



Bird Genoscape Project's Annual Newsletter

Issue 4, Spring 2026



A Message from the Director

Welcome to the Bird Genoscape Project's 2026 newsletter!

After a bit of a long stopover since our last issue in Fall 2023, we're excited to land back in your inbox and share updates from across the Bird Genoscape Project. Thank you for your patience while we've been busy behind the scenes—we're thrilled to finally bring you the latest from our growing flock.

Over the past few years, our team has continued to spread its wings, strengthening collaborations across the Western Hemisphere to build genoscapes and make these data widely accessible through tools like the [National Audubon Society's Migratory Bird Explorer](#). In response to the conservation community's call, we've focused much of our recent work on grassland birds—developing genoscapes for species and working with partners to incorporate the resulting information into conservation planning.



Our flock has also seen some exciting changes, celebrated several members as they've successfully fledged into the next stages of their careers, while welcoming many new researchers who are just beginning their journeys with us. It's been inspiring to watch this community grow and evolve.

We hope you enjoy the feathery details within this issue, which includes:

- **Page 2: Breeding Grounds** – Understanding declines in an aerial insectivore.
- **Page 3: Wintering Grounds** – Three field teams, one goal: Grassland birds!
- **Pages 4–7:** News, publications, outreach, etc.

Happy reading, and thank you for being part of our journey!

Sincerely,

Kristen Ruegg



birdgenoscape@gmail.com



www.birdgenoscape.org

Each summer, members of the Bird Genoscape Project take to the field to better understand how migratory birds are responding to environmental change. During the summer of 2025, some of our crew traveled to Wyoming to collect samples from breeding Bank Swallows (*Riparia riparia*; BANS) as part of PhD candidate Erica Robertson's dissertation research. Working along lakes and riparian areas—where BANS nest in large colonies—the team captured birds and collected feather samples to better understand the species' population structure and conservation needs. Fieldwork in Wyoming represented just one piece of a much greater collaborative effort.



Josie Paris (left) and Amanda Carpenter (right) are processing a BANS.

With the help of partners across North America—including Julie Hagelin with the Alaska Department of Fish and Game and Greg Mitchell with Environment and Climate Change Canada—samples were collected throughout the breeding range, from western populations in Montana to eastern populations along the Atlantic Coast, and northern populations across Canada and Alaska. Together, our team is building a more comprehensive understanding of how BANS populations differ and whether some groups may be declining more rapidly than others.

This work is especially important because BANS are among the fastest-declining aerial insectivores. However, these pressures are unlikely to be uniform across the species' range, and some populations may face unique environmental challenges depending on where they breed or the migratory routes they follow. Identifying these distinct populations is therefore critical for developing effective conservation strategies.



One of the many Bank Swallows (*Riparia riparia*) banded and sampled in Wyoming!

One of the main goals of Erica's work is to integrate environmental data and long-term population trends to better understand the factors driving declines in different regions. Ultimately, this work aims to provide decision-support tools that help conservation practitioners prioritize actions for the populations that need them most. Stay tuned as analyses continue, and we learn more about how these declining aerial insectivores are responding to a rapidly changing world.

A special thank you to Megan Fylling and her team at the University of Montana Bird Ecology Lab in Missoula, MT (Maggie Blake, Tricia Rodriguez, Bridger Creel, and Su Ryann) and to Rose Swift and Garrett MacDonald at the Northern Prairie Wildlife Research Center in Jamestown, ND, for helping fill critical gaps in the breeding range last year!

Down on the wintering grounds, three teams set out with a shared mission: sampling grassland birds. A major focus was the Horned Lark (*Eremophila alpestris*; HOLA), the focal species of a new NSF Partnerships in Conservation Science and Practice (PACSP) award in collaboration with the Bird Conservancy of the Rockies. Teams also targeted a suite of other grassland species—including Baird's Sparrow, Chestnut-collared Longspur, Grasshopper Sparrow, and meadowlarks (*Sturnella* spp.)—helping to fulfill the goals of a grant from the Knobloch Family Foundation.



Adult HOLA (*Eremophila alpestris*)

Sergio Gómez-Villaverde (Director, Observatorio de Aves de Tlaxiaco) set out on an ambitious mission to sample Horned Larks across three regions of southern and central Mexico—Oaxaca, Veracruz, and Mexico City—during the January–February field season. With support from local technicians, he tracked these elusive birds across open landscapes.

Horned Larks proved to be no easy target. Individuals often moved considerable distances in response to capture attempts, and much of the field season was marked by challenging weather conditions. Despite these hurdles, Sergio's persistence paid off—he successfully captured and sampled 18 Horned Larks, along with 3 meadowlarks.



One HOLA site in the Grassland Priority Conservation Area, El Tokio, Nuevo León.

Irene Ruvalcaba Ortega & Ricardo Canales (Universidad Autónoma de Nuevo León)

focused on northern Mexico, including the El Tokio grassland conservation area. While large flocks were spotted, early capture success was low.

After adjusting their methods, things turned around. In Nuevo León and Chihuahua, they sampled 18 Horned Larks along with 25 Grasshopper Sparrows, 2 Baird's Sparrows, and 1 Western Meadowlark—and even identified a promising new site in Durango for next season!

Jessie Reese (Bird Conservancy of the Rockies) and her team focused on sampling grassland birds across multiple sites in New Mexico and Arizona. Working in open habitats, they targeted a diversity of species using mist nets strategically placed around water sources—an approach that proved especially effective.

Their efforts resulted in the highest capture success among the three teams. In total, they sampled 8 grassland bird species, including 72 Chestnut-collared Longspurs, 41 Grasshopper Sparrows, 11 Horned Larks, 11 Chihuahuan Meadowlarks, 2 Baird's Sparrows, and 1 Western Meadowlark.

Thank you to all three crews for their outstanding efforts!



What have we been up to?

Kristen Ruegg was awarded the AOS William Brewster Memorial Award (2025), recognizing her contributions to the study of birds of the Western Hemisphere.

Marina Rodriguez successfully defended her PhD in early 2025 on Yellow Warblers. Congratulations, Dr. Rodriguez! See page 5 for her recent publications and news features.

Erica Robertson passed her qualifying exams in 2025 and is now a PhD candidate. She also published her first paper, based on one of her dissertation chapters, on Gray-crowned Rosy-Finches (see page 5 for citation).

Holden Fox joined our flock in fall 2023 as a master's student and transitioned to the PhD program in spring 2024. His dissertation focuses on applying genomic tools to improve conservation decision-making in Loggerhead Shrikes, including translocations, climate vulnerability assessments, and captive breeding.

Joan Ferrer Obiol joined in fall 2024 as a postdoc. He is leading a large, multi-species study across 35 avian taxa, in collaboration with Benjamin Winger (University of Michigan), to assess the repeatability of climate adaptation, evaluate how life-history strategies influence population structure and local adaptation, and produce vulnerability maps highlighting populations most at risk under future climate scenarios.

William Hemstrom joined in fall 2024 as a postdoc and is continuing work on three focal grassland species: Grasshopper Sparrow, Chestnut-collared Longspur, and Baird's Sparrow, following Sheela Turbek's transition to the American Bird Conservancy. He recently submitted his first paper on Grasshopper Sparrows—stay tuned.

Johanna Beam joined in fall 2025 as a postdoc. Her work focuses on understanding the mechanisms of environmental adaptation and population structure in Horned Larks, a species with remarkable variation in plumage, habitat, and genomic architecture across its global range.

Charlie Dees joined in fall 2025 as a PhD student and is working on several species, including Common Loon, Yellow-billed Cuckoo (YBCU), and Burrowing Owl. For the latter two, his work will help generate genomic data that can inform conservation strategies for populations of concern. Charlie was recently awarded a Sea and Sage Audubon Society grant for YBCU work!

George Kinney joined in fall 2025 as a master's student studying Bobolinks, an orange-alert species identified by the Road to Recovery Initiative. His work aims to fill key gaps across the breeding range, particularly in the Mountain West, to better understand population structure and assess genetic diversity. George was recently awarded an NSF GRFP Fellowship!

Looking ahead, **Prashant Ghimire** will be joining our flock in fall 2026 as a Smith Postdoctoral Fellow to work on grassland bird conservation.



BGP in the News....

Audubon Magazine published an article that includes details from our Canadian and Indiana DNR partners about what they're doing to help protect Loggerhead Shrikes and how our genomic data is supporting these goals: 'Shrubs for Shrikes' Strives to Save Indiana's Butcherbirds from Going Extinct.

(<https://www.audubon.org/magazine/shrubs-shrikes-strives-save-indianas-butcherbirds-going-extinct>).

PNAS published a commentary by Peter R. Grant in response to Marina Rodriguez's telomere work on Yellow Warblers: "A yellow warbler is for the climate as a canary is for the coal mine".

(<https://www.birdgenoscape.org/wp-content/uploads/2025/10/grant-2025-a-yellow-warbler-is-for-the-climate-as-a-canary-is-for-the-coal-mine.pdf>).

Big Picture Science interviewed Kristen Ruegg for a podcast titled "Birds of a Feather".

Top 2024-2026 Publications

1. Robertson ECN, Brown TM, Deitch S, Bossu CM, Zavaleta ES, Hooten MB, and Ruegg KC. 2026. The genetic and morphological basis of local adaptation to elevational extremes in an alpine finch. *Ecology and Evolution*.
2. Rodriguez MD, Bossu CM, Anderson EC, Bay RA, and Ruegg KC. 2025. Genetic, phenotypic, and environmental drivers of local adaptation and climate change-induced maladaptation in a migratory songbird. *PNAS*.
3. Pegan TM, Kimmitt AA, Benz BW, Weeks BC, Aubry Y, Burg TM, Hudon J, Jones AW, Kirchman JJ, Ruegg KC, and Winger BM. 2025. Long-distance seasonal migration to the tropics promotes genetic diversity but not gene flow in boreal birds. *Nature Ecology & Evolution*.
4. Bobowski TJ, Bossu CM, Rueda-Hernandez R, Schweizer T, Tello-Lopez I, Smith TB, Feldman R, Cohen E, and Ruegg KC. 2025. Factors underlying migratory timing of a seasonally migrating bird. *Scientific Reports*.
5. Rodriguez MD, Bay RA, and Ruegg KC. 2025. Telomere length differences indicate climate-induced stress and population decline in a migratory songbird. *Molecular Ecology*.
6. Turbek SP, Polich A, Bossu CM, Rayne C, Carpenter AM, Rodriguez Otero G, Villaverde SG, Rodriguez Vasquez F, Hernandez-Banos BE, McCormack J, and Ruegg KC. 2025. Genetic analysis of museum samples suggests temporal stability in the Mexican nonbreeding distribution of a neotropical migrant. *Journal of Avian Biology*.
7. Somveille M, Bossu CM, DeSaix MG, Alvarado AH, Villaverde SG, Rodriguez Otero G, Hernandez-Banos BE, Smith TB, and Ruegg KC. 2024. Broad-scale seasonal climate tracking is a consequence, not a driver, of avian migratory connectivity. *Ecology Letters*.
8. DeSaix MG, Rodriguez MD, Ruegg KC, and Anderson EC. 2024. Population assignment from genotype likelihoods for low-coverage whole-genome sequencing data. *Methods in Ecology and Evolution*.
9. DeSaix MG, Bossu CM, Hagelin JC, Harrigan RJ, Saracco JF, Somveille M, Taylor CM, and Ruegg KC. 2024. *mignette*: An R package for creating and visualizing migratory network models. *Methods in Ecology and Evolution*.



Outreach

Every spring and fall migration season, BGP Lab & Collection's Manager, Amanda Carpenter, travels to the Alabama coast to volunteer for Banding Coalition of the Americas (BCA) public outreach events. The overarching goal of BCA is to demonstrate bird banding, explain its importance, and communicate why the two locations where BCA bands (Dauphin Island, AL, in spring and Fort Morgan, AL, in fall) are critical stopover areas worth protecting for migratory birds. Since feather samples are also collected during these events, it's a great opportunity to share with the public how we can extract genomic DNA from the calamus and with this, what we can learn about species' populations and their connectivity across the annual cycle. Each year, both events attract between 800 and 1000 visitors of all ages!



A feather sample being placed into a BGP envelope.
Photo credit: Micah Green, Gulf Coast News

Genoscape Updates

Our flock of completed genoscapes has grown to 27 species! It includes:

American Crow	Chestnut-collared Longspur	Swainson's Thrush
American Kestrel	Common Loon	Tri-colored Blackbird
American Redstart	Common Yellowthroat	Veery
Anna's Hummingbird	Eastern Meadowlark	Warbling Vireo
Baird's Sparrow	Grasshopper Sparrow	Western Meadowlark
Bank Swallow	Grey-crowned Rosy-Fish	Willow Flycatcher
Brown-capped Rosy-Finch	Hermit Thrush	Wilson's Warbler
Canada Warbler	Loggerhead Shrike	Yellow-breasted Chat
Chihuahuan Meadowlark	Painted Bunting	Yellow Warbler

With another 24 genoscapes that we're working on! Including:

American Robin	Brown Creeper	Palm Warbler
Blackpoll Warbler	Chestnut-sided Warbler	Ruby-crowned Kinglet
Black-throated Blue Warbler	Dark-eyed Junco	Tennessee Warbler
Black-throated Green Warbler	Downy Woodpecker	Western Bluebird
Blackburnian Warbler	Hairy Woodpecker	White-throated Sparrow
Blue-headed Vireo	Horned Lark	Winter Wren
Bobolink	Magnolia Warbler	Yellow-bellied Sapsucker
Brewer's Sparrow	Nashville Warbler	Yellow-billed Cuckoo

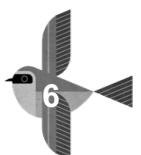
[Visit our website to learn more!](#)



birdgenoscape@gmail.com



www.birdgenoscape.org



Updates cont.



Curatorial Update

Since our last newsletter in Fall 2023, we have received **>60,000** blood, feather, and tissue samples. 2026 is off to a strong start with ~6,600 samples curated so far. Thank you so much to all our amazing contributors!

And speaking of our contributors, thank you!

Al Sherkow, Alex Jahn, Alice Boyle, Allen Chartier, Amanda Aitken, Amy Chabot, Amy Kearns, Amy Scarpignato, Andrew Johnson, Anna Tran Nguyen, Andy Boyce, Annie Lindsay, Ashley Jensen, August Hazel, Ben Nickley, Blaine Carnes, Blanca Estela-Hernandez Banos, Braeden Duffee, Brenda Keith, Brice Leech, Cailin O'Connor, Carla Cicero, Caroline Ellison, Cathy Nowak, Charles Hathcock, Chris Hill, Colin Woolley, Courtney Conway, Dan Shustack, Danny Erickson, Darian Washington, Dave Grosshuesch, David Alexander, David Yeany, Dawn Drumtra, Ed Pike, Elisa Bonaccorso, Elizabeth Rush, Emily Braker, Emily Pavlovic, Emily Williams, Emma Buck, Emma Cox, Emma Rhodes, Eric Demers, Eric Soehren, Garth Spellman, Gary Voelker, Gigi Gerben, Gordon Howard, Gregory Mitchell, Gregory Silva, Gwen Baluss, Heather Prestridge, Hunter Hopkins, Ian Stewart, Jannaca Chick, Jason Weir, Jay Mager, Jay Wright, Jeanette Kelly, Jeff Kozma, Jeff Port, Jennifer McKay, Jessie Reese, Jill Deppe, Jim Armbruster, Jim McGinity, Jim Tietz, Jocelyn Hudon, Jodi Isaacs, Josh Lefever, John Loegering, John McCormack, Jonathan Perez, Judy Woods, Junior Tremblay, Karl Kleiner, Kate Slankard, Keith Hobson, Kellie Hayden, Kevin Burns, Kevin Kenow, Kim Guillian, Kristina Paxton, Kyle Kittelberger, Laura Cook, Laura Mahrt, Laura Tabbakh, Lauren diBiccari, Laurie Doss, Lianne Kozcur, Lindsay Herlihy, Lori Walewski, Luke Fara, Luke Trittelwitz, Maggie Blake, Maren Gimpel, Mark Myers, Mark Osokow, Mark Robbins, Mariel Campbell, Maria Stager, Martin Pereda, Matt Dunning, Matt Furst, Megan Fylling, Megan Ring, Mercedes Maddox, Michael Avara, Michael Russello, Michelle Eshleman, Nancy Mahony, Nancy Ransom, Nate Rice, Nick Mason, Nicole Buttner, Noah Perlut, Orion Metheny, Paul Super, Paul Fehring, Peter O Dunn, Philip Unitt, Rebecca Lausch, Raurie Bowie, Ricardo Canales, Rick Schmid, Robert Fleischer, Robert Snowden, Rose Swift, RYanne Pritchard-Bee, Sandra Kinsey, Sarah Milligan, Sarah Oyler-McCance, Sasha Robinson, Sergio Gomez Villaverde, Sergio Harding, Sharon Birks, Stacey Hayden, Stephanie Munguia, Stephanie Augustine, Steven Cox, Sue Finnegan, Than Boves, Theresa Burg, Vanna Boccadori, Vicki Piaskowski, Walter Sakai, and Walter Wehtje.

Thank you for reading! Visit the '[How to help](#)' section of our website if you or someone you know wants to support the Bird Genoscape Project.

See you next year!



birdgenoscape@gmail.com



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