



North American Bird Phenology Program (BPP):

Reviving a Historic Program in the Digital Era

www.pwrc.usgs.gov/bpp/

Presentation by Jessica Zelt, Kevin Laurent, and Sam Droege



North American Bird Phenology Program



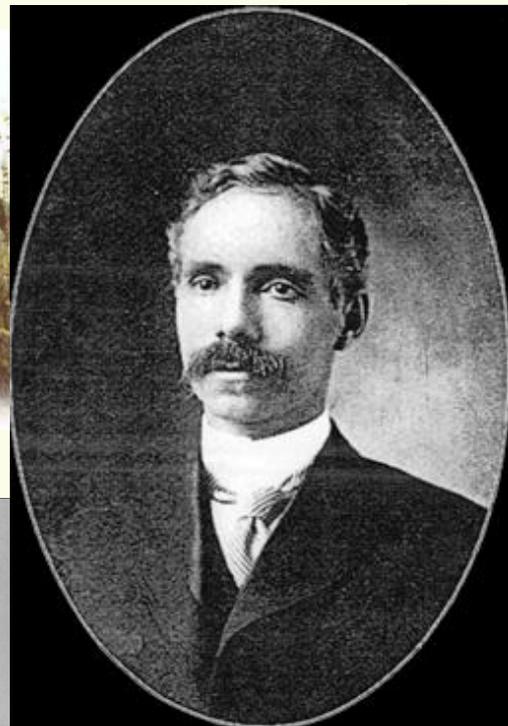
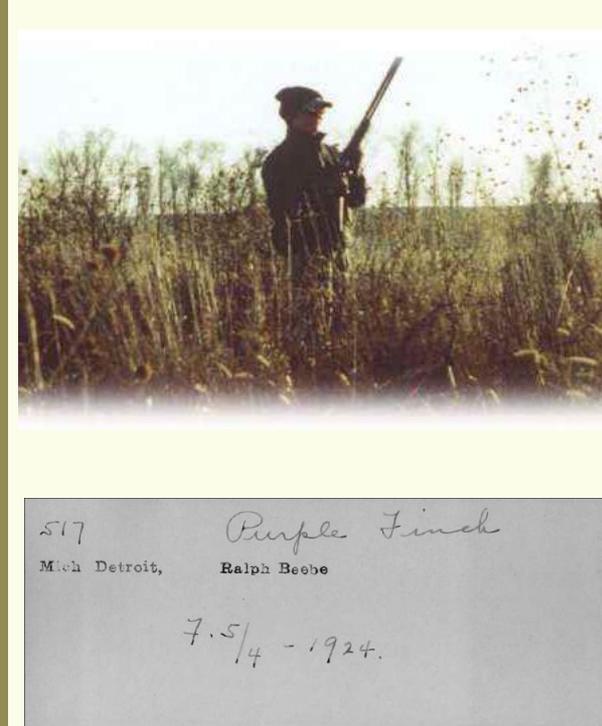
Presentation Summary

- Program History
- Coordinators and Observers
- Revival of Program
- Transcription Screen and Process
- Matching aka “Validate-o-Rama”
- Who volunteers with us and why?
- Future goals and applications



Wells W. Cooke and the start of the program

- Wells W. Cooke, teacher in Indian Schools in the Mississippi Valley, took interest in studying bird migration
- 1881: First two years of his study he was receiving correspondence from about 20 observers
- 1883: The American Ornithologist Union (AOU) was founded, took interest in Cooke's research
- 1884: The task of collecting and cataloging the amount of information had outgrown the capabilities and funding of the AOU.
- Merriam drafted a memo to Congress asking for the appropriation of funds and the creation of The Division of Economic Ornithology.
- As Chief of the Division of Economic Ornithology Merriam increased number of participation to ~3,000 observers.

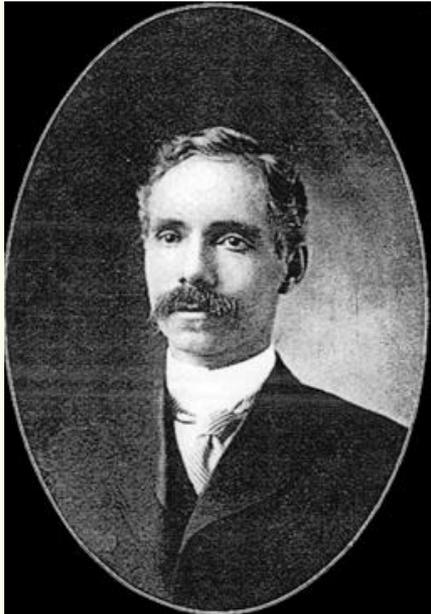


Wells Woodbridge Cooke (1858-1916)



Program Coordinators

- **Wells W. Cooke** started the project while a teacher at an Indian School in the Mississippi Valley
- After Cooke's death the program was supervised by the likes of Edward A. Goldman, Edward W. Nelson, **Harry C. Oberholser**, and May Thatcher Cooke (Wells' daughter).
- **Fred Lincoln** contributed greatly to running the project while simultaneously running the North American Bird Banding Lab.
- **Chandler Robbins** closed the program in 1970, in part, to focus on the North American Breeding Bird Survey.



Wells W. Cooke



H.C. Oberholser



Fred Lincoln



Chandler Robbins



Bird Phenology Program Observers

Over the 90 year span in which records were actively collected, the collectors and original observers who recorded the bird migration cards comprised of notable naturalists, researchers and high ranking biologists within Fish and Wildlife Service and the Bureau of Biological Survey.



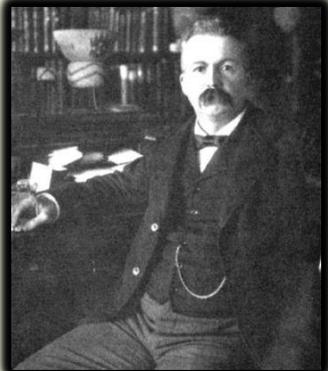
Ira N. Gabrielson

John Walter Hoxie

Winton Wedemeyer

Edgar Mearns

Alexander Skutch

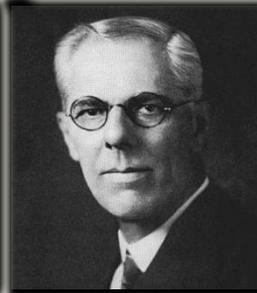


Olaus J. Murie

C. Hart Merriam

Vernon Bailey

P. A. Taverner



James Bond

Aldo Leopold

Lawrence Walkinshaw

H.C. Oberholser

A.H. Howell

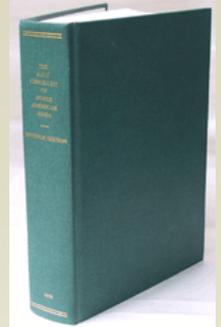


The 52 filing cabinets were put into attics, basements, and off-site storage facilities for 40 years





- The program came to a close in 1970
- Over the 90 year span 6 million records were collected
 - Database of the time- all of what was known about bird migration
 - Contained original records, publications, breeding and nest records, field reports...etc.
 - Contained records of extinct species, exotic species, and rare records.
 - Used to create the AOU Checklist of North American Birds and first field guides



Campephilus principalis
 FLORIDA: East Florida.
 The range of this species begins on the west of the
 Alapatochee and extends west and south toward Okeechobeg.
 I had a good view only of one near the Hatochochee. Heard
 frequently but could only get glimpses at the best along the
 Locogumpohatchee.
 Aug. 5-Nov. 10, 1868. Walter Hoxie.

House Sparrows introduced to U.S. in 1851

533
 Locust Grove, N.Y.
 6. 10/24, bulkarr, 10/25, 1884
 seen 3/31, 4/4, 4/9, 4/19, 22, 1884
 Miss F.A. Merriam Migration Card Catalogue, A.K. Fisher

Ivory billed Woodpecker critically endangered or extinct

SPECIES Bewick's Wren		SEASONS April 3 1949	
STATE OR TERRITORY Maryland		NEAREST TOWN my farm at Unity	
ORGANIZATION OR OBSERVER Seth H. Low	DATE FIRST SEEN 4/3/49	DATE LAST SEEN	DATE MAXIMUM BREEDING
NUMBER FIRST SEEN 1	LARGEST NUMBER SEEN IN ONE DAY 5 in 1949 - also seen	NUMBER LAST SEEN	LARGEST NUMBER (PAIRS) BREEDING
NUMBER OF TRIPS		AVERAGE HOURS	
DATE MAXIMUM WINTERING		LARGEST NUMBER WINTERING	

Bewick's Wren now extirpated breeder from MD



In 2009, Sam Droege and John Sauer received funding to hire a coordinator and a few scanners to revive the program



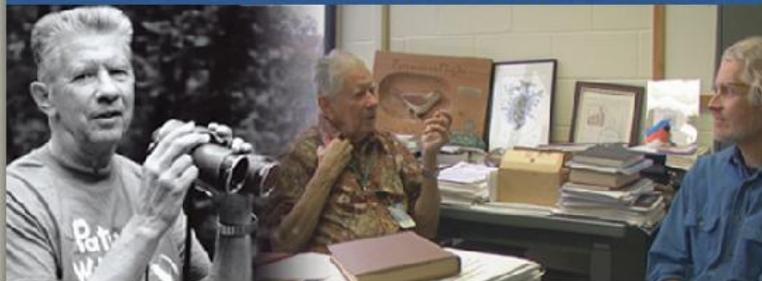
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**North American
Bird Phenology Program**

USA **nnpn**
National Phenology Network

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BECOME AN OFFICE
VOLUNTEER

BECOME AN ONLINE
PARTICIPANT

FEATURED PHOTOS



View Chan's Video:

Chan Robbins, who was one of the last coordinators of the BPP before it stopped accepting migration records in 1970. In this interview, conducted by Sam Droege, Chan talks about the history of the BPP, how it began, who ran the program and why it came to a close.

[Click here to see the interview](#)

Related Links

USA-NPN

E-Newsletters

What's New



Learn more about other phenology programs around the country.



The BPP is a part of the USA National Phenology Network. Learn more.



Sign-up to receive the BPP E-Newsletter or read our past E-Newsletters.



What's new with the BPP? Check out the latest happenings.



Program Goals

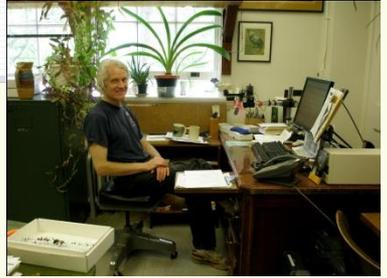
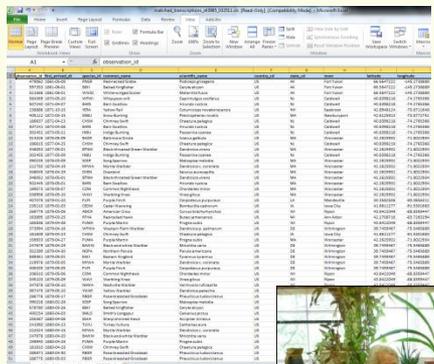
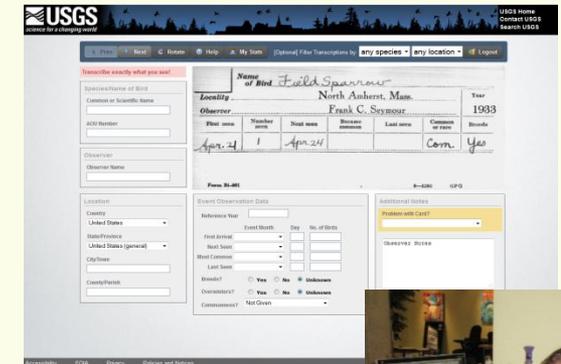
- Curate, organize and prioritize 6 million data records for N. America, 1880-1970
- Scan and key standard cards with quality assurance
- Create a digital format for a dataset
- Grow and manage a network of volunteers worldwide to transcribe historical biological data online.
- Create automated system for transcription verification
- Make data easily accessible for policy makers, the public and researchers.
- Create template for digitizing legacy data that can be replicated and applied to other data sets



North American Bird Phenology Program



www.pwrc.usgs.gov/bpp/





Typical Cards

517 Purple Finch
Mich Detroit, Ralph Beebe
7.5/4 - 1924.

507 Onaga, Kans, Crevecoeur
+ 5/7 - 5/8 - 5/9 - 07

Location where the observation was made

Species Name

Observer Name

Year

Does it winter in the area?

On which dates was it observed?
(First, Next, Became Common, Last)

Does it breed in the area?

Name of bird <u>Ruby-throated Hummingbird</u>						Year
Locality <u>Leetonia, Ohio</u>						1944
Observer <u>Paul A. Stewart</u>						
First seen	Number seen	Next seen	Became common	Last seen	Breeds	Winters
				<u>Sept. 17</u>	<u>Yes</u>	<u>No</u>
3-801 January 1940						GPO 16-14100



[Optional] Filter Transcriptions by:
 any species ▾
any location ▾

Transcribe exactly what you see!

Species/Name of Bird

Common or Scientific Name

AOU Number

Observer

Observer Name

Location

Country

United States ▾

State/Province

United States (general) ▾

City/Town

County/Parish

Name of Bird *Field Sparrow*

Locality *North Amherst, Mass.* Year *1933*

Observer *Frank C. Seymour*

First seen	Number seen	Next seen	Became common	Last seen	Common or rare	Breeds
<i>Apr. 24</i>	<i>1</i>	<i>Apr. 24</i>			<i>Com.</i>	<i>Yes</i>

Form BI-801 8-5280 GPO

Event Observation Data

Reference Year

	Event Month	Day	No. of Birds
First Arrival	▾	<input type="text"/>	<input type="text"/>
Next Seen	▾	<input type="text"/>	<input type="text"/>
Most Common	▾	<input type="text"/>	<input type="text"/>
Last Seen	▾	<input type="text"/>	<input type="text"/>

Breeds? Yes No Unknown

Overwinters? Yes No Unknown

Commonness?

Additional Notes

Problem with Card?

▾

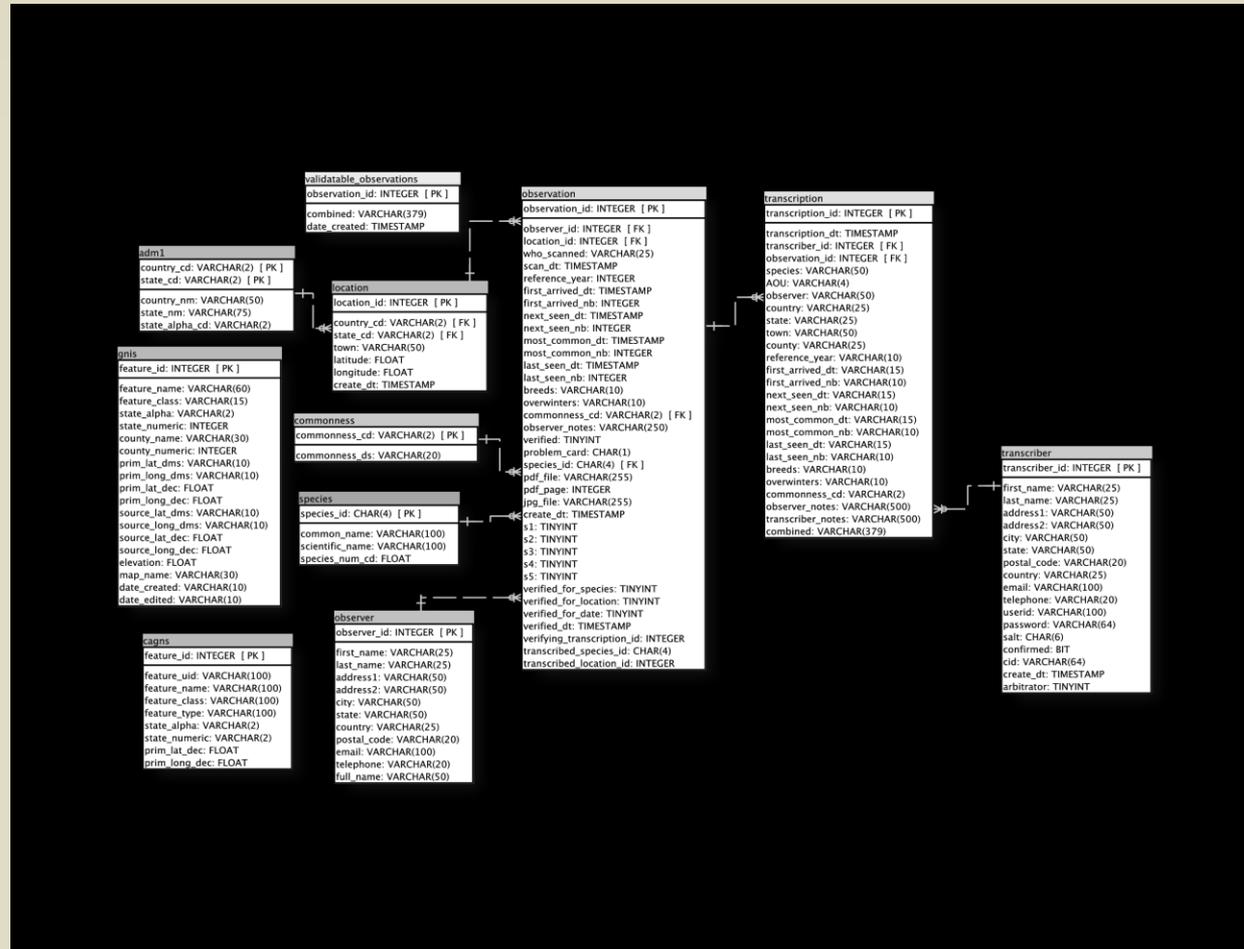
Observer Notes

Transcriber Comments

<https://www.pwrc.usgs.gov/BPP/v4/>



North American Bird Phenology Program Database Diagram





352
Bald Eagle
Amnetaburg, Iowa.
7/9/1921.
L.I. Weeks.

Locality *Lewis and Clark*
Observer *Mrs. W. K. Parley*
First seen *Nov. 11* Number seen *1* Nest seen Because common Last seen Common in 1920 Breeds
*First time we had ever seen this bird
but we felt sure of the identification.*

Name of bird *Snow Geese*
Locality *Semi-ahmeo, R.I.*
Observer *Lucile H. Kline*
First seen *Nov. 13* Number seen *1* Nest seen Because common Last seen Common in 1920 Breeds *No*

Transcription 1:
Transcriber A

Transcription 2:
Transcriber B

Match

No Match

Data from one transcription
goes into observation table

Transcription 3: Transcriber C

Match

No Match

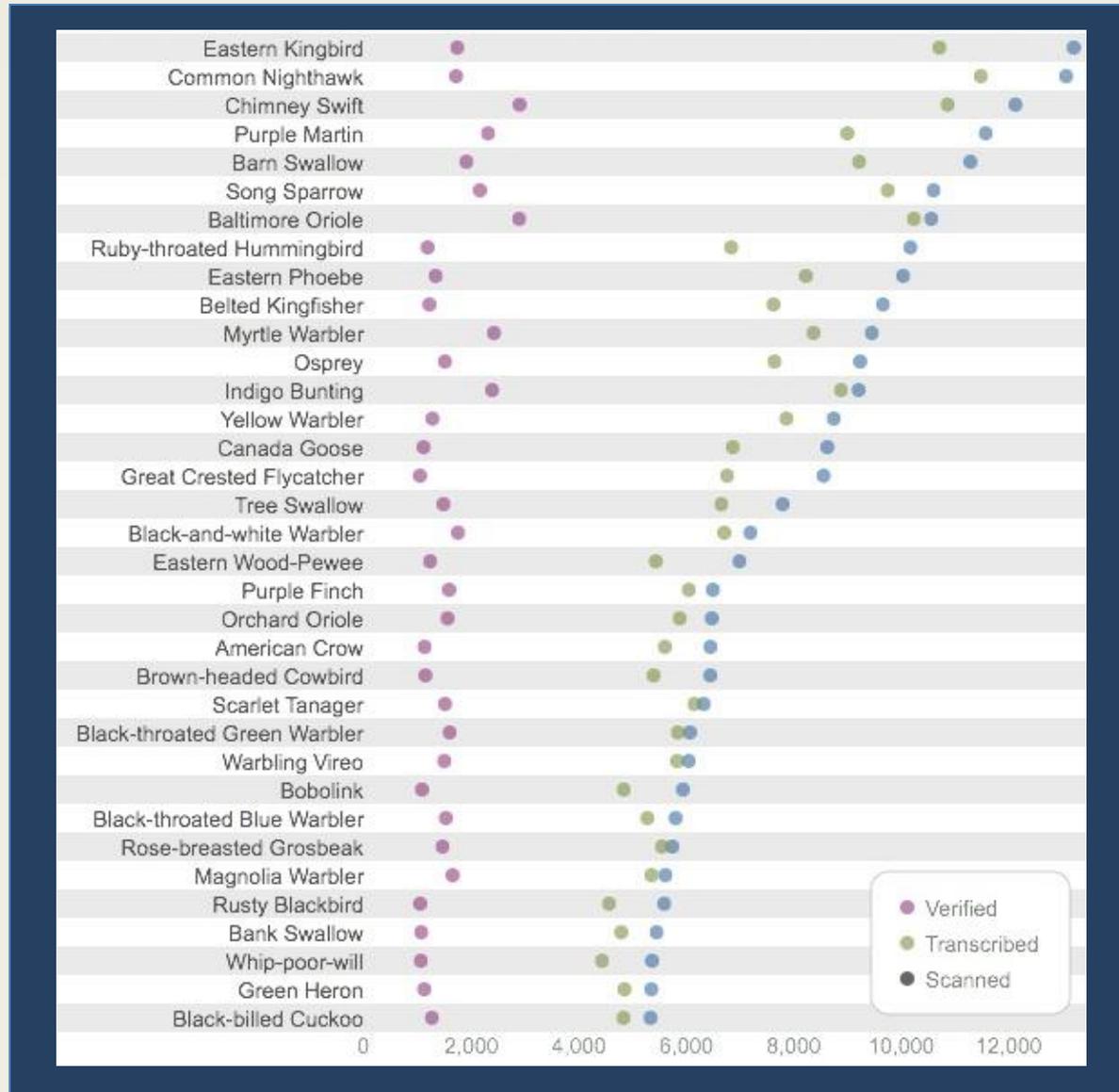
Data from one transcription
goes into observation table

Record sent to
"rectification system"

Data from one transcription
goes into observation table



Scan—Transcribe—Verify





Volunteer Recruitment

On March 18, 2009, the BPP put out a press release to announce the program



ClimateWatch Magazine
Watching Birds, Tracking Climate
Audubon Naturalist News
Measuring Springtime
BioScience
Phenology and Citizen Science
Audubon Magazine
In the Cards
TC Palm

Bird records may provide insight into global warming
South Coast Today

Flight plans: Historic records to shed light on global warming, migration

Wildbirds Broadcasting
Online Entry to Improve Input of Historic Bird Phenology Details
CNN.com

Ninety years of birdwatchers' notes going online
Wired.com

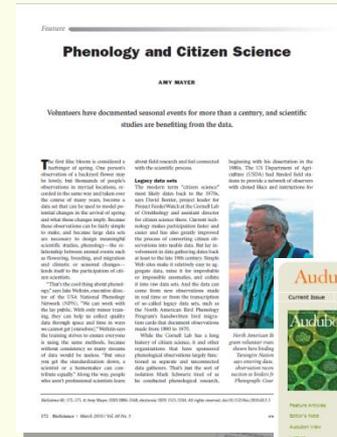
Open Data: Help Migratory Bird Observations Fly into the Digital Age
ABC 7 News: San Francisco

Bird-watching helps fight global warming
ABC 7 News: Washington DC

What can old bird sightings reveal about climate change?
The Take Away

Saving history: The biologist who protected six million bird-watching notecards
The Take Away

Birding gets a digital upgrade





BPP records transcribed online by a worldwide network of over 2,700 volunteers from...

- United States
- Canada
- Turkey
- Philippines
- Nigeria
- Japan
- Ireland



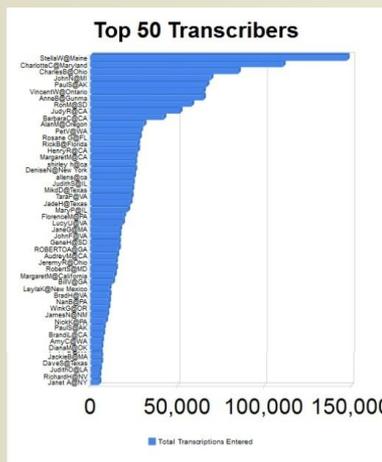
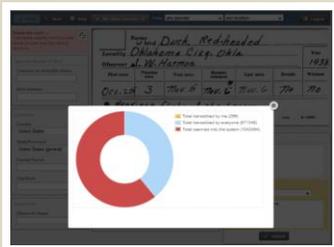
- Belgium
- France
- Germany
- India
- Romania
- Iran
- Australia





Volunteer Retention

- Let volunteers choose their own level of involvement
- Establish a community by interacting with each other
- Give volunteers a reason to donate their time
- Allow the volunteers to feel needed- without them we could not accomplish what we do!
- Keep the lines of communication open with volunteers and identify any potential problems
- Create a survey examining each volunteer's level of satisfaction within the project/program
- Allow volunteers to contribute suggestions and improvements at anytime
- Recognized each volunteer through for his/her work



NORTH AMERICAN BIRD PHENOLOGY PROGRAM

With the help of volunteers worldwide, the North American Bird Phenology Program is working to understand the world of global climate change and how it is affecting bird populations across North America.

Current Migration Card Count:

- Online Volunteers: 2,752
- Cards Transcribed Online: 638,090
- Cards Scanned: 5,182,494

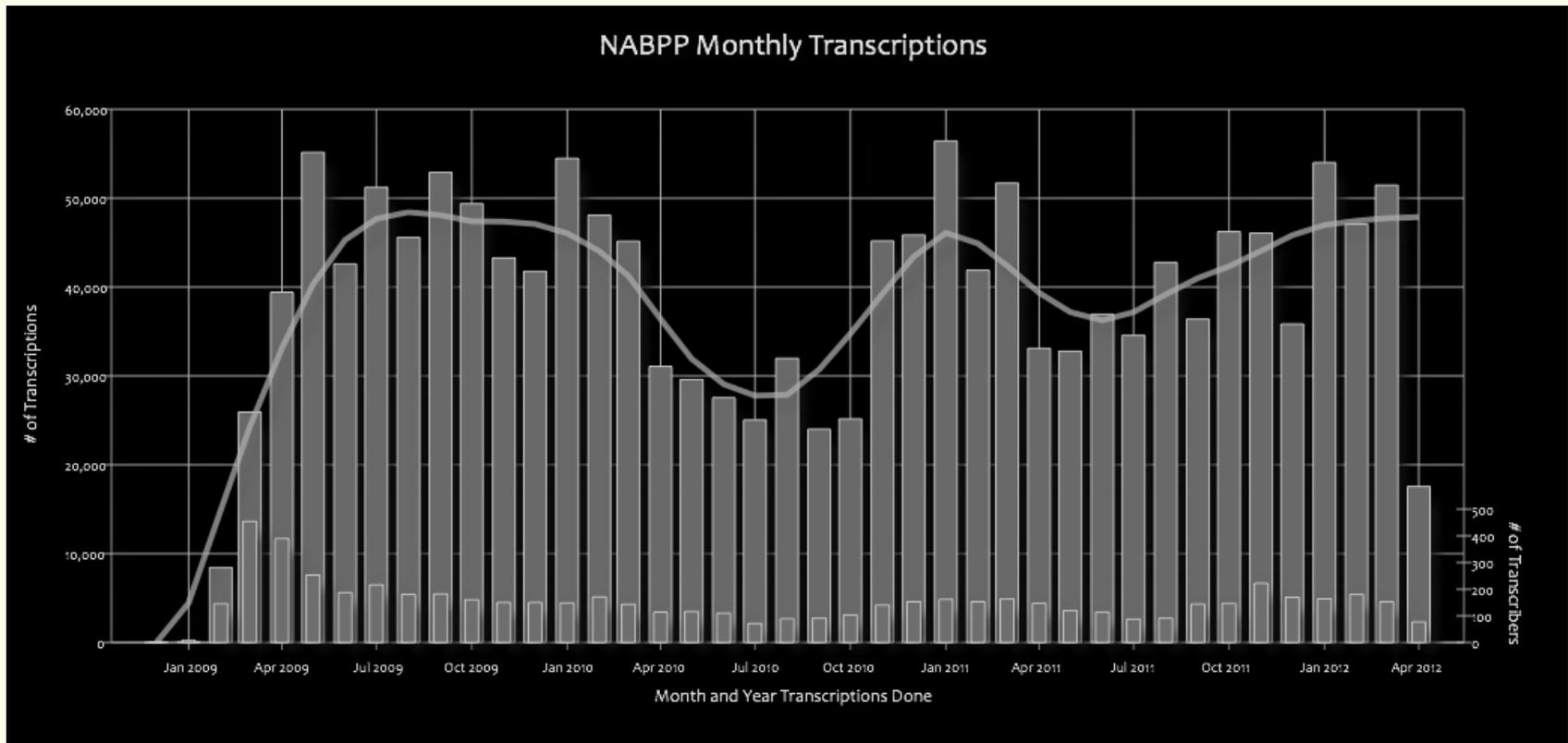
Volunteer of the Month:

Shirley Hoffman
In October 2009, when I volunteered for the program, I had no idea that I would be a part of something so special. I became a birding enthusiast and a member of the program. I have been a member since then and I have been a part of many great projects and events. I have been a part of many great projects and events. I have been a part of many great projects and events.

Ade Lee McAlister
I have been a member of the program since 2009. I have been a part of many great projects and events. I have been a part of many great projects and events. I have been a part of many great projects and events.

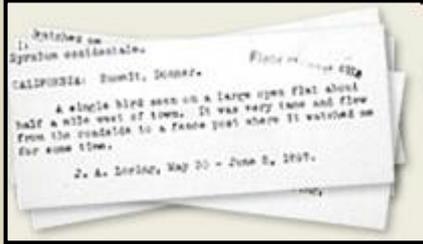


North American Bird Phenology Program Transcription History





Current Count:



Cards

- Total cards scanned: **1,042,494**
- Cards transcribed online: **669,070**



Participants

- Participants transcribing cards online: **2,700**





160,000 Records Will Soon Be Available for Download



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Download Data

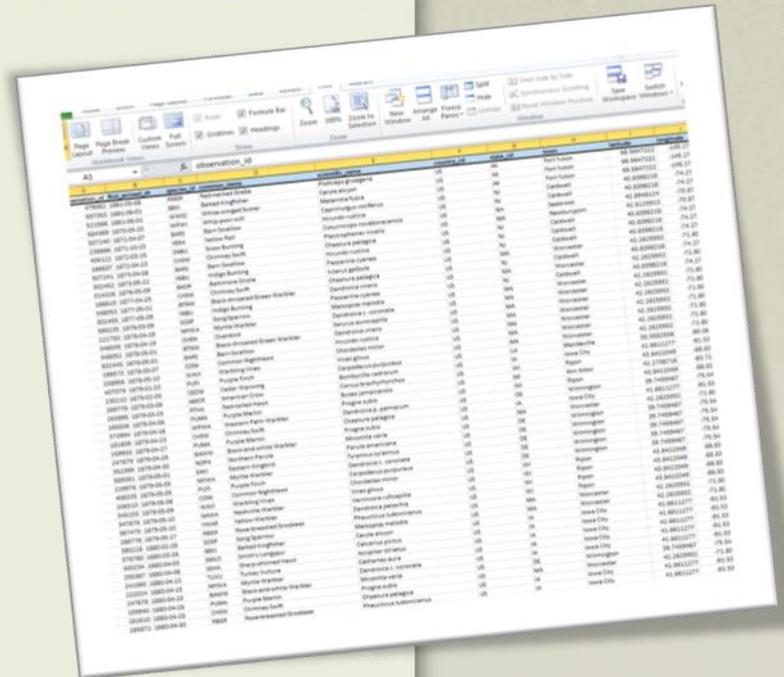
Download an initial dataset of Legacy Phenology Data from the North American Bird Phenology Program.

By downloading this dataset, you acknowledge that you have read and agreed to both the [NABPP Data Use](#) and [Data Attribution](#) policies.

Download the [Documentation Guide](#).

Download Dataset:

Date	Excel Format	CSV Format
March 25, 2011	Download (7.7MB)	Download (4.2MB)



www.pwrc.usgs.gov/bpp/

North American Bird Phenology Program



Publications from BPP Data

Zelt, J., J. Courter, A. Arab, R. Johnson, and S. Droege, Accepted April 26, 2012. Reviving a Legacy Citizen Science Project to Illuminate Shifts in Bird Phenology. *International Journal of Zoology*.

Courter, J., R. Johnson, W. Bridges, K. Hubbard. Submitted March 30, 2012. Assessing Migration of Ruby-Throated Hummingbirds at Broad Spatial and Temporal Scales. *The Auk*.

Courter, J., R. Johnson, C. Stuyck, B. Lang, E. Kaiser. Submitted May 1, 2012. Weekend Bias in Citizen Science Data Reporting: Implications for Phenological Studies. *International Journal of Biometeorology*

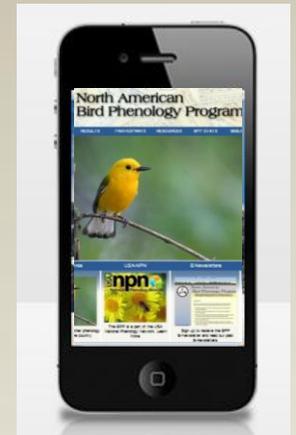
Droege, Sam. 2003. Spring Arrivals of Maryland and Washington D.C. Birds. *Maryland Birdlife*, Volume 59. No 1-2.



Next Steps...

Expand communication:

- Developing a mobile app to further engage citizen scientists
- Allow volunteers to interact with each other through website comments forum
- Expand social media applications by allowing volunteers to tweet, text, email, or post their transcription stats
- Develop visualizations of data for website
- Create a user-friendly interface for data search and output
- Allow volunteers to gauge their accuracy, not just tally transcriptions



517 *Purple Finch*
 Mich Detroit, Ralph Beabe
 7.5/4 - 1924.

Name of bird *Ruby-throated Hummingbird*
 Locality *Ceeonia, Ohio* Year *1944*
 Observer *Paul A. Stewart*

First seen	Number seen	Next seen	Became common	Last seen	Breeds	Winters
				<i>Sept. 17</i>	<i>Yes</i>	<i>No</i>

3-001
January 1940 sps 10-54100

352 *Bald Eagle*
 Summitaburg, Iowa. *7/1 - 1921.*
 L.L. Weeks.



Future Applications

- Create a front end for collecting migration records or merge with existing program
- Make dataset accessible to scientists, managers, and other stakeholders interested in exploring patterns and trends in phenology and climate across space and time
- Make dataset available through other database repositories thereby integrating dataset with other physical and climatological datasets.
- Repurposing crowdsourcing system for museum collections, citizen scientists, and other large datasets

517 Purple Finch
 Mich Detroit, Ralph Beobe
 7.5/4 - 1924.

Name of bird <u>Ruby-throated Hummingbird</u>						
Locality <u>Ceeonia, Ohio</u>						Year
Observer <u>Paul A. Stewart</u>						<u>1944</u>
First seen	Number seen	Next seen	Became common	Last seen	Breeds	Winters
				Sept. 17	Yes	No

3-001
January 1940 sps 10-54100

352 Bald Eagle
 Summitburg, Iowa. 7/1 - 1921.
 L. L. Weeks.

For more information or to contribute or participate in this project, please contact:

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