

0203-0066

UNIVERSITY OF
RHODE ISLAND

PROPOSAL

PROJECT TITLE: Developing a Conservation Strategy for grassland bird
at Saratoga National Park

DATE: 7/31/02

AGENCY: National Park Service

Submitted by
The University of Rhode Island

Total Amount Requested: \$25,000

Proposed Starting Date: 1/1/03

Duration of Project: 21 months

Principal Investigator:

Name: Peter Paton

Signature: 

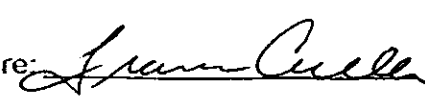
Department: NRS

Telephone: 4-2986

 8-1-02

Authorized University Representative:

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Specialist, Contracts
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Signature: 

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(Pat)

week of 4th
(mid-March)

Chris
Linda
Brian U.
Eliot
Janet

send proposal management plan
outline major elements of study
planning / management plan deliverable

\$25,000
\$20,000

SARA:

Grassland Birds

Conservation Issues to explore

- Team Review Draft
- ELs started
- CLR being finished (Eliot) (simulate ^{demonstration} strip area)
- Grassland Bird habitat needs to be addressed
potential to change field + forest

PMIS request: strategy to guide cultural landscape trt.
should be sensitive to breeding biology of species

- spotted knapweed good
henstons even in exotics

- * 2) fire management program
- * 3) agricultural lease
- 4) invasive exotics in fields
how would trt impact grassland birds

SARA = Important Bird Area designation

grasshopper sparrows
henstons sparrows
blue birds, northern harriers

"sink" pop. not "source" population

rachael
hazer
brian
underwood

forbs in fields important

open
forest

what responsibility does park have to PIF Bird Conservation Plans?

State-listed species

Park wants to say they are doing their part to
manage habitat

"semi-colonial"

henstons sparrow habitat defined
sp. composition not important

except. perches for males
depends on y ground for spring

[how to orchestrate tools
burning, mowing, leasing
to accomplish habitat
goals]

(guild)

Project Proposal

**Develop a Conservation Strategy for Grassland birds
At Saratoga National Park**

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16 July 2002

PMIS Project Number: 78136

INTRODUCTION

Grassland bird populations are declining at a dramatic rate throughout North America (Vickery et al. 1999). Based on Breeding Bird Surveys conducted throughout North America, 13 species were in significant decline from 1966-1996, 9 species remained stable, and 3 species increased (Peterjohn and Sauer 1999). In Northeastern North America, grassland and shrubland birds are the habitat-community groups exhibiting the most pervasive and steady declines in abundance of any guild of birds (Witham and Hunter 1992; Askins 1993, 2000), thus there is considerable interest among conservation biologists in this group of species. Among obligate grassland species in decline throughout North America, Henslow's Sparrow (*Ammodramus henslowii*) had the greatest rate of decline, which was estimated at 8.8% annually from 1966-1996 (Peterjohn and Sauer 1999), with the rate of decline increasing from 6.0% annually from 1966-1979 to 10.4% annually from 1980-1996. Henslow's sparrow has a limited breeding distribution rate, restricted to the northeastern and north-central United States. At least one obligate grassland subspecies is already extinct in the Northeast; the endemic Heath Hen (*Tympanuchus cupido cupido*) was extirpated from Martha's Vineyard, Massachusetts in 1932

2' 3 1/2 x 44 1/2
27 1/2 x 44 1/2 x 36 tall
28 x 45 x 36 tall

due to habitat loss. Without immediate conservation measures and active management of remaining grassland habitat, several other obligate grassland bird species may also be extirpated from the region (Wells and Rosenberg 1999).

Current hypotheses suggest that grassland birds have declined throughout North America due to farmland abandonment and declines in hayfield acreage (Pruitt 1996, Vickery and Dunwiddie 1997; Askins 1997, 2000), intensification of agricultural practices such as increases in mowing rotations of hay fields (Norment et al. 1999), habitat loss (Young and Osborn 1990), habitat fragmentation (Vickery et al. 1994), mortality from toxicants (Stone 1979), increases in nest parasitism from Brown-headed Cowbirds (*Molothrus ater*) (Zimmerman 1983), and adverse weather (Sauer et al. 1996). Habitat conversion and intensification of agricultural practices are probably the two primary causes of grassland birds declines in the Northeast. Since the early 1900s, reforestation of agricultural landscapes in New England has resulted in a substantial decline in the acreage of grasslands available to obligate grassland species (Askins 2000).

Although there is some controversy over whether extensive native grasslands existed prior to European colonization of the Northeast, available evidence suggests that some large coastal sandplain grasslands and heathlands occurred in the region (Askins 1999). Mehrhoff (1997) provided evidence of prairie or large tracts of grasslands historically occurring in New England, and although extensive grasslands most likely never existed in the region, there are some notable exceptions such as Hempstead Plains on Long Island. There currently are few self-sustaining grasslands in the region. Askins (2000) emphasized that in eastern North America, obligate grassland bird species are generally restricted to artificial open habitats maintained by human intervention. Conservation efforts must focus on these highly artificial habitats to prevent regional extinctions of grassland specialists.

The National Park Service has one park in northeastern New York that provides critical habitat for a number of grassland birds. Saratoga National Historical Park (SARA: 43°00'N, 73° 78'W) encompasses 1,100 ha, including over 335 ha of managed fields (Austin 1992). The importance of SARA to obligate grassland species was recently recognized when the Park was designated as a New York State Important Bird Area. Each field has a unique management history and most have been subjected to haying, burning, mowing and occasional manual shrub removal. Certain fields are leased to local farmers who cut the existing grasses and forbs for

hay. Field vegetation is dominated by *Centaurea* spp., *Bromus* spp., and *Galium* spp. The presence of several regionally important species of grassland birds has been documented in a number of surveys (Appendix A) including Henslow's Sparrow, Grasshopper Sparrow (*Ammodramus* *savannarum*), Savannah Sparrow (*Passerculus* *sandwichensis*), Eastern Meadowlark (*Sturnella* *magna*), Bobolink (*Dolichonyx* *oryzivorus*), Horned Lark (*Eremophila* *alpestris*), Vesper Sparrow (*Pooecetes* *gamineus*), Upland Sandpiper (*Bartramia* *longicauda*), and Northern Harrier (*Circus* *cyaneus*). The spatial distribution of birds on SARA was confirmed in 1985 during the New York Breeding Bird Atlas Project and more recently by surveys conducted by the University of Rhode Island.

The Park Service currently revising its General Management Plan for SARA, which will describe current resource conditions, and models expected changes in visitor use in the park and changes in resources over the next 15-20 years. In addition, the park is finalizing a Cultural Landscape Plan, which broadly defines the habitat configuration necessary to deliver to the visiting public an accurate portrayal of the conditions in the park during the historic battle of 1777 when American troops defeated the British in one of the 15 most decisive battles in world history. Previous avian research in the park has primarily focused on grassland habitats (Appendix A), although quantitative surveys conducted by the University of Rhode Island during the 2002 and 2003 field seasons will assess the spatial distribution of birds in all habitats throughout the park (P. Paton, in prep.). The park is currently documenting the histories of fire management, agricultural leasing, and mowing in anticipation of the need to establish specific histories for affected park areas. Finally, there are a number of datasets documenting the presence/absence of songbirds overtime at fixed listening points throughout the park, species composition and structure of vegetation in the fields of SARA, and general vegetation characterization from parkwide transects and other sources (Appendix A).

PROPOSED RESEARCH/WORK

We propose to integrate the existing resources, plans, guidelines and data into a synthetic, decision support document detailing the present value of managed grassland habitats of SARA to obligate grassland bird species. In addition, we will propose improvements to existing management operations at SARA. Finally, we will propose mitigation strategies if the present or future values of grassland habitats to grassland birds are lost or diminished.

- Specific Tasks

- (a) *Develop guidelines for managing fields that integrates the Park's natural, cultural and maintenance programs.*

- (i) We will develop a GIS map that shows the current and past distribution of grassland habitats at SARA. These maps will be created by heads-up digitizing recent and past aerial photographs of the park. These maps will be useful in quantifying changes in acreage of grassland habitats in the Park.

- (ii) We will assess existing natural, cultural and maintenance program activities (i.e., encampments, preservation of archeological features, proposed cultural landscape changes, etc.) that might compromise habitat value for grassland birds. Specifically, this task is to address impact of the following on current or future grassland avian habitat:

- a) *Prescribe Fire Treatment Program*-We will create a detailed assessment of current and past fire management that has taken place at SARA. There is a growing body of literature that has assessed the impact of fire management on grassland birds and grassland bird habitat (Shriver et al. 1999, Vickery et al. 1999, Herkert and Glass 1999, Rohrbaugh et al. 1999). We will integrate information from the current fire treatment program with existing peer-reviewed literature.

- ii) *Mowing with respect to vegetation management*: There has been considerable research conducted on the impact of the intensification of agricultural practices on grassland birds, including the rotation schedule of mowings (Jones and Vickery 1997). We will assess the current mowing schedule at SARA and compare it to best management practices in the peer-reviewed literature.

iii) *Non-native and invasive plant species:* Orchard grass (*Dactylis glomerata*), Kentucky bluegrass (*Poa pratensis*), and timothy grass (*Phleum pratense*) are examples of non-native that grow in the spring and fall when native warm-season grasses are dormant, and the soil and air temperatures are cooler (Dickerson et al. 1998). These grasses were introduced throughout the northeast for crops and pastures. Available evidence suggests that cool-season grasses provide less suitable nesting habitat, particularly invasive grasses such as fescue (*Festuca sp.*) and reed canary (*Phalaris arundinacea*). These two species of grass are avoided by grassland birds during the breeding season, although some cool-season species are tolerated by grassland birds (Jones and Vickery 1997b, Mitchell et al. 2000). We will assess the current distribution of non-native and invasive plant species in SARA based on available reports. We will summarize the spatial distribution and abundance of invasive species in SARA based on this available evidence. Finally, we will develop management recommendation for the control of invasive species based on the peer-reviewed literature.

iii) Adjacent landuse : We will assess adjacent land use patterns based on aerial photo interpretation of the most recently available photos. We will heads-up digitize lands within 1 mile of the park to assess current (2003) land use patterns and determine the acreage of grassland habitats near (within 1 mile of the park). We will also ground truth this map during the 2003 field season to assess map accuracy.

iv) Development proposals specifically listed in the GMP (e.g., effects of visitor flow patterns). Based on our assessment of projected visitor flow patterns, we will compare estimate of potential human disturbance on nesting grassland birds to available peer-reviewed literature on the impact of human disturbance on grassland birds.

b) *Consolidate existing data associated with the management of park fields, and identify those areas of most value to grassland birds.*

- (i) Based on available data, we will determine the spatial distribution and extent of grassland habitats in the park.
 - (ii) We will provide sources and meta-descriptions (using only Dataset Catalog descriptions) of existing datasets to provide a single source repository for grassland bird/habitat information in SARA.
- c) *Provide decision guidelines for management that make the best use of existing data and allow for tradeoffs and potential mitigation strategies for conflicting program activities.*
- (i) Based on our assessment of current monitoring plans for SARA, we will provide guidelines on how we feel avian and habitat resources should be monitored into the future to guide management options. These monitoring protocols will be based on existing inventory data. We will provide guidelines to managers for when we feel grassland birds in the Park are in trouble and what mitigation strategies should be implemented if avian populations decline to a specific point.

PRODUCTS TO BE DELIVERED

The deliverables we produced will be in both paper and digital form for the Final Report following standard guidelines provided by the National Park Service's Boston Support Office.

Management Guidelines:

We will provide a comprehensive set of guidelines for managing park open areas for grassland bird habitat values, that integrates various program activities and recognizes the need for mitigation and trade-off analysis. A matrix that cross references various park program areas related to the specific recommendation shall be provided when completed and approved. Specifically, the following areas should be explicitly addressed:

Value of existing grassland bird habitat for the species:

- i) *Potential impacts of proposed landscape treatments:* We will conduct a thorough review of all scientific literature related to managing habitats for grassland birds.

Based on that compilation of the literature, we will assess existing ongoing management activities at SARA and make recommendations, based on the literature, on how management could be improved at SARA.

- ii) *Reclamation of fallow pasture or shrublands*: We will search available peer-reviewed literature to assess potential strategies to reclaim pasturelands, shrublands, or even forested habitat (e.g., Mitchell et al. 2000)
- iii) *Effects of treatment types and timing*: There is a growing body of literature that has quantified the impact of fire management on grassland birds (Vickery et al. 1999, Herkert and Glass 1999, Shriver et al. 1999) and our summary of current/past fire management at SARA will be compared with current recommendations for fire management to maximize grassland bird productivity at the Park.
- iv) *Alternative treatments and applications*: Herbicides used in blueberry fields can have negative impacts on grassland birds (Vickery et al. 1999b). However, the impact of herbicides to maintain grassland habitats is less studied. We proposed to conduct a thorough literature review to assess alternative treatments to maximize avian abundance and productivity at SARA.

Metadata Standards

All existing data shall be properly documented using accepted metadata standards of the National Park Service (using Dataset Catalog standards established by NPS), including their potential for conversion to digital format (i.e., layers in a Geographical Information System).

Future Work

Suggestions for future research, monitoring, or management will be included in the final completion report. We will identify areas where consolidation of effort among program areas will be identified.

LITERATURE CITED

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Appendix A. Potential data sources that provide information on birds and habitat at Saratoga National Historical Park that could be summarized as part of this proposal.

Avian Inventory/Surveys- resource management files.

Bird Inventory: Dr. Peter Paton, Mike Windsor, June 2002 (work in progress)

Bird Observation Lists: Linda White, Jane Graves, Jim Schabrel, - resource management files.

Bird Point Counts/Bird Monitoring: 1993 (36), 1994 (29), 1996 (38), 1997 (2), species lists and maps, 1998 (8) – resource management files.

Canada Geese Neck-Banding and Observations, 1998 - resource management files.

Grassland Bird Project: 1993, 1994, 1995, 1996, 1997- resource management files.

Christmas Bird Counts: Jane Graves, 1987, 2001, and other years, Jane Graves - National Audubon Society and the resource management files.

Breeding Bird Atlas: 1985 Linda White, 2000, 2001 and ongoing with Jane Graves - resource management files.

Bird Records: compiled on index cards by Ranger Chapman and Nelson, circa 1964, but dating back to 1954, (records transferred to a written document) - resource management files.

Bird Club Counts, including Birdathons, Hudson Mohawk Bird Club and Southern Adirondack Audubon Society - copies being obtained from these groups for resource management files.

Wild Turkey Program Review, 1987, by Michael Fobes - resource management files.

Gobble Count Survey (New York State Wild Turkey Research), 1987 (31), 1988 (25), 1889 (47), 1990 (34) - resource management files.

Turkey Counts: 19 - resource management files

Report by Rachel Mazur 1996, "Implications of Field Management for Henslow's Sparrow Habitat At Saratoga National Historical Park, New York" - copy in resource management files.

Long-eared Owl Pellet Analysis; Elly George, 1983 and 1984 - resource management files.

Report by Emily Russell (Cultural Landscape Report – draft) - copy of draft in resource management files.

Parkwide Transect Data, Brian Underwood – Brian Underwood's files.

Vegetation Sampling/Monitoring, (1987, 1992, 93, 94, 95, 96, 98) - resource management files.

"Factors Affecting Night-Spotlighting Counts of White-Tailed Deer at Saratoga National Historical Park" by Michael Bigger, 1996 – research management files.

Vegetation sampling from the fire monitoring program, 2001 - paper copies in resource management files, digital format at Shenandoa National Park (This is where the northeast fire effects monitoring module is based.)

"A Four Year Study of the Effect of Fire on the Vegetation in Two Fields, Saratoga National Historical Park", New York, by R. Stalter and J. Schabrel, 1992 – resource management files.

Cornus Research by Kelly Austin, 1987 to 1989 – resource management files.

Herp Inventory Report, 2001, by the Wildlife Conservation Society contracted for the NPS under the Inventory and Monitoring Program, currently in draft but final report is due) - resource management office, digital form on laptop.

Adjacent Land Use, 1995 and 2000 parcel Data, - GIS layer in resource management office.
Field Maintenance/Mowing History - resource management files.
 Agricultural Lease Data – resource management files.
 “Vegetation Treatment Plan, Saratoga National Historical Park, 1989”, by Patrick Lynch (Draft) – resource management files.
 “Interactions of White-tailed Deer and Vegetation at Saratoga National Historical Park”, by H. Brian Underwood, 1994 – resource management files.
Fire Management History and Plan, (New FMP in draft) - resources management files.
Cultural Management Plan, to be completed.
Cultural Landscape Report, by the Olmsted Center, in draft, final to be ready by the summer of 2002.
Resource Management Plan for Saratoga National Historical Park (expired) – resource management files.
Draft Archeological Overview, references all reports, resource management office.
Landscape/Field Study, 1974.

The following digital information is in the SARA resource management office:

Grassland Bird Vegetation Data:

1994 database, FIE-DVGZ, FLDDIVR2.
 1995 database, STRUC95, VEG95.
 1996 database, STRUC96, VEG96

Grassland Bird Observation Data:

1993 database, GRASBIRD.dbf
 1993 database, FIELDVEG.dbf
 1993 database, FLDDIVER.dbf
 banddata97.xls
 banding_data_97.xls
 BINFO97 DOCUMENTATION.doc, documentation of 1997 bird data
 BIRDINFO97.mdb
 Birdinformation.xls
 GRASSLANDBIRD 1997.mdb
 GRASSLAND BIRD97.xls
 HENSLOW_97.DOC, action plan for the management of Henslow's Sparrow
 HEWSLOW FORM.XLS
 INTERNAL GRASSLAND BIRD SPECIES and HESLOW.doc
 Observations grassland bird 1997.doc
 Outline of Notes1997 Grassland Bird Project.doc

Vegetation Data:

1993 plant list, FLORSRT.dbf
 1992 plant list, PLANTS.dbf
 1992 plant transect data, VEGSORT.DBF
 1992 plant transect data, VEGSORTA.DBF
 1992 plant transect data, VEGSORTB.DBF

1988-1992 veg. Data, FIREFFEC.dbf
1990 and 1992, fire behavior data, FIRE_BEH.dbf
1998 Veg. Data, fireveg98_RAWDATA.XLS

Budget:

Item	Cost
GIS compilation of habitat data at SARA and adjacent lands; GIS research technician for 1 month: \$18/hr * 40 hr/wk * 4 weeks	\$2880
Data compilation of existing data/create Dataset Catalog of existing report/studies at SARA; research technician 3 months; compile peer-reviewed literature: \$12/hr * 40 hr/wk * 12 weeks	\$5760
Meta-analysis of existing data collected at SARA/help with report writing; \$3529/month for 1.5 months	\$5294
FICA on Salaries for research technicians	\$1066
PI salary, 1 month summer salary (\$5,000) for one year to assist with meta-analysis and final report writing	\$5000
SubTotal	\$20,000
URI overhead (25%)	\$ 5,000
Total	\$25,000