society is a unique avenue through which to expand the regional monitoring effort. Audubon New York and Audubon Vermont currently participate, and other state programs with limited existing efforts are particularly interested (including Audubon North Carolina, Audubon Connecticut, and Audubon Pennsylvania) in participating in a regional effort.

C. 2007 monitoring data

Monitoring of the NYSDEC Landowner Incentive Program was planned to be the initial pilot for instituting a New York monitoring program, and fieldwork was planned for 2007. However, bureaucratic setbacks prevented the signup of participants until the beginning of 2008, so fieldwork was postponed until the 2008 breeding season. The protocol for surveying at each sample point was described in the previous section.

A full discussion of the process for assignment of sample points to the potential and available grassland habitat within the NY focus areas is described in Burger et al. (2008). However, in brief, a critical need for an effective grassland bird monitoring program is a spatially explicit

sampling framework that balances the assessment of management success on “conservation grasslands” with regional population trends on all available (or “potential”) grassland habit.

We attempted to include these considerations in an RRQRR output for the 2008 pilot season, but failed to create a fully useable product. Authors of the spatially-balanced sampling tools are continuing to develop the associated extensions and programs, and additional expertise is being included in the monitoring program with the objective of full implementation in upcoming field seasons. See Burger et al. (2008) for a more detailed discussion of this process.

79 points were surveyed twice following the described protocol by two observers in New York during the 2008 field season (see Figure 1 for the distribution of the survey points in the New York focus areas). The points were equally distributed between applicants to the Landowner Incentive Program (both enrolled and unfunded applicants) and randomly selected habitat patches (>50 ha). All the targeted grassland bird species were encountered other than Henslow’s Sparrow (nearly extirpated as a breeder in NY) and Short-eared Owl (extirpated as a breeder but winters in New York).

The 2008 survey data is appended to this report, and a shapefile of the surveyed points is appended to Burger et al. 2008.

3. Support

Support for this project was provided by the American Bird Conservancy through the NE CBM Survey Design and Implementation Fund and the Sport Fish and Wildlife Restoration Programs of the U.S. Fish and Wildlife Service, the monitoring component of Audubon New York’s contract with the NYSDEC’s Landowner Incentive Program, the USFWS Neotropical

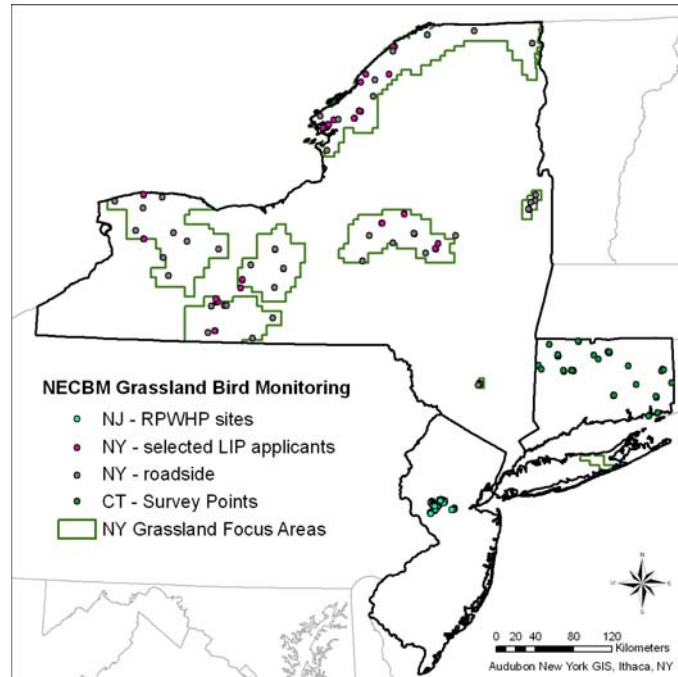


Fig. 1. Points surveyed in 2008 by members of the grassland working group of the NE CBM partnership.

Migratory Bird Conservation Act grant program, and donors and supporters of Audubon New York's mission to conserve birds and their habitats.



4. Citations

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Appendix A – 2008 Datasheet used in New York

NECBM Grassland Bird Monitoring Program
2008 Data Collection Sheet

Distance from trail/road: _____

Observer: _____

UTMs Easting: _____

Location: _____

Northing: _____

Point #: _____ Visit: 1st 2nd

Date: _____

Datum: _____
e.g. WGS1984

Precipitation: None Fog* Mist Light rain* Heavy Rain* (*outside prescription for survey)
Wind: 0 1-5 6-10 >10* Temp: _____

Cloud cover: 0% 1-15% 16-40% 41-75% 76- 90% 91-100%

Time started: _____

	0 - undetected	1 - seen only	2 - singing only
Detection	3 - seen and heard	4 - calling/chipping only	
codes:	0 - undetected	1 - seen only	2 - singing only
	3 - seen and heard	4 - calling/chipping only	

	Species	Distance	Minutes							Breeding behaviors (code)
			1-3	4-5	6	7	8	9	10	
ex.	SAVS	47	0	2	3	3	2	0	1	F
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

N - carrying nesting material
F - carrying food
G - carrying egg fragments
S - carrying fecal sack
L - local young

Note: Ignore BOBO and SAVS >100 m unless none detected <100 m

1) Habitat disturbed (e.g. mowed/hayed) during breeding season: Yes No

1a) If yes, % disturbed: 1-25% 26-50% 51-75% 76-100%

2) Point landuse: Cons. Grass Hayfield Pasture Fallow RowCrop Seed Crop
Open Space/Park Successional (~ >25% shrub cover)

3) Vegetation (Ignore the following fields when more rigorous sampling will be occurring):

Vegetation height: _____ % Grass _____ Dominant Grass: _____

Litter depth: _____ % Forb _____ Dominant Forb: _____

Shrub cover: _____ Nearest: _____ Averaged Height/Density (Robel Pole): _____

(7/1/2008)