



## Celebrating a Season of Grassland Bird Breeding and Creative Collaboration

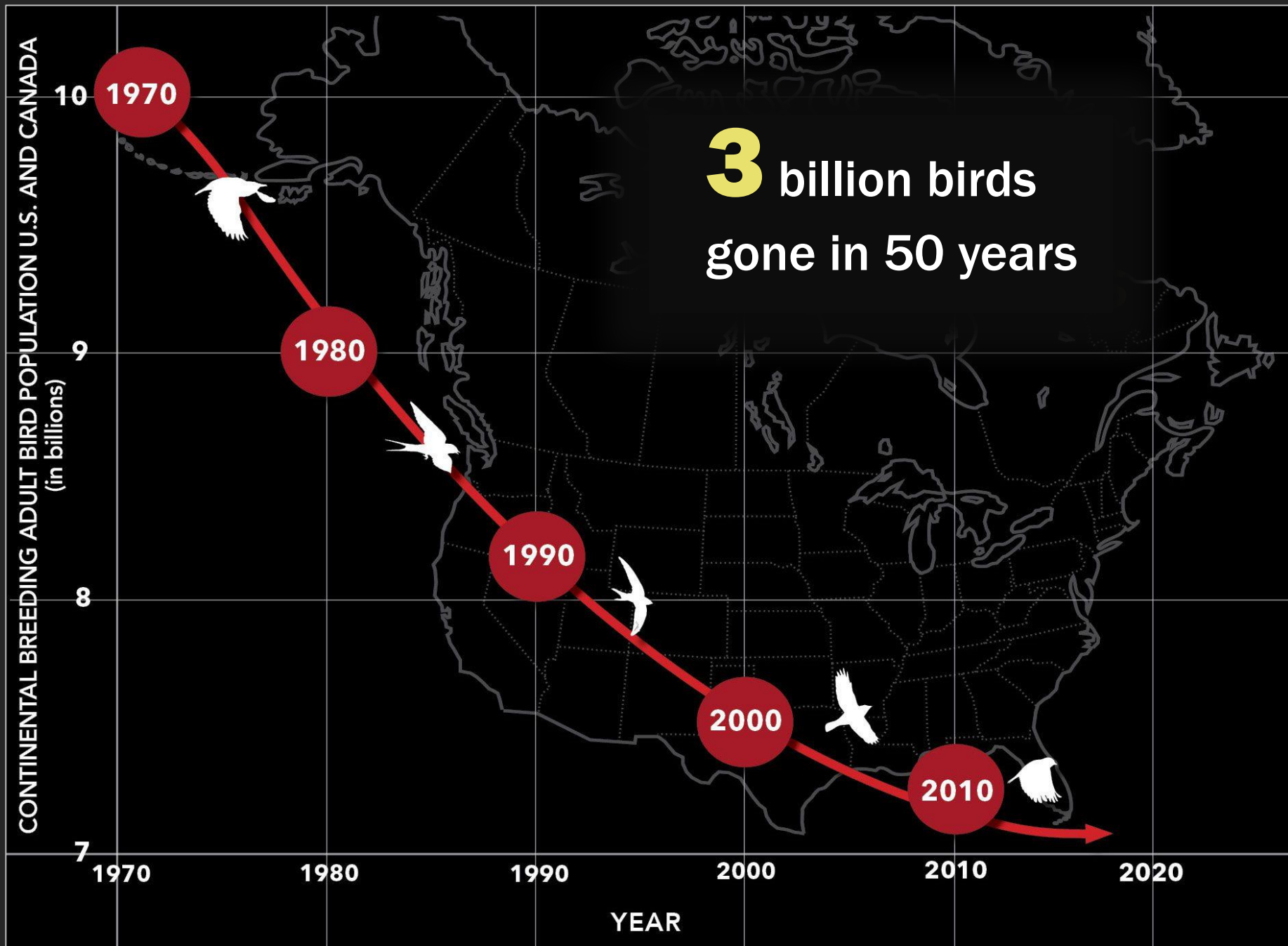
Zoë Warner, PhD  
November 16 , 2023

*Generously hosted by*



**PennVet**  
New Bolton Center  
UNIVERSITY of PENNSYLVANIA

# Vanishing Voices



**-17%**  
EASTERN  
FOREST BIRDS



**-23%**  
ARCTIC  
TUNDRA BIRDS



**-29%**  
WESTERN  
FOREST BIRDS



**-33%**  
BOREAL  
FOREST BIRDS



**-37%**  
SHOREBIRDS



**-53%**  
GRASSLAND  
BIRDS



**720  
MILLION**  
GRASSLAND BIRDS  
LOST SINCE 1970

Grassland Birds are experiencing the greatest declines of any bird group.

720 million grassland birds **lost since 1970**

**3 in 5**

**BOBOLINKS**





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**3 in 5**

**BOBOLINKS**



**3 in 4**

**EASTERN MEADOWLARKS**



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3 in 5

BOBOLINKS



3 in 4

EASTERN MEADOWLARKS



2 in 3

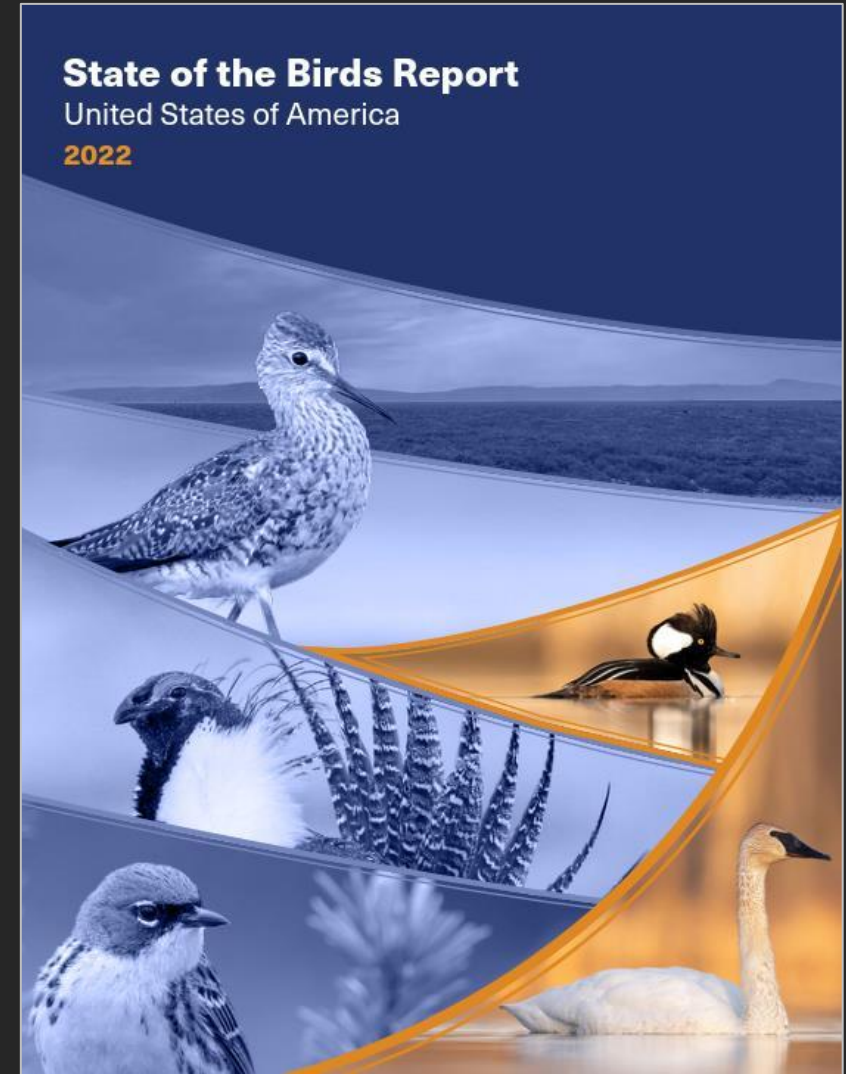
GRASSHOPPER SPARROWS



Losses of these birds **CAN BE REVERSED** through voluntary partnerships among

- Farmers
- Landowners
- Conservation Organizations

Locally, we are well positioned to support grassland bird conservation.



North American Bird Conservation Initiative. 2022. The State of the Birds, United States of America, 2022. [StateoftheBirds.org](https://StateoftheBirds.org)



## Grassland Birds' Basic Needs

- Large, open hayfields and pastures with ample interior area
- A “no-mow” period that allows young birds to develop in a safe environment before the nesting grounds are disturbed
- Habitat connectivity – different fields are important at different times and for different reasons (i.e., breeding, foraging, staging)

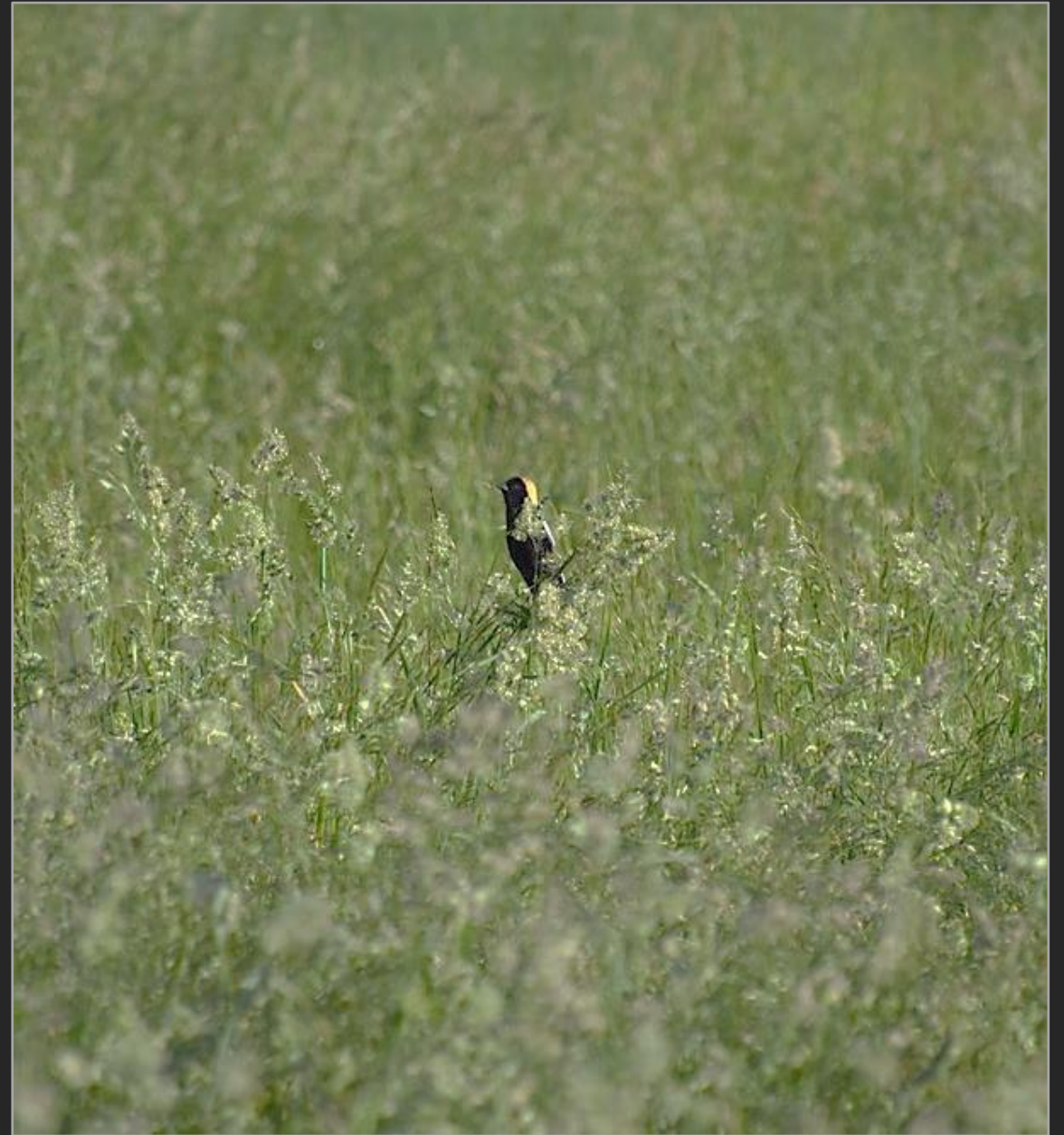




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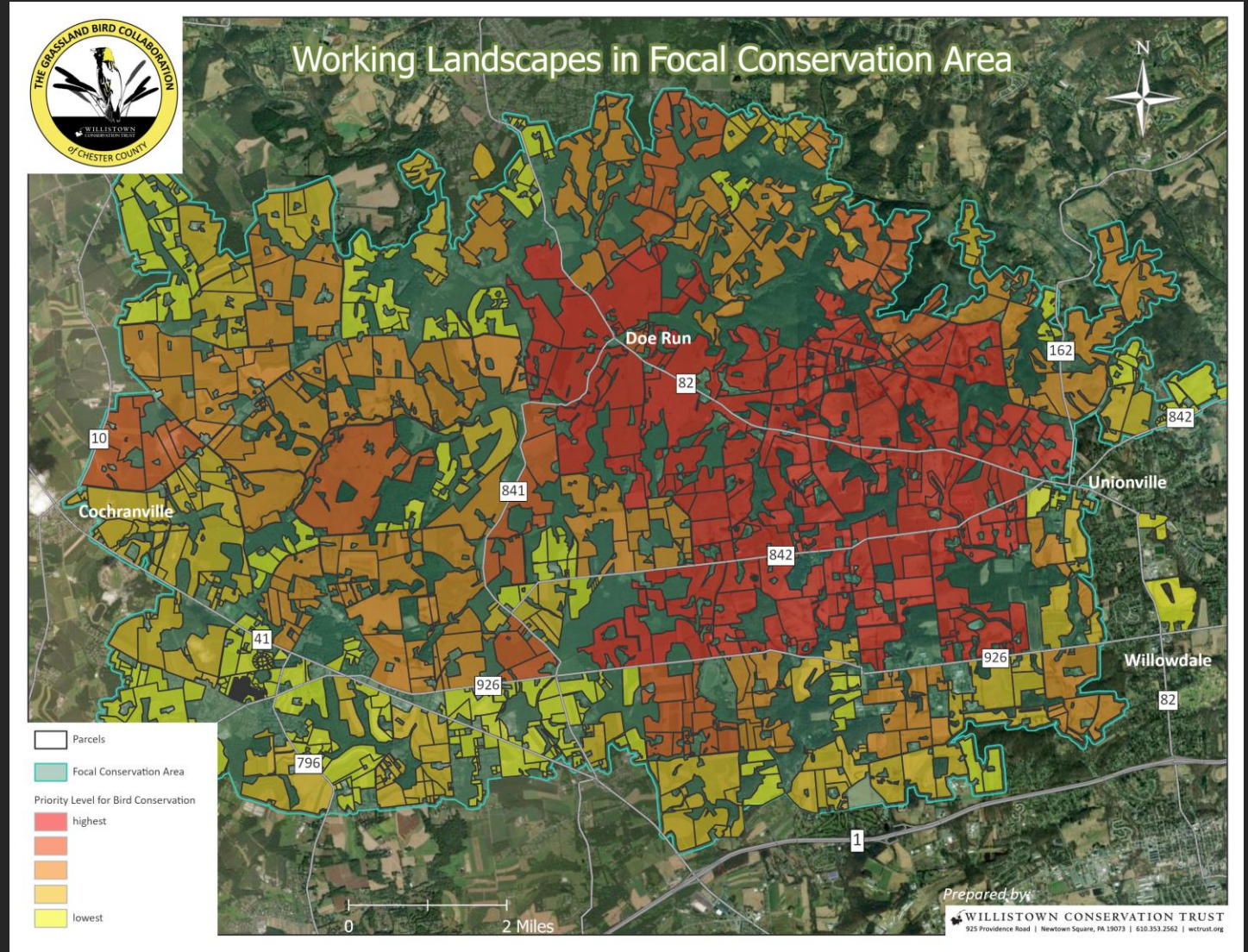
**The Greater Doe Run area meets these requirements, and we are working to make it a hot spot for grassland bird conservation.**





Partner to establish a **Conservation Working Landscape** in the Greater Doe Run area

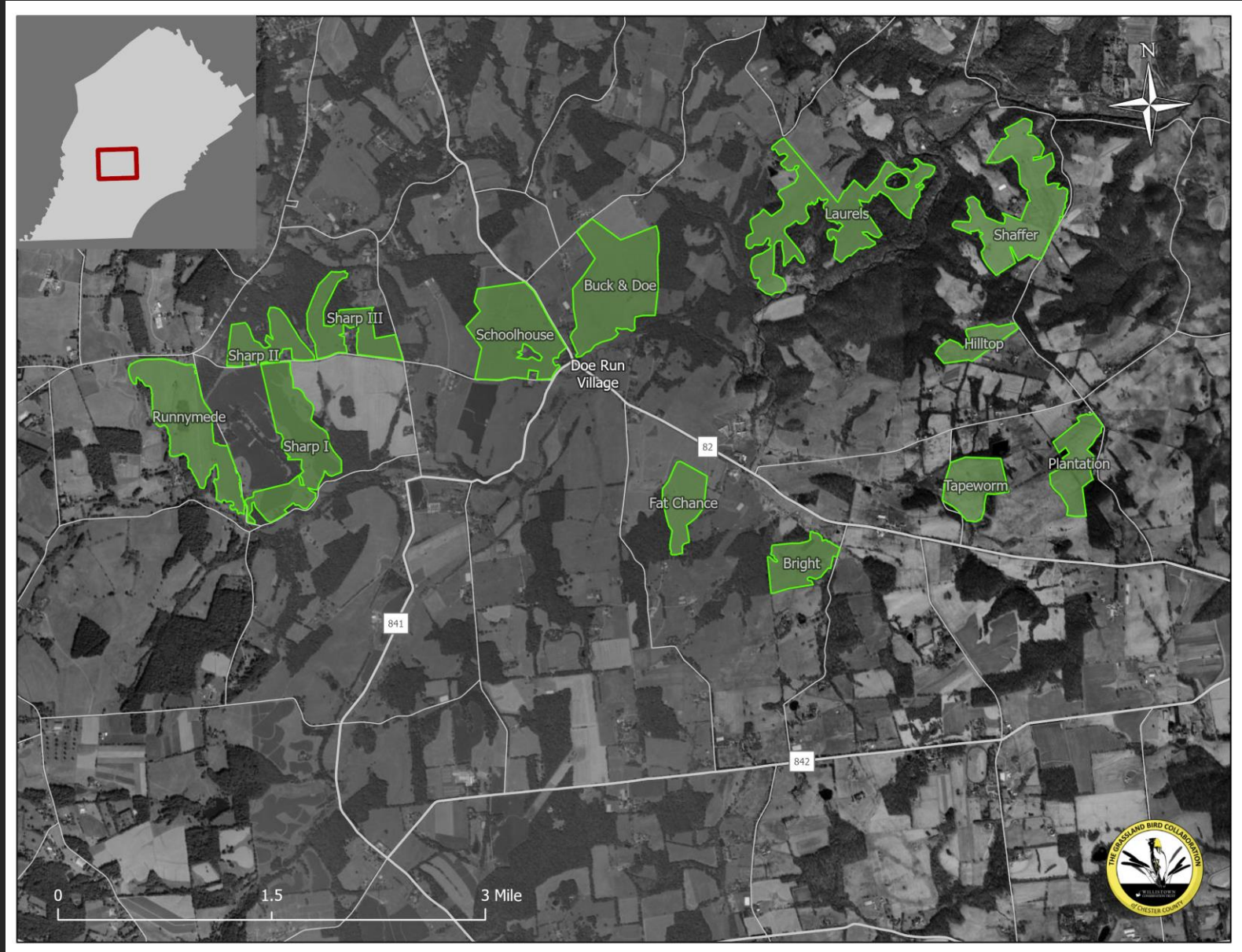
- Work with farmers to prioritize fields for GBC participation based on agricultural and economic factors
- Provide responsive management guidance based on bird data
- Educate larger community about grassland bird habitat needs and how they impact grassland management





# 2023 GBC Action Plan

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3. Tag Bobolinks to examine local and migratory movement
4. Hold outreach events for the community



**2023**

A Season of Successes



## Growing By the Acre

Farmers committed 1000 acres to “late-mow” management with mowing to occur after July 1.

Over 400 acres became “observational acres” – bird activity was monitored in these fields, but management was not altered.

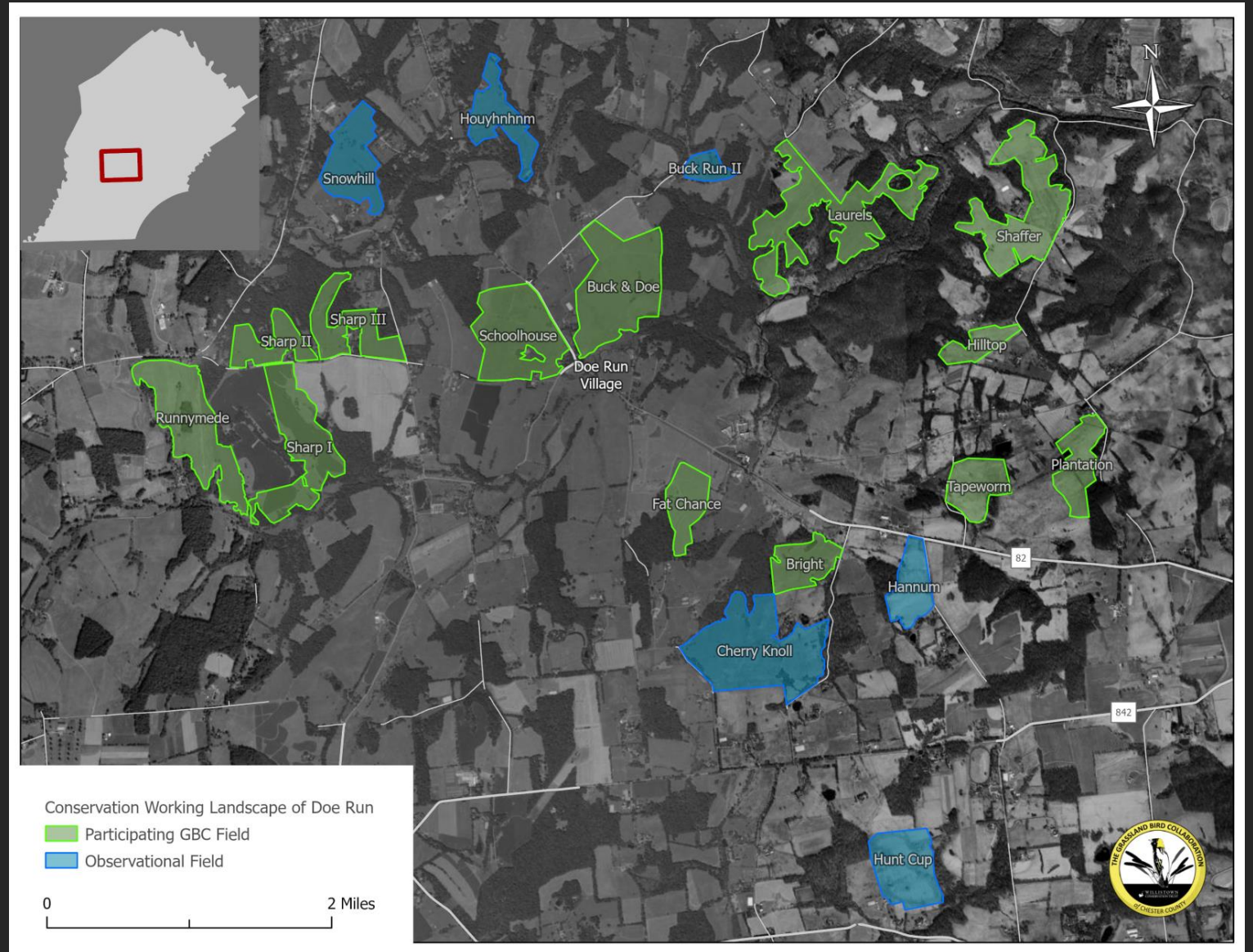




## Growing By the Acre

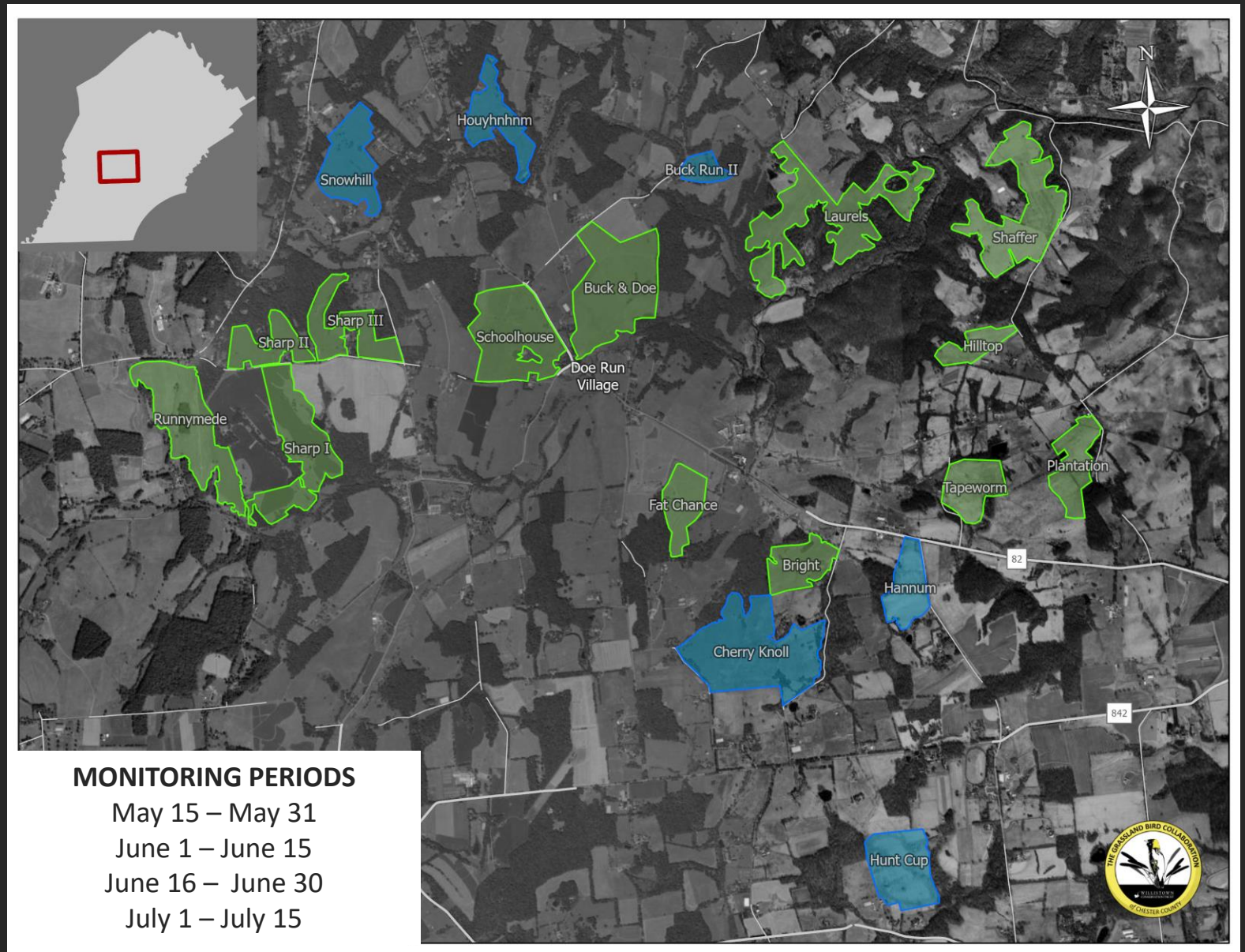
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## Snapshots in Time

Each field was surveyed 4 times during the breeding season to evaluate how bird composition and activity changed over the course of the breeding season.





## Grassland Birds Across the Landscape

Focal grassland species—Bobolink, Eastern Meadowlark and Grasshopper Sparrow—were present at each site during at least one observation period.

The majority of the fields hosted breeding populations of at least one focal species, and many had two species breeding.





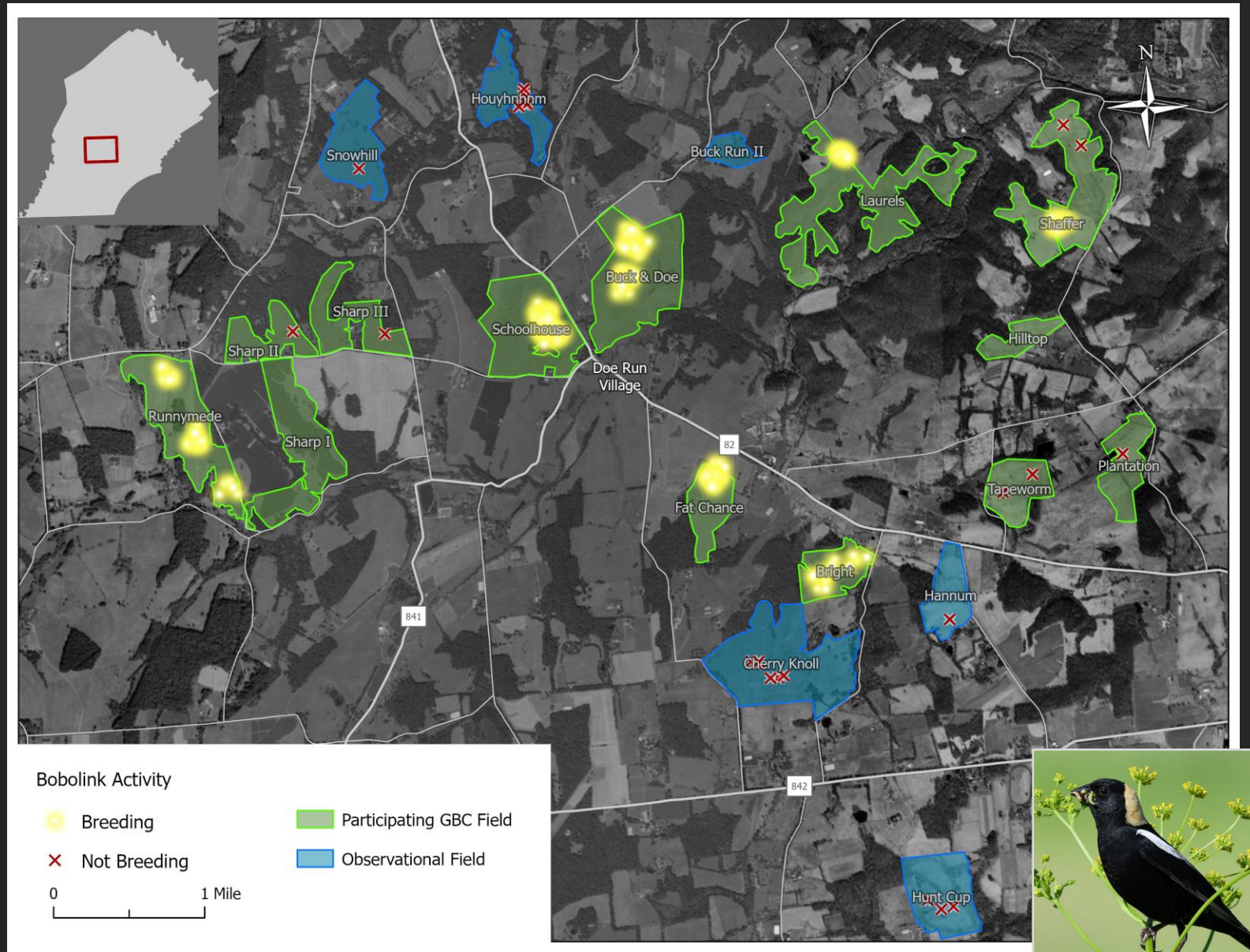
## Bobolink Breeding Activity

Bobolink breeding occurred in **7** fields. In fields that have previously been in late-mow management, density seems to be increasing.

### ISSUES TO CONSIDER...

Bobolinks at Bright's farm may have come from other fields after early mowing. Buck & Doe and Schoolhouse Farms instituted delayed mowing several years ago. Buck & Doe Bobolinks may have moved into the Laurels field, which had not had breeding Bobolinks in previous years.

Several of the observational fields had Bobolinks in high densities early in the breeding season. Mowing occurred before they could complete the breeding cycle.





## Eastern Meadowlark Breeding Activity

Eastern Meadowlark breeding occurred in **12** fields. Meadowlarks were the most wide-spread breeders among the focal species.

### ISSUES TO CONSIDER...

Meadowlarks bred in both early-mow and late-mow fields. They may be able to reneest after mowing disruption, but they did not return to all mowed fields. Densities were higher in fields that had not been mowed.

Habitat characteristics may have been a factor in fields where meadowlarks were observed but not breeding.





## Grasshopper Sparrow Breeding Activity

Grasshopper Sparrow breeding occurred in **3** fields. Grasshopper Sparrows had the least number of breeding sites among the focal species.

### ISSUES TO CONSIDER...

Grasshopper Sparrows prefer shorter grass, and they nest later in the season. The late-mow fields may not be ideal breeding habitat unless there are areas with shorter, clumpier grasses.

Grasshopper Sparrows may have nested in three other fields, but their densities tend to be lower, so it is more difficult to confirm breeding without observing specific breeding behaviors.







In 2022, a Penn student examined the impact of field management on occupancy of breeding habitats in Doe Run. Some fields monitored 2022 were also monitored in 2023. Among the fields studied over the two years, all three species exhibited consistency among their breeding locations (indicated by the fields highlighted in white).

### Year-to-Year Breeding Overlap

- Bobolink = **3** fields
- Eastern Meadowlark = **6** fields
- Grasshopper Sparrow = **2** fields



## Tagging By the Numbers

In its **3<sup>rd</sup>** year of tagging, the WCT bird team placed **14** nanotags on **11** males and **3** females in **1** day. Tagging took place at **2** farms: Buck & Doe and Schoolhouse Farms. Over **3** field seasons, **4** males have been recaptured in the same field where they were initially tagged in **2021**. Local sensor stations were installed to detect local movement at **3** fields in **2021** and **2** fields in **2023**. Since tagging began, **44** Doe Run Bobolinks have been tagged.





## Captured and Banded: 2021

Male Bobolink  
2891-69002  
Buck & Doe Farm



Recaptured: 2022

Male Bobolink  
2891-69006  
Schoolhouse Farm



Male Bobolink  
2891-69011  
Schoolhouse Farm



Recaptured: 2023

Male Bobolink  
2891-69013  
Buck & Doe Farm



## Bird's Eye View

Local movement data confirmed **BIRDS DON'T SEE BOUNDARIES.** They see a connected landscape that collectively provides for their habitat needs.



*2021: Sensors stations placed at breeding fields.*



*2023: Sensor station placed at breeding and non-breeding fields.*



## Movement Varies by Sex

The Bobolinks frequently left their breeding field during the breeding season, but there were differences between males and females. Females are much more loyal to their breeding habitat because they are caring for young.





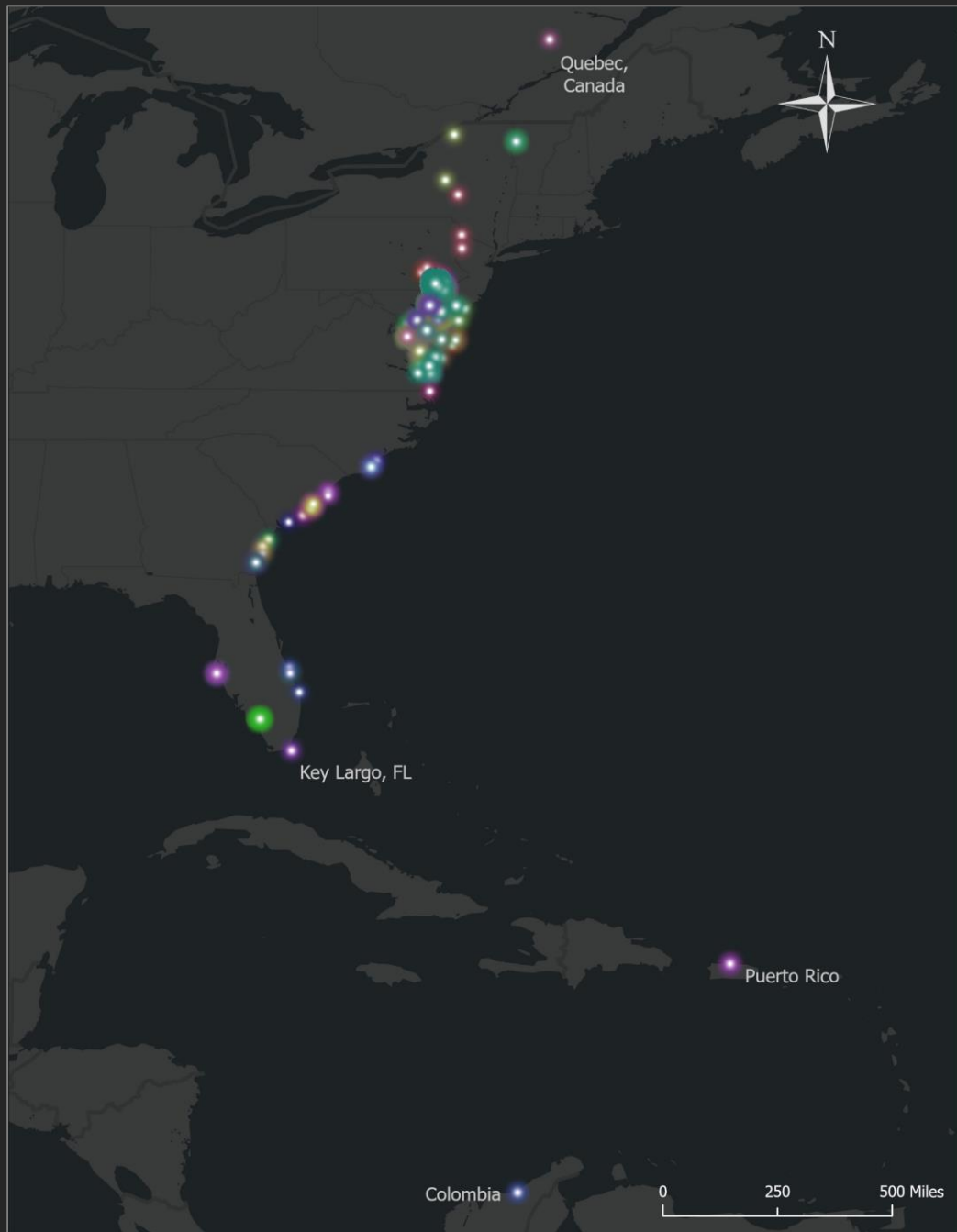
In 2023, five Bobolinks were tagged at Schoolhouse Farm, but they were detected multiple times at Buck & Doe and DuPont Road. Bobolinks use non-breeding areas to extend their habitat.



# Buck Run Farm: Late Season Refuge



Bobolinks move to Buck Run Farm when breeding is over and surrounding fields have been mowed. There, they “stage” in anticipation of migration. The birds feast on insects and seeds among the vegetation that has been left standing in the fields. Young birds practice training flights in preparation for the 6,000+ mile journey to South America.

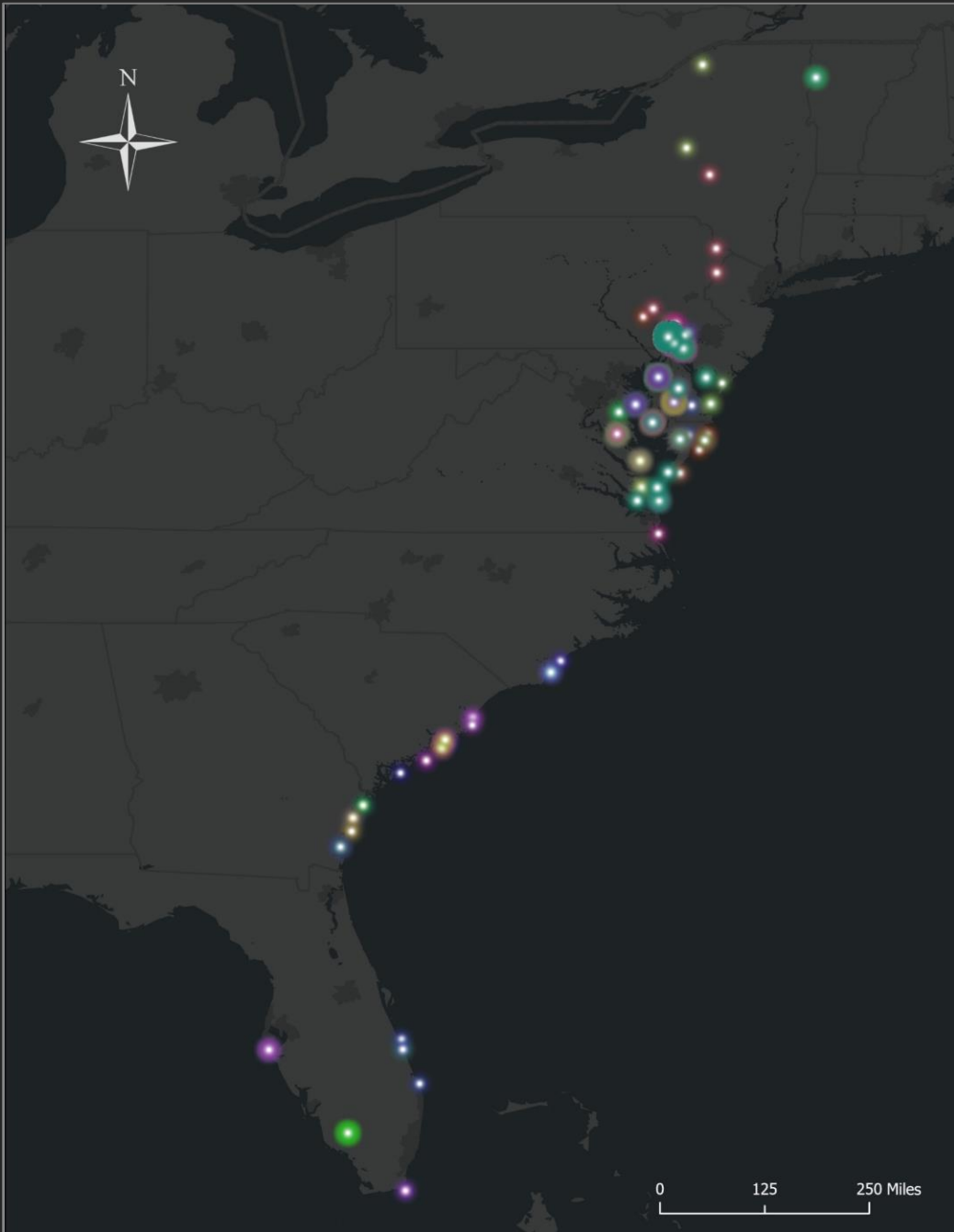


## Bobolink Detection Locations

May 17, 2021 – November 12, 2023 \*

\* Tags typically are active for ~ 6 months. In 2023, 8 tags were adjusted to extend the battery life through spring migration.

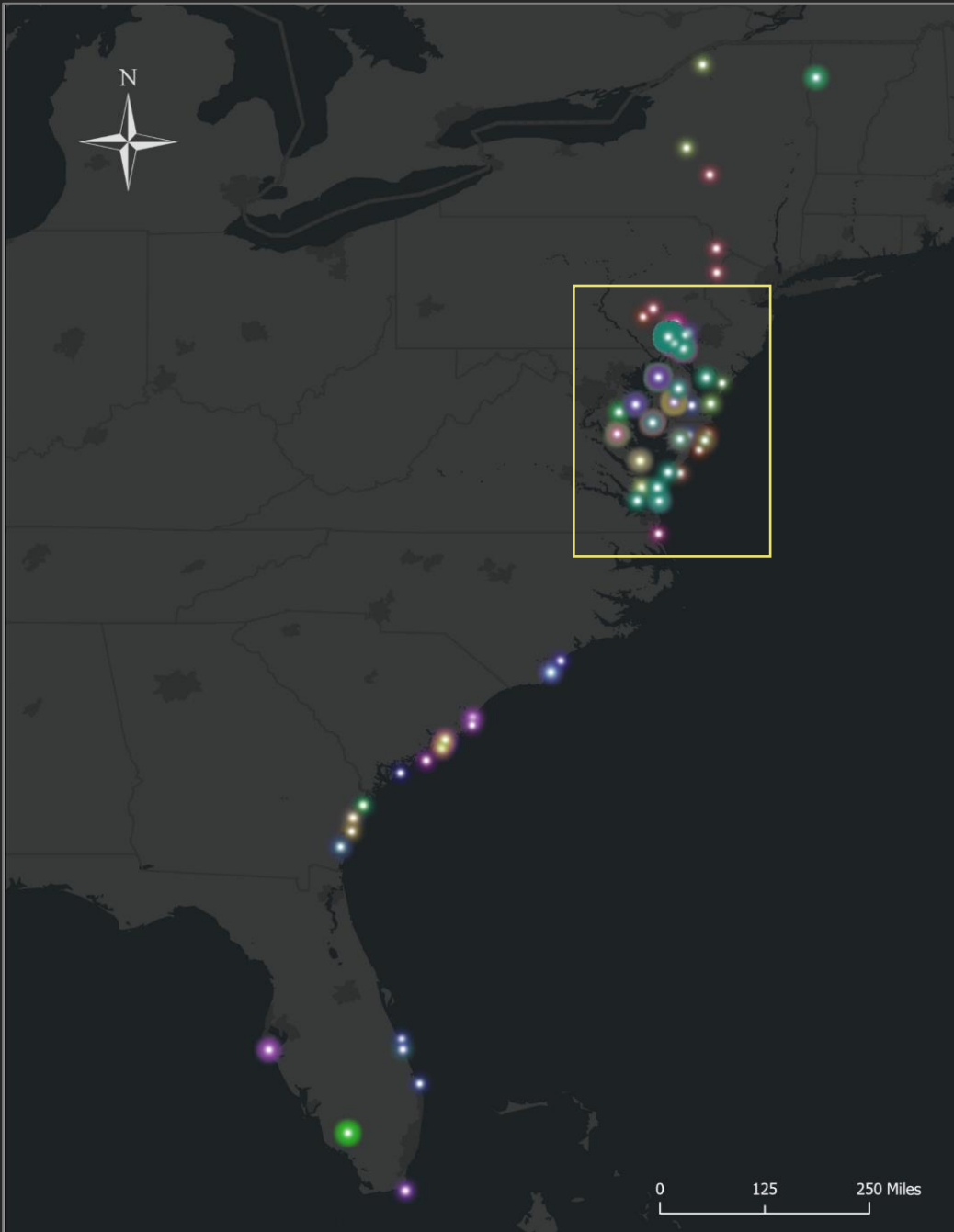




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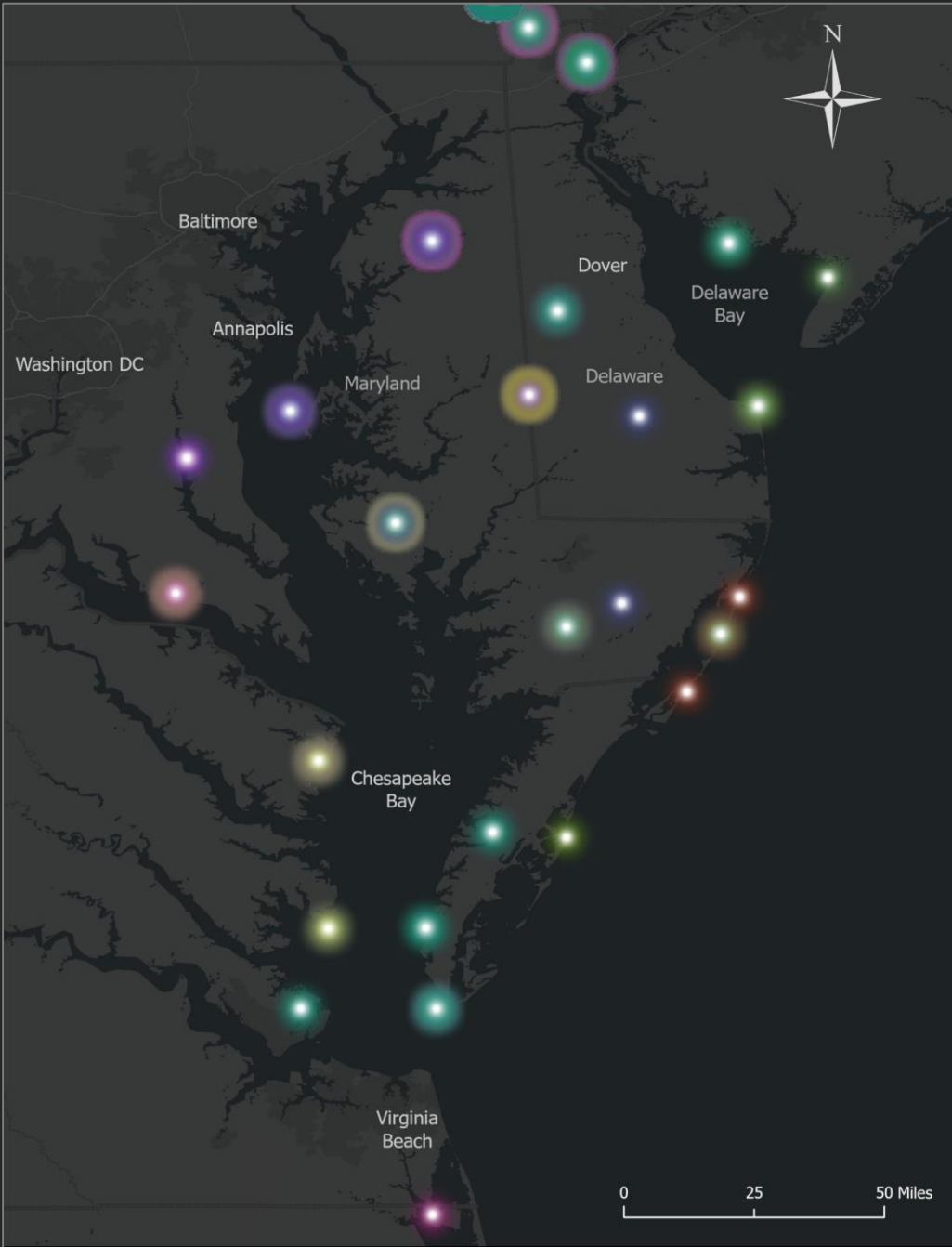


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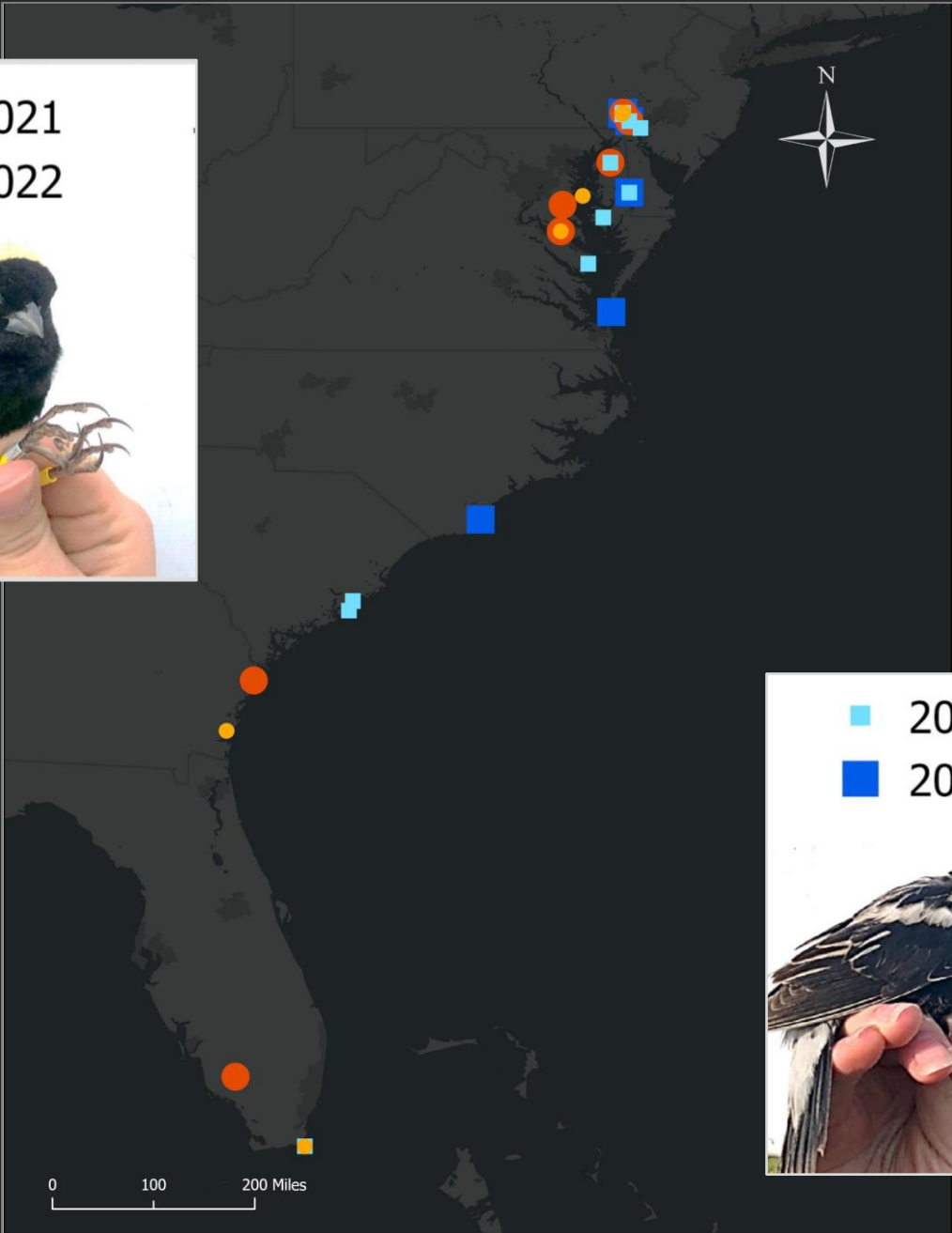
## DELMARVA PENINSULA

The Delmarva is an important stop-over on the Bobolinks' journey south. The majority of the tagged Doe Run birds were detected at least once in the region over the three fall migration periods.

- 2021: 10 of the 20
- 2022 – 9 out of 10
- 2023 – 8 out of 14 (9 active tags)

### Two-Year Migration Movement

Both males followed similar routes over two fall migrations separated by a year. In some cases, they were detected at the same station during two separate trips. In 2021, both male left the US via Key Largo, FL.







# LAND TRUST BIRD CONSERVATION INITIATIVE

[www.birdtrust.org](http://www.birdtrust.org)

PHOTO BY NICHOLAS A. TONELLI

## Recognizing our Success

Cornell Land Trust Bird Conservation Initiative awarded a \$25K grant to the Grassland Bird Collaboration of Willistown Conservation Trust and its partner, Natural Lands.



## Partners in Conservation

Natural Lands monitored focal grassland species at three preserves—Bryn Coed, Cheslen, and Stroud. Bobolinks bred at Stroud, and Grasshopper Sparrows bred at Bryn Coed. It's likely grassland species were also breeding in some areas of Cheslen. Natural Lands utilizes BMPs on all NL preserves, including mowing after July 15.

More habitat for birds...  
In 2023, the three preserves each planted pollinator meadows and added acreage.

- Bryn Coed + 17 acres
- Cheslen + 23 acres
- Stroud + 7 acres



## Bellweather Birds

Field Notes by Natural Lands  
June 13, 2022

Many have been inspired by the Bobolink's melodic call. Describing the grassland bird, Thoreau wrote, "This flashing, tinkling meteor bursts through the expectant meadow air, leaving a train of tinkling notes behind."

Natural Lands volunteer Jim McVoy knows the Bobolink well. Since 2003, he has spent many hours sitting cross-legged in the grassy meadows at our Stroud Preserve peering through his binoculars to observe Bobolinks and Eastern Meadowlarks. From April to early July he visits several preselected sites, initially to count nests (which both species prefer to make in tall, dense grasses) and then later in the season to assess fledglings. Over the years, we have used Jim's research results to direct our mowing and grazing practices and to reconfigure land cover to help minimize threats to Bobolink and Meadowlark nests.



Bobolink at Stroud Preserve  
Photo by Mike Nelson

"When I was originally asked about the project, it was to be a one-time count and population assessment. I felt that, to gather any statistically useful information, I should monitor several sites over the entire nesting season and preferably for several successive years. I made more work for myself, but my records have demonstrated that the Bobolink nesting fields should be mowed at least a few weeks later than past practices to give the fledglings time to develop their independence. If my time in the field has accomplished even that little bit, it has been worth every minute."

The Pennsylvania Game Commission reported that the state has lost 1.1 million acres of farmland in the past 40 years. Since that time, major declines have occurred in almost all groups of grassland-associated wildlife. According to the North American Breeding Bird Survey, the Bobolink population in the US declined by 65 percent between 1966 and 2015. Other grassland species, like Eastern Meadowlark, have seen an even more alarming decline.



Eastern Meadowlark at Stroud Preserve  
Photo by Mike Nelson

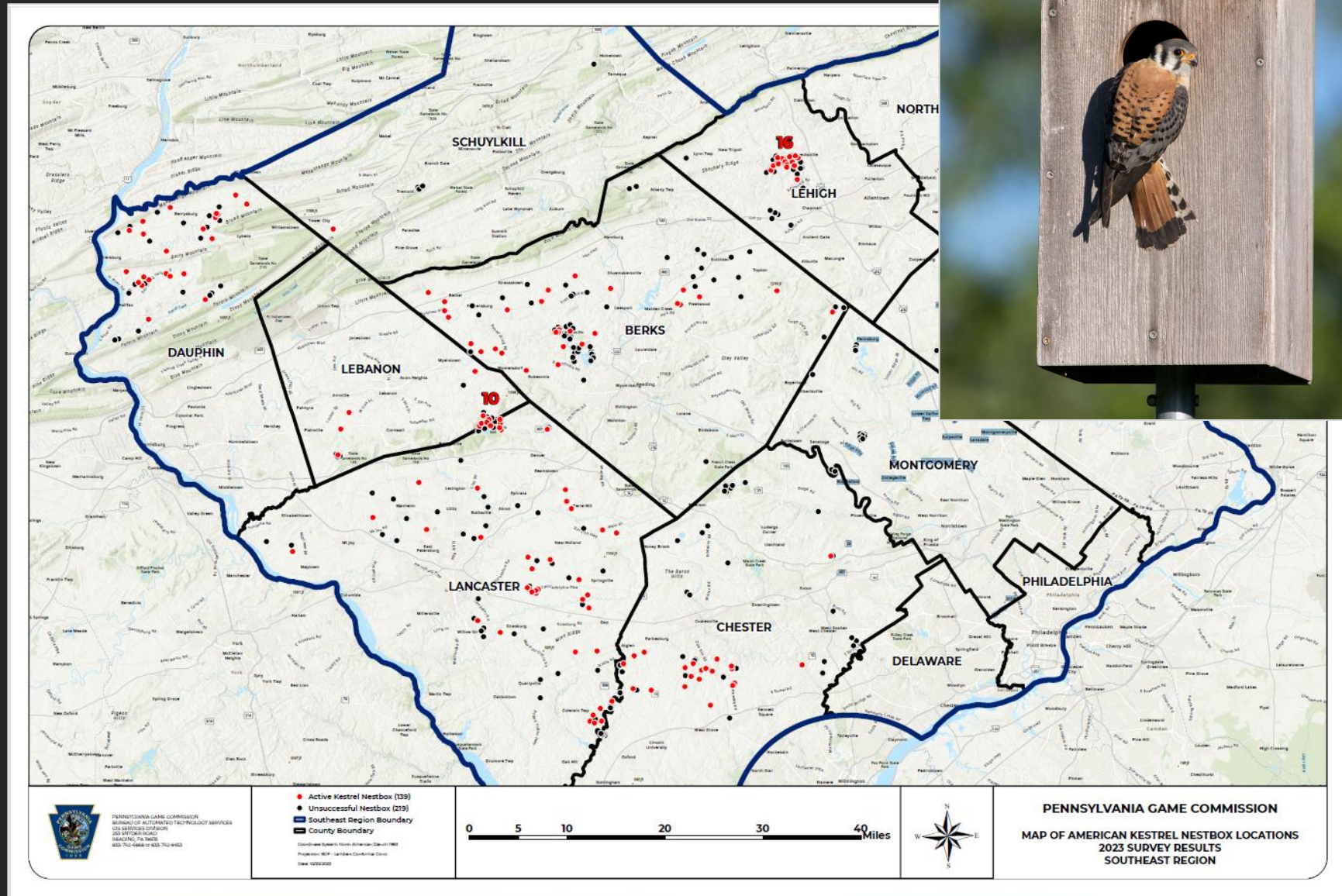
Birds, like frogs, are an environmental bellwether. Scientists have long used changes in bird populations, behavior, and reproductive ability to examine the effects of habitat fragmentation and invasive species, monitor water quality, and identify environmental pollutants. Because of their rapid metabolism and wide geographical range, they reflect changes in the environment quickly and warn us when things are out of balance. The documented observations of volunteer birders like Jim McVoy provide valuable data about bird populations over a broad geographical range.

Ultimately, it is Jim's love of the birds—and, by extension, their grass-land habitat—that drives his volunteer efforts on their behalf. "Every spring the Bobolinks' arrival at Stroud is a moment of wonder for me. I know that some of these birds were here the previous summer and have flown to their South American wintering grounds and back. The thrill of witnessing their return after crossing two continents is one I want to be able to share with my grandchildren. I'm just doing what I can to help ensure their survival so I can do just that."



## American Kestrels

PGC has installed kestrel boxes throughout southeastern PA. Kestrels used 139 boxes and produced 507 nestlings. Almost all were successfully banded and assumed to have fledged.

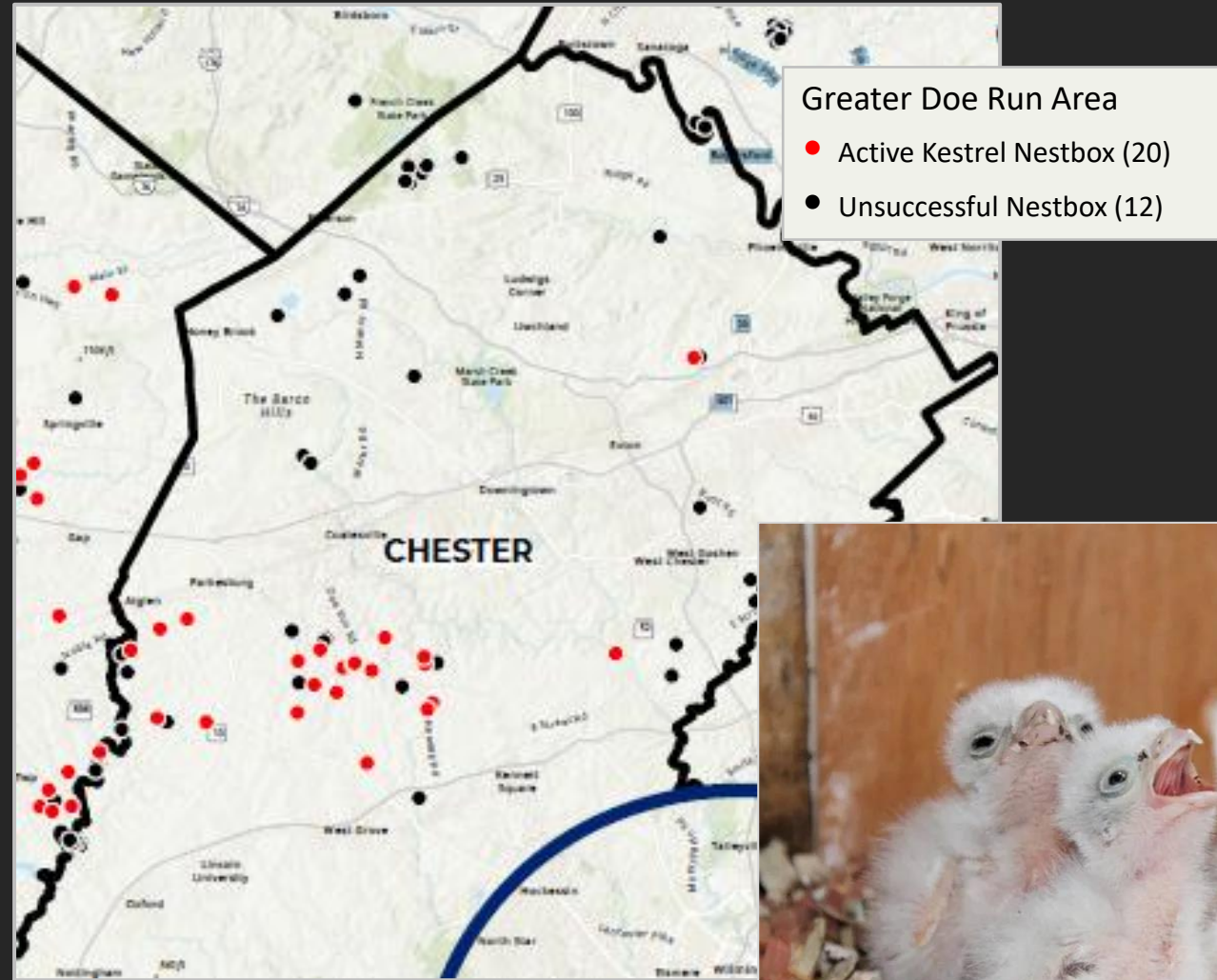




## American Kestrels in Greater Doe Run

In the greater Doe Run area, there are now 32 kestrel boxes in place with 20 of them in use. In 2023, those boxes produced 77 nestlings.

The Doe Run kestrel project is a collaborative effort among landowners, PGC, WCT, and citizen volunteers working together to install, maintain, and monitor the nestboxes to support the growth of the kestrel population in the Doe Run area.



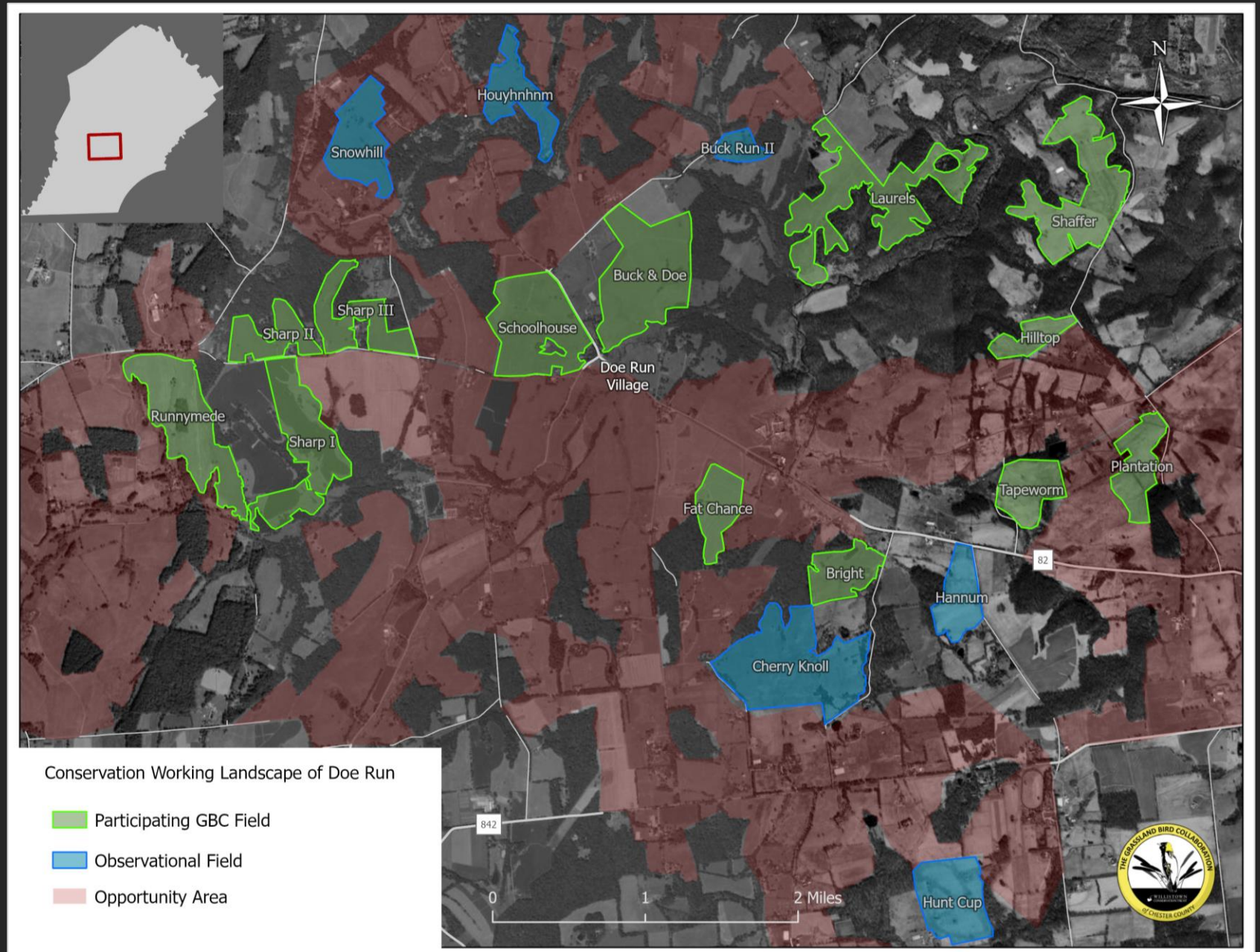


**2024**

What's on the Horizon?

## Adding Acres

GBC will partner with farmers and landowners to expand to **1500** acres of “bird friendly” farming. We will target fields within the Conservation Working Landscape established this year.





## Building in Flexibility

Because grassland birds occupy fields based on a range of habitat needs, the landscape can be viewed as a mosaic, providing for a variety of needs and outcomes. This approach allows for flexibility in managing the landscape.

The majority of the GBC fields will be “late-mow,” but others could be mowed before May 25. Mowing schedules can be set based on the species composition of a field.





## **Building in Flexibility**

Not all fields are ideal for grassland bird breeding. Less productive fields could be earlier mow to allow for more productive fields to stand.







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## Monitoring = Knowledge

Continue monitoring fields during the breeding season to evaluate how birds are using individual fields to build an understanding of field-use across the landscape.





# FIELD MANAGEMENT GUIDELINES

For Pennsylvania's Grassland & Shrubland Birds



**Grassland birds are declining more than any other group of birds.** These declines have been attributed to changes in farming practices and increased land development resulting in habitat loss and fragmentation. These trends are increasingly exacerbated by changing weather patterns that disrupt traditional farming cycles. Chester County's working grasslands are home to some of the most threatened species of birds throughout the year.

With the large amount of grasslands in the greater Doe Run area, farmers and landowners are working together to ensure the local survival and well-being of these vulnerable species by establishing "bird friendly" field management practices. Locally, we are creating a grassland bird conservation area made up of working landscapes where partners address the issues affecting declining grassland species. This guide is intended for farmers and landowners who want to help grassland birds and have some flexibility in their management approaches.

**What Birds and When?** Grassland use varies by species and by season. We can expect to find certain birds based on a field's characteristics. Below are the habitat preferences for the focal grassland species of the greater Doe Run and other species associated with grasslands.

	SPECIES	TIME OF YEAR	HABITAT PREFERENCES
FOCAL SPECIES	 BOBOLINK	Spring/Summer	Large, open cool-season hayfields and pastures intermixed with broad-leaved forbs
	 EASTERN MEADOWLARK	Spring/Summer	Large, open cool-season hayfields and pastures with areas of sparse vegetation
	 GRASSHOPPER SPARROW	Spring/Summer	Large, open cool-season hayfields and pastures with short vegetation
GRASSLAND ASSOCIATED SPECIES	 AMERICAN KESTREL	Year-round	Open grassland habitats including meadows, pastures, and hayfields
	 EASTERN BLUEBIRD	Year-round	Wide range of grasslands but requires cavities for nesting and multiple perches
	 EASTERN KINGBIRD	Spring/Summer	Wide range of grasslands but requires cavities for nesting and multiple perches
	 FIELD SPARROW	Spring/Summer	Both warm and cool-season meadows containing ample forbs and shrubs
	 NORTHERN HARRIER	Winter	Large grasslands with sparse/short grass for hunting and patches of tall/dense grass for roosting
	 RED-WINGED BLACKBIRD	Year-round	Wide range of grasslands, higher densities in wet areas with patches of thick vegetation
	 SHORT-EARED OWL	Winter	Large grasslands with sparse/short grass for hunting and patches of tall/dense grass for roosting

## Support our Farmers and Landowners

Provide guidance for farmers and landowners who want to help grassland birds and can build flexibility into their management approaches.

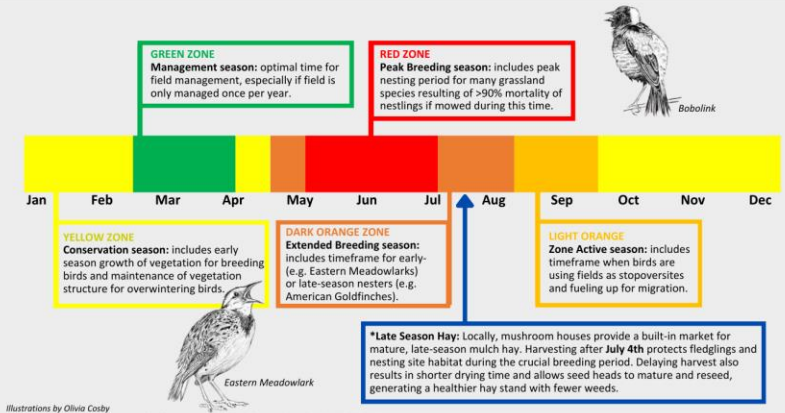
## WHAT CAN YOU DO?



1. If possible, delay mowing until early- to mid-July. If circumstances require you to cut earlier, try to do so by late-May and wait at least 65 days before the next cut. This first cut may disturb nesting birds, but it is early enough in the season that they will have an opportunity to re-nest. Waiting the 65 day period will allow most species to successfully fledge at least one clutch of young.
2. If there is flexibility in the mowing and management schedule, focus on mowing smaller fields first and work your way up to larger fields. You can also manage larger fields in patches to leave undisturbed areas and varying structure and cover for birds year-round. Larger fields (>30 acres) have a higher density of grassland nesting birds.
3. Increase cutting height to a minimum of 6-8 inches. This leaves protective cover for nesting grassland birds and their fledglings, and it helps promote healthy root systems and soil health. Attaching flushing bars or dangling chains to the front of your tractor will help flush young birds from the mower's path.
4. Promote connectivity of grasslands by creating "neighborhoods" made up of several adjacent fields. Large expanses of connected grasslands are important for many grassland birds because they prefer open areas away from woodlands where predators can hide.
5. Incorporate native grasses, forbs, and legumes into your fields to provide foraging opportunities and protective cover. This can also be in the form of buffer strips between crop fields and along edges.
6. If you have fallow fields that are managed once annually, the optimal time of year to rotary mow is Feb 15—Apr 1. This leaves denser cover for overwintering birds and insects.
7. Hang nest boxes for cavity-nesting species like American Kestrels, Barn Owls, and Eastern Bluebirds.

Choosing to implement any of the practices listed below can have a positive impact. For more references, visit [wctrust.org/the-grassland-bird-collaboration/](http://wctrust.org/the-grassland-bird-collaboration/).

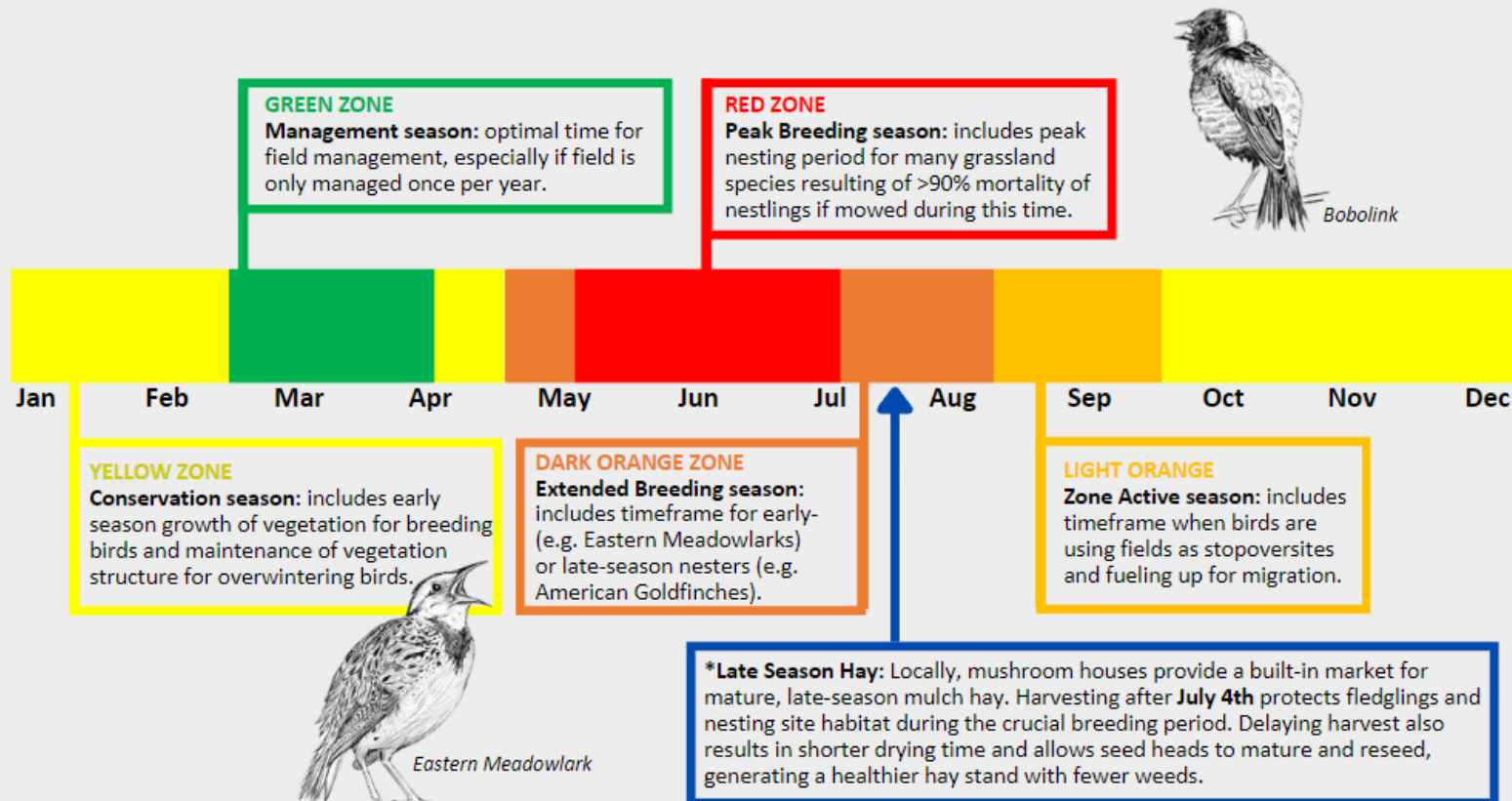
## FIELD MANAGEMENT RISK CALENDAR FOR GRASSLAND BIRDS



## Support our Farmers and Landowners

In season, field assessments can supplement land management guidelines.

### FIELD MANAGEMENT RISK CALENDAR FOR GRASSLAND BIRDS



Illustrations by Olivia Cosby

Adapted from Virginia Working Landscapes' [Field Management Guidelines for Virginia's Grassland and Shrubland Birds](#)









developing a conservation land ethic that benefits all who love and use the land



**Our work is only possible with the cooperation of a diverse network of individuals, including farmers, landowners, regional partners, supporters, and scientists.**

## **SPECIAL THANKS TO**

**Our farmers Jamie Hicks, Cliff and Cameron Stoltzfus, and Lew Wilkinson**

**Our landowners and land managers who allow their fields to part of the inaugural GBC initiative**

**Our grassland bird champions Bill Elkins and DD Matz**

**Our conservation partners Brandywine Conservancy, Buck & Doe Trust, Natural Lands, PennVet New Bolton Center, and Stroud Water Research**

**Our program leaders Bonnie Van Alen and Dick Eales**

**The Willistown Conservation Trust Bird Team and the Pennsylvania Game Commission**

