

# BIRD CONSERVATION

The Magazine of American Bird Conservancy

SPRING 2017



# Protecting “Every Day” Migration with BirdScapes

For many of my friends, migration evokes thoughts of springtime, when a day afield will net 100 or more species seen. Where I live, we call that a “fall out” day, when migrants seem to festoon every tree. But for me, migration is the first song of the Brown Thrasher or Great Crested Flycatcher or Scarlet Tanager as I walk home from American Bird Conservancy’s office in The Plains, Va. Though I always enjoy the occasional Bay-breasted Warbler or Swainson’s Thrush just passing through, it is the local nesters announcing their return that makes my springtime.

Migration is amazing. It is the Golden-winged Warbler—only a few grams of feather and muscle—that travels to South America and back every year. It is the flight of birds so plentiful that they can be seen on FAA radar screens. It is the Ruby-throated Hummingbird—the weight of a penny—crossing the 600-mile Gulf of Mexico. It is 75 Blue Grosbeaks lighting up a single tree at Houston Audubon’s High Island.

But migration is also so much more. It is our reminder of the incredible complexity and staggering peril that fills migratory birds’ daily lives. It is the ultimate proof that nature defies human rationality. It is foundational evidence of evolution. It is the contradiction that such sublime fragility can be so abiding. It is a reminder to think about what is out over the horizon. And it is the unceasing, relentless will of birds to simply exist.

More than anything else, migration is fragile and in urgent need of our protection. Migratory birds are dwindling—their number shrink continuously. And now we find



Migration gives notice that birds travel far, and that truly protecting them requires consideration of southern wintering grounds, northern breeding grounds, and safe passage in between.

ourselves at a time when the end of bird migration is no longer unthinkable. That is shocking, or it should be. Can’t happen, you say? I have two words for you: Passenger Pigeon. In 1814, the ornithologist Alexander Wilson wrote of them, “The light of the noonday was obscured as if by eclipse....” Exactly 100 years later, the last Passenger Pigeon—a female named Martha—died in captivity at the Cincinnati Zoo. So, why is it hard to believe that so many bird species—having already declined by 50, 70, or 90 percent in the past 50 years—may succumb entirely in another 50 years to the numerous threats facing birds today?

Migration is not just the big “fall out” day. It is every day: Barn Swallows returning from Argentina in February and Buff-breasted Sandpipers gathering in flocks to leave the Arctic in July. Migration gives notice that birds travel far, and that truly protecting them requires consideration of southern wintering grounds, northern breeding grounds, and safe passage in between. Ornithologists call this full life-cycle conservation.

As a *Bird Conservation* reader, you’re familiar with this term. You know that migratory birds are an abiding

priority for ABC. Now, with this issue, we are pleased to introduce you to a new ABC approach to migratory bird conservation: BirdScapes. These landscape-scale areas provide—or could provide—important contributions to sustaining or recovering one part of the full life-cycle of targeted migratory bird species. They are places where, we believe, pragmatic conservation action can do the most to benefit migratory birds. Rather than invisible “flyways” that birds simply fly through, BirdScapes are the places birds actually use and need. And rather than reserves where land is set aside, BirdScapes unite ABC and partners with local people to conserve lands in the human-altered landscape. There is a lot to learn about BirdScapes, so we hope you will read this issue through to discover what ABC, with many partners, aims to do to bring back the birds.



*George*

George H. Fenwick  
President, ABC



ABC is the Western Hemisphere’s bird conservation specialist—the only organization with a single and steadfast commitment to achieving conservation results for native wild birds and their habitats throughout the Americas.

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Florida: Division of Consumer Services, toll-free number within the state: 800-435-7352.

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Spring 2017  
**BIRD CONSERVATION**

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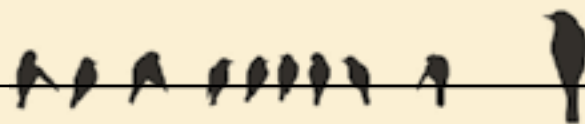


Long-billed Curlew by Tim Zurowski, Shutterstock

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## Endangered Species Act Facing Its Own Extinction?

For more than 40 years, the Endangered Species Act (ESA) has been one of the nation's cornerstone environmental laws—a lifeline to prevent rare species from becoming extinct. However, the ESA now faces threats to its own existence, notably from some members of Congress.

Since the ESA was first passed in 1973, it has helped restore populations of Bald Eagle, California Condor, Whooping Crane, and many other American birds and animals that were headed for extinction.

Today, the ESA continues to play a critical role guiding the recovery of listed species and determining whether there is scientific support to protect additional populations.

Whooping Crane by Jack Nevitt, Shutterstock



The need for this law is as great as it has ever been, as threats including habitat loss, invasive species, pesticides, and climate change continue to increase.

In recent years, Congress has sought to exempt ESA protection for some species, but hasn't tried to overturn the law itself. Unfortunately, that's about to change, with some Congressional leaders saying they want to scuttle the ESA entirely. The year 2017 will be a critical one for people who love wildlife to speak out on behalf of this key legislation.

You can take action. Speak out by calling or writing to your Congressional decision-makers. Phoning or writing personal letters has more impact than email.

We at ABC believe that threats to the ESA will be strongly opposed and can ultimately be halted—if the public makes its voice heard now.

## Together for Birds Petition Delivered to Congress

After collecting the endorsements of 424 organizations and the signatures of more than 24,000 individuals, ABC delivered its initial Together for Birds petition to the Trump administration and congressional leaders on February 27.

The petition supports maintaining the agencies, laws, and programs that are making the greatest difference for birds, including the Endangered Species Act and Migratory Bird Treaty Act, federal funding for bird conservation and the Environmental Protection Agency, and the sustainable management of public lands.

"The American people love birds," says Steve Holmer, Vice President of Policy for ABC. "The current administration and 115th Congress have an opportunity to make a real difference to reverse current population declines, restore habitats, and put in place smart policies to balance conservation with development on public lands."

ABC's Together For Birds petition remains open for signature. The final list of endorsements and signatures will be delivered to Congress



during a Capitol Hill reception to highlight migratory bird conservation, tentatively scheduled for mid-May.

**Add your name to the petition today: [togetherforbirds.org](http://togetherforbirds.org)**

## Brazil's Araripe Oasis Reserve Doubles in Size

In December 2016, ABC and Brazilian partner Aquasis secured more than 170 acres of critical habitat for the Araripe Manakin and other threatened species in northeastern Brazil. This acquisition roughly doubles the size of the existing Araripe Oasis Reserve and connects it to the much larger Araripe National Forest, protecting additional habitat for the manakin and other rare birds such as Yellow-faced Siskin and White-browed Antpitta.

Expanding the reserve is a critical contribution to the survival of the Araripe Manakin, an Alliance for Zero Extinction species that had dwindled to fewer than 1,000 individuals when it was discovered 20 years ago. These birds depend



Female Araripe Manakin on her streamside nest. Photo by Ciro Albano

on a unique type of forest found only at the base of the Araripe Plateau in Brazil, where encroaching human development—including farming, cattle grazing, and home

construction—has pushed them to the edge of extinction.

The newly acquired property includes springs, streams, and forests—all the elements required to support new breeding territories for the manakin, which nests in understory vegetation overhanging running water.

This purchase was made possible by the support of the IUCN National Committee of The Netherlands, Gulf Coast Bird Observatory, Quick Response Biodiversity Fund, David and Patricia Davidson, Larry Thompson, Silicon Valley Community Foundation, and a number of other donors who generously gave to ABC's online campaign.

## Geolocators Continue to Reveal Valuable Life-Cycle Data

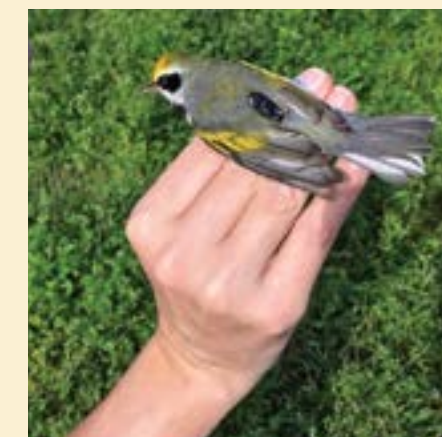
Much is still unknown about bird migration, including the wintering distributions of many species, locations of their migratory routes and stopover areas, and how breeding and non-breeding populations are structured. The declining Golden-winged Warbler is a case in point; until we fully understand specific migration patterns for individual breeding populations, attempts at full life-cycle conservation may be limited in their effectiveness.

Fortunately, advances in geolocator technology permit researchers to begin to investigate several aspects of migratory connectivity between wintering and breeding populations of Golden-winged Warblers. For example, researchers from the University of Minnesota and their partners published an article in *The Condor* in February 2017. Their

study was based on data from 21 geolocator-equipped Golden-winged Warblers from three separate breeding locations in Tennessee, Minnesota, and Pennsylvania. Among their findings: Individuals from each breeding population wintered in different locations. Pennsylvania birds wintered in Venezuela, while the birds that nested in Tennessee wintered in Colombia, and Minnesota breeders migrated to Central America.

Additionally, individuals from each breeding population traveled different routes during their fall migration, and some populations spent more time "on the road" during their southward journey.

In general, the warblers traveled at slower rates over more days in fall migration than during spring migration. Fall migration routes



Golden-winged Warbler tagged with a geolocator, visible on the bird's back. Photo by Kirstin Johnson

were population-specific, whereas spring routes were more varied and overlapped among breeding populations. The findings from this latest round of geolocator-based research highlight the need for monitoring multiple breeding populations within migratory species for more targeted, effective conservation.



## ABC Seeks Protection of Oregon Vesper Sparrow

In December 2016, ABC petitioned the U.S. Fish and Wildlife Service to list the Oregon Vesper Sparrow as a threatened or endangered species under the Endangered Species Act (ESA). ABC and others consider this subspecies of the Vesper Sparrow as threatened with extinction throughout its range due to significant population declines and ongoing habitat loss and degradation.

The current estimated population of the Oregon Vesper Sparrow is fewer than 3,000 birds, and Breeding Bird Survey data indicates a statistically significant population decline of more than five percent every year during the last 45 years.

This migratory species has a restricted breeding range that

historically included southwestern British Columbia, western Washington and Oregon, and northwestern California. Now, breeding populations have disappeared from British Columbia and California, along with numerous local breeding populations throughout the range.

The species overwinters in California west of the Sierra Nevada Mountains and south of San Francisco Bay. Historically, the species also ranged into northwestern Baja California, Mexico, but those wintering populations have now disappeared.

Existing regulatory mechanisms do not provide the protection needed to save the Oregon Vesper Sparrow from extinction. There are no federal or state programs dedicated



Klamath Bird Observatory

to its conservation, and only about 20 percent of the birds' population occurs on public lands.

"We are deeply concerned about the future of this bird," says Bob Altman, ABC's Pacific Northwest Conservation Officer. "With so few birds remaining, many in small and isolated populations, the Oregon Vesper Sparrow needs the immediate protection and conservation focus of ESA listing."

## Lawsuit to Protect Piping Plovers Moves Forward

In a ruling issued February 6, a federal judge denied a motion to dismiss ABC's lawsuit against the New York State Department of Parks, Recreation, and Historic Preservation (Parks Office) over feral cat colonies at Jones Beach, N.Y.

"ABC is very pleased that the Court denied the state's motion to dismiss the complaint," says Grant Sizemore, Director of ABC's Invasive Species Programs. "Our complaint is solid, and we look forward to having the opportunity to prove our case on behalf of the birds."

ABC filed the lawsuit in March 2016 against the Parks Office over the cats' continued presence at Jones Beach. The cat colonies exist

in close proximity to the nesting sites of Piping Plovers, a species listed as threatened in the Atlantic Coast region under the Endangered

Species Act. New York State's own Endangered and Threatened Species Regulations list the species as endangered.



Vernu Challa

## New Breeding Area Discovered for Critically Endangered Blue-throated Macaw

In February 2017, an expedition by ABC partner Asociación Armonía discovered additional breeding grounds of the critically endangered Blue-throated Macaw in Bolivia—a major step toward improving understanding of its life-cycle and ensuring its full protection.

Since 2008, Armonía has been protecting key roosting and feeding grounds of the largest wild Blue-throated Macaw population at Bolivia's Barba Azul Nature Reserve. Recent sightings of a record-high 118 macaws indicate a healthy increase of the macaw population at the reserve. However, the majority of these birds only use Barba Azul from May to November. At the beginning of the breeding season the macaws disperse to unknown sites, returning to Barba Azul in small groups in March. The question remains: Where do all of these birds breed?



The expedition pauses at a flooded palm island north of Barba Azul reserve boundaries. New Blue-throated Macaw nesting sites were discovered in this area. Photo by Tjalle Boorsma, Asociación Armonía

A 2016 expedition had discovered roosting birds north of Barba Azul Nature Reserve. With this evidence, Armonía, with support from ABC and The Cincinnati Zoo, began to search for breeding grounds north of Barba Azul.

The February 2017 expedition was led by Tjalle Boorsma, the reserve coordinator at Barba Azul. He and his crew discovered four Blue-throated Macaw nests deep in the wilderness of the Beni Savanna, northwest of the reserve's boundaries.

These macaws were nesting in royal palm snags rather than the mocatu palms they use at Barba Azul. These stands of palms proved difficult to access, as they were flooded due to recent rainfall. This natural barrier could be the reason why the macaws chose these palm snags for their nesting cavities.

Blue-throated Macaw by Daniel Alarcon, Asociación Armonía

After verifying the birds were not disturbed by the presence of a drone, the crew filmed the parrots on their nests. In a few cases, the birds chose locations close to an active farm and showed no signs of disturbance from the proximity to humans and livestock.

Armonía and ABC plan a second expedition into the area to gather additional information. A group of experts are also in the process of designing macaw-proof GPS units, which would allow tagged birds to be tracked during their seasonal movements.

Armonía will also use this new data to continue improving its nest box program at Barba Azul.

*ABC and Asociación Armonía are grateful to David and Patricia Davidson for their generous support of Blue-throated Macaw conservation at Barba Azul.*



# New Management Rule Leaves Eagles at Risk

In December 2016, the U.S. Fish and Wildlife Service (FWS) released the final version of its revised eagle management plan. ABC's initial assessment finds some positive elements in the rule, including a promise that eagle mortality data will be collected by independent, third-party experts using standardized methods. But we also see significant weaknesses and omissions.

Under the rule, FWS would issue 30-year "take" permits to wind energy companies, which are protected from prosecution if their activities harm eagles. Internal reviews of the permits, conducted once every five years, should provide an opportunity to cancel or amend the permit if the wind energy facility is killing more eagles than anticipated.

However, under the new rule, these five-year reviews will usually not allow feedback from the public. That also excludes conservation groups and other stakeholders from the process.

Instead of public input, the Service would use "adaptive management," which allows for changes to management practices based on observed results. But given FWS's already stretched resources, ABC believes that enhanced public oversight is essential. In addition, the lack of an opportunity for public input makes the rule vulnerable to legal challenges under the National Environmental Policy Act (NEPA), one of our most important environmental laws.

"Public oversight and input from concerned conservation organizations are critical in order to assess the specific causes of eagle deaths," said Michael Hutchins, Director of



ABC remains concerned about the lack of incentives for wind energy companies to comply with FWS's current voluntary guidelines on eagle take.



ABC's Bird-Smart Wind Energy Campaign. "Other areas where public input is important include assessing the effectiveness of mitigation strategies used at wind energy facilities and reviewing the appropriateness of regulatory actions, which are at the sole discretion of FWS."

In 2015, in response to the Service's previous 30-year eagle rule, ABC won a court battle to require FWS to follow the process required by NEPA, including the preparation of an Environmental Impact Statement and consultation with Native American tribes, for whom eagles are sacred. As a result of the lawsuit, a federal judge overturned the former rule, agreeing with ABC that lack of public oversight during the five-year reviews was a potential NEPA violation.

"Unfortunately, this new rule again risks violating NEPA," said Hutchins.

In addition, the new 30-year eagle take rule leaves Golden Eagles, particularly the birds' small Eastern population, too much at risk.

ABC remains concerned about the lack of incentives for wind energy companies to comply with FWS's current voluntary guidelines on eagle take. "We fully understand the challenges that the Service faces, especially given large cuts to its resources over the past several years," says Hutchins. "But we do not believe this absolves the Service of its obligations, both legally and morally, to protect our irreplaceable wildlife, including our iconic eagles."

TOP: Bald Eagle by Alan Wilson. BOTTOM: Golden Eagle by Stewart Dawber, Shutterstock

# Help Protect BirdScapes



*ABC's new BirdScapes approach seeks to conserve migratory birds in the places that matter most*

**How do we save bird migration?** Migratory birds' twice-yearly journeys can span continents and may cross a dozen or more international borders. Protecting them where they breed is not enough. We must do more.

At ABC, we believe our BirdScapes approach is the answer. From the Pennsylvania Wilds BirdScape, where Golden-winged Warblers raise their young, to the Guatemala Conservation Coast, where Wood Thrush and other migratory birds might winter among shade-grown crops, BirdScapes unite ABC and local partners in a hemisphere-wide effort to protect one of nature's greatest phenomena: bird migration.

To truly protect migration and migratory birds, we have to bring conservation to where the birds are, and also wherever they may go. This is BirdScapes: a full life-cycle approach to conserve migratory birds on their southern wintering grounds, their northern breeding grounds, and along their journeys in between. **Your donation will help support ABC's BirdScapes and save bird migration throughout the Americas.**

Please use the enclosed envelope to make an additional gift, or give online at **abcbirds.org**.

TOP: Golden-winged Warbler by Glenn T. Adams



# The ABCs of BirdScapes:

## *Our Approach to Bringing Back the Birds*



Long-billed Curlew by Tim Zurowski, Shutterstock

By George Fenwick

A glance at the history of New World migratory bird populations reveals a history—and surely a prehistory—of continuous change: up and down as forests are lost and regained; grasslands turning to desert; climates swinging back and forth.

Now, however, we face a downturn for many migrants that is perhaps unlike any other, one that may not recover from contemporary factors such as climate change; the spread of human populations into the last bits of undiminished forest, grasslands, and waterfront; water loss; alien species that fundamentally change ecosystems; and permanent habitat loss. That is, unless concerted, collaborative action is taken now.

*continued page 12*

## Landscape-Scale Habitat Conservation for Migratory Birds

The spectrum of activities now supporting bird conservation—science, education, land protection—is piecemeal: fragmented islands in a sea of threats, habitat loss, and ignorance. It has helped, but it isn't enough. At ABC, we believe that by bringing the pieces together in our new BirdScapes approach, we can succeed. These principles apply:

- We must conserve core breeding, migratory, and wintering habitats for declining bird species at the needed scale. We can achieve healthy, species-rich, high-functioning habitats by determining and implementing best management practices (BMPs) for the birds that have the most demanding requirements within those habitats across their full life-cycles. To be successful, BMPs must be sustainable over time and resilient to global changes.
- The key to conserving North American migrants lies largely in their southern wintering grounds. Much more must be done on the breeding grounds, but the largest factors affecting many of our migrants are loss of habitat and unsustainable land use, lack of conservation capacity, and a lack of resources to incentivize conservation on their wintering grounds. Northern conservation organizations have failed to adequately engage in these activities at the level necessary to recover American migratory birds.
- Bird conservation must focus on changing people's behaviors and habits. We use science to determine what birds need, but changes in bird populations happen because of changes in human behavior. We must offer solutions that benefit both birds and people, and help landowners and managers implement those solutions. This is just as true in the Neotropics, where many birds winter, as on the breeding grounds. Local community support is as critical as government support.

- New, non-traditional methods and expertise are needed. The conservation community must not be hobbled by past paradigms. Success demands a broad range of skills in science, economics and financing, water use, nature-friendly income-producing land uses, social dimensions, and much more. These skills are the new normal of 21st century conservation partnerships.
- We must capitalize on the current revolution in science. Knowledge of birds and their migration has grown significantly in the past decade through a range of advancements, from eBird and miniature geolocators to climate science and resiliency. This massive influx of information should direct conservation and point to knowledge gaps, notably in the south.
- We must resolve threats that are having a population-level effect on declining bird species. We will not succeed in stabilizing bird populations solely by focusing on stemming habitat loss or management of key areas. Threats such as poorly sited communication towers and wind turbines, pesticides, and an over-population of deer that destroy forest understories must be addressed.
- Success at the needed scale will require not only broad partnerships with members willing to put aside competitive instincts, but also one or more organizations dedicated to coordinating the various dimensions involved. These “backbone” groups are needed to maintain focus for collective impact yet remain flexible enough to move with the shifting mosaic of bird conservation needs. Our BirdScapes approach is a call to action for groups ranging from national and local governments to foundations and nonprofits throughout the Americas.

El Tokio BirdScape, Mexico. Photo by Aditi Desai, ABC





The stakes are high. The incredible yet tenuous phenomenon of New World bird migration must be passed on to the next generation if we expect them to experience it and learn to value and appreciate it personally. We can wait and study the problem some more, but the sooner we act at the needed scale, the better our chances of success. That's why we're launching BirdScapes now—our ambitious approach to migratory bird conservation.

### What Is a BirdScape?

BirdScapes are landscape-scale areas defined by ABC that provide, or could provide, habitat important to sustaining or recovering one part of the full annual life-cycle of targeted migratory bird species or populations. Generally between 150,000 and 2.5 million acres in size, BirdScapes are places where critical bird habitats meet opportunity and where effective, pragmatic conservation action takes place

as a result. We are identifying BirdScapes for breeding, wintering, and migration (or stopover) areas throughout the Western Hemisphere.

### Why Are BirdScapes Needed?

Landscape-scale habitat conservation across the large geographic ranges of migratory and resident bird species is the most efficient and effective approach to conserving bird populations across their entire annual life-cycles. Smaller, site-based actions, while important, are insufficient for this purpose. BirdScapes provide a mechanism for strategic conservation across multiple sites within a landscape to meet the needs of a species or suite of species at a meaningful spatial scale.

However, BirdScapes are not the only areas where ABC will work for migratory bird conservation, and they are not the only areas important for migratory birds.

Rather, BirdScapes are areas where we have chosen to invest and build capacity because of their particular importance for recovering bird populations.

### How Are BirdScapes Different?

There are many land conservation designations, each suited to its purpose, including those defined by nongovernmental groups (such as Conservation International's Biodiversity Hotspots) and government or multilateral designations (such as Biosphere Reserves). Only a few of these designations are specific to birds. Of these, flyways are broad, general corridors originally developed for waterfowl in the 1930s to

In the Valles Centrales BirdScape, we're working with our Mexican partner Pronatura Noreste and local ranchers to conserve habitat for grassland birds. Since 2012, Rubén and Gabriela Borunda have implemented sustainable grazing practices at Coyamito, their ranch in the Chihuahuan Desert grasslands. Photo by Aditi Desai, ABC, February 2017

facilitate management of bird migration through North America. Important Bird Areas were designed primarily to identify places where birds concentrate in large numbers that could have the potential for protection or management.

In contrast, while a BirdScape may include core protected areas, BirdScapes are not suitable for full protected status because of the diverse land uses and complexity of management within them.

### How Are BirdScapes Selected and Designed?

Potential BirdScapes are selected for a particular declining species (for example, Long-billed Curlew) or suite of species (such as grassland birds). They are evaluated and designed using a combination of factors, including bird distribution and abundance, land cover data, socioeconomic conditions, and more so that strategic conservation investment in these areas will provide a beneficial long-term response from targeted species.

The distributions of species or habitat types, physical geography, and political borders may all contribute to defining a BirdScape. These boundaries may change over time as information improves or as opportunities arise or are lost. The size, scope, and influence of threats may also affect the placement of a BirdScape.

### What Landscape Features Can Be Found Within a BirdScape?

BirdScapes may include pristine core habitat, areas that need restoration, critical areas under threat of



### What Conservation Strategies Will ABC Use in BirdScapes?

BirdScapes may include large areas of pristine habitat, but many will also include commercial lands such as managed forests and even residential areas. Thus, conservation strategies

will vary from one BirdScape to the next. Though ABC has begun to expand into new approaches such as water-use planning and working with the forest products industry, additional approaches will evolve as we advance. In some cases, we may want to encourage policy or regulatory change. In others, we will need to scientifically test approaches for both habitat and socio-economic benefits.

### How Will BirdScapes Be Evaluated?

Conservation within a BirdScape must lead to the protection, restoration, or improved management of habitat on a meaningful scale.

Because the habitat and socioeconomic conditions in each BirdScape will be different, conservation strategies will also vary and must be evaluated on a case-by-case basis.

ABC must establish BirdScape boundaries, plans, and actions that allow us to set measurable goals; implement long-term, on-the-ground benefits to birds, their habitats, and communities; and track progress toward real targets. And because conserving large areas is key to protecting migratory birds at the population level—and to maintaining the phenomenon of migration—ABC is committed to conducting conservation within BirdScapes for decades.

The incredible phenomenon of bird migration must be passed on to the next generation if we expect them to learn to value and appreciate it personally.

conversion, and areas in production that can be managed to contribute to bird conservation objectives. Protected areas and buffer zones, working lands managed sustainably or with best management practices, and corridors that connect protected areas may all be found within a BirdScape. Due to their large size, some BirdScapes will inevitably include developed areas as well.

### Who Will Accomplish the Needed Conservation?

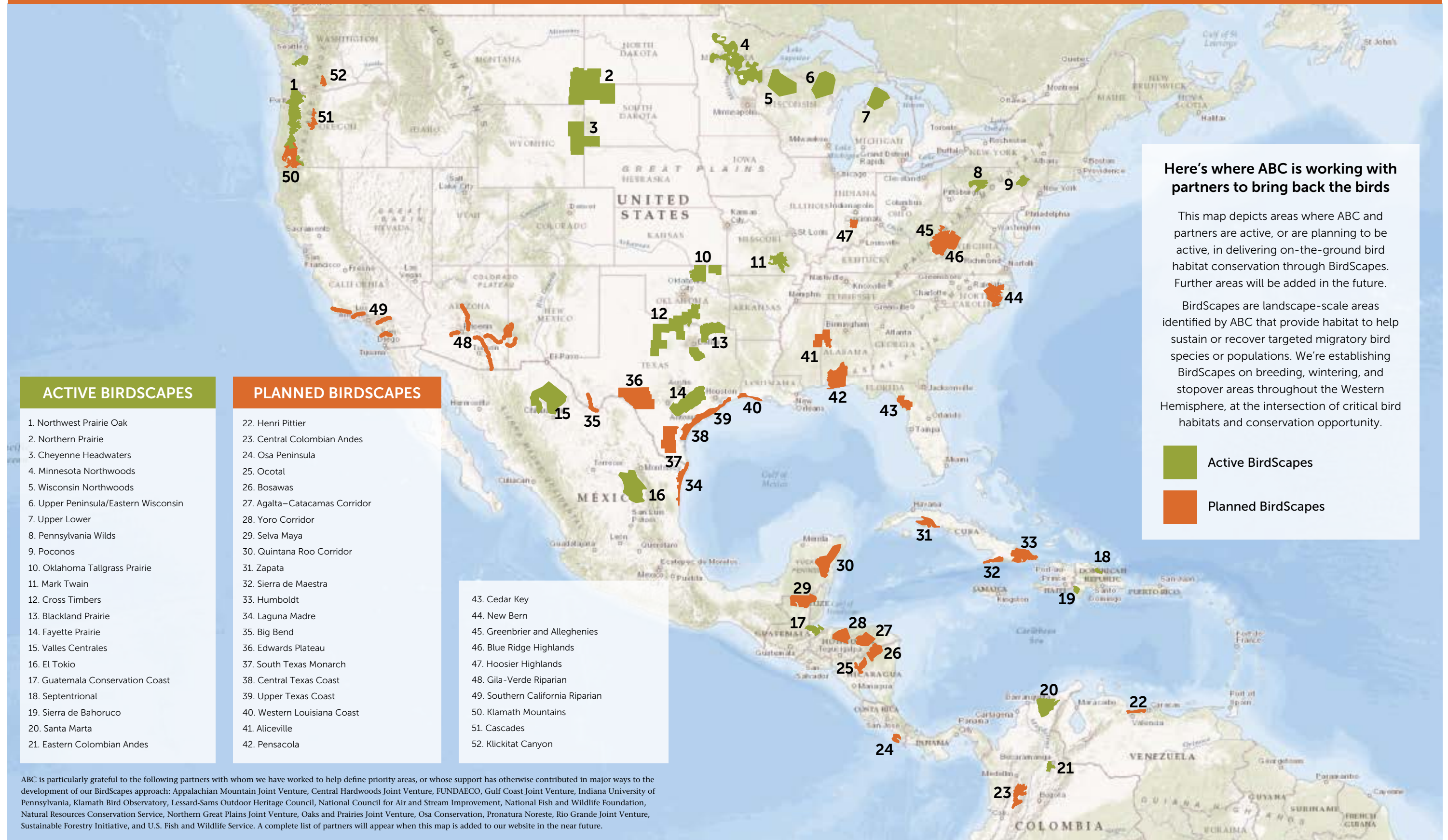
BirdScapes must have a spectrum of partners who share both our goals and our commitment to execute conservation actions at a landscape level. Already, we have especially strong partners at several international BirdScapes and with Migratory Bird Joint Ventures in the United States. We anticipate that each BirdScape will have one or more principal partners, and we welcome all nonprofit, commercial, or government entities who want to help accomplish our goals.



BirdScapes must have a spectrum of partners who share both our goals and our commitment to execute conservation actions at a landscape level.



# ABC BIRDSCAPES: Redrawing the Map for Migratory Bird Conservation





# Of Kings and Migrants

*The BirdScapes approach seeks to protect migratory birds at the places they call home—from Pennsylvania to Guatemala and beyond*



Don Francisco Lopez, the “Guatemalan King of Black Pepper.” Photo by Mike Parr, ABC, August 2016

*By Cristina Santiestevan*

In the shadows of trees he planted himself, Don Francisco Lopez tends his black pepper crop. The woody, perennial vines reach a dozen feet or more overhead, clambering up the *Cordia* and *Gliricidia* trees that surround his house. The dappled shade protects the vines from Guatemala’s strong sun, while the trees that cast those shadows provide shelter and food for abundant birds, including many migratory songbirds that travel to these slopes from their summer breeding grounds in North America.

“We call him the Guatemalan King of Black Pepper,” jokes Marco Cerezo, President of Fundación para el Ecodesarrollo y la Conservación (FUNDAECO), which translates to the Foundation for Ecodevelopment and Conservation. “He has put three daughters through college, all on the proceeds from his pepper vines.”

Don Francisco is one of many local landowners who are experimenting with a more bird-friendly approach to agriculture with the help of FUNDAECO and ABC in the Conservation Coast region of Guatemala—a stretch of land that covers approximately one million acres from the country’s Caribbean shoreline to the Izabal Department hills farther inland. His success is among the first for ABC’s ambitious new approach to saving migratory birds, BirdScapes.



## How to Save What Won’t Hold Still

Far to the north, in a climate that wouldn’t begin to support black pepper, Wood Thrush build nests, hatch eggs, and fledge chicks in the mature forest of Pennsylvania’s Appalachian Mountains. But once the chicks leave the nest, they and their parents relocate to nearby stands of dense, scrubby habitat known as “young forest” to forage.

“Right there, you see how we can’t just think about a single site,” ABC’s Migratory Bird Program Director, Andrew Rothman, says. “The birds need two kinds of habitat—mature forest, with young forest nearby. So we have to think about how these sites interact. We need to think about this at a bigger scale.”

Wood Thrush move between habitats on their nesting grounds. That relatively local movement is challenge enough for bird conservation. But when their full lifespans are considered, they and other migratory birds inhabit an almost incomprehensible amount of territory. Some species travel more than 4,000 miles

each way in their twice-yearly migrations. In addition to healthy habitat at both ends of that journey, the birds also require well-preserved “rest stops” during their travels. Some of these stopover habitats provide shelter and fuel for more than 200 species of migratory birds.

This is the origin story for BirdScapes, ABC’s newly launched answer to the essential question of migratory bird conservation: How do we save something with a range that potentially spans continents and may cross a dozen or more international borders? Put another

way: How do we save migratory birds when they just won’t hold still?

The solution, explains ABC’s Vice President and Chief Conservation Officer, Mike Parr, is to be selective. “Migratory birds are in all kinds of habitats. They’re in agricultural areas. They’re in the surrounding forest. They’re almost everywhere. We can’t properly conserve them by setting up small reserves, but we can’t protect absolutely every acre either. We have to define

How do we save something with a range that potentially spans continents and may cross a dozen or more international borders?



Landowners within BirdScapes are using a more bird-friendly approach to agriculture.



Cacao pod. Photo by loca4motion, Shutterstock



Coffee beans, Guatemala. Photo by loca4motion, Shutterstock



Hardwood tree plantation, Guatemala. Photo by FUNDAECO

landscapes that are big enough to make a difference, but manageable enough that we can deliver conservation and make change happen.”

This is the founding idea behind BirdScapes: Make them large enough to matter, but small enough to allow for effective conservation action.

### Defining BirdScapes

What, exactly, is a BirdScape? Put simply, BirdScapes are large-scale priority areas for habitat management to support the conservation of migratory birds. A single BirdScape could cover 150,000 to 2.5 million acres. It might include several habitat restoration projects, extensive working lands, and a handful of protected areas.

Like a watershed, a BirdScape is a landscape-level classification of habitat, and it may include whole towns and counties within its borders. But while watersheds are defined by the downhill and downstream flow of water, BirdScapes are defined first by the seasonal migration of birds.

Depending upon the regional threats to birds, a BirdScape’s conservation plan may call for planting trees, removing invasive species, or working with local farmers and landowners to establish more bird-friendly land-use practices. For example, in grassland areas this might include the implementation of ranching practices that support a diversity of grass heights through rotational grazing; financial incentives for bird-friendly herd management strategies; and the use of fencing and supplemental water sources to reduce impacts on streams and riparian habitats.

“You can think of a BirdScape as a way of delivering a project across a landscape,” says Parr, who explains that the borders of each individual BirdScape are drawn with pragmatism and compromise.

The designation of a BirdScape begins with the birds, but it does not end there. In addition to the birds’ habitat preferences and needs, ABC considers the location of existing and potential partner organizations—an essential ingredient for success—as well as the ability to effectively implement conservation projects in the region.

“It’s the junction of science and opportunity,” says Parr.

### Evolution of Migratory Bird Conservation

BirdScapes build upon similar approaches that have been proven successful, many of which ABC already supports as a partner. For example, the USDA’s Natural Resources Conservation Service—often in partnership with the National Fish and Wildlife Foundation—has already designated multiple areas for habitat management of priority species. Likewise, the Commission for Environmental Conservation—a trilateral intergovernmental organization that unites Canada, the United States, and Mexico on continent-wide conservation issues—helps prioritize landscapes for conservation through its Grassland Priority Conservation Areas project.

In the northern Great Plains, the Northern Great Plains Joint Venture and partners are collaborating to keep large swaths of grassland protected from agricultural development. And in Latin America and the Caribbean, the World Resources Institute is actively working to protect 20 million hectares by 2020 through its Initiative 20x20.

BirdScapes build upon similar approaches that have been proven successful, many of which ABC already supports as a partner.

Even within ABC, many of the pieces that make up BirdScapes have been in place for some time. In fact, all of the currently active BirdScapes (see map, p. 14) are set around areas where ABC has existing partnerships and projects. BirdScapes formalizes those programs and unites them in a hemisphere-wide approach that has already proven itself successful on a local scale.



Don Jose Mendoza releases a Golden-winged Warbler captured during a wintering research project in Honduras. Photo by Ruth Bennett, 2012



“We’re confident this is a good thing precisely because it is based on tried and true approaches,” explains EJ Williams, ABC Vice President for Migratory Birds and Habitats. “This is built on 20 years of work with migratory birds.”

But while many of BirdScapes’ tactics have been in place for years, the overall strategy—protect migratory birds throughout their full life-cycles, and especially on their wintering grounds—is new for both ABC and bird conservation overall. “This is very much an evolution that’s taking us from site-based habitat conservation to habitat conservation on a large scale across the landscape,” says Williams.

### From Maps to Boots-on-the-Ground

Guatemala’s Conservation Coast is one of the two dozen or so active BirdScapes. Here, ABC and lead partner FUNDAECO are working with landowners to implement forest-friendly agriculture. Agroforestry is no substitute for wild, primary forest, but it supports significantly more wildlife than crops often grown as monocultures, such as corn, oil palm, and sugar cane.

Shade-grown coffee is a well-known example of bird-friendly agroforestry, but ABC and FUNDAECO believe crops such as cacao, cardamom, rubber, black pepper, and sustainable timber also have potential to generate income for landowners and habitat for birds. Already, some local landowners—such as the Guatemalan King of Pepper—are benefiting from these new practices, which often bring a price premium at the market while restoring viable habitat for birds in the forests.

But, these successes—in Guatemala and at other Bird-Scape locations—do not start in the forest. Rather, explains Parr, they begin with a map. “First, we set a boundary. It’s based on a combination of bird data, topographic and political boundaries, and existing protected areas.” Then, once the BirdScape is defined in broad terms, the partners work together to create a land-use plan that accounts for the needs of all its stakeholders—landowners and birds alike.

Not every acre within a BirdScape can be protected, and this is never the goal. To identify priority areas for

conservation action, ABC and partners first disregard areas that are already well protected and do not require additional conservation efforts. Then, they eliminate the areas that are already too far gone, such as cities and towns and urban centers that are paved over and fully developed. The remaining landscape—that which is neither fully protected nor fully developed—is where ABC and partners focus their efforts.

“You take the data that you have, and you look to see where you can make the most positive change for birds,” says Parr.

The overall strategy—  
protect migratory birds  
throughout their full life-  
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conservation overall.

In this manner, ABC and FUNDAECO are defining priority areas within Guatemala’s Conservation Coast BirdScape. At the same time, they’re putting conservation efforts on the ground. Some lands will be set aside as demonstration sites for bird-friendly agriculture, such as shade-grown cardamom, cacao, and black pepper. Elsewhere, the partners will work with interested landowners to change over annual crops to sustainable agroforestry. And in some cases, ABC and FUNDAECO hope to unite landowners into cooperatives that might attract outside investment for crops that

require years to fully develop.

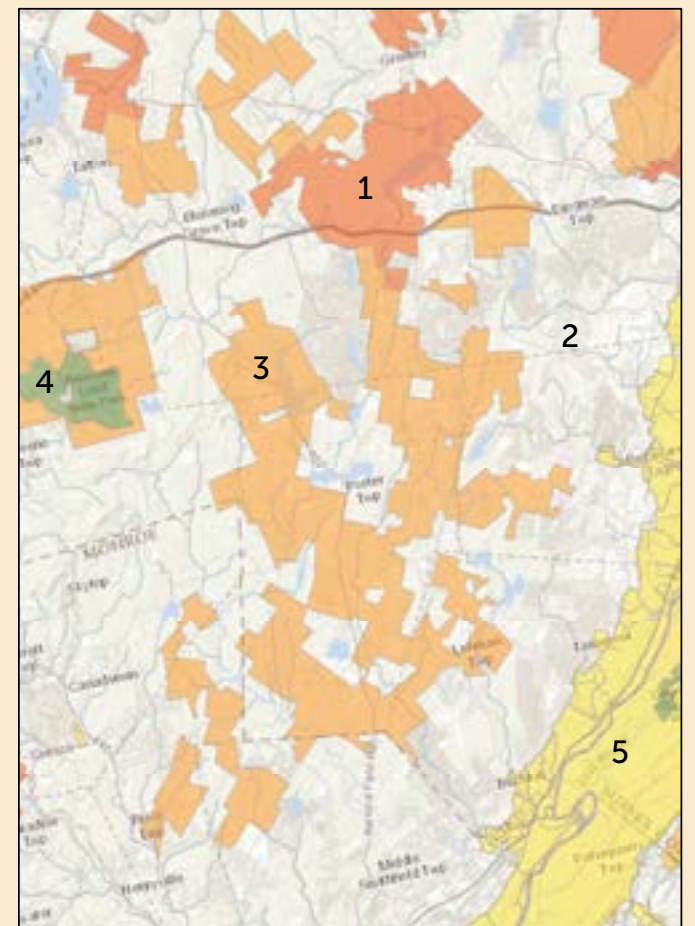
“Even cacao takes several years before it starts to return any kind of proceeds,” Parr explains. “So, if you’re a landowner, are you going to plant cacao? Or are you going to go with corn, which you can plant this year and get money out of this year?”

By bringing in outside investors, ABC and FUNDAECO hope to make it possible for landowners to plant high-returning but slow-yielding crops, such as cacao, rubber, and sustainable timber. “We’re trying to identify large enough amounts of production that might appeal to investors as a way to get non-philanthropic dollars invested in conservation and the production of more bird-friendly products,” says Rothman. “So, if we package together a large number of acres of long-term, sustainably managed timber production with, say, cacao underneath it, we may be able to engage fund managers who are looking for environmentally friendly products to serve their environmentally conscious members or investors.”

## THE POCONOS BIRDSCAPE: A Closer Look

The Poconos BirdScape is dominated by forests and wetlands and is home to several priority bird species, including Wood Thrush, Golden-winged Warbler, and Cerulean Warbler. A strong partnership among government agencies, universities, and private landowners is the foundation for a comprehensive approach to forest bird conservation. Several activities to benefit forest birds and other wildlife are ongoing in this BirdScape:

1. **Pennsylvania Game Commission** uses commercial timber harvest and non-commercial practices such as prescribed fire to create structurally diverse forest conditions across the more than 55,000 acres they manage in this region.
2. **ABC and Indiana University of Pennsylvania** assist USDA’s Natural Resources Conservation Service with the delivery of Working Lands for Wildlife and Regional Conservation Partnership Programs that target Golden-winged Warbler and Cerulean Warbler, respectively.
3. **Pennsylvania Department of Conservation and Natural Resources (PA-DCNR)-Bureau of Forestry** manages for forest age diversity across the more than 80,000 acres in this region, including a 2,500-acre Golden-winged Warbler Special Management Area.
4. & 5. **PA-DCNR State Parks and the Delaware Water Gap National Recreation Area** also provide considerable habitat and opportunities for bird conservation.



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

This is one of the potential advantages for BirdScapes. By working at such a large scale, ABC hopes to implement conservation solutions—such as investor-supported sustainable timber production—that would simply not be possible if attempted one property or landowner at a time. Likewise, BirdScapes allow ABC and our partners to find economies of scale, attract new funders and donors, and better share tactics and strategies across landscapes and continents.

“We will learn from each one as we go,” Rothman says. “But I think there are some baseline concepts that apply broadly, such as influencing land use and doing so in a way that’s going to be more beneficial to birds while also meeting the economic needs of local people. How that actually is done, I think, will vary from one BirdScape to another.”

Twenty-one of those BirdScapes have already been identified—including the Poconos BirdScape in Pennsylvania where Wood Thrush raise their young

and where the idea for BirdScapes first took flight. These same Wood Thrush may winter on Guatemala’s Conservation Coast, in the trees that support the shade-grown vines that have made one man a de facto king of black pepper. More—many more— BirdScapes will be added in the years to come.

*ABC’s conservation efforts at the Guatemala Conservation Coast BirdScape are made possible thanks to the generous support of the March Conservation Fund through the Latin American Reserve Stewardship Initiative, and also from the Jeniam Foundation.*



*Cristina Santiestevan is an independent writer and editor committed to sharing stories about nature and conservation in today’s world. She has written about the ecology of gardens, the myriad impacts of climate change and habitat loss, and the surprising conservation value of whale poop. Visit her blog at [outlawgarden.com](http://outlawgarden.com).*



# Stopping Over:

## Learning What Birds Need on Migration

By Ken Rosenberg, Nick Bayly, and Camila Gómez

*Migration is possibly the riskiest activity many birds undertake in their lives, and yet billions of birds representing nearly 300 species migrate between North America and tropical regions to the south every spring and fall.*

Sierra Nevada de Santa Marta landscape by Larry Thompson



We need to  
better understand  
migratory birds'  
needs once they  
leave North America.

Gray-cheeked Thrush by Barth Schorre

Their twice-yearly journeys can span thousands of miles and are fraught with dangers and unfamiliar places. Evolution and adaptation minimize some risks but work too slowly to help species respond to today's rapidly changing conditions—such as habitat loss and the effects of climate change.

Human population growth, and the associated increase in development and demands on natural resources, has put tremendous pressures on the habitats needed by migratory birds throughout the Americas. As a result, the number of migratory birds is declining year after year. It's part of a disturbing global pattern, raising concerns that the phenomenon of migration—and the capacity of our ecosystems to support it—could disappear.

We cannot speed a species' evolutionary response to threats from land use or climate change, but we can help slow or reverse the spread of those threats. First, however, we need to better understand migratory birds' needs once they leave North America.

### Partners in Conservation

In July 2016, the Cornell Laboratory of Ornithology (CLO) and ABC signed an agreement establishing the ABC-CLO Science to Conservation Action Partnership. Through this partnership, the organizations are uniting CLO's science with ABC's conservation approach in a joint effort to address the decline of migratory birds in the Americas.

One of the partnership's initial collaborations employs new research from the Neotropical Flyways Project, which is led by SELVA in Colombia and aims to

identify critical stopover habitats for migratory birds. CLO and ABC will use that data to help guide investment in effective conservation strategies. Among other things, this effort will provide essential information as ABC identifies new BirdScapes locations.

### What Happens South of the Border?

Many of North America's migratory bird species spend much of their time in Mexico and farther south—either on their wintering grounds or in transit between them and their more northerly breeding grounds. For example, many species of warblers, thrushes, tanagers, and cuckoos traverse vast stretches of the Caribbean Basin or Central and northern South America to reach their wintering grounds in the Andes, the Amazon Basin, or even farther south.

In spite of this large area's critical importance to birds, we know very little about where, when, and why migratory landbirds stop in the Neotropics (the region that extends from southern Mexico through Central America and the Caribbean, and into South America). Our knowledge of migration is biased by studies that focus on the United States and Canada. As a result, the Neotropics have been described as a "black box" in our knowledge of bird migration, holding essential secrets to which we don't yet have access. That glaring knowledge gap limits our ability to design effective conservation strategies for all stages of migratory birds' annual life-cycle.

### The Need for Knowledge

In no area of migratory birds' life-cycle is our understanding so limited as in stopover habitats.



The partners have made it a conservation priority to identify and protect the tropical habitats that sustain migration for some of North America's most-loved species.



LEFT: Red-eyed Vireo by Tim Zurowski, Shutterstock. RIGHT: Blackburnian Warbler by Gerald A. DeBoer, Shutterstock

We know that these sites provide crucial resources: food that fuels their long-haul flights, safe places to roost and rest, and somewhere to ride out unfavorable conditions or events such as the tropical storms that sometimes rage through the Caribbean during fall migration.

Like links in a chain, these stopover sites sustain birds' remarkable long-distance migrations. They are typically resource-rich—some birds literally double their body weight at these sites, building fat stores that will sustain them as they fly thousands of miles across continents and oceans.

Researchers long thought these refueling stops could be made at any point along the birds' migratory journeys, but recent studies suggest otherwise. We now know that individual birds often take long, multi-day breaks at just three or four key points during their migration.

These findings highlight an urgent need to re-evaluate how we approach the conservation of migratory birds, and especially how we think about their needs during migration. This need is especially apparent in the Neotropics, where the funnel-shaped geography of Mexico and Central America acts as a bottleneck, concentrating millions of migratory birds. SELVA,

ABC, and CLO have made it a conservation priority to identify and protect these tropical habitats that sustain migration for some of North America's most-loved species.

It's time to open the black box.

### A Peek Inside the Black Box

What we do know about stopover sites reinforces just how important these Neotropical regions can be to the survival of migratory birds. For example, Purple Martin, Swainson's Thrush, and Wood Thrush all make extended fall stopovers on the Yucatán Peninsula. And geolocators—tiny tracking devices that use light levels to approximate a bird's location—have revealed that both Red-eyed Vireo and Swainson's Thrush make long refueling stops in northern Central America.

Recent studies by SELVA in the Sierra Nevada de Santa Marta—an isolated mountain range on Colombia's Caribbean coast—are even more striking. The region contains an exceptional concentration of resident birds found nowhere else. But we now know the area provides essential habitat for Red-eyed Vireo, Gray-cheeked Thrush, Blackburnian Warbler, and Tennessee Warbler during their spring migration. Veery also stop here for as many as nine days in the fall, increasing their

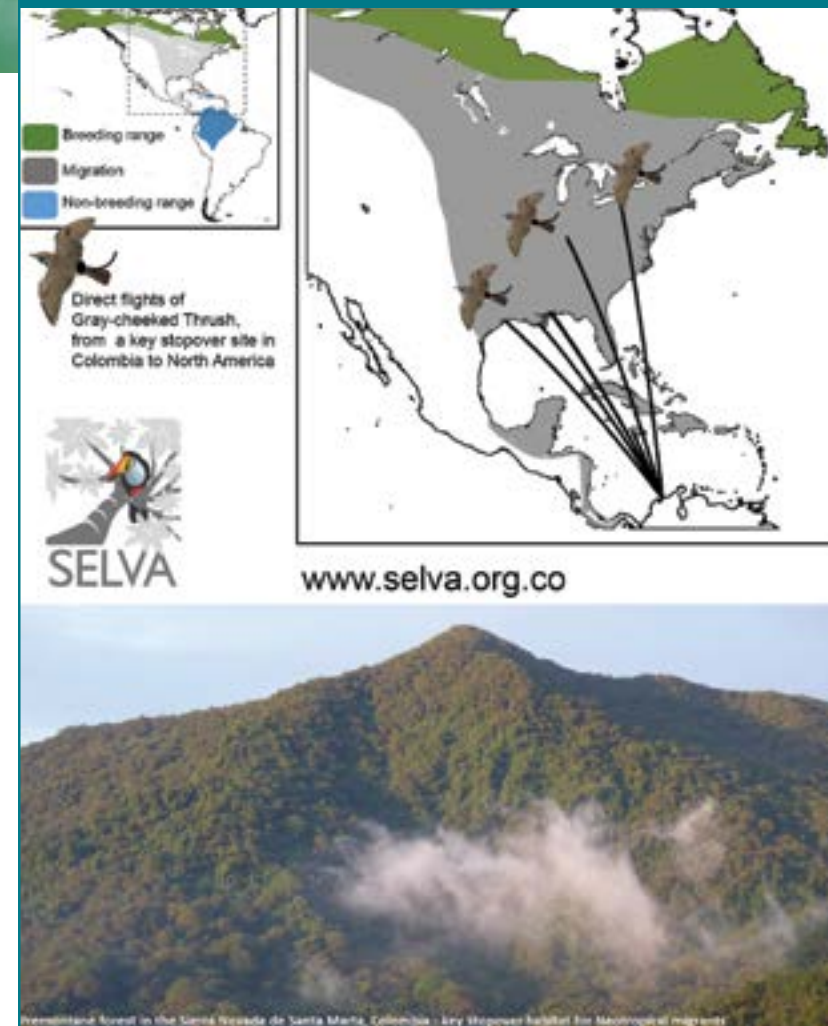
body mass by approximately 30 percent. These impressive energy stores will sustain them on their long flight to their Amazonian wintering grounds, a distance of more than 1,200 miles.

The story of the Gray-cheeked Thrush illustrates the crucial importance of these stopover sites. This species makes a marathon journey each spring from the tropical forests of Amazonia to the northernmost extent of Canada's boreal forest and sometimes as far as Siberia. In the fruit-rich forests of Colombia's Sierra Nevada de Santa Marta, the thrushes build fat reserves during two weeks of frenzied feeding before crossing the Caribbean Sea. Radio transmitters reveal that many of the thrushes fly nonstop for up to 2,000 miles after departing the Sierra Nevada de Santa Marta, safely flying over the Caribbean and the Gulf of Mexico to reach the heart of North America. (See map on next page.)

Studies in Colombia offer other key lessons. For example, we now know that migratory landbirds are far more abundant in certain stopover habitats than in others and that different habitats provide different fueling opportunities for



### Gray-cheeked Thrush Migratory Routes



birds. Variations in habitat quality and food availability can make the difference between individuals successfully crossing a water barrier, needing to take a longer route or make additional stopovers, or—worst of all—running out of fuel while over water.

### Protecting the Stopover Habitats

As researchers are learning about the importance of certain tropical regions for migration, new concerns are being raised about threats to specific sites and vital habitats. Habitat loss continues to be the leading threat to migratory bird populations throughout their ranges. When birds are highly concentrated during migration, loss or degradation of critical habitats for them may contribute disproportionately to overall population declines.

TOP: Gray-cheeked Thrush by Mike Parr, ABC





Much of the research to date indicates that many landbirds stopping over in the Neotropics rely on native forests, from the foothills of the Sierra Nevada de Santa Marta to lowland tropical wet and dry forests along the coasts. Yet across the Neotropics, these forests are under severe threat from expanding agriculture and development; several of the major stopover regions identified to date are experiencing high rates of deforestation.

The deadly effects of collisions with buildings, communication towers, wind turbines, and other structures may also be magnified in these areas where millions of birds congregate. We know that astounding numbers of birds—up to one billion a year—are thought to perish through glass collisions in North America alone, but we don’t yet have equivalent data from the Central American bottleneck and other important migratory corridors. The loss of life here may be as great—or greater—than that experienced in North America. Meanwhile, urban and resort development along coastlines, along with a proliferation of wind-energy and communications infrastructure, pose major challenges for migratory bird conservation.

We have only scratched the surface when it comes to the needs of migratory landbirds. While continued and future research will reveal additional secrets from the black box, some habitats and regions are so threatened that we cannot afford to wait.

Despite our growing understanding of migratory strategies and stopover use, as well as the various threats birds face, we have only scratched the surface when it comes to the needs of migratory landbirds. And while continued and future research will reveal additional secrets from



Ken Rosenberg (shown) is Applied Conservation Scientist at the Cornell Lab of Ornithology and is leading the ABC-CLO Science to Action Partnership. Nick Bayly and Camila Gómez have led SELVA’s migratory bird research program since 2009 and hope to uncover many more secrets through the Neotropical Flyways Project.

LEFT: A guard at the Buenaventura Reserve, Ecuador, holds a dead Bay-headed Tanager, a victim of a window collision. Photo by Benjamin Skolnik. RIGHT: Deforested habitat in Colombia. Photo by Larry Thompson

the black box, some habitats and regions are so threatened that we cannot afford to wait.

This is why CLO and ABC are working together with SELVA to incorporate what we already know into full life-cycle bird conservation plans, and to put these plans into action through BirdScapes. (See page 14 for map.) It’s also why we join together with partners on the ground across the Neotropics—partners like SELVA, FUNDAECO, Pronatura Noreste, Fundación Jocotoco, and many others—to ensure our conservation actions are sustainable over the long term.

Saving the great avian migration of the Western Hemisphere requires nothing less than this large-scale, highly collaborative effort. Because losing migration is a risk we cannot afford to take.



# Through the Bottleneck

By Jennifer Howard

New technology and boots-on-the-ground research help biologists better understand when and where migratory birds travel around the Gulf of Mexico

As a teen in Nashville, Emily Cohen did plant surveys for a local nature center. But the work she loved best—like volunteering at a banding station—involved birds. After college, her training took her from Tennessee to Maine, California, Hawai’i, and ultimately Costa Rica, where she studied thrushes in agricultural landscapes for her master’s degree.

Then, as a Ph.D. student, Cohen studied migratory songbirds passing through Louisiana and Mississippi. That led her to the Smithsonian Migratory Bird Center, where she’s now a Research Associate working on migration biology and especially with birds migrating across or around the Gulf of Mexico. Some of her work takes place at The Nature



Conservancy’s Clive Runnells Family Mad Island Marsh Preserve on the Texas coast, where Emily and her colleagues band and assess some of the millions of migratory birds that pass through every spring.

ABC’s Jennifer Howard caught up with Emily to learn more about her work for migratory birds.

**Jen Howard (ABC):** You specialize in “migratory connectivity.” What is this, and why is it important to study?

**Emily Cohen (Smithsonian Migratory Bird Center):** Migratory connectivity is the study of how populations are linked between seasons. Take Ovenbirds that breed in Maryland, for example. Where do they spend the winter and what routes do they take for spring and fall migration? You really need to have that information to understand how specific populations are doing.

LEFT: Prothonotary Warbler by Danielle Aube, Smithsonian Migratory Bird Center. TOP: Coastal chenier forests are important stopover habitat for birds crossing the Gulf of Mexico. Shown is Chenier au Tigre, Vermilion Parish, Louisiana. Photo by Erik I. Johnson, Audubon Louisiana





**JH: What questions are you trying to answer through your research?**

EC: We're focused on the Gulf of Mexico as a bottleneck for migratory landbirds—one they have to move through every spring and fall. We're trying to understand the extent to which events that occur during migration might influence breeding populations of these species.

We compare data from multiple sites, so we can look at the distributions of bird populations not just at a single site but around the Gulf. Our work started with Mad Island, but we've expanded from that banding site to also using tracking, Cornell Lab of Ornithology's eBird data, stable isotopes, and weather radar to detect migrants. This is just a super-exciting time to be studying migration biology, because we have all of these new technologies as well as better and better analyses.

**JH: How does weather radar help you understand bird migration?**

EC: Weather predictions are based on information from stationary radar stations that collect data 24 hours a day. What's cool is

that weather radar also picks up biological elements. When radar stations shoot out those radar beams, they also hit insects and birds moving through the airspace. So we do the opposite of what meteorologists do—we filter out the weather and look at the birds.

We're using data from 12 radar stations—from the Florida Keys to Texas. The data go back 20 years. It's probably the largest dataset of animal migration in the Western Hemisphere, and it's freely available.

**JH: What do you do with that data?**

EC: If you get the correct time, right after sunset in the evening, that's when birds are lifting up out of the habitat and flying into these radar beams. From that, you can find the stopover habitat they're coming out of. So we can build maps of where migrants are using habitat around the whole U.S. Gulf Coast during spring and fall.

We're also looking at airspace as habitat. We can use the radar beam that's pointed upward to look at where birds are moving through the

air, where the flight corridors are, and what characteristics of the air make it good habitat.

**JH: What do you mean by "airspace habitat?"**

EC: It's easier for us to think about how the landscapes are changing—from climate change, pollution, and habitat destruction or degradation from human activity—but the airspace is also changing. We're building and adding artificial light and radio and cellphone towers. It's really exciting to think about putting those pieces of the puzzle together.

**JH: Are there limitations to the radar data? And how does it fit in with the other techniques and kinds of data you use?**

EC: You can't identify individual species with weather radar data, but we can get that information in other ways. One way is by working with eBird data to model species-specific data around the Gulf. Collected by citizen scientists, this data tells us about species distributions, when those species are moving, and which habitats they prefer.

We collect data from three different banding stations—in Texas, Florida, and Louisiana—during spring migration. The objective is to find out more about these birds that passed through these three areas.

And we use stable isotopes that we get from the feathers and toenails of the birds we catch. We pull one feather and analyze the values of deuterium—a hydrogen isotope—which varies according to the birds' breeding latitudes. The hydrogen value in that feather is a signature of where the birds are going. It's not perfect. It's not going to tell you Bethesda versus Baltimore. But it tells

you the latitudes they are headed to—Maryland or the boreal forest.

So the radar data gives us distribution—where the migrating birds congregate in stopover and airspace habitat around the Gulf Coast. The eBird data looks at species distribution as a companion to the weather radar. Isotope data tells you which populations within that species occur in certain areas. And the banding data that we collect at Mad Island and elsewhere gives us information about passage timing and the condition of individual birds.

**JH: Tell us more about Mad Island—why is that stopover habitat so important?**

EC: The flight across the Gulf of Mexico is a 15-to-20-hour flight, so many birds arrive very skinny. They land for a day or two to refuel. It's critical for them to be able to refuel quickly and safely so that they can continue their journey to arrive at their breeding sites in good shape. Those birds do better.

We get some birds that are like little butterballs, because they have fat stored all around their body for long flights. And we also catch birds that are super-skinny. Once they burn all the fat when they're on a sustained flight, they start burning muscle. When we catch those super-skinny birds, we don't hold onto them long, because they really need to get back in that habitat and refuel. That's why high-quality habitat like Mad Island is so critical.

**JH: Can you give an example of other stopover habitats?**

EC: In Louisiana, there are patches of coastal chenier forest of live oak and hackberry that are like islands for migrants. On one side of these



"The data we collect at Mad Island and elsewhere gives us information about passage timing and the condition of individual birds."

Wood Thrush by Danielle Aube, Smithsonian Migratory Bird Center

forest patches is the Gulf of Mexico and on the other side is miles and miles of open marsh. These oak and hackberry forests are really important habitat for birds recovering from and preparing for the long flight across the Gulf of Mexico.

**JH: Is migration biology a relatively unusual or new thing to study?**

EC: According to our recent review of the animal ecology literature, the majority of bird studies still occur during just one part of the life-cycle: the breeding season. That bias is limiting our ability to understand why so many of our migratory populations are declining. We need to understand how populations

are affected by events that occur throughout their full annual life-cycle—during migration and in the winter, as well as during the breeding season.

Take a migratory species that flies from Michigan down to Texas and then over the Gulf of Mexico to spend the winter in Belize, and then back in the spring. What happens over the winter and during those migratory journeys can limit populations through mortality, or influence the survival or condition of birds during later phases of their annual cycle.

We need to understand not just where a population is moving during migration but also when—early or late in the season. We have hurricanes and floods, for example, that come through the Gulf Coast at different times. And even regular habitat characteristics change depending on the time of the season. In the early fall, you might have abundant food when some plants are fruiting, and then later in the season not so much. To understand if or how these events contribute to population declines, we need information about the spatial and temporal distributions of species and populations throughout the annual cycle.

What's going on during these journeys is the final frontier for migratory bird biology. We're using all these established and emerging tools, and figuring out so much exciting information right now!



Jennifer Howard is Director of Public Relations at ABC. She was a writer and reporter with The Chronicle of Higher Education for 10 years and before that was a contributing editor and columnist with The Washington Post. Follow Jen on Twitter at @JenHoward.





# the Piecing Together BirdScapes Puzzle

*Yellow-billed Cuckoo and how BirdScapes come together one puzzle-piece of research at a time*

By Cristina Santiestevan

Once, the Colorado River roared mighty enough to sculpt the Grand Canyon. It poured more than 5.3 trillion gallons of water into the Gulf of California every year. Nurtured by its waters, riparian forests stretched far into the surrounding countryside along either bank of the river.

But the Colorado River has been tamed, its waters dammed and diverted and domesticated for human use. The river's once-wild waters now irrigate fields in California, fuel more than a dozen hydroelectric dams along its length, and fill drinking glasses for approximately 40 million people throughout the Southwest. The river is so heavily diverted that it often dries out completely before reaching its natural delta where Baja California joins the mainland. The river is literally being sucked dry.

In many ways, this is the story for every body of water throughout the Southwest. The mighty Colorado River might be the grandest of the mix, but every stream in the region tells a similar tale. "We've had such decimation," says David Younkman, ABC's Vice President, Western Region. "Ninety-five percent of the streams in the Southwest have been destroyed or degraded."

As the streams and rivers dry, their once-vast riparian forests contract closer and closer to their shores. Where cottonwood and willow once stood dense in mixed-age groves, now there is often nothing but salt cedar or worse—nothing at all. The consequences are felt at every level in the ecosystem, from the smallest insects to the birds that prey upon them and even the people who would watch those birds.



Colorado river by Linda Armstrong, Shutterstock

"There are more Watch List species in the West than in any other region of the continental United States," says Younkman, referring to the list of priority-for-conservation bird species that is compiled every few years as a part of the State of the Birds report. "You can't take away all that habitat and expect the birds to remain."

## A Most Unusual Bird

Recently, one patch of southwestern riparian habitat has been restored to resounding success, explains John Stanek, a wildlife biologist with the Southern Sierra Research Station (SSRS) in California's Kern River Valley just south of the Sequoia National Forest. "The Bureau of Reclamation has started creating habitat along the Lower Colorado River. They planted more than 2,500 acres of cottonwood and willow—most of it in rows—and it worked better than anybody could have expected. It's been highly successful for Yellow-billed Cuckoos. It's the largest population of cuckoos in the state of California right now."

Yellow-billed Cuckoo—a State of the Birds Watch List species that recently received Endangered Species list status for its western population—is a priority for both Stanek and ABC. The western population once nested as far north as southern Canada, but for reasons that are still not completely understood, has slowly contracted its summer range.

"We're seeing fewer and fewer cuckoos every year," says Stanek, citing an 85 percent decline in western Yellow-billed Cuckoos in the Kern River Valley in just the past four years. "There is still habitat that looks good in Washington and Oregon and California; there just are not enough birds to populate





Yellow-billed Cuckoo by Rolf Nussbaumer Photography  
Alamy Stock Photo

all those areas anymore. The population is literally contracting toward the center.”

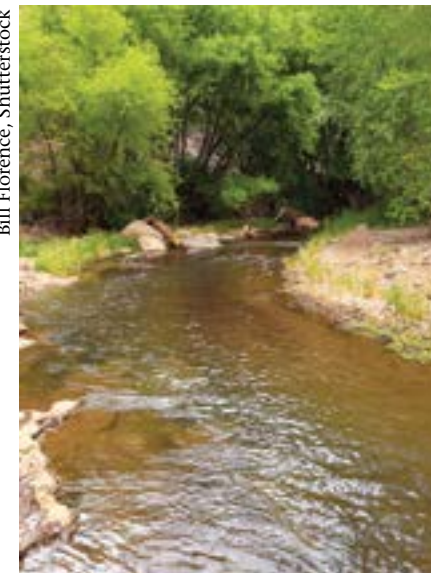
That decline will earn the species a place or two on ABC’s BirdScapes map, just as soon as ABC and partners learn enough about the secretive birds to effectively identify lands for conservation. “The southwestern riparian system is being developed as BirdScapes in both California and the Arizona region right now,” says Younkman. “We have been working for quite a while in the region and have mapped out some of the best habitats. This stuff just takes a long time.”

That “long time” can stretch even longer when dealing with a species like the western Yellow-billed Cuckoo. Put simply, these are unusual birds. They are polyandrous—the females may take multiple mates, abandoning first one and sometimes a second mate to care for their chicks while starting another nest with a new male. They breed quickly, fledging chicks just 15 or 16 days after laying the first egg in a clutch. And they migrate so gradually that they may ultimately require more protected stopover sites than many other migratory species.

“They sort of saunter,” says Younkman. “They will spend a few weeks in one place before moving on to the next stopover site. We think they’re following food availability, the flush of insects.”

Added to this is an elusiveness that befuddles researchers and birders alike. Yellow-billed Cuckoos actively avoid detection. They will literally hide from observation if they detect a person nearby, says Stanek: “I’ve had standoffs with cuckoos.

Bill Florence, Shutterstock



BirdScapes in the southwestern riparian system will ultimately contribute to the conservation of western Yellow-billed Cuckoo. They are among many sites now in the planning phases.

Once, I sat there in the heat and I waited for an hour. That bird didn’t move. I was tracking it with a radio antenna; I knew it was in the tree, but it just wouldn’t move. I finally gave up. It was hot. I went down to have lunch. And as I was walking away, I swung the antenna back to where the bird was, and it was moving again. That bird was watching me watch it.”

### Filling in the BirdScapes Map

BirdScapes in the southwestern riparian system will ultimately contribute to the protection of western Yellow-billed Cuckoo. They are among many sites now in the planning phases.

In launching a BirdScape, the first question is always the same, explains ABC Senior Conservation Scientist, David Wiedenfeld: “Where are the birds?” From here, ABC and partners begin asking and answering the questions that will guide the placement of a BirdScape and dictate its ultimate conservation plan. Additional factors are also considered, such as the location of current or potential partners, any political or financial limitations or opportunities, safety concerns, and any other factors that might impact the ability to implement effective conservation on the ground.

“We start with biology,” says Wiedenfeld. “But there is also a lot of subjectivity. Why draw the boundary at this place rather than that place? Why include this particular area and not that one? What do we want to accomplish on this particular patch of land? Are there people interested in helping in this area?”

Even the simplest of those questions—Where are the birds?—is difficult to answer with a species like western Yellow-billed Cuckoos. “They’re so shy and secretive,” says Stanek. “Unless you’re specifically looking for cuckoos, you may not know they are there.”

In 2012, Stanek’s colleagues, SSRS biologists Shannon McNeil and Diane Tracy, placed their first geolocators on the backs of several western Yellow-billed Cuckoos. The following year, they recovered just one with usable data. This was the first time SSRS had been able to look at the cuckoo’s full migratory journey. In the five years since deploying those first geolocators—which use light levels to estimate a bird’s location and can have a margin of error of hundreds of miles—Stanek’s colleagues have





## PUTTING BIRDSCAPES ON THE MAP

By David Wiedenfeld, ABC Senior Conservation Scientist

Each year, as spring's green leaves unfurl from south to north, migratory birds begin returning to their summer homes. Among these are two priority species for ABC and for BirdScapes—Long-billed Curlew and Golden-winged Warbler.

Betty Rizzotti



### Long-billed Curlew

Many grassland birds—including the Long-billed Curlew—summer in the northern Great Plains, where ABC's Northern Prairie BirdScape works to protect the natural grasslands they need for nesting. The birds then fly south to Mexico's grasslands, where ABC's El Tokio and Valles Centrales BirdScapes partner with Pronatura Noreste to protect their wintering habitat.



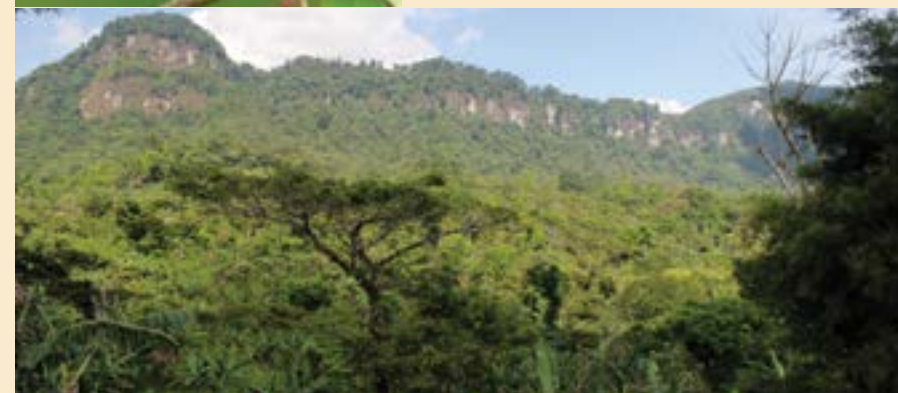
Loma del Gorrión is a property in Mexico that is part of the El Tokio BirdScape, where some Long-billed Curlew populations winter. Photo by Aditi Desai, ABC

Lynda Goff



### Golden-winged Warbler

Several active BirdScapes support breeding populations of Golden-winged Warblers in the United States. But, as with many migratory birds, Golden-winged Warblers spend half or more of the year south of the border. To help protect them every month of the year, ABC has also identified BirdScapes within the warblers' wintering habitat in Guatemala, Honduras, and Nicaragua.



Wintering habitat used by Golden-winged Warblers in Nicaragua. Photo by Andrew Rothman, ABC

switched to using GPS devices that actually record each tracked bird's exact location with an accuracy of a few yards.

"We now know the cuckoos spend two months migrating, and that they winter in the Gran Chaco region of Bolivia, Paraguay, and Argentina," says Stanek. "We had no idea. And that brings up the next point: We really don't know what's happening on their wintering grounds, where they spend six months of the year. That might be where conservation dollars have to go to preserve cuckoos in the United States."

Cornell's citizen-science powered bird tracking platform—eBird—also helps. Birders and biologists alike can record their observations of Yellow-billed Cuckoos or any other bird they see. The data helps biologists refine range maps and better understand the seasonal movement of migratory birds.

These observations support Stanek's concerns about a shrinking range for western Yellow-billed Cuckoos: "If you log on to eBird and look at the western Yellow-billed Cuckoo records for last summer alone, you'll see that the majority of those observations were in Arizona and New Mexico. There were just barely any observations anywhere else."

On a quest for answers, McNeil and Tracy recently embarked on a months-long journey to visit the GPS data points collected from their tagged birds. "They're going to get a first-hand account," says Stanek. "They're going to network with people and try to figure out what's going on down there." The results from this journey may ultimately help ABC site one or more migratory or wintering-ground BirdScapes for western Yellow-billed Cuckoos. In the meantime, McNeil and Tracy will be posting updates from their





expedition on the “Cuckoo Tracks” Facebook page.

### Habitat and Beyond

Data points on a map are essential, but they are not sufficient. To effectively conserve western Yellow-billed Cuckoos and other migratory birds, ABC and its partners must identify the what as well as the where: What threats are these birds facing on their journeys? What speeds their decline or limits their recovery? What can be done to help?

This is where the puzzle of the western Yellow-billed Cuckoo currently sits. With the help of geolocators, GPS devices, and eBird data, biologists now know approximately where and when the birds can be found on a map of the Americas. To refine that knowledge and better understand fine-scale habitat use, Stanek and his colleagues use radio telemetry and color-coded leg bands to track and identify individual birds on their summering grounds.

“This allows us to track a bird without directly impacting its actions and movements,” explains

Stanek. “From this, we are able to get territory sizes. We are able to find nests. We are able to see when a bird will leave the nest.” This is how SSRS biologists discovered female cuckoos’ infidelity and mate abandonment. This is how they learned that the birds assess an area for habitat, food, and potential mates before settling down to a core territory. And, by comparing field observations with genetic analysis, this is how they discovered that it is the females who call to solicit mates—adding one more fact to the list of many that set Yellow-billed Cuckoos apart from most other migratory birds.

What comes next? Stanek and many others are concerned about pesticides—especially the neonicotinoid pesticides that have proven to be fatal to bees (and which ABC research has established as toxic to birds). Specifically, they’re concerned about potential impacts on western Yellow-billed Cuckoo food resources. “They are a large prey item specialist,” says Stanek. “Large caterpillars. Katydid. Cicadas. Tree frogs. Lizards. But

Stanek and many others are concerned about pesticides and their potential impacts on western Yellow-billed Cuckoo food resources.

nobody studies caterpillars when they’re studying cuckoos. We should be doing that, too.”

The question of pesticides is alarming, but also presents an area where ABC’s BirdScapes may be most helpful, says Younkman: “Because BirdScapes are place-based, we can really get down to the specifics. A certain pesticide may be bad—lots of them are for birds—but the specific farming practices used in one county may be very different from another. So the way you address the pesticide use may vary by location. You can’t do that at the national level. I have hope that, in some cases, the specificity of BirdScapes sites will allow us to move forward in a way that we might not be able to at a national level.”

### One Piece at a Time

As of yet, the western Yellow-billed Cuckoo’s map is still an incomplete puzzle. Some pieces have been clearly identified. Biologists know the habitat the cuckoos prefer for nesting and raising their fledglings, and even know how to effectively make more of it. But habitat is not enough. The birds also need food to eat and safe stopover sites and wintering grounds to sustain them during the nine months they are away from their nesting grounds.

Younkman is optimistic. “We could be getting started in these



Greg Homel, Natural Elements Productions



Southwestern BirdScapes will help to conserve the cuckoo and other species such as the endangered Least Bell's Vireo.

BirdScapes this year.” But, he acknowledges it could also take longer. In addition to some lingering questions of biology and conservation—for example, habitat restoration projects work in some places, but not others—there are also questions of capacity and funding. “Somebody has to give us money,” he jokes. In the meantime, Younkman hopes to create more managed, suitable habitat for cuckoos on their breeding grounds, while simultaneously seeking answers about pesticides, migration, and wintering habitats.

“Planting trees and growing new habitat really worked for attracting cuckoos,” says Stanek, referring to the Bureau of Reclamation’s Lower Colorado River Multi-Species Conservation Program’s land restoration projects. “But what it really did was create an optimal area for bugs, for these large prey

TOP: Riparian habitat throughout the southwest provides important habitat for western Yellow-billed Cuckoos and a wide variety of other bird species. Photo of Aravaipa Creek, Arizona by Bill Florence, Shutterstock

items. That was not a focus of the project—and it is still not entirely well understood because nobody went out and monitored and counted large insects—but you go out to these restoration areas at night, and it’s deafening with the sound of insects.”

And perhaps this is the answer. Or, one of several. Restore habitat for the birds and their prey. Address issues of pesticide contamination where possible. Identify and protect several stopover and wintering sites. And continue to ask more questions and seek more answers. And, one puzzle-piece of research at a time, the BirdScapes map for western Yellow-billed Cuckoos—and other species—will become clear.



# Protecting the Rarest (Non-Migratory) Birds

By Daniel Lebbin

For the more than 200 bird species in the Americas that are endangered or critically endangered, well-managed reserves function as a safety net against extinction. Making sure that those species get such protection continues to be a driving force behind ABC’s work throughout the United States, Latin America, and the Caribbean. With our partners, we have already protected more than 996,200 acres of bird habitat across 70 reserves and nine conservation easements. We have also planted 5 million trees and shrubs to enhance and restore habitat.

But protecting land is often not enough. Invasive species and the illegal wildlife trade also pose major threats to many at-risk species. ABC and multiple partners have developed a number of strategies in response. For instance, ABC worked with partners to translocate threatened Millerbirds from Nihoa in the Northwestern Hawaiian Islands to Laysan, establishing a new population of these birds. With partners, we translocated Newell’s Shearwater and Hawaiian Petrel nestlings to new colonies within predator-proof fencing on Kauai. Again working with partners, we trapped invasive predators threatening the White-breasted Thrasher on St. Lucia and worked to reduce parrot trafficking in Bolivia.

Only a few of North America’s migratory birds, such as the Whooping Crane and Tricolored



In the Dominican Republic, our work with the Sociedad Ornitológica de la Hispaniola and the government to improve management of Bahoruco National Park protects resident species such as the endangered La Selle Thrush and preserves a critical site for wintering Bicknell’s Thrush.



TOP: La Selle Thrush by Dax M. Roman;  
BOTTOM: Bicknell’s Thrush by Jacob Spendelow



Daniel Lebbin is Vice President of International Programs for ABC. Daniel has participated in field research projects in Jamaica, Costa Rica, Ecuador, and Venezuela. A lifelong birder, Daniel enjoys bird illustration and photography. He co-authored The American Bird Conservancy Guide to Bird Conservation.

Blackbird, are endangered or critically endangered. But in many places where ABC works, wintering migrants and the rarest non-migratory species occur together. Some of these sites are of real significance to migrants. This means that the conservation actions we take for the rarest species benefit our less-threatened migrants as well.

For example, habitat restoration work with our partner Pronatura Noreste in Mexico’s Chihuahuan Desert grasslands benefits wintering migratory birds such as Sprague’s Pipit and Baird’s Sparrow—and also helps the endangered resident Worthen’s Sparrow. In the Dominican Republic, our work with the Sociedad Ornitológica de la Hispaniola and the government to improve management of Bahoruco National Park protects resident species such as the endangered La Selle Thrush—and preserves a critical site for wintering Bicknell’s Thrush.

Not all sites that harbor the rarest birds also support migratory species, and not all of the best areas for migrants also shelter the rarest of the rare—but many sites benefit both. ABC and our partners will continue to do everything we can to protect the most important sites in the Americas for endangered species.

Because, as always, ABC works where the birds need us most.



## Make Your Legacy a Better Future for Birds

Are you concerned about some of the more negative future scenarios for bird conservation? Things such as a rollback of the Endangered Species Act, a reduction in the Environmental Protection Agency’s ability to regulate pesticides, and the possibility of the sale or development of public lands important to birds?

Rest assured that ABC will stand up for birds and fight these worst-case scenarios to make sure that they don’t set bird conservation back now and for the future. **You can help by including ABC in your estate plans with a legacy gift.**

Currently there is a risk Congress may slash funding for bird conservation programs. Tomorrow may bring additional challenges. The needs for birds are as great as they have ever been; threats including habitat loss, invasive species, pesticides, and climate change rise swiftly. Your dedication to the future of bird conservation by naming ABC as a beneficiary of your will, trust, retirement, or insurance plans grows in importance: Your estate gift will make a crucial difference as we stand together for the betterment of birds for years to come.

If you would like more information on how to join ABC’s Legacy Circle with an estate gift, or if you have already included ABC in your estate plans, please contact Jack Morrison, ABC Planned Giving Director, at **540-253-5780** or **[jmorrison@abcbirds.org](mailto:jmorrison@abcbirds.org)**.

Bald Eagle by Ondrej Chvatal, Shutterstock





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Searching for Blue-throated Macaw nests during a research expedition into Bolivia's Beni Savanna. Photo by Tjalle Boorsma, Asociación Armonía, February 2017

