

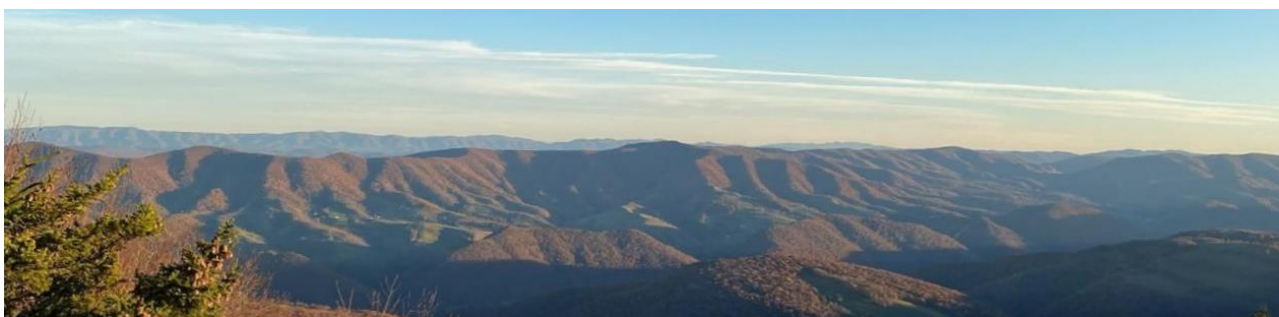
2021  
**APPALACHIAN  
MOUNTAINS  
JOINT VENTURE**  
YEAR IN REVIEW



View from Spruce Knob, W.V. Photo by Steve Bark







Dear AMJV Partners,

We're excited to present our 2021 AMJV Year in Review.

I believe the best way I can describe 2021 is as a year of transition into a new normal. We left 2020 hopeful of a light at the end of the COVID tunnel and a return to our “old way of life,” only to have omicron upend that hope. That began the realization and acceptance that COVID is now a permanent feature in our world, and what we hoped were the temporary adaptations and adjustments made to function in that world are now our new normal and would likely be permanent in some fashion for the foreseeable future.

Likewise, I believe our bird conservation work, both within the AMJV and broadly across the hemisphere, also spent 2021 transitioning into a new normal. The [3 Billion Birds publication](#) in 2019 initiated a paradigm shift in how we view and approach bird conservation, and that shift started to catalyze in 2021 as conservation organizations moved from reaction to response, and initiatives like [Road to Recovery](#) grew and gained broader support. Likewise, efforts to ensure equity and inclusion and grow the diversity of the conservation community have moved from ideas and discussion to purposeful actions, though much remains to be done.

However, I do not believe this transition into a new normal is finished. Not only did 2021 establish that our COVID world is, at least in part, permanent, but it also ushered in an unprecedented level of opportunities for the conservation community. The current administration's emphasis on landscape conservation and the resulting new initiatives such as USDA's Partnerships for Climate Smart Commodities and NFWF's America the Beautiful Challenge, coupled with new conservation funding going to federal agencies, are providing novel resources at a level we have never experienced. Other potential opportunities are just over the horizon, most notably Recovering America's Wildlife Act, which as we all know, if passed, would be a game-changer for our bird conservation efforts. The potential new normal these could collectively create makes 2022 an exciting year!

Many thanks to the AMJV staff, board members, and partners for starting to build our new normal in 2021, and I look forward to continuing that work in 2022!

Thank you!

Todd Fearer  
Coordinator, Appalachian Mountains Joint Venture

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## AMJV STAFF

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## AMJV MISSION & VISION

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Our [mission](#) is to restore and sustain viable populations of native birds and their habitats in the Appalachian Mountains Joint Venture region through effective, collaborative partnerships.

[Vision](#) - Partners working together for conservation of native bird species in the Appalachian Mountains region to attain:

- Fully-functioning ecosystems with sustainable populations of the region's native avifauna, guided by state, regional, national, and international bird plans
- Effective delivery of habitat conservation through adaptive management and guided by a conservation approach consisting of biological planning, conservation design, delivery of conservation actions, evaluation, and research
- Success in capitalizing on funding opportunities relevant to partnership priorities
- An engaged Management Board, representative of the diverse landscape and effective partnerships in the Appalachian Mountains

## INTRODUCTION

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The [AMJV Partnership](#) - which consists of over 55 state and federal agencies, conservation organizations, and universities throughout 12 states in the Appalachian Region - is focused on preserving, managing, and restoring diverse, healthy forest habitats in the region to benefit not only birds, but the diversity of Appalachian plants and wildlife.

This Year in Review is organized to reflect the two overarching themes of the current [AMJV Strategic Plan \(2018-2023\)](#). [Theme 1](#) goals, which focus on creating a dynamic, healthy forest landscape in the Appalachian Region, are supported by projects within the [six focal landscapes](#): Allegheny Highlands (PA/NY); Greenbrier/Alleghenies (WV); Southeastern Ohio; Cumberlands (KY/TN); Southern Appalachian High Country (NC/TN/VA); and Virginia Highlands as part of the [AMJV Focal Landscape Initiative](#) and also by state and regional projects that occur outside of those boundaries. [Theme 2](#) goals, which focus on full annual cycle conservation of birds, are supported by international projects completed by various AMJV partners.





NEW JERSEY

New Jersey's Highlands Forests: Don't Leave All of It Alone  
Sharon Petzinger, Senior Zoologist, New Jersey Division of Fish and Wildlife

Golden-winged Warbler (GWWA) populations are still declining in New Jersey. Thanks to the help of NJ Audubon staff, 127 locations were surveyed in 2021. However, only 10 GWWAs were found during the survey - all on public lands (Figure 1). This is a 28% reduction from the number found last year. If nothing is done and this rate of decline continues, GWWAs have an 88% chance of being extirpated (extinct in NJ) within the next 10 years and 100% chance in 20 years.



Figure 1. Locations of Golden-Winged Warblers (red dots) found in New Jersey in 2021. Green shading indicates public lands.

There is still hope, however. Data show that when new young forest nesting habitat is created through active management in areas with more than 75% forest cover surrounding that nesting habitat, breeding GWWAs will use those sites more often than power lines and passively managed shrubby wetlands (Table 1).

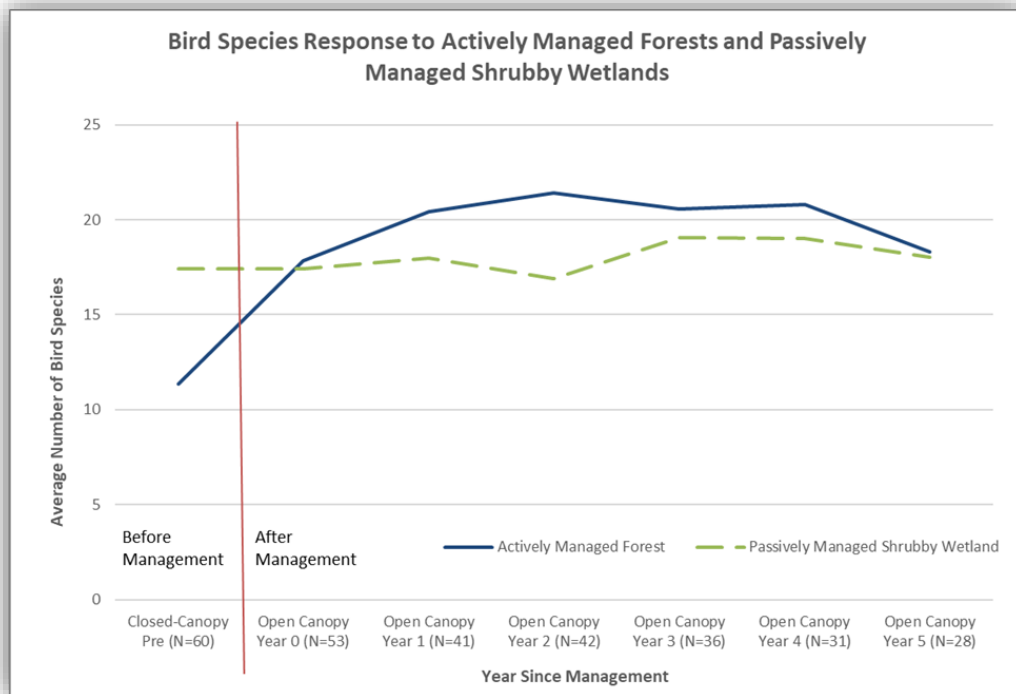
If we can continue to create more GWWA nesting habitat to attract new breeding pairs and create specific habitat for young birds to help them survive after leaving the nest, we can prevent this species from going extinct in New Jersey. Unfortunately, there is still a lot of opposition to cutting trees, which is necessary to open the forest canopy to create both nesting and post-fledging habitats. As a result, creating GWWA nesting habitat has been restricted to only 10 acres per year on public lands, the best areas in NJ that have sufficient forest cover.

Creating GWWA nesting habitat helps more than just GWWAs. When compared with numbers of bird species using a closed-

Table 1. Percentage of Sites with Golden-winged Warblers in 2021

	Actively Managed Sites	Passively Managed Sites	Powerlines
Suitable Habitat with > 75% Forest Cover	16.7%	9.7%	11.1%

canopy forest before it was managed, opening the forest canopy to create nesting habitat for GWWAs nearly doubled the average number of breeding bird species and more than doubled the average number of concern species (Figure 2). Even before the end of the first growing season after a forest canopy is opened up, the number of bird species in actively managed sites increases to match what we would typically find in passively managed shrubby wetlands and then surpasses it a year later.



(Left) Figure 2. Average number of bird species observed during breeding bird surveys on Actively Managed (WLFW & other lands treated to create or enhance habitat for GWWAs) and Passively Managed (Natural Control) sites.

In order to prevent birds from becoming extirpated in New Jersey, and to help reverse declines of other birds, we need to increase the amount of nesting habitat for GWWAs on public lands and expand that to also

create habitat for young birds after they leave the nest. The public and partnering agencies are urged to please help get the word out that cutting trees to open the forest canopy is not deforestation and is critically needed in New Jersey and elsewhere to improve habitat for our most vulnerable bird species.

## NEW YORK

### Audubon's Bird-friendly Maple Program: A Collaborative Conservation Project That Aims to Sweeten Sugarbush Habitat for Songbirds

Sharon Bruce, Communications Manager, Audubon Connecticut and New York

The original version of this article appeared online [here](#).

Once the nights become warmer in late March and the maple tapping season ends, nesting birds start to move into northeastern forests. But these birds need more than just maple trees to thrive. As part of the Healthy Forests Initiative, Audubon Vermont and New York are partnering with [maple producers](#) to return sugarbushes to a more natural state (sugarbush refers to a forest stand that is utilized for maple syrup; the tree canopy is dominated by sugar maple). The shift will benefit nesting songbirds, including Scarlet Tanagers, Wood Thrushes, Black-throated Blue Warblers, and Veeries—and make the resulting product more appealing to bird-loving consumers.

#### What Is a Bird-Friendly Sugarbush?

While many maple products may look and taste the same, the forests they come from can be managed in different ways. A sugarbush is a forest stand that



Audubon New York's Bird-friendly Maple Logo

consists of mostly sugar maple tree species, which can be used to produce maple syrup. Maple syrup can be a model for sustainably produced food that also creates habitat for birds and other wildlife.

Through applied forest management, bird-friendly maple producers strive to improve habitat quality in their sugarbush to optimize breeding and foraging opportunities for forest birds in decline ([video](#)). A bird-friendly sugarbush is managed for the following features to not only provide great habitat for forest birds, but also improve the health of the sugarbush:

- A diversity of tree species and age classes; more than just mature sugar maple
- Complex structural diversity: layers of vegetation; from small seedlings on the forest floor, to saplings and shrubs, to the canopy overhead
- Standing dead trees and live trees with cavities; the bigger the better
- Large logs and branches on the forest floor

### [A Delicious Conservation Project](#)

The Bird-Friendly Maple project is a collaborative effort to integrate bird conservation with the maple industry in Vermont and New York by:

- Promoting sugarbush management practices that support birds, forest health, and sustainable sap production
- Recognizing maple producers for considering bird habitat in their sugarbush
- Increasing awareness of the important role forests play in bird conservation
- Educating consumers about maple syrup and its many natural benefits

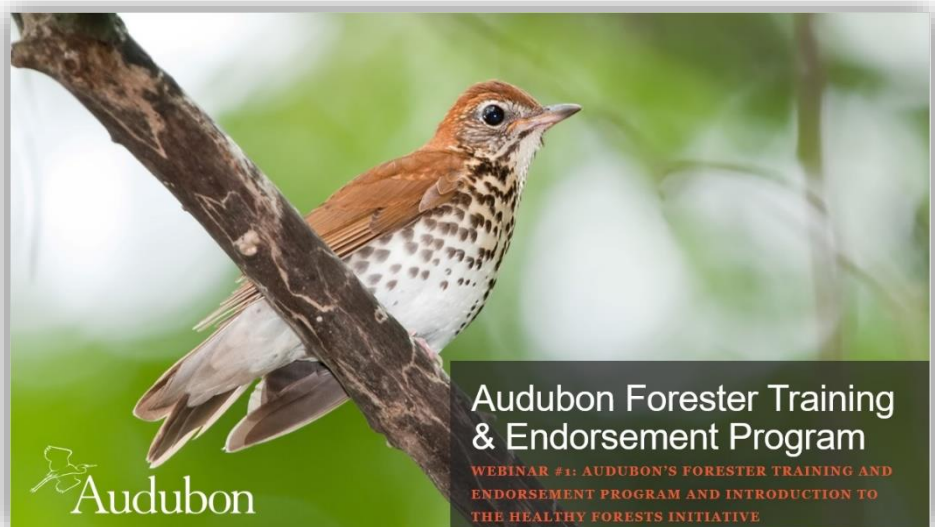
### [Look for The Label](#)

To recognize and support participating maple producers for their good work, [look for maple syrup containers](#) with the label indicating that the syrup is Maple Managed for Birds. Maple producers who intentionally integrate bird habitat into the stewardship of their forest are taking the first step toward ensuring important habitat features are created during sugarbush management activities.

### **Audubon Forester Training and Endorsement Program**

*Suzanne Treyger, Forest Program Manager, Audubon Connecticut and New York*

Audubon launched their new Forester Training and Endorsement Program in 2021. The purpose of Audubon's Forester Endorsement Program is to create a national network of professional foresters working in partnership with the National Audubon Society to promote healthy forest ecosystems that provide high-quality habitat at multiple scales for priority bird species.



*Slide from an Audubon Forester Training and Endorsement Program webinar. Slide capture by Kelly Colgan Azar*

The Audubon Forester Training and Endorsement Program is a multi-step process that starts with a series of training webinars. More than 180 consulting, agency, industry, and procurement foresters in 19 states attended the first two training webinar series launched in May and October 2021. Participating foresters learned about birds in decline and landscape- and stand-



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level planning and management to improve forest habitat diversity. The information included in the trainings can be applied to private and public land and is compatible with many objectives, including timber production, water quality, recreation, and carbon sequestration.

After participating in the training, foresters can continue on to the final two steps of the endorsement process and demonstrate that they understand the concepts learned and can apply the technical information shared in the trainings. Steps two and three include developing an example stand-level prescription and sharing two new or revised forest management plans that incorporate forest bird habitat considerations. We offer assistance to foresters where they need it, and we've built in flexibility into all steps of the endorsement process to accommodate their schedules.

Once endorsed, foresters will share information once a year with Audubon about the number of bird-friendly forest management plans they've developed and/or how many acres were managed with birds in mind. To maintain endorsement, foresters will participate in at least two continuing education programs every other year, provided by Audubon or other conservation partners. We hope this program grows into a powerful network of conservation professionals who can promote forest health and habitat on a working landscape. To find out more about Audubon's Forester Training and Endorsement Program, [please visit this website](#).

### **Audubon New York's Harvests for Habitat: Project Updates**

*Suzanne Treyger, Forest Program Manager, Audubon Connecticut and New York*

Over the past year, six forest habitat management projects were implemented on 513 acres, creating improved habitat for Wood Thrush, Cerulean Warbler, and associated mature forest species. Although many of these projects had been approved for implementation in 2019 and 2020, management was delayed due to the onset of COVID, a

downturn in the regional hardwood market, and poor harvesting conditions due to excessive rain and over-saturated soils. Harvests included commercial cuts and non-commercial forest habitat and health-focused projects which integrated bird habitat management specifications, like residual basal area target ranges, desirable tree species retention, invasive plant control, and increasing coarse woody material.



*Seed tree harvest in action, Neversink, NY. Photo by Steve Distasio and courtesy of Kelly Nywening/Sawtooth Lands and Forestry*

Harvests for Habitat is a partnership between Audubon NY, Watershed Agricultural Council, NY Tree Farm Program, and NY Forest Owners Association, and is funded by the National Fish and Wildlife

Foundation Delaware River Program. This project enables habitat improvements for forest birds in decline through active forest management and financial incentives for loggers and foresters. Harvests for Habitat is based in the Upper Delaware Watershed. While developing and launching this project, we have reached more than 3,400 people and engaged nearly 170 landowners, foresters, and loggers in Harvests for Habitat. Through a new award, Harvests for Habitat will continue through 2023, with two new habitat management projects approved on more than 300 acres.



## New video: Audubon's Healthy Forests Initiative in New York

*Suzanne Treyger, Forest*

*Program Manager, Audubon  
Connecticut and New York*

Audubon created a [new video that provides an overview of our Healthy Forests Initiative](#). Although filmed north of the AMJV boundary, the video's content is relevant to bird conservation efforts throughout eastern forests. The video was filmed at the Kunjamuk Young Forest Demonstration Project, a property owned and managed by the Lyme Adirondack Forest Company, an affiliate of Lyme Timber Company.



*Young, regenerating forest at Kunjamuk. Photo by Suzanne Treyger/Audubon*

Here, Lyme is managing forests for birds and other wildlife in partnership with Audubon and NYS Department of Environmental Conservation. The project shows how commercial timber harvesting can create young forest habitat in a carefully planned, science-based, sustainable manner over many decades, benefitting a full suite of forest birds and other wildlife.

## Forest Management on New York State Wildlife Management Areas

*Katherine Yard, Wildlife Biologist, New York State Department of Environmental Conservation*

*Beth Cooper, Fish & Wildlife Technician, New York State Department of Environmental Conservation*

*Sandy Van Vranken, Wildlife Biologist, New York State Department of Environmental Conservation*

***\*This work overlaps the Allegheny Highlands (PA/NY) Focal Landscape\****



New York State Department of Environmental Conservation (DEC) continues to improve habitat for American Woodcock, Ruffed Grouse, Wild Turkey, Eastern Whip-poor-will, Golden-winged Warbler, and other wildlife on Wildlife Management Areas (WMAs) throughout New York.

*(Left) A new observation tower overlooks the forest management demonstration area currently being developed at Partridge Run WMA in Albany County, New York. Photo by Region 4/DEC*

In 2021, we updated our Strategic Plan for Forest Management on WMAs. Major changes included adding shrublands and all forest age classes to our scope, pivoting to a goal of 10% young forest across the WMA system rather than individual WMAs, including uneven-aged silvicultural options, and adding three new target species (Canada Warbler,

Cerulean Warbler, and Wood Thrush). The following updates are for the 26 NY WMAs located within the AMJV region.

Over the past year, we completed the Habitat Management Plans (HMPs) for Allegany Reservoir WMA and Bog Brook Unique Area and began drafting plans for Wolf Hollow and Genesee Valley WMAs. Overall, we've completed 19 HMPs and are currently developing another five. New York State acquired two new properties within the AMJV region: Big Flats WMA in Chemung County and Poverty Hill WMA in Cattaraugus County. We anticipate completing an HMP for each of these properties within the next two years.



*A forest management demonstration area is now complete at Connecticut Hill WMA in Tompkins-Schuyler County, New York, including a trail and interpretive signs. Photo by Adam Perry/DEC*

In 2021, we completed 15 young forest projects (>500 acres) on nine WMAs, including clearcuts, patch cuts, seed tree, and shelterwood cuts. We also completed one shrubland project (>50 acres) and one timber stand improvement (TSI) project (five acres). Since our program began in 2015, we've completed 1,200 acres of young forest, over 100 acres of shrubland, and over 250 acres of TSI on 15 WMAs.

We currently have 600 acres of young forest, 40 acres of shrubland, and 25 acres of TSI under contract on 11 WMAs, which we expect to be completed within three to five years. An additional 1,350 acres of young forest, 50 acres of shrubland, and 250 acres of TSI on 13 WMAs are at the planning stage.

While many of our completed project areas haven't yet had time to develop suitable habitat structure for our target species, we are beginning to see some positive wildlife responses. Our 2021 avian survey effort included woodcock surveys on nine WMAs, grouse/turkey surveys on 10 WMAs, and point counts on four WMAs. Woodcock surveys confirmed displaying males in/near project areas post-treatment; we detected approximately 0.6 males per point in/nearby completed project areas. Point counts (including both pre- and post-treatment sites) detected an average of over 40 species per WMA, including several Species of Greatest Conservation Need: Black-billed Cuckoo, Brown Thrasher, Black-throated Blue Warbler, Blue-winged Warbler, Canada Warbler, Prairie Warbler, Red-shouldered Hawk, Scarlet Tanager, and Wood Thrush.

## NORTH CAROLINA

**Ecovention Artist Contributes to the Success of Appalachian Bird Conservation in NC**  
*Aimee Tomcho, Conservation Biologist, Audubon North Carolina*

*\*This work overlaps the Southern Appalachian High Country (NC/TN/VA) Focal Landscape\**

Burnsville, NC - Ecovention is an ecological art intervention in environmental degradation. The term 'ecovention' is composed from the words 'ecology' and 'innovation' or 'intervention'. Found where art



intersects social, political, and environmental justice, artists in the Ecovention movement believe their expression can evolve into community-based activism. It is a relatively new concept (1999) in the world of art exemplified by a handful of artists, including Mel Chin.

When Mel Chin and his partner Helen Nagge joined Audubon North Carolina's network of private landowners in the Southern Appalachian Mountains working to conserve Golden-winged Warblers and other forest songbirds in 2021, their activism transformed beyond visual arts. Biologists from Audubon North Carolina and North Carolina Wildlife Resources Commission (Clint

Barden) worked together to plan a series of bird-friendly forest practices at the Nagge/Chin homestead. As a birdwatcher, Helen was especially thankful for the habitat conservation guidance. "Doing this restoration work is already making me feel closer to the land," she said.

As our private lands conservation work expands, we aggregate a network of landowners and conservation partnerships for the Golden-winged Warbler in a rural part of North Carolina previously inaccessible to bird inventory and monitoring. Our new collaboration with Helen and Mel illustrates the importance of conservation outreach to not only the primary landowners but also helps illuminate their role in providing a gateway to neighborhood, and even worldwide, conversations. While speaking to them, I shared my desire to access and survey the ridgeline above their property as I suspected it would be suitable for Golden-wings. Less than two weeks later, I found myself counting Golden-winged and Brewster's Warblers in what I

imagine has served as a *Vermivora* population source for many years. In this geography deep in the bucolic Appalachian Mountains, where my directions included a "turn before the antique tractor," a strong bird conservation network is gaining momentum across the landscape.

*(Left) Ecovention Artist Mel Chin unboxed his rendition of the Carolina Parakeet upon request. Sculpted from the pages of a dictionary, it is currently on its way to museum display. Photo by Aimee Tomcho*

Mel's newest thematic artwork centralizes endangered species. He feels very connected to the cause and the opportunity to make a difference on his own land. Both they and their neighbors are creating safe places for birds to land, now and in the



*Helen and Mel display the landowner stewardship recognition sign presented to them by Audubon. Photo by Aimee Tomcho*





future. For more on his rendition of the Carolina Parakeet, visit <https://melchin.org/oeuvre/bird-is-the-word/> or go check it out for yourself at his 'There's Something Happening Here' exhibit in Madison, Wisconsin on display at the Madison Museum of Contemporary Art this March 12 through July 31, 2022.

### How do Golden-winged Warbler Nests Associated with Timber Harvests Measure Up?

*Chris Kelly, Mountain Wildlife Diversity Biologist, North Carolina Wildlife Resources Commission*



*Golden-winged Warbler pair. Photo by Ruth Bennett, courtesy of the American Bird Conservancy*

North Carolina Wildlife Resources Commission began monitoring Golden-winged Warblers (GWWAs) in timber harvest (logging) units on the Nantahala National Forests in 2010. In 2021, biologists searched for nests in conjunction with the ongoing point count and banding surveys. They found nine GWWA nests ([video](#)) across survey areas in the Cheoah Mountains spanning recent (<five-year-old) and aging (15-years-old) harvest units (Figure 3).

In August, biologists returned to Graham County to measure habitat data around several GWWA nests. This work was completed to see how habitat at the nine GWWA nests found in the Cheoah Mountains measured up with respect to typical and recommended habitat characteristics outlined in the [revised Golden-winged Warbler Conservation Plan](#). These nests were associated with timber harvests ranging from five to 15 years post-harvest. Nests were found along interior roads and field edges. Vegetation data were collected using protocols from the Conservation Effects Assessment Protocols (CEAP). In habitat derived from timber harvests, such as these, the Conservation



*Figure 3. Four of the GWWA nests, vegetation sampling plots at nests, and additional birds detected in the Cheoah Mountains (Graham County), 2021*



Plan notes that most nest sites contain >50% broad-leaved herbaceous plants (forbs), and the Cheoah nests averaged 46.4%. Overall, the nine nests fell within the range of desired habitat components known to be important to nesting GWWAs, though caution should be used in interpreting these results as plots were restricted to the nests and not the surrounding management sites.

### **Trials with Trail Cameras for Monitoring Peregrine Falcon Nests**

*Chris Kelly, Mountain Wildlife Diversity Biologist, North Carolina Wildlife Resources Commission*

The challenge of monitoring western North Carolina's Peregrine Falcon population is as enormous as the cliffs on which they nest. Nest failure is widespread in western NC and, when nesting does not proceed normally, it requires additional monitoring sessions to confirm that a nest has failed, to document re-nesting, and to gauge when it is safe to lift seasonal cliff closures to recreational use. North Carolina Wildlife Resources Commission (NCWRC) biologists have begun supplementing ground-based observation sessions with cameras placed in eyries ([video](#)). Since live-streaming footage for the public's consumption was not the objective of camera installations, we used simple trail cameras that we had on hand. Two Reconyx PC900 Hyperfire cameras placed in one eyrie captured some interesting footage: nightly visits to the nest ledge by Southern Flying Squirrels, the falcons' quick adjustment to the cameras, prey items, and, most surprisingly, a second female falcon that was never seen during ground-based observation sessions.

The remoteness of most of the Peregrine Falcon nest ledges in the mountains poses a challenge for powering cameras and relaying images during the breeding season. In fall 2021, rock climbers from the Appalachian Mountain Rescue Team, Carolina Climbers Coalition, and The Access Fund helped deploy Cuddeback Cuddelink cameras in two eyries. These cameras are transmitting footage wirelessly to their respective "home camera" on the ground. Nest cameras are only useful at cliffs where falcons return to the same next ledge each year. At cliffs, the falcons rotate



*(Above) NCWRC Wildlife Technician Clifton Avery sets up a camera on a Peregrine Falcon nest ledge to monitor nesting activity. Photo by Tom Caldwell*

*(Below) A male Peregrine Falcon (foreground) tidies the "nest scrape" while the female (background) looks on. Notice the blue-gray and white coloring and smaller size of the male compared to the brownish-gray and cream coloring of the larger female. Photo courtesy of NCWRC*



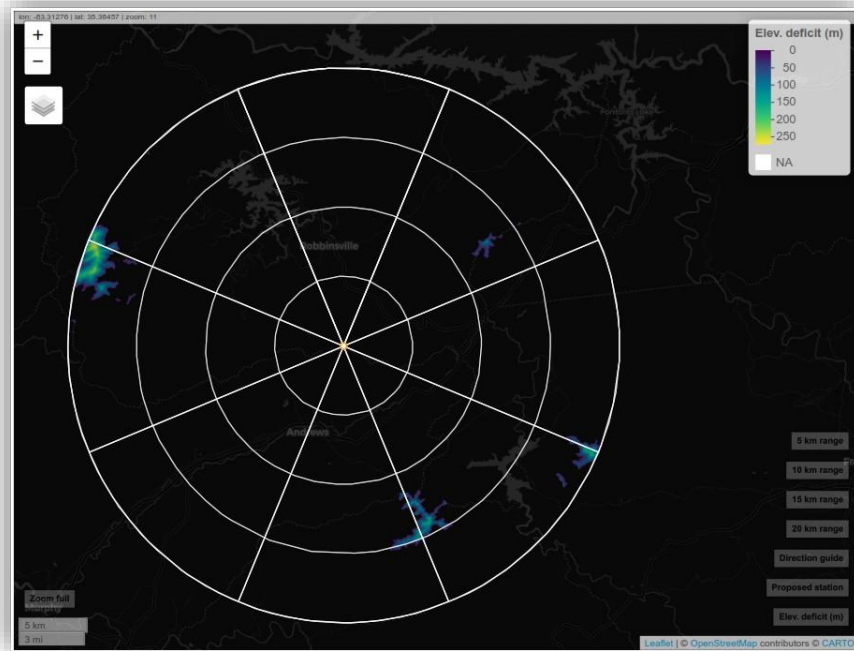
between ledges, making it a guessing game as to where to deploy a camera each year. Where nest cameras are a good option, we hope they will provide insight into causes of nest failure, turnover of individuals, and more. The camera effort further strengthened NCWRC's partnership with the rock-climbing community and could save us thousands of miles of driving each season.

### Western NC Motus Network Planning

*Chris Kelly, Mountain Wildlife Diversity Biologist, North Carolina Wildlife Resources Commission*

*\*This work overlaps the Southern Appalachian High Country (NC/TN/VA) Focal Landscape\**

North Carolina Wildlife Resources Commission's (NCWRC) Wildlife Diversity staff in western North Carolina have been learning about the Motus Wildlife Tracking Network over the past year and gauging its role as a state wildlife agency. Motus is a collaborative network using automated radio telemetry to track movements of migratory animals. The basic components of the system are coded radio tags that are deployed on animals and emit a signal that can be detected on a Motus station's antennas and simple computer (receiver).



(Left) Figure 4. One of numerous viewshed analyses ran by biologists to assess antenna signal range of potential Motus receiver station sites in western North Carolina. The colored areas represent limited topographic obstructions at this site.

NCWRC would like to contribute broadly to the Motus network. That is, NCWRC is approaching Motus with the intention of first installing a Motus “fence” over the next several years. A fence, which consists of receiver stations spaced ~30km apart, can detect tagged migrant birds, bats, or insects passing by *and* serve as the foundation for North

Carolina-based studies of animal movement. NCWRC is also finding ways to fund Motus in the tropics to support continued monitoring of our breeding birds on their wintering grounds. Later, we hope to install more receiver stations to support our own tagging projects. But to start with, we are working to fill part of the large gap in the Motus receiver station network in the Southeast. To that end, we’ve been gathering partners interested in a Motus network - NC State Parks, Audubon North Carolina, land trusts, Eastern Band of Cherokee Indians, National Park Service, and more.

## OHIO

### Motus Expansion in Ohio

*Laura Kerns, Wildlife Biologist, Ohio Department of Natural Resources - Division of Wildlife*

The Ohio Division of Wildlife received funding through a Competitive State Wildlife Grant to install six Motus ([www.motus.org](http://www.motus.org)) receiver stations in Ohio. The grant, entitled “Broadening the Motus Wildlife Tracking Network and Tracking Species of Greatest Conservation Need (SGCN) Movements in the Midwest and Neotropics” also includes funds to support the installation of 53 new Motus



stations in Midwestern states, Mexico, Costa Rica, and Colombia, and will support specific research on species including Golden-winged Warblers, Wood Thrush, and American Kestrels. Motus is an automated telemetry system that enables the tracking of small migratory wildlife such as birds, bats, and insects. The Motus system continues to expand in the eastern US and these stations will fill in critical gaps to better understand migratory routes and annual cycles of birds in Ohio and across the Appalachian region. The stations will be installed at state or local metropark properties along the I-70 corridor to create a digital east-west fence across central Ohio from the Dayton area to just east of Columbus. All Ohio towers will be installed on permanent structures and functional by the end of May 2022.

### **New Acreage Added - Appalachian Hills Wildlife Area**

*Laura Kerns, Wildlife Biologist, Ohio Department of Natural Resources - Division of Wildlife*

*\*This work overlaps the Southeastern Ohio Focal Landscape\**

In 2021, the Ohio Division of Wildlife added 5,840 acres to the new [Appalachian Hills Wildlife Area](#). It currently stands at 38,414 acres and is the largest public wildlife area in Ohio. It consists of 68% forest, 27% grass/openland, and 5% ponds/wetlands. The Ohio Division of Wildlife plans to acquire an additional 16,300 acres from American Electric Power (AEP) in the coming year.



*View of the Appalachian Hills Wildlife Area. Photo by ODNR Division of Wildlife*

### **Research on Migrating Eastern Whip-poor-wills Published**

*Chris Tonra, Associate Professor in Avian Wildlife Ecology, The Ohio State University*  
*Steve Matthews, Associate Professor of Wildlife Landscape Ecology, The Ohio State University*  
*Collaborators from the University of Illinois and USDA Forest Service*

*\*This work overlaps the Southeastern Ohio Focal Landscape\**

Using GPS tags attached to the birds, researchers discovered some surprising facts about the long migrations that Eastern Whip-poor-wills make from their Midwest breeding grounds to where they winter in Mexico and Central America. [This study](#) originated in the AMJV portion of Ohio to quantify overwinter home ranges size and habitat relationships



*Eastern Whip-poor-will fitted with GPS tag. Photo by Steve Matthews*

(Tonra et al. 2019), and the project has expanded across the region to inform full annual perspective of this declining species. With additional funding provided by the US Fish and Wildlife Service, this collaborative project will be in the field again this year as we are now aiming to understand why Eastern Whip-poor-will populations are declining across the Midwestern breeding grounds.

### **Ohio Breeding Bird Atlas Data Used to Assess the Potential for Northern Bobwhites as an Open-lands Umbrella Species**

*Matt Shumar, Program Coordinator, Ohio Bird Conservation Initiative/The Ohio State University*



*Bobwhite pair. Photo by Gary Kramer/National Fish and Wildlife Foundation, courtesy of the American Bird Conservancy*

Northern Bobwhites are rapidly declining across North America, as are many grassland- and shrubland-obligate breeding birds in Ohio. Using data from the Second Atlas of Breeding Birds in Ohio along with remotely sensed landcover data, [we constructed models](#) to assess the potential for Northern Bobwhites to serve as an umbrella species for other open-land species. We did not find a strong association with most species; the reliance of both shrubland and grassland habitat by bobwhites likely preclude them from being a true umbrella species.

However, management for

bobwhites may still be able to promote co-occurrence for declining species across multiple guilds by identifying locations where focused management can create more suitable conditions for species with positive co-occurrence.

## **PENNSYLVANIA**



*Adult Northern Goshawk in Pennsylvania. Photo by Meghan Jensen*

### **Important Species Status Changes for Two Iconic Pennsylvania Raptors**

*Sean Murphy, State Ornithologist, PA Game Commission*

In 2021, one Pennsylvania raptor was placed on the state's endangered species list, while another, previously classified as a threatened species, was upgraded and removed from the list.

The Northern Goshawk, a large secretive raptor of mature, mixed forests, is found in the higher elevations across Pennsylvania forests and has experienced both range contraction and breeding population decline over the past 20 years. Primary threats to goshawks include forest fragmentation and



degradation, nest site disturbance, disease, and predation. Pennsylvania lies at the southern limits of the range of the northeastern U.S. population of Northern Goshawks, which makes this population more susceptible to the above effects. Classifying the Northern Goshawk as an endangered species further protects it by limiting or delaying certain activities within Northern Goshawk breeding habitat during courtship and nesting seasons. The PA Game Commission will also commit more resources annually to surveying, monitoring, and developing best management practices for this secretive forest raptor.

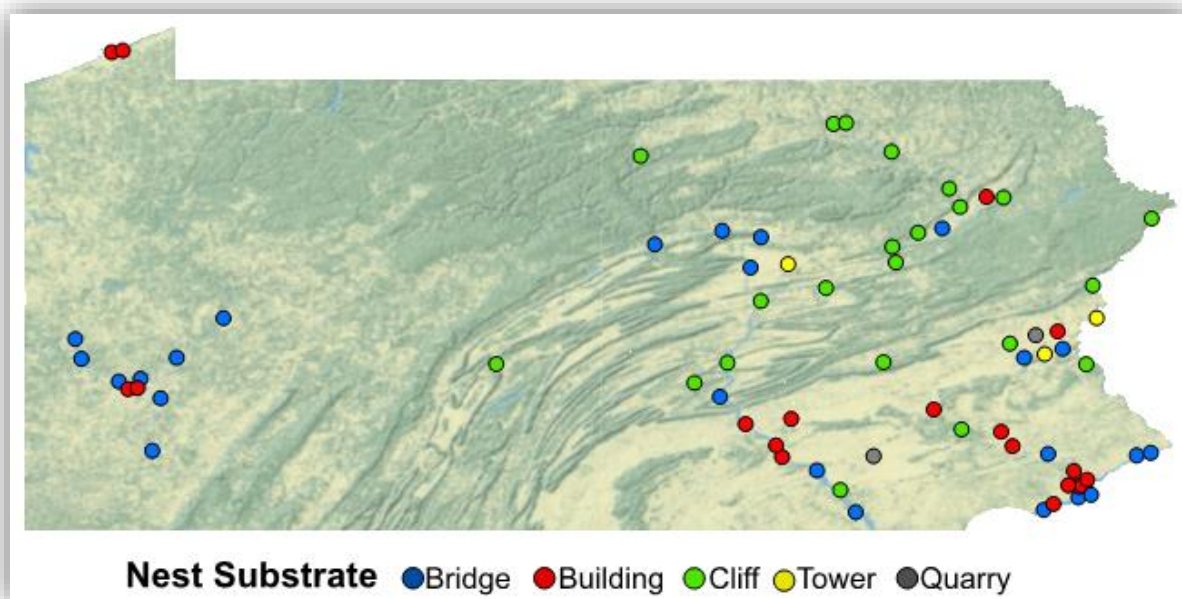
Meanwhile, after more than 40 years of conservation recovery action in Pennsylvania and nationally, the Peregrine Falcon was taken off the state's threatened and endangered species list. Within the brief period between the mid-1940s and 1965, reproductive success dropped sharply, and Peregrine Falcons were eradicated from most of the eastern U.S. This loss was primarily attributed to the widespread use of DDT. After DDT was banned, the Peregrine Fund began a national recovery plan focused on releasing captive-bred birds into the wild. In Pennsylvania, some of the earliest (1981) recovery efforts included four young falcons successfully introduced in



*Adult Peregrine Falcon in Harrisburg, Pennsylvania.  
Photo by Joe Kosack, PGC*

downtown Philadelphia. Between 1993 and 1998, additional releases were conducted under the direction of the Game Commission to bolster the nesting population and promote the use of historic cliffs. The population continued to grow and expand in the state (9 pairs in 2001; 32 in 2011; and 73 in 2021). In 2019, the population had met the required criteria to be upgraded to threatened. In 2021, with 73 nests in the state (Figure 5), the species was delisted.

The status change is a victory for the commission as the third high-profile raptor recovery, following Bald Eagle and Osprey. The Game Commission has demonstrated a commitment to thoughtful, scientific species management based on population monitoring data. Endangered or threatened species listing is not a permanent designation—recovery is achievable!



*Figure 5. Peregrine falcon nest locations and nesting substrates in Pennsylvania in 2021*

## WVU Collaborates on Study in Pennsylvania: Looking Toward Birds to Understand the Spread of Beech Leaf Disease

*Spencer R. Parkinson, M.S. Student, Division of Forestry and Natural Resources, West Virginia University*

*Danielle K. H. Martin, Forest Pathologist, Forest Health Protection, United States Forest Service*

*Scott H. Stoleson, Research Biologist, Northern Research Station, United States Forest Service*

*David Burke, Vice President for Science and Conservation, Holden Forests and Gardens*

*Christopher M. Lituma, Assistant Professor, Division of Forestry and Natural Resources, West Virginia University*

***\*This work overlaps the Allegheny Highlands (PA/NY) Focal Landscape\****

Beech Leaf Disease (BLD) was first observed in 2012 in Lake County, Ohio. Since then, it has been detected in New York, New Jersey, Virginia, West Virginia, Maine, Connecticut, Massachusetts, Pennsylvania, Rhode Island, and Ontario, Canada. Symptoms of BLD include darkening green stripes or bands between lateral veins on American Beech (*Fagus grandifolia*) leaves in early stages, moving to leaves becoming leathery, crinkling, and puckering with heavy chlorotic striping. In 2021 it was discovered that a novel nematode, *Litylenchus crenatae mccannii* (LCM), is responsible for the disease.

West Virginia University, in collaboration with the US Forest Service in WV and PA and Holden Arboretum in OH, are exploring the possibility of birds as a vector for BLD. This year is the pilot season of a study to understand if, and how, birds play a role in the spread of BLD. We are trapping birds in American Beech areas with



*Highly symptomatic Beech Leaf Disease example. Photo by Spencer Parkinson / WVU*



*Brown Creeper trapped at feeder. Photo by Spencer Parkinson / WVU*

heavy infestation, and we are placing bird feeders that are

baited with BLD infected buds. American Beech keeps its buds throughout the winter season and the nematode responsible for BLD (LCM) has been detected at high levels in the buds. Since it is an available food resource during the winter when food is scarce, we hypothesize that birds are consuming buds infested with LCM. Our goal is to determine if birds can spread BLD through excrement after consuming infected Beech buds. We will collect fecal samples from the birds and use PCR to test for LCM DNA. Our goal is to understand if the nematode can survive the gut of the bird and remain viable. Our results could elucidate the mechanism for the rapid spread and large gaps between infected areas of BLD infestation.

In October of 2021, we established bird feeders in the Allegheny National Forest (ANF) with camera traps to monitor bird activity. We will mist net for birds twice this winter on the ANF, once in October and again in March. In January of 2022 we mist-netted at Holden Arboretum and



focused on previously established feeders in BLD infected areas. We captured 53 birds of seven species, mostly Dark-eyed Junco (*Junco hyemalis*) and Black-capped Chickadee (*Poecile atricapillus*). We collected 43 fecal samples and tested them in a lab. Although results returned negative for LCM, we are still in the initial stages of this process and will continue efforts this winter and next year.

## TENNESSEE

### Tennessee River Gorge Trust: Bird Research and Land Conservation Updates

*Eliot Berz, Director of Conservation and Access, Tennessee River Gorge Trust*

The Tennessee River Gorge Trust (TRGT) had an exciting 2021. The highlights of TRGT's conservation projects included the acquisition of three properties totaling roughly 300 acres. These properties were missing pieces in a broader landscape of conserved lands within the Tennessee River Gorge. One of the properties contains a series of mountain bogs which provide unique avian habitat

atop Aetna Mountain, Tennessee.

The land acquisition also included a popular overlook, Edwards Point, that now has secured access via the Cumberland Trail. These efforts were accompanied by other projects to enhance public access in the river gorge.

*(Left) Photo of one of the properties recently protected by a Tennessee River Gorge Trust acquisition. Photo by Petra and Gunter Porzer*



The bird research team retrieved eight geolocator tracking units from Louisiana Waterthrushes and Worm-eating Warblers. These units were deployed on the birds in the

spring of 2021 as part of a six-year study tracking the annual cycles of these species. TRGT is currently working with the University of Toledo, University of Tennessee Chattanooga, and Harding University to analyze these data. Our partners in Petén, Guatemala, a wintering area for these species, were supplied with binoculars to expand their growing environmental education program thanks to funding from the Lyndhurst Foundation. The Petén Birders Association administers an educational program in which schools and community groups within Petén are taught about bird conservation and are taken on bird watching outings.

*(Right) Belted Kingfisher fitted with GPS tracking unit. Photo by Matt Reed*

The TRGT research team also deployed four GPS tracking units on Belted Kingfishers as a pilot study to assess the suitability of these tracking units and a leg-loop harness attachment method on this species. Although a common species, their population is declining in the Appalachian region and the seasonal movements of the Belted Kingfisher are not well understood.



## VIRGINIA

### Field-Validation of Golden-winged Warbler Distribution Models in Southwest Virginia

Lesley Bulluck, Associate Professor, Virginia Commonwealth University

Sergio Harding, Nongame Bird Conservation Biologist, Virginia Department of Wildlife Resources

*\*This work overlaps the Southern Appalachian High Country (NC/TN/VA) Focal Landscape\**

In recent years, a sizable concentration of Golden-winged Warbler (GWWA) has been documented in areas of southwest Virginia through a series of off-road surveys. Through a contract with DWR, Virginia Commonwealth University (VCU) developed a high resolution (1m) land cover map that accurately represents shrub/sapling cover (an important component of GWWA habitat) across five counties in southwest Virginia (Figure 6). Details can be found in a [recently published paper in the journal Remote Sensing](#).

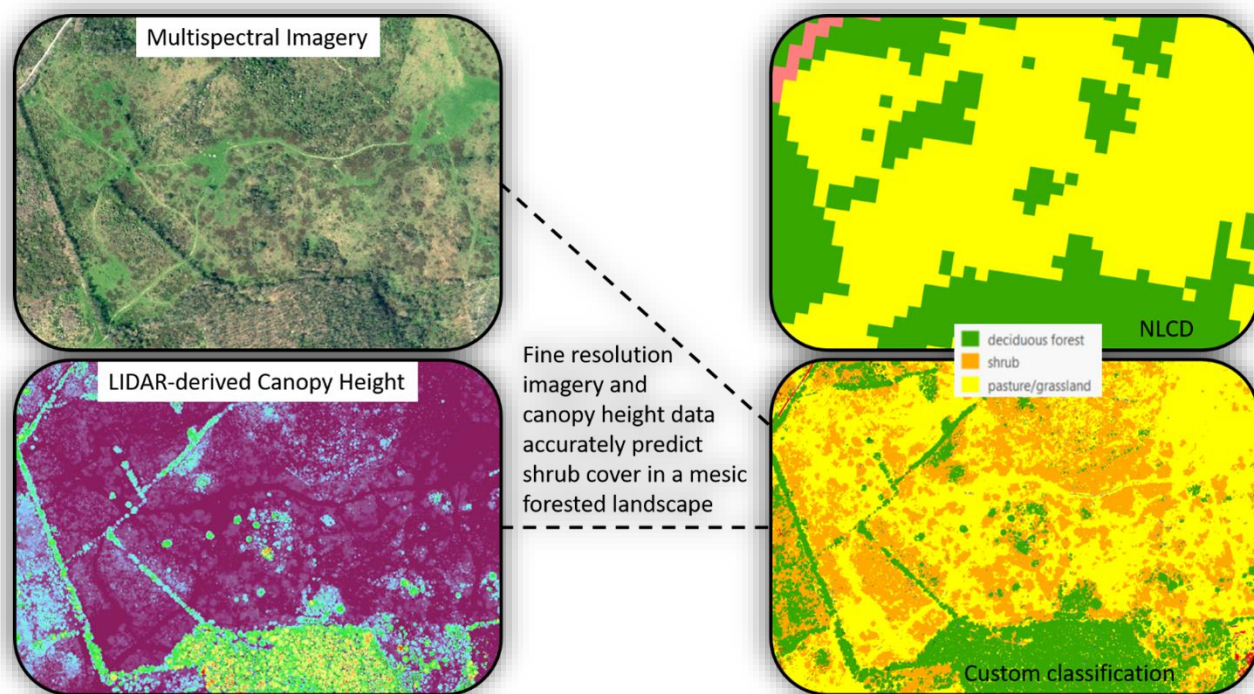
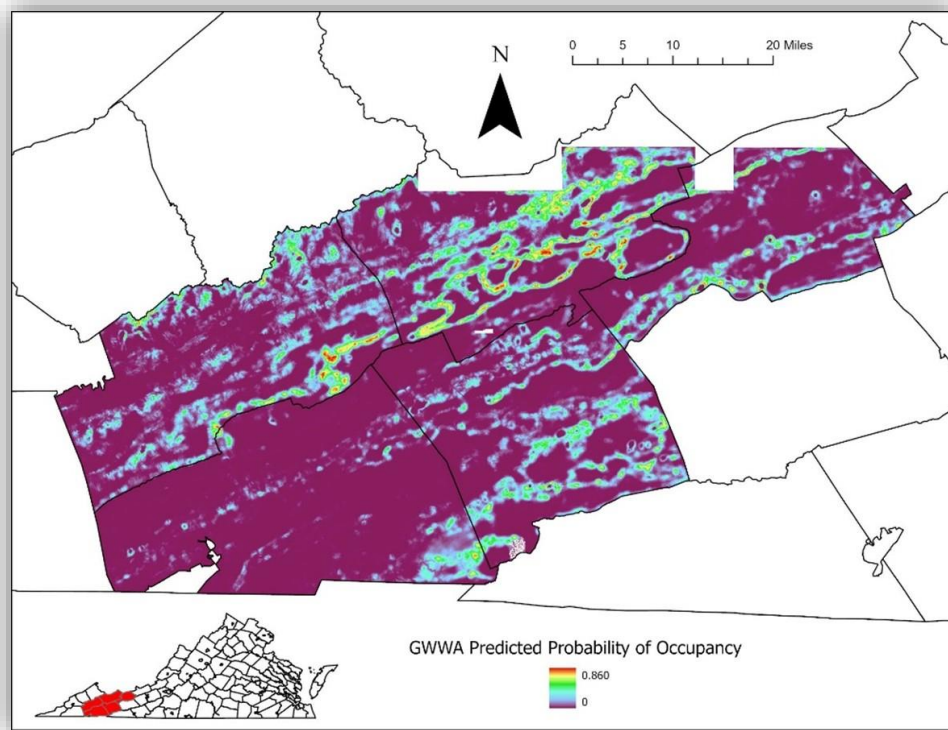


Figure 6. High resolution (1m) land cover map developed by VCU through a contract with VA DWR. Map accurately represents shrub/sapling cover (an important component of GWWA habitat) across five counties in southwest Virginia

They then used this land cover map along with avian data collected in 2019 and 2020 to develop multi-scale occupancy models in this region for breeding *Vermivora* (GWWA, Blue-winged Warbler [BWWA] and hybrids of the two species) and for GWWA only (Figure 7). The models are specific to a five-county area that includes Bland, Russell, Smyth, Tazewell, and Washington.

In 2021, DWR contracted with VCU to conduct new GWWA surveys in this five-county area in order to validate the occupancy models. The GWWA-only occupancy model was used to identify areas to survey with probability of occupancy > 0.5. A random stratified sample of potential survey locations based on patch size and county was created, with a larger percentage of sampling locations in counties that were under-surveyed in 2019 and 2020. A total of 239 new points were surveyed twice between May 1 and June 15, 2021. These surveys resulted in GWWA detections at 17 new points, BWWA detections at 42 new points, and *Vermivora* detections at 57 new points.





(Left) Figure 7. Map of predicted probability of Golden-winged Warbler (GWWA) occupancy across the five-county region in southwestern Virginia. Areas with occupancy >0.5 (green to red) were targeted for model validation surveys in 2021

The 2021 surveys were successful in identifying new breeding sites for GWWA and *Vermivora*, adding to our knowledge of the distribution and abundance of the species in this until-recently under-surveyed region of Virginia. However, the occupancy models upon which these surveys were

based did not perform well, especially for GWWA – the predicted probability of occupancy was not higher in newly occupied sites compared with unoccupied points. The poor performance of the GWWA occupancy models could be due to the fact the GWWAs are relatively rare and declining such that suitable habitat remains unoccupied, and/or due to the exclusion of important habitat variables. Such variables may include a measure of habitat patch isolation from known occupied sites, or vegetation metrics measured on the ground at survey sites that are not captured in a land cover classification (e.g., species of shrub/forb/grass, stem density, degree of shrub aggregation, etc.). Field validation of occupancy models is a rare but valuable exercise that should be carried out more often. Doing so identifies weaknesses and highlights additional factors that may be important when trying to predict species distributions. This is even more important for species with declining populations where distribution maps based on occupancy models are used for prioritizing management and conservation efforts.

## The 2nd Virginia Breeding Bird Atlas – 2021 Summary

*Sergio Harding, Nongame Bird Conservation Biologist, VA DWR*

While 2020 marked the end of a five-year period of data collection for Virginia's 2<sup>nd</sup> Breeding Bird Atlas, 2021 saw the effort shift decisively toward data processing and to planning for publication of the results. Data review is being handled by Dr. Ashley Peele of the Conservation Management Institute (CMI) at Virginia Tech through a contract with the Virginia Department of Wildlife Resources (DWR). Data review was anticipated to wrap up in April 2022 and will be followed by data analyses through the fall of 2023, again via a DWR contract with CMI.

An Atlas Final Products Committee consisting of representatives from DWR, CMI, and Atlas project partner Virginia Society of Ornithology (VSO) met consistently about once a month throughout 2021, with the goal of charting a course for transforming the raw Atlas data into published final products. The Committee identified key audiences, ranging from Atlas volunteers and birders to natural resource professionals, policymakers, and academics. Given the diversity in audiences, the information in the publication will be presented in a style understandable to the layperson, while including supplemental technical information. The Committee also identified key content via a review of published Atlas books and websites from other states/provinces, and decided to focus on providing Virginia-specific information derived directly from the Atlas data, rather than basic

information on species life history and ecology that is already widely available through existing online resources. Furthermore, the Committee decided on a format for the published materials, opting for a website over a traditional printed book or digital version of a book. This decision was reached via a systematic approach that weighed the pros and cons of each format. Among the many advantages of a website is that it will provide the greatest access to the information across audiences, and to audiences far beyond Virginia. The Committee also drafted timelines and budgets and is finalizing a work plan to help guide the Atlas project to completion. More detail on the planned publication can be found [here](#).

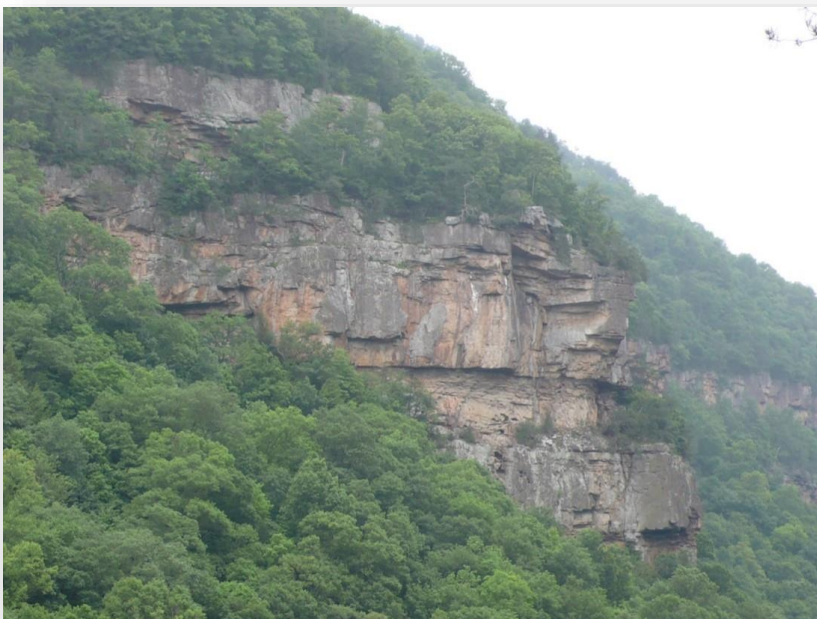


*Golden-winged Warbler in Tazewell County, Virginia; this was one of the many species confirmed as a breeder by the Atlas. Photo by Baron Lin*

## **Virginia's Peregrine Falcon Population Reaches a New Milestone**

*Sergio Harding, Nongame Bird Conservation Biologist, Virginia Department of Wildlife Resources*

*\*This work overlaps the Virginia Highlands Focal Landscape\**



*Peregrine Falcon nesting cliff at Breaks Interstate Park. Photo by Sergio Harding*

The Peregrine Falcon is a State Threatened, Tier I Species of Greatest Conservation Need in Virginia's Wildlife Action Plan. The species formerly bred throughout the Appalachian Mountains of the eastern US but was extirpated as a breeder across this region by the early 1960s. Nationally-coordinated recovery efforts starting in the 1970s were successful in establishing a breeding population in Virginia's Coastal Plain and less successful in returning the species to its former breeding range in the Virginia mountains. Current conservation efforts in Virginia are focused on both populations.

Coastal Plain (and Piedmont) peregrine monitoring and management is implemented through a partnership between the Virginia Department of Wildlife Resources (DWR) and the Center for Conservation Biology at the College of



William and Mary (CCB), as well as a number of stakeholders. DWR leads monitoring efforts at natural cliff faces in the mountains through a network that includes partners such as National Park Service personnel, Student Conservation Association interns, AmeriCorps volunteers, and student volunteers from Lincoln Memorial University (LMU). The 2021 monitoring efforts documented breeding pairs at a record five natural cliff face sites, a modern milestone for the Virginia peregrine population. Four of the sites were on protected public lands, and three were among the 22 nesting sites documented to have been historically used by peregrines in the mountains of Virginia.

The five mountain pairs accounted for 17% ( $n = 29$ ) of the total documented Virginia breeding population in 2021. It is believed that there are additional natural cliff sites occupied by peregrines that have yet to be documented in Virginia; the time requirements of occupancy surveys and the remoteness of many of the sites make this endeavor challenging. Nonetheless, this moderate high is a promising sign of the continued expansion of the peregrine population into its former breeding range.

## WEST VIRGINIA

### Forest and Wildlife Conservation Efforts through the Farm Bill on Private Land in West Virginia

*Emily Reasor, Cerulean Warbler Partner Biologist, Natural Resources Conservation Service & West Virginia Department of Natural Resources*

*Kyle Aldinger, Resource Conservationist, Natural Resources Conservation Service*

*\*This work overlaps the Greenbrier & Alleghenies (WV) Focal Landscape\**

Conservation organizations in West Virginia have a long history of partnering for forest and wildlife conservation. For some of these organizations that deliver conservation through the Farm Bill, 2021 was a year of growth and turnover. The USDA Natural Resources Conservation Service (NRCS), the WV Division of Natural Resources (DNR), and the National Wild Turkey Federation (NWTf) work

together to create partner employee positions whose main purpose is to provide forestry- and wildlife-related technical and financial assistance to non-industrial private forest owners in WV.



*(Left) Forestry training for NRCS field staff and partners in Lewis County, WV on September 13, 2021. Photo by Kyle Aldinger*

The new hires included Cerulean Warbler (CERW) and Golden-winged Warbler (GWWA) WVDNR partner biologists, an NWTf partner forester, and two NRCS area foresters. Jane Capozzelli came on in February 2021 as the Avian Biologist for the NRCS north area; Emily Reasor started in

October 2021 as the CERW biologist

for the south area; and Katie Fernald began her role in January 2022 to replace Tiffany Beachy as the GWWA biologist in the south area. The NWTf hired Keiran Zwirner in November 2021 as their

partner forester for the state through the NRCS/NWTF National Forestry Initiative agreement. Finally, in October 2021 the NRCS hired Carl Gower (former NWTF partner forester) as the south area forester and Christopher Evans as the north area forester.

The increased emphasis on forest conservation combined with the lack of experienced foresters at the local NRCS offices has also created a unique opportunity to educate and train existing NRCS field staff on conservation planning on forestland. Incorporating soil conservationists in the forestry planning process will provide opportunities for them to include their expertise and knowledge on individual plans. This will in-turn help to create comprehensive, interdisciplinary conservation plans that cover all resource concerns and land uses on the property. In addition to implementing more forestry plans, there have also been some changes to NRCS programs that have bolstered collaboration with the AMJV in WV. The Cerulean Warbler Appalachian Forestland Enhancement Project, funded through the Regional Conservation Partnership Program (RCPP), expired in May 2021. Fortunately, funding for NRCS conservation plans targeting Cerulean Warbler will continue to be available through the Environmental Quality Incentives Program (EQIP). The Working Lands for Wildlife (WLFW) partnership will continue to focus on creating and enhancing habitat for Golden-winged Warbler while adding new priority species in Eastern Hellbender and Northern Bobwhite.

A renewed focus toward forestry will undoubtedly increase the number of forestry-related conservation plans and financial assistance contracts through NRCS, which will provide for multiple benefits including forest health, wildlife habitat, and forest products. In addition to traditional forestry initiatives, the NRCS continues to prioritize assistance for historically underserved landowners while exploring new and unique opportunities such as forest farming. Both could create new pathways and help us reimagine how we manage and use our forests. Overall, NRCS WV is moving in a positive direction, sending foresters into the field to serve WV forest owners, adding acres of privately owned forests into conservation plans and financial assistance contracts, and creating viable wildlife habitat for the years to come.

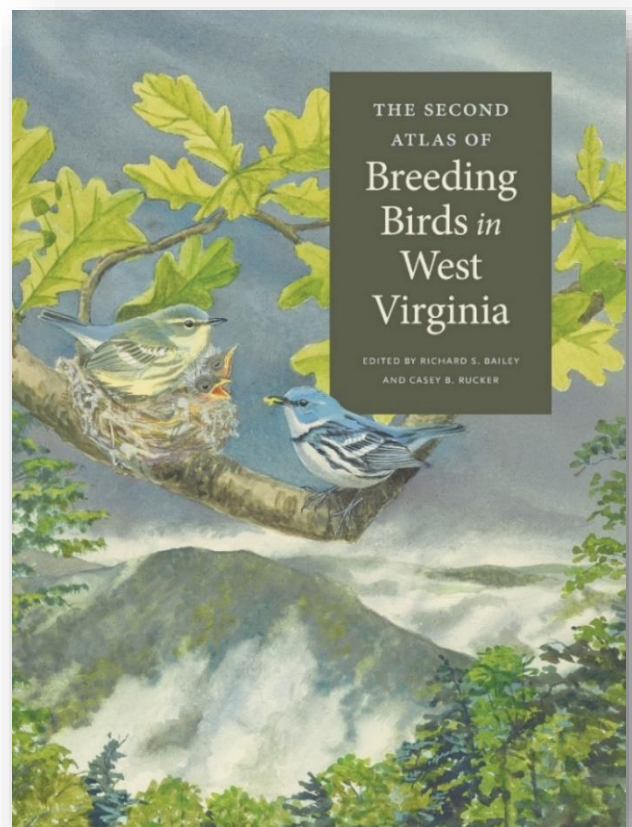
## 2nd West Virginia Breeding Bird Atlas Completed

Casey Rucker, *Avian Biologist, West Virginia Division of Natural Resources*

Richard Bailey, West Virginia Division of Natural Resources (WVDNR) State Ornithologist, and co-editor Casey Rucker have completed work on *The Second Atlas of Breeding Birds in West Virginia*. The book was published by the Pennsylvania State University Press in a large-format, full-color edition and is [available online for purchase](#). The volume includes detailed information on 170 breeding species and two hybrids as well as land use and ornithological history, habitats, and conservation issues.

(Right) Cover of the *Second Atlas of Breeding Birds in West Virginia*. Cover art by Julie Zickefoose

Publication of the atlas represents the culmination of 14 years of work by volunteers and WVDNR staff. The field period for the atlas was 2009–2014, during which more than 100,000 records were obtained, including the results of point-count surveys conducted on 2,121 locations. Since 2015, effort has been focused on analysis of atlas data and writing the book.





In contrast to other recently completed atlases in neighboring states, direct comparison of results from the prior West Virginia atlas, 1984–1989, was not possible due to the loss of effort information from that project. Instead, estimated statewide occurrence maps were produced for both atlases, enabling estimated change maps to be produced for 116 species.

Atlas data also enabled estimates of state population and density for 62 species. In some cases, the results were both surprising and encouraging. Hooded Warblers, for instance, were estimated to number 3,290,000 singing males, with densities greater than 80 per square kilometer over much of the state. Even a declining species such as Wood Thrush was found to number an estimated 1,976,000 singing males, with densities in excess of 40 per square kilometer in most areas west of the Allegheny Mountains. Estimated density maps have already assisted efforts such as the Cerulean Warbler Appalachian Forestland Enhancement Project to select the most promising locations for conservation work.



*Wood Thrush in Costa Rica, where many Appalachian songbirds overwinter. Photo by Petr Simon, courtesy of Shutterstock & the American Bird Conservancy*

Although the atlas conforms to standard presentation of breeding evidence in blocks, each representing one-sixth of a USGS 7.5-minute topographic map, surveyors using GPS devices logged specific locations of many sightings, including all observations of certain species flagged for rarity or conservation importance. Location data is available to researchers upon request and should prove to be another valuable resource to conservationists.

Atlas results have already informed the 2015 revision of West Virginia’s State Wildlife Action Plan and will remain relevant through the next atlas period, scheduled to begin in 2034. Presenting the most comprehensive information yet on the state’s bird life, the atlas represents a milestone in avian conservation in the Mountain State.

## REGIONAL

### NFWF Regional Updates

*Todd Fearer, Coordinator, Appalachian Mountains Joint Venture*

*\*This work overlaps the Greenbrier & Alleghenies (WV) and Southern Appalachian High Country (NC/TN/VA) Focal Landscapes\**

In 2021, the National Fish and Wildlife Foundation’s Central Appalachia Habitat Stewardship Program awarded \$1.7 million to 10 new or continuing projects that will improve the quality and connectivity of forest and freshwater habitat and increase the distribution and abundance of fish, birds, and other wildlife. The 10 awards announced were matched by over \$1.9 million from the grantees, providing a total conservation impact of over \$3.6 million. Five of the selected projects, totaling over \$925,000 in funds from NFWF and matched with over \$930,000 from grantees, are

focused on enhancing forest age and structural diversity and will benefit the suite of our AMJV priority forest birds.

The AMJV is a partner on two of these projects. The first, led by the Forest Steward's Guild (FSG), is for work in the eastern portion of West Virginia, including the Greenbrier & Alleghenies Focal Landscape. The project engages multiple additional partners, including West Virginia University, West Virginia Division of Natural Resources, The Forestland Group (TFG), and the Natural Resources Conservation Service (NRCS). The focus of this project is to increase awareness, capacity, and acreage for bird-friendly forestry in Central Appalachia. FSG will lead development of a dynamic forest plan across 5,000 acres of TFG forest in West Virginia. Three new demonstration sites will be developed on this forest block and will serve as hubs for five outreach and technical training opportunities for landowners, practitioners, and future practitioners (students). This training will increase capacity by training potential and current NRCS technical service providers. The dynamic forest block will further serve as the landscape for connectivity and bird occupancy mapping, which will be incorporated into an ArcGIS StoryMap that will be pivotal in effective landowner and practitioner outreach and training. Finally, this project will develop a forest management plan template that will increase efficiency and capacity for wildlife forestry in Central Appalachia and connect landowners to cost share through NRCS.



*Cerulean Warbler, one of the AMJV's priority bird forest birds. Photo by Ray Hennessy, courtesy of Shutterstock & the American Bird Conservancy*

The second project is led by Ruffed Grouse Society (RGS) for work in the Virginia portion of our Southern Appalachian High Country Focal Landscape. Other partners in this project include the Virginia Department of Wildlife Resources, Virginia Department of Forestry, The Nature Conservancy, University of North Carolina, Virginia Commonwealth University, Indiana University of Pennsylvania, University of Pittsburgh, TerraCarbon, and Quail Forever/Pheasants Forever. The goal of this project is to implement forest management that results in a mosaic of mixed-aged forests which will support a diversity of bird and wildlife species on both state and private lands. RGS will work with partners to develop a dynamic forest restoration block, assess carbon outcomes associated with dynamic forest restoration, execute baseline monitoring of vegetative conditions and wildlife occurrence, implement active forest management practices to achieve desired conditions while also piloting silvicultural treatments that accelerate the development of late-successional forest conditions, and provide technical assistance to private forest landowners.

The AMJV continues to work with NFWF and all grantees to facilitate coordination and collaboration across all forestry projects to maximize their collective impact across the Central Appalachia region.



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Todd Fearer, AMJV Coordinator, and Amanda Duren, AMJV Director of Conservation Partnerships, are part of the advisory team for this program.

The Central Appalachia Habitat Stewardship Program is a partnership initiative involving the U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the Richard King Mellon Foundation, and Shell Oil Company. It was established in 2017 and through 2021 has awarded more than \$8.4 million in funding to 57 projects in portions of the Appalachian region of New York, Pennsylvania, Ohio, Maryland, Virginia, and West Virginia.

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## THEME 2: FULL ANNUAL CYCLE CONSERVATION

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### INTERNATIONAL

#### **American Bird Conservancy BirdScapes - Updates from Latin America & Caribbean Regions**

*Andrés Anchondo, Associate Director, Impact Investment in Latin America & the Caribbean, American Bird Conservancy*

*Marci Eggers, Director for Migratory Bird Habitats in Latin America & the Caribbean, American Bird Conservancy*

The American Bird Conservancy (ABC) and partners accomplished the following in Latin America and the Caribbean Region Birdscapes in 2021:

- ABC supported tree-planting projects focused on migratory birds with 10 partners in seven countries (Dominican Republic, Jamaica, Honduras, Nicaragua, Venezuela, Colombia, and Peru) to plant 171,117 trees to enhance more than 912 acres of habitat benefiting migratory and endemic resident birds including Golden-winged, Cerulean, and Canada Warblers; Bicknell's Thrush, Tolima Dove, and Yellow-headed Brushfinch.



*Yellow-headed Brushfinch, one of the migratory bird species benefiting from ABC-supported tree-planting projects. Photo by Fundación ProAves, courtesy of the American Bird Conservancy*

- ABC and Pronatura Noreste enhanced 7,830 acres of grassland habitat in the El Tokio BirdScape in Mexico by removing invasive plants and erecting fences to exclude cattle on communal lands of two ejidos, benefiting species such as Mountain Plover and Worthen's Sparrow.

- ABC completed a joint project with BirdLife International to better understand how birds use tall grasses (>3.2 ft) and provided ranchers in southern South America with seven recommendations (e.g., leave ~5 acres of un-grazed land for birds that use tall grass) to improve habitat for grassland birds, such as the endangered Saffron-cowled Blackbird. This will be a useful tool to promote bird friendly practices on large ranches.
- In Bolivia, ABC and our partner Asociación Armonía completed a financial model that demonstrates the feasibility of cattle ranching at Barba Azul Reserve and justifies capital investments to generate profits. We will use this tool to attract impact investors to the project and help the reserve become more financially self-sustaining. Buff-breasted Sandpipers benefit from areas grazed by cattle on this reserve.



- In Venezuela, the first batch of Organic and Bird Friendly certified coffee from our agroforestry project with partner Provita has gone to market. ABC helped 39 producers get certified as Organic and 13 of them also were able to get certified as Bird Friendly, which has helped increase their earnings on sales six-fold.

*(Left) Shade-grown coffee – this coffee-growing method allows for the retention of a forest-like structure, which benefits many bird species. Photo by Mike Parr, courtesy of the American Bird Conservancy*

- In the Conservation Coast BirdScape in Guatemala, ABC supported FUNDAECO with the installation of four Motus Wildlife Tracking stations. Three of the stations are located strategically throughout the BirdScape in protected areas (Sierra Caral, Sarstún River, and Punta de Manabique) and the fourth is located in Guatemala City at FUNDAECO headquarters. These will help us track migratory birds as they pass through and winter in this area.

### **Improving Wintering Habitat in Colombia for Lowland Migratory Birds**

*Pedro José Cardona-Camacho, Research Professional, Fundación Biodiversa Colombia*

*Santiago Rosado, Management Plan Coordinator of El Silencio Natural Reserve, Fundación Biodiversa Colombia & Biodiversa Foundation*

*Fernando Arbeláez, General Director / Legal representative / El Silencio Reserve Director, Fundación Biodiversa Colombia & Board Member, Biodiversa Foundation*

*Eliana Fierro Calderón, International Conservation Project Officer, American Bird Conservancy*

*Paula Caycedo-Rosales, Researcher in Ornithology and Ecoacoustics / Board Member, Fundación Biodiversa Colombia & Board Member, Biodiversa Foundation*

While our knowledge of the routes and strategies that migratory landbirds adopt in the Neotropics is ever-increasing, there is still much to learn. In Colombia, there are monitoring stations at important stopover locations for species that cross the Gulf of Mexico, located at middle elevations of the Sierra Nevada de Santa Marta and in the dry forests of the Caribbean region. Furthermore, for the evaluation and monitoring of species that move from Central America to South America, there are monitoring stations throughout the northwestern part of the country, in the Tumbes-Choco-



Magdalena ecoregion, and the northwest area of Magdalena-Urabá ecoregion. However, in the Middle Magdalena Valley, which is further to the south in this last ecoregion, systematic monitoring has not been carried out. Hence, the species composition of the migratory bird community, their habitat use, or the phenology of migration in this part of the country remains uncertain. It is unclear which species use these habitats as stopover sites, migration, or wintering grounds. Therefore, the importance of the Middle Magdalena Valley ecosystems for migrant birds has remained unknown.



*Great Crested Flycatcher. Photo by Sandiango Rosado*

Since November 2021, Fundación Biodiversa Colombia (FBC) and American Bird Conservancy (ABC) have been running a pilot project in the [Middle Magdalena Valley](#) in three different forested habitats at the [El Silencio](#) Natural Reserve ([video](#)), following the [Neotropical Flyways Project](#) protocols in order to i) identify the migratory bird community composition ii) determine the phenology of fall and spring migration iii) collect information on the diet and foraging behavior and use it to enrich the restoration processes, and iv) extend this characterization to resident species, which will allow us to put together a more complete picture of the bird community in El Silencio.



*Agami Heron. Photo by Santiago Rosado*

Between November 2021 and March 2022, we obtained 10,120 records of 15,840 individuals belonging to 228 bird species using these areas. We found 27 migratory bird species (24 land birds and three waterbird species). Interestingly, some species present in fall migration are not during spring migration and vice versa; Bank Swallow and Western Wood-Pewee were only reported between mid-November and mid-January, while 10 other species had only been reported between mid-

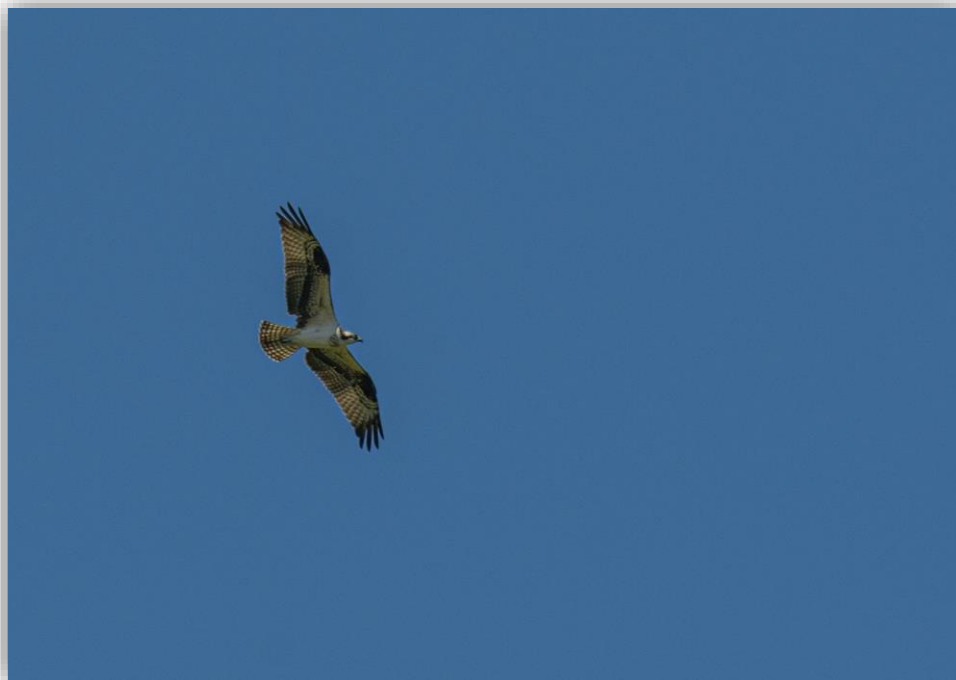


*Olive-sided Flycatcher. Photo by Santiago Rosado*

January and the first week of April; some of those were very abundant, like the Chimney Swift (184 individuals), a species considered of high priority for the Appalachian Mountain Joint Venture (AMJV). In other cases, the abundance from fall to spring migration increased conspicuously; the most evident case was Barn Swallow since 13 individuals were reported in fall migration, while in spring migration, 1,486 were reported. Similar abundances between fall and spring migration were reported for seven species;

Great Crested Flycatcher (531 individuals), Acadian Flycatcher (119 individuals), Bay-breasted Warbler (116 individuals), and the Osprey (94 individuals), presenting the highest number of records. Of the 27 reported species, 26 breed in the Appalachian region, and three of these are cataloged as high AMJV priorities.

Thanks to this effort, we added 40 resident species to the reserve's bird list, including rare birds associated with well-preserved forests, such as the Agami Heron (*Agamia agami*), the Pygmy Motmot (*Hylomanes momotula*), the Hook-billed Kite (*Chondrohierax uncinatus*), the Rufous-crowned Chick (*Anurolimnas viridis*), among others. In addition, we confirmed the presence of a critically endangered species, the Blue-billed Curassow (*Crax alberti*) ([video](#)).



*Osprey. Photo by Santiago Rosado*





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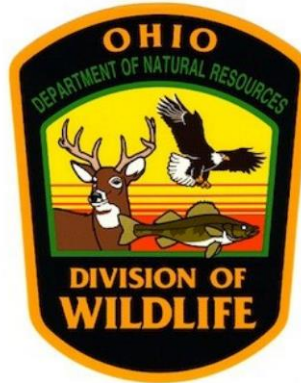


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## REGIONAL PARTNERSHIPS

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AMJV partners and regional partnerships not represented above with logos:

Eastern Golden Eagle Working Group  
National Park Service  
Southern Appalachian Spruce Restoration Initiative (SASRI)