

# PEEKING ON THE PROTHONOTARY



Ann Tanner  
Nestbox Academy  
February 1, 2025

**K-STATE**  
Research and Extension

Master Naturalist  
Johnson County



**Burroughs**



Audubon Society  
of Greater Kansas City

**THANK YOU TO THE PROTHONOTARY  
WARBLER PILOT STUDY TEAM - 2024**

- Rex Collier
- Jack Corrigan – Citizen Scientist
- JC Cowden
- Heather Cwach
- Cindy and Steve Ford – Citizen Scientists
- Kathy Fox – Citizen Scientist
- Mary Gillespie
- Lane Hensley
- Samantha Grove – Citizen Scientist
- Orlin Heady – Citizen Scientist
- Dan Johnson
- Greg Lauber
- Bill Price
- Randy Ray
- BJ Schulenberg
- Dawn Wessling
- Melissa Streczywilk – Team Photographer

# WE WILL DISCUSS:

- Information on Prothonotary Warblers (PROWs)
- International Connections – *Where do PROWs spend the winter?*
- EMN PROW Nesting Box Pilot Study – Description and Results
- Prothonotary Warbler Working Group Study/Delta Audubon - Erik Johnson, PhD
  - Barometric Pressure Geolocators
  - Federal Bands and Colored Study Bands on PROWs
- Kansas Academic Study: Pittsburg State University – Andy George, Ph.D., and Gabe McClain Graduate Student

# PROTHONOTARY WARBLER (PROW)

SWAMP WARBLER/SWAMP CANDLE

SPECIES IN DECLINE

BREED AND NEST IN WOODED  
SWAMPS AND WOODED AREAS NEAR  
STREAMS AND LAKES

THREATS: LOSS OF HABITAT –  
WETLANDS AND SWAMPS  
MANGROVE FORESTS

PREDATORS: RACCOONS, SNAKES,  
AND BROWN-HEADED COWBIRDS

OLDEST KNOWN PROW (MALE) WAS 8  
YEARS 11 MONTHS WHEN IDENTIFIED  
BY BAND IN OHIO

*\*PHOTO BY LARRY PACE*



# PROTHONOTARY WARBLER (PROW)

- PREFER DEAD TREES WITH WOODPECKER HOLES FOR NESTING (BALD CYPRESS)
- BRIGHTER MALES PREFERRED BY FEMALES
  - MALE SELECTS SEVERAL NESTING SITES, AND FEMALE CHOOSES AND BUILDS NEST (GRASS, CATKINS, MOSS)
  - NEST HEIGHT 2 - 33 FT
  - CLUTCH SIZE: 3-7 EGGS
  - INCUBATION 12-14 DAYS



*Ann Tanner*

## **PROTHONOTARY WARBLER (PROW)**

- MONOGAMOUS DURING BREEDING SEASON WITH STRONG NEST FIDELITY

KANSAS ON NW EDGE OF RANGE MAP

- NESTING BOX SAME AS BLUEBIRD BOX, BUT ENTRY HOLE IS 1.25 INCHES (SMALLER)

- PROW SONG



*Larry Pace*

# PROTHONOTARY WARBLER RANGE MAP

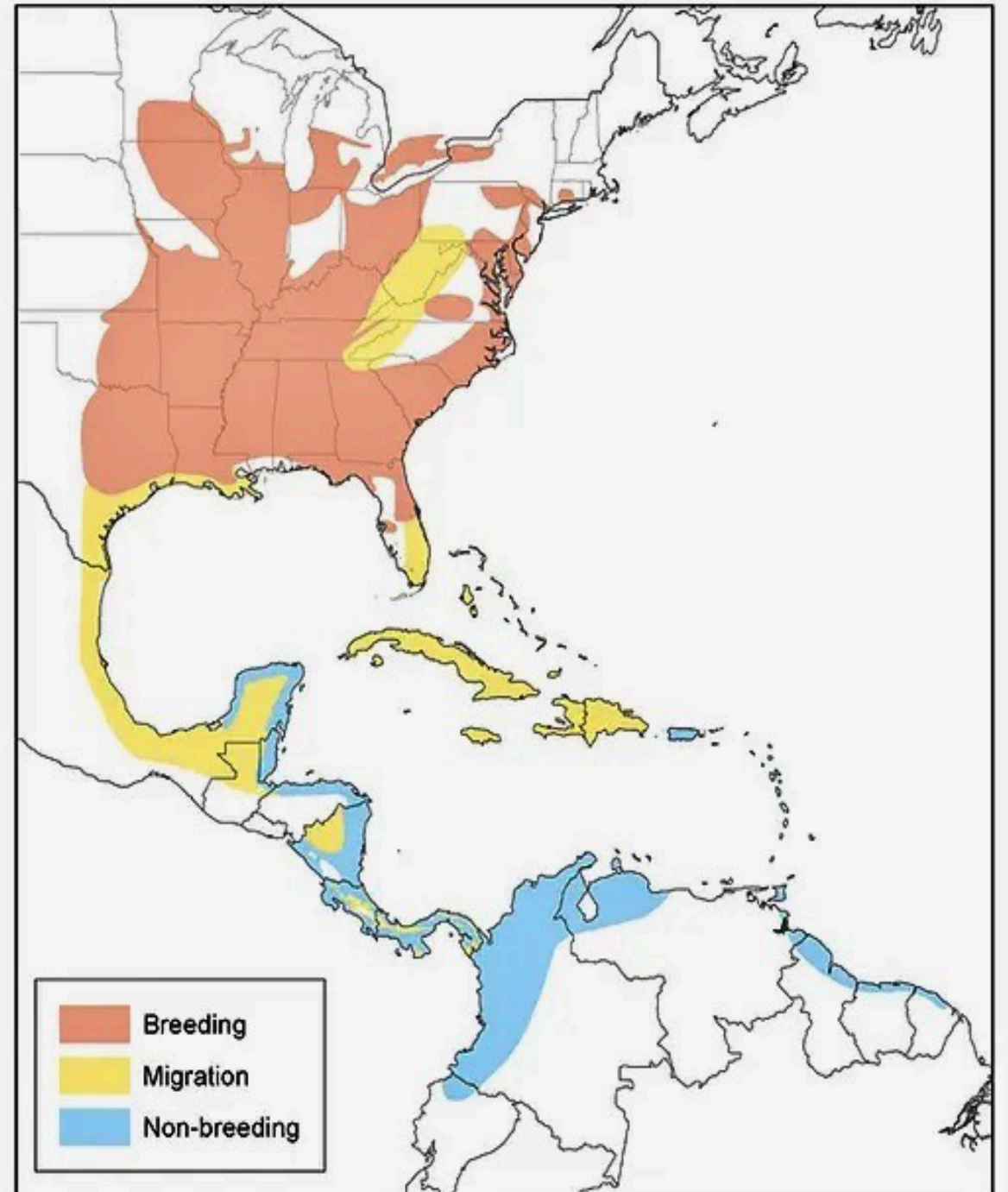
[HTTPS://WWW.ALLABOUTBIRDS.ORG/GUIDE/  
PROTHONOTARY\\_WARBLER/MAPS-RANGE](https://www.allaboutbirds.org/guide/prothonotary_warbler/maps-range)

CORNELL LAB OF ORNITHOLOGY

Nest and Breed in Eastern  
North America

Migrate initially to Yucatan  
Peninsula or Caribbean

Winter mainly in Colombia  
in South America



# INTERNATIONAL FLIGHT OF THE PROTHONOTARY WARBLER



- The Birds Rely Heavily on 4 Sites During Migration Where They Make Long Stopovers
  - Mexico's Yucatan Peninsula
  - Honduras-Nicaraguan Border
  - Along Costa-Rica's Border with Panama
  - Caribbean Islands of Cuba, Haiti, and the Dominican Republic



# PROTHONOTARY WARBLER MIGRATION PATHS

MIGRATORY CONNECTIVITY IN THE  
PROTHONOTARY WARBLER. THE CONDOR 121.  
GRAPHIC BY MELANIE A. SMITH/AUDUBON

[HTTPS://WWW.AUDUBON.ORG/NEWS/A-TALE-  
TWO-MIGRATION-ROUTES-HOW-  
PROTHONOTARY-WARBLEDERS-MAKE-THEIR-WAY-  
HOME](https://www.audubon.org/news/a-tale-two-migration-routes-how-prothonotary-warblers-make-their-way-home)

ADDITIONAL WORK BY ERIK JOHNSON  
(AUDUBON DELTA) AND THE PROTHONOTARY  
WARBLER WORKING GROUP – FIRST BIRD WAS  
“GEODAD”

Fall Migration from North  
America and Winter Habitat  
in Colombia, South America  
from Geolocators on 6 birds

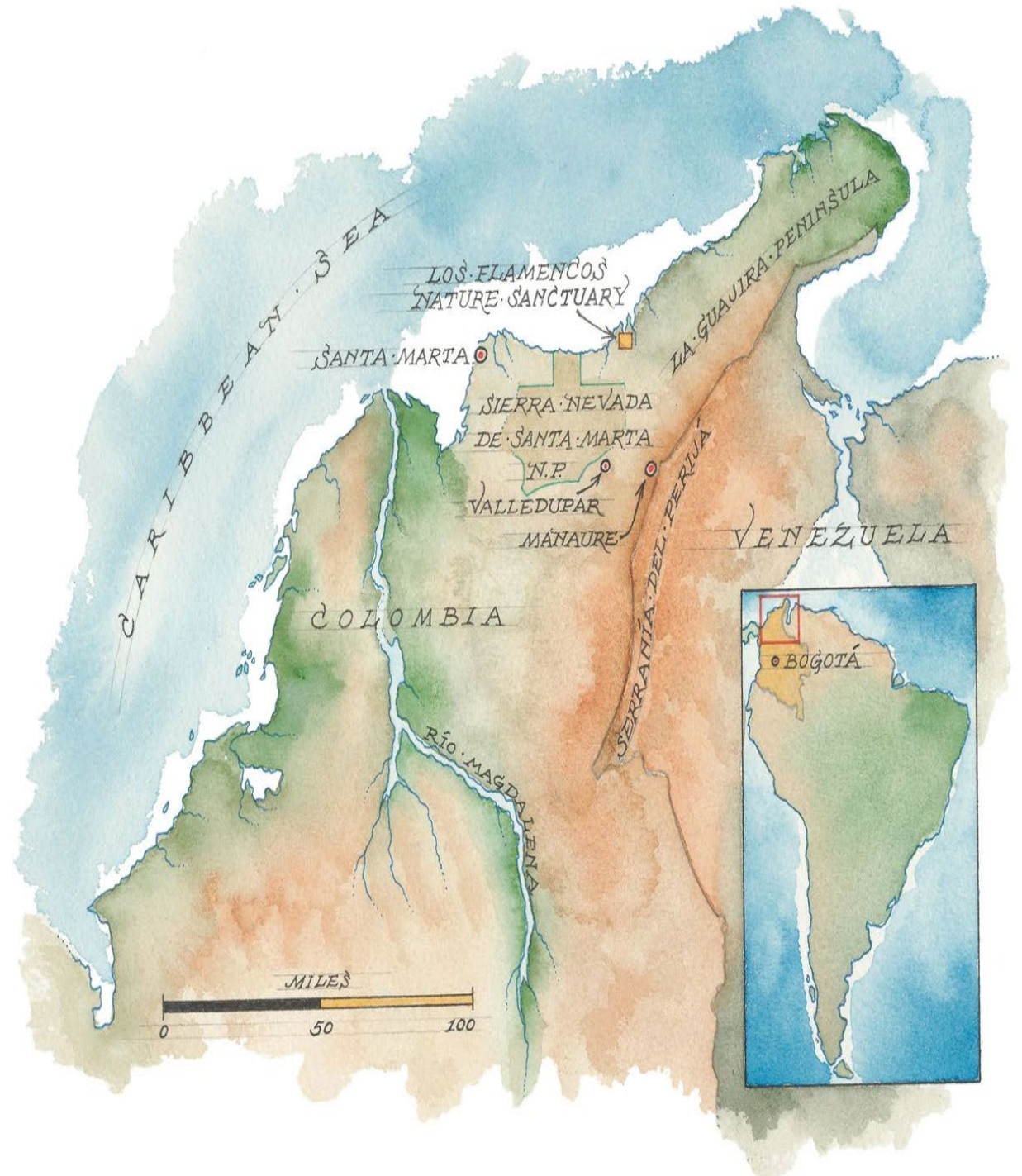


# COLOMBIA IN SOUTH AMERICA IS CRITICAL TO THE PROTHONOTARY WARBLER

90% of PROWs  
Overwinter in Colombia,  
South America

Coastal Mangrove Forest  
Habitat

Inland in Northern  
Colombia



**WHERE DO  
PROTHONOTARY  
WARBLERS NEST?**

*Anywhere they want to  
nest – “If it fits...I sits”*

- Cavity Nesters
- Most often nest in Swamps of Louisiana, Mississippi, Georgia, and South Carolina
- Sometimes in Kansas and Missouri and other states as far north as Wisconsin, Michigan, Pennsylvania, and New York State







# PROTHONOTARY WARBLER (PROW) STUDY MASTER NATURALIST NESTING BOXES 2022, 2023, & 2024 CITIZEN SCIENTISTS IN KANSAS AND MISSOURI 2023 AND 2024



# PROTHONOTARY WARBLER (PROW) STUDY KANSAS CITIZEN SCIENTIST NESTING BOXES IN '23 & '24

- Crawford County near Pittsburg (Kathy Fox)
- Crawford County near Pittsburg (Cindy and Steve Ford)
- Linn County near Lacygne (Wanda and Orlin Heady)





# PROTHONOTARY WARBLER (PROW) STUDY MISSOURI CITIZEN SCIENTIST NESTING BOXES IN 2024

- Kendzaro Conservation Area (Jack Corrigan)
- Springfield Conservation Nature Center (Samantha Grove)



# 2022, 2023, AND 2024 SUCCESSFUL PROW NESTING BOX AT WYANDOTTE COUNTY LAKE PROTON AND ELECTRON



**2022, 2023, AND  
2024 PROW  
NESTING BOX  
SUCCESS AT  
WYANDOTTE  
COUNTY LAKE**

**WHITE EGGS  
WITH RED  
SPECKLES OR  
SPLOTCHES**



2022 AND 2023 PROWS  
FLEDGE FROM IRON PIPE AT  
WYANDOTTE COUNTY LAKE  
(WARRIOR'S NEST)



# 2024 BREAKING NEWS – NEW PROWS IN TOWN FERROUS AND FERRIC ARE PARENTS!



# MASTER NATURALIST PILOT STUDY RESULTS 2022, 2023, & 2024 WYANDOTTE COUNTY ACTIVE NESTS WITH FLEDGED YOUNG

Location	Year	Species	Active Nests	Number Fledged
Wyandotte Lake	2022	Prothonotary Warbler	2	10
Wyandotte Lake	2023	Prothonotary Warbler	2	10
Wyandotte Lake First Clutch	2024	Prothonotary Warbler	3	13
Wyandotte Lake Second Clutch	2024	Prothonotary Warbler	2	4
<b>Total</b>			<b>9</b>	<b>37</b>

# CITIZEN SCIENTIST RESULTS

## ACTIVE NESTS WITH FLEDGED YOUNG

Location	Year	Species	Active Nests	Number Fledged
Linn County, Kansas	2023	Prothonotary Warbler	1	5
Crawford County, Kansas	2023	Prothonotary Warbler	1	4
Linn County, Kansas	2024	Prothonotary Warbler	1	5
Crawford County, Kansas	2024	Prothonotary Warbler	1	4
Springfield, Missouri	2024	Prothonotary Warbler	1	5
		Second Clutch	1	4
Kendzora in Missouri	2024	PROW	2	6
<b>Total</b>			<b>8</b>	<b>33</b>



*Photos by Kathy Fox*



# LEARNINGS AND HIGHLIGHTS FROM PREVIOUS YEARS

- Redeployed Boxes from Inactive Sites to More Promising Locations
  - Shade, Trees, Water – Avoid or remove overhanging tree limbs and brush
- Raised Height on Boxes with Taller Poles (7 foot T-Posts)
  - Adjustable height for monitoring ease
- Banded and Tagged Prothonotary Warblers at 2 sites in Kansas - Delta Audubon Study
  - Alice Boyle, PhD Kansas State – Ornithologist & Licensed Bander
  - Andy George, PhD Pittsburg State – Ornithologist & Licensed Bander
  - Federal and Colored Study Bands and Barometric Pressure Geolocators
    - Geolocators - 3 Males at Wyandotte Lake and 1 Male in Crawford County
    - Federal and Study Colored Bands on 5 Males and 1 Female
    - Federal Bands on 8 Nestlings

**GOAL OF DELTA AUDUBON STUDY:  
PROVIDE PROW MIGRATORY DATA  
FOR DESIGN OF WIND FARMS IN  
GULF OF MEXICO**



# DELTA AUDUBON PROW MIGRATION STUDY BAROMETRIC PRESSURE GEOLOCATORS “PRESSURE TAGS”

- **Record atmospheric pressure at set intervals**
  - Document migratory movements and stationary periods
  - Reveal previously unknown flight behaviors
  - Improve the accuracy of a bird’s location
- **What they Can Reveal:**
  - Migration Routes and Timing
  - Stopover Locations
  - Non-breeding Location
  - Flight Behavior
  - Altitude of Flight
- **How They Are Used:**
  - Attached to birds and must be recovered to extract the archived data









# NEW IN 2025 - PITTSBURG STATE UNIVERSITY STUDY

## ANDY GEORGE, PH.D.

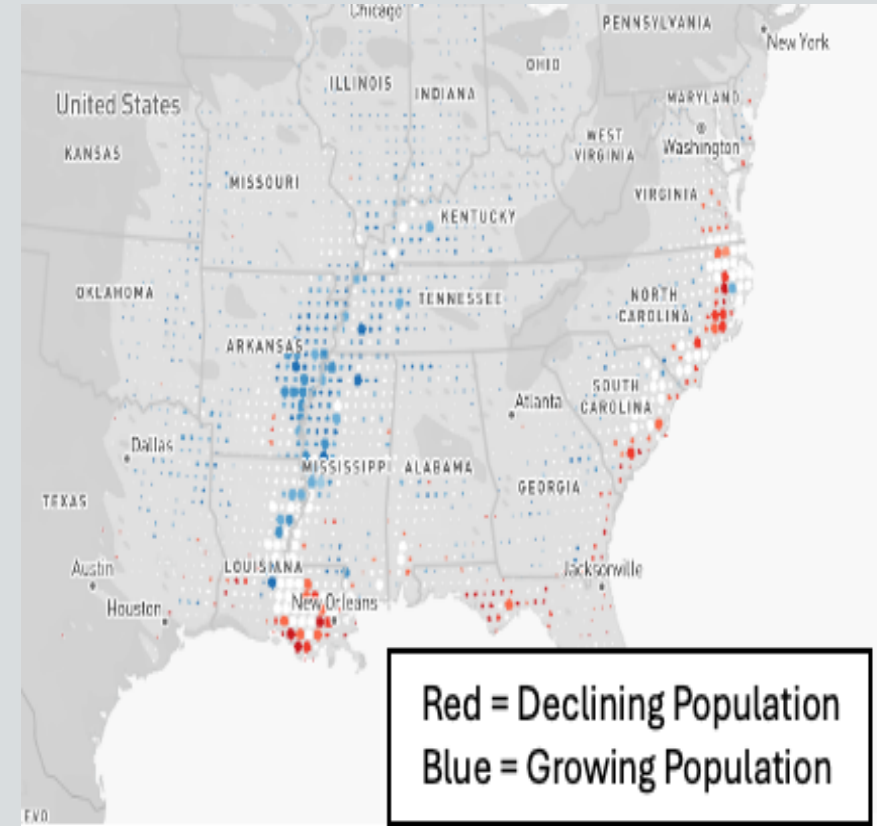
### GABE MCCLAIN, GRADUATE STUDENT

#### Background:

- Artificial nest boxes can benefit PROWs
- Previous work has targeted populations in core regions of range, where they are declining (Louisiana)
- Range maps and population trends indicate abundance is stable or increasing at the western edge of their range.
- Mechanisms linking specific habitat to nest survival and nest fidelity have not been established

#### Goal :

- Use nest survival and site fidelity to gain insight on PROW trends along the western portion of their range.



## **2025 COLLABORATIVE WORK – PITTSBURG STATE, K-STATE, EMNS, AND CITIZEN SCIENTISTS IN MISSOURI AND KANSAS**

- Recapture birds tagged in 2024, remove pressure tags, and dispatch data for analysis
- EMNs and Citizen Scientists in Kansas and Missouri will:
  - Install and Monitor PROW nesting boxes
  - Record data in Bluebird Stewards database
  - Share data with Pittsburg State to provide a more robust dataset for analysis
- Place pressure tags and bands on nesting PROWs across western Kansas and Missouri
  - 6 pressure tags available in 2025:
    - 4 Pressure tags will be provided through Delta Audubon.
    - 1 pressure tag provided by Johnson County K-State EMNs
    - 1 pressure tag donated by a private citizen



# BENEFITS FROM PROJECT

- Nesting Success Rate (75% boxes vs 50% wild)
- Increased Interest in PROW Protection and Conservation
- Data Shared with Cornell Labs Nest Watch and the Prothonotary Warbler Working Group for Research
- Study Site for Delta Audubon Prothonotary Warbler Migration Study
- Upcoming Academic Prothonotary Warbler Study at Pittsburg State University





## Protecting Birds by Advancing Clean Energy

We are engaging in the clean energy transition to protect North American bird species from climate change and ensure that infrastructure is planned with birds and people in mind. Over the past year, we worked with clean energy developers and federal and state agencies in advocating for bird-safe practices on 36 gigawatts of wind and solar and nearly 45 gigawatts of transmission capacity. [Click here to discover more about our recent efforts](#)

## National Audubon Society Wingspan Newsletter November 2024

### Warbler Research in Louisiana, Kansas, Arkansas, and Ohio

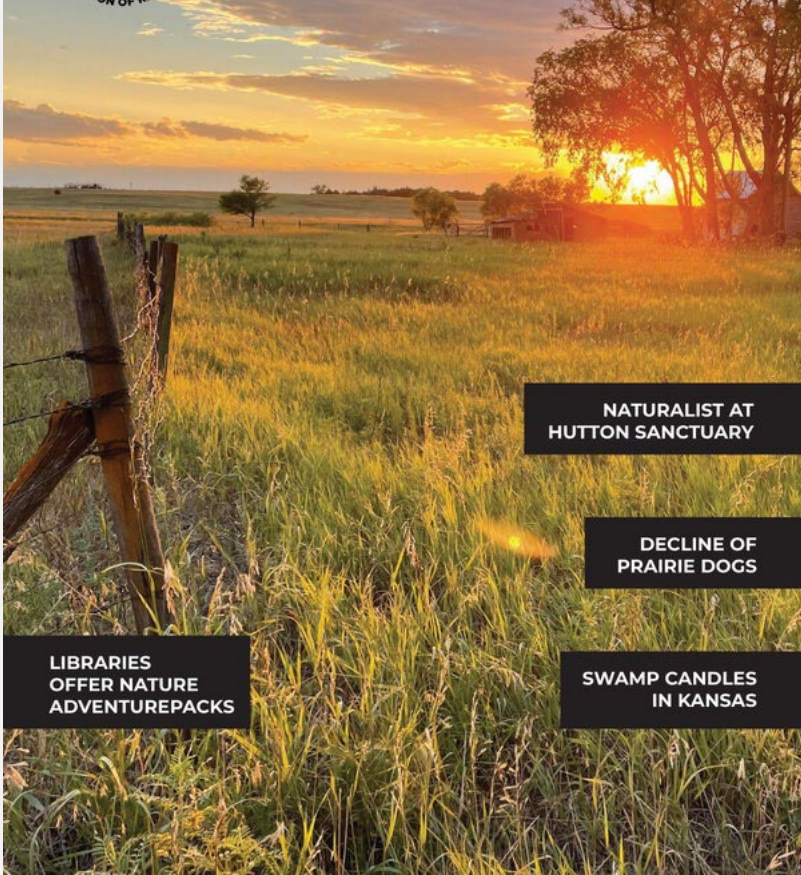
In May and June, [Audubon Delta](#) and partners fitted over 50 Prothonotary Warblers with tiny trackers across Louisiana, Kansas, Arkansas, and Ohio. The multi-sensor geolocators will collect data on the flight behavior of these songbirds as they migrate across the Gulf of Mexico. The information gathered from returning birds will offer new insights into their use of airspace and their responses to inclement weather. This research will aid in assessing collision risks for [offshore wind projects in the region](#) and support improved planning and siting efforts.



2023-24

# PRAIRIE WINGS

Advancing Conservation in the Great Plains



**NATURALIST AT HUTTON SANCTUARY**

**DECLINE OF PRAIRIE DOGS**

**LIBRARIES OFFER NATURE ADVENTURE PACKS**

**SWAMP CANDLES IN KANSAS**

## SWAMP CANDLES IN KANSAS

ANN TANNER



Five Prothonotary Warbler eggs. Photo by Greg Laube



Hungry mouths. Photo by Kathy Fox

Who doesn't love a bright splash of color in an otherwise muddy and murky setting? The brilliant yellow Prothonotary Warbler shines like a bright candle in its swampy and marshy home environment. In fact, it is often referred to as a "Swamp Warbler" or a "Swamp Candle" for just that reason. Its unique bright yellow plumage, beady black eye, and blue gray wings are eye-catching to both experienced and new birders. Most people consider the Prothonotary Warbler a bird that breeds in the swamps of Louisiana and Mississippi, but it also nests surprisingly far to the north along rivers and as far west as eastern Kansas.

My love of the Prothonotary Warblers dates back to my years growing up near Sky Lake in Mississippi. Sky Lake is both a lake and a swamp, and it is also home to Bald Cypress trees over 1,000 years old. This location is in the heart of the Prothonotary Warbler breeding grounds. When these brilliant yellow birds caught my attention as a youngster, I asked my dad about them. He did not know the scientific name for

the bird, but he called them "Wild Canaries."

The population of Prothonotary Warblers is in decline, and the birds are on the "Yellow Watch D" Conservation List of Concern. This is a list of 55 bird species with steep declines in population and major threats. The Prothonotary Warbler Working Group, established in February 2014, is a consortium of conservation and research partners in 14 states across the U.S. and in the country of Colombia in South America. This group represents researchers and collaborative partners across the breeding, migratory, and wintering range for the warbler. The group reports we have been losing these birds at an alarming rate because of habitat loss, climate change, and the hazards they face spanning two continents during migration. The birds nest primarily in the southeastern United States, but they spend the winter in the mangrove forests in Colombia. This translates into a migratory journey of thousands of miles each year.



Feeding babies in the iron pipe nesting site. Photo by Melissa Schwartz Streczywilk



Warrior, the Prothonotary Warbler Patriarch in Wyandotte County Lake Park. Photo by Melissa Schwartz Streczywilk

Conservation and protection of the Prothonotary Warbler is a priority, since their population is in steep decline. The Prothonotary Warbler Working Group has identified migration patterns for Prothonotary Warblers in the southeast. Those nesting on the southeastern coast (including Georgia and the Carolinas) migrate through Cuba, before reaching their winter home in Colombia, South America. Those nesting in Mississippi and Louisiana migrate through Mexico and the Yucatan Peninsula, before they meet the nesting birds from the southeast for the winter in Colombia.

Decades after my first childhood sightings of "Wild Canaries," I joined the Delta Wind Birds Board of Directors in Mississippi. This non-profit organization is dedicated to protecting and creating wetlands as well as raising the awareness of migratory birds and their habitat in the Mississippi Delta. In 2021, the Delta Wind Birds group established the "Prothonotary Warbler Trail" with nesting boxes along a 14-acre

site on Sky Lake. We were unsure if the birds would accept wooden nesting boxes, however.

**We hosted 4 active nests and learned a great deal that year, but most importantly, we learned that swamp warblers will sometimes choose wooden nesting boxes over their natural cavity tree nests in one of their favorite breeding areas in the heart of the Mississippi Delta.**

Also in 2021, I completed the Extension Master Naturalist training program in Johnson County, Kansas. I have been a birder for several years, and I was aware of one pair of Prothonotary Warblers nesting in an iron pipe located in the lake behind the Mr. and Mrs. F.L. Schlagle Library at Wyandotte County Lake Park. I wondered if Prothonotary Warblers in Kansas would accept wooden nesting boxes, as they do in Mississippi. The Bluebird

<https://www.audubonofkansas.org/prairie-wings.cfm?fx=NODHNZCDWLG389GY>

# REFERENCES

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- “Geodad”, Erik Johnson and the Prothonotary Warbler Working Group: Journal of Field Ornithology: Jared Wolfe and Erik Johnson 27 August 2015 <https://onlinelibrary.wiley.com/doi/abs/10.1111/jof.12107>
- Gustave Axelson and Jillian Ditner; All About Birds Jan 4, 2021 Where Do Migrants Go in Winter? New Models Provide Exquisite Detail. <https://www.allaboutbirds.org/news/where-do-migrants-go-in-winter-new-models-provide-exquisite-detail>
- L. Bulluck et al. (2019). [Habitat-dependent occupancy and movement in a migrant songbird highlights the importance of mangroves and forested lagoons in Panama and Colombia](https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.5610). Ecology and Evolution. <https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.5610>
- Audubon in Action 2015: <https://www.audubon.org/news/new-research-details-warblers-mystery-treks?>
- National Wildlife Foundation: <https://offshorewind.nwf.org/2024/08/monitoring-bird-interactions-with-offshore-wind-development/>
- Cornell Lab of Ornithology NestWatch: <https://nestwatch.org>

Thank you for your Interest!

For Questions or Additional Information:

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