The INSTITUTE for BIRD POPULATIONS

# MAPS Chat

The annual newsletter of the Monitoring Avian Productivity and Survivorship Program

Number 21 March 2021

## Thank you MAPS banders for your contributions to science and conservation

by Meredith Walker

As MAPS banders, you roll out of bed in the pre-dawn blackness to unfurl nets with chilly fingers, delicately extract tangled birds, carefully measure them and closely examine their feathers. Despite the interrupted sleep, the banding season often flies by and soon we're all back to visiting with birds only at a distance. Beyond the friendships with fellow bird-lovers and happy memories of up-close encounters with birds we love dearly, it's the data, carefully recorded on gradually filled datasheets, that endures.

We know you work hard to collect these data and it's well worth the effort. The MAPS database is an amazingly powerful resource in the effort to conserve birds. MAPS is the only large-scale, long-term monitoring program that collects the data necessary to estimate the vital rates of North American bird populations such as productivity, recruitment, and survival. These vital rates help scientists understand what is driving changes in bird populations so conservation efforts can be more targeted and effective.

To date, MAPS data has been used in well over 100 scientific publications and will continue to be used by conservation biologists in the coming decades to answer conservation questions that haven't even been conceived of yet. Here's a review of some of the conservation biology research published in just 2020 that used MAPS data!

### In this issue:



### A genoscape-network model that will help prioritize conservation efforts for Wilson's Warblers and other migrants

In a paper in the journal *Conservation Biology*, Colorado State University Assistant Professor Dr. Kristen Ruegg and IBP Research Ecologist Dr. Jim Saracco, along with colleagues from the University of California and Tulane University, developed a "genoscape-network" model to help decision makers prioritize conservation actions to protect populations of Wilson's Warbler, a neotropical migrant.

*Wilson's Warbler Photo by Alan Schmierer /Flickr*

Wilson's Warblers as a species are declining, but not to the same degree in all areas of their breeding range. The greater global population of Wilson's Warbler is made up of six distinct populations that breed in different regions in Canada and the US, and that winter in different regions of Mexico and Central America. Ruegg and her colleagues used genome-wide sequencing to assign individual warblers to each population and determine where they spent the non-breeding season. DNA samples used in the genetic sequencing came from feathers collected by bird banders, many of whom are MAPS (Monitoring Avian Productivity and Survivorship)

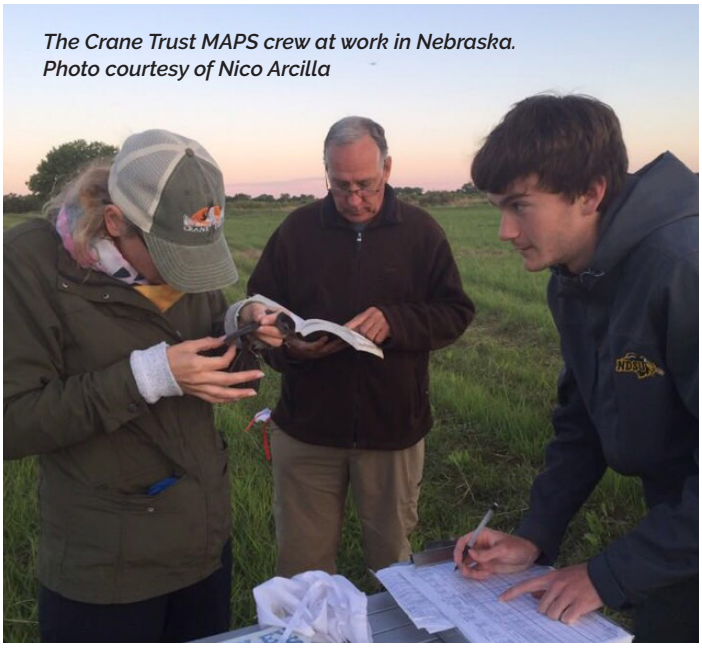
station operators throughout the US and Canada, or MoSI (Monitoreo De Sobrevivencia Invernal) station operators in Mexico, Central America, or South America.

This genoscape-network model creates a framework that integrates population trends, genetic groups, and the migratory cycle. It is a tool that will enable conservationists to better prioritize their efforts and make the best use of limited funding to protect declining populations. In a rapidly changing world where so many bird species are declining, making well-informed conservation choices is more important than ever.

**Grassland birds, climate change and land management**

In 2019, the journal *Science* published a report about bird declines in North America which identified grassland birds as one of the hardest hit groups, with population declines of over 50% since 1970. These declines are primarily attributed to habitat loss, land use changes, and climate change.

MAPS stations at a private conservation area managed by the Crane Trust in Nebraska's Platte River Valley are helping scientists better understand what is going on with grassland birds. The stations operated between 2002-07 and again between 2017-19. Dr. Nico Arcilla, of the International Bird Conservation Partnership and the University of Nebraska, along with her students and colleagues, used data from the Crane Trust MAPS stations to examine how climate change and land use changes are affecting two iconic grassland species - Grasshopper Sparrow and Dickcissel.



*The Crane Trust MAPS crew at work in Nebraska. Photo courtesy of Nico Arcilla*

*Grasshopper Sparrow. Photo courtesy of Nico Arcilla.*

Their study, published in the journal *Avian Conservation and Ecology*, found that wetter springs led to declines in Grasshopper Sparrow abundance. The researchers hypothesize that more precipitation promoted vegetation that was too tall and dense for this species, which prefers sparser vegetation with bare spots. But they found that prescribed burning could mitigate the effect of high precipitation by reducing the height and density of vegetation.

Another study from the same research group in the journal *Frontiers in Ecology and Evolution* used MAPS data, along with weather, climate, and land management data, to examine the effects of climate and management on Dickcissel populations and their vulnerability to brood parasitism by Brown-headed Cowbirds. The study found that Dickcissels were less abundant in years with high precipitation in the first part of the breeding season (June), whereas cowbirds were more abundant. This means that lower numbers of Dickcissels nests may be exposed to higher numbers of cowbirds, suggesting that higher June rainfall may contribute to higher levels of brood parasitism of Dickcissels by cowbirds. These findings have troubling implications for declining Dickcissel populations as climate change models predict increased frequency of extreme precipitation events on the Great Plains.

Dr. Arcilla says these studies could not have been done without data from the MAPS program:

*"The MAPS data made these studies possible. Whereas bird surveys can be done in a variety of ways, MAPS data is always collected systematically, according to strict protocols, which means that we could replicate what had been done in the past with confidence that the new MAPS data we collected could be compared with the previous MAPS data. In my opinion, MAPS data represents a highly valuable resource for understanding how our breeding bird populations are changing over time. This is particularly true because MAPS allows us to measure productivity and other demographic parameters in addition to abundance, so we can get a better picture of what is driving population change."*

*A young male Rose-breasted Grosbeak. Photo by Kelly Colgan Azar/Flickr*

**Yearling birds yield clues about habitat quality**

In a study published in the journal *PeerJ*, IBP biologist Peter Pyle along with colleagues from IBP and Owl Moon Environmental Inc., used MAPS data to look at habitat usage by yearlings - one-year old birds experiencing their first breeding season - in a community of 29 bird species that breed in the boreal forest.

The MAPS stations that produced the data for this study were located in the oil sands region of northeastern Alberta. Some areas of forest had been cleared for oil sands development and later reclaimed (replanted with trees), while others were undisturbed. This presented an opportunity to look at how reclaimed habitat changed as vegetation matured, and how the habitat age and characteristics related to the proportion of yearling birds captured.

The study found that the probability of catching yearlings of species that prefer more mature forests was lower in mature forests and higher in early successional habitats. The reverse was true for species that prefer habitats in earlier successional stages. Regardless of habitat preference, yearlings were more likely found in the presumably less desirable habitat for each species.

A high proportion of yearlings may indicate that a habitat is a "sink" because yearlings are generally thought to have lower reproductive success than older birds. A sink habitat is an area where a lot of birds breed but the number of young produced is low, and the population would actually decrease without immigrants from other populations. The researchers concluded that yearling proportion, along with estimates of productivity and survivorship, might help ecologists identify sink and source habitats.

One key feature of the MAPS program – the ability to accurately age birds – was critical for this study. "Accurate ageing (often referred to as 'micro-ageing' by banders) is an important aspect of such a study," says Pyle, "because if breeding birds are wrongly aged it can greatly affect the estimation of yearling proportion and compromise the results of the study." The researchers note that the MAPS bird monitoring program is the only long term, large scale dataset that estimates proportion of yearlings in both sexes.

**Combining MAPS and breeding bird survey data to look at the effects of climate change on Wilson's Warblers**

Heavy duty math and powerful computers are allowing conservation scientists to answer complex but critical questions about bird populations. In a paper in the journal *Ecology and Evolution*, IBP research ecologist Jim Saracco, along with Madeleine Rubenstein of the USGS National Climate Change & Wildlife Science Center, used gigabytes and statistical savvy to examine how climate change is affecting Wilson's Warbler - a species whose populations are declining. The researchers combined 17 years of data from the Breeding Bird Survey (BBS) and the MAPS program. Combining these two datasets in a single analysis is no easy feat. Statistically speaking, the BBS data and the MAPS data are apples and oranges, or perhaps even apples and artichokes. So Sarraco and Rubenstein developed an "integrated population model" to analyze the combined datasets.

*Magnolia Warbler*
*Photo by Rodney Campbell*

"Our model shows that spring temperature may be important for determining breeding success for populations in the Pacific Northwest and Sierra Nevada where springs are cooler but variable year-to-year," said Saracco. This is presumably because warmer springs mean earlier snow-melt and more insects to eat and feed young. But the researchers note that there is probably a limit to this effect; theoretically springs could become too warm for many insects and birds.

The researchers also found that drought on the warbler's wintering grounds in northwest Mexico reduced adult survival in Sierra Nevada and coastal California populations of the species, but not in Pacific Northwest populations. Late summer is very dry in the Sierra Nevada and along the coast of California, though usually not in the Pacific Northwest. Drought at the end of the breeding season, which reduces insect prey, combined with drought on the wintering grounds, may be a double whammy that many individuals in these populations don't survive.

Unfortunately, droughts are expected to become more frequent in many areas as the climate changes. But targeted conservation efforts might help mitigate this. "Focusing habitat preservation efforts in Baja California and northwest Mexico on areas that are both drought-resilient and full of wintering Wilson's Warblers would be a good idea," said Saracco.

**Noisy humans affect the abundance and productivity of breeding birds**

A study in the journal *Avian Conservation and Ecology* used MAPS banding data and ambient noise level estimates produced by the National Park Service to look at whether anthropogenic noise affects the abundance and productivity of 72 bird species across the United States. Many of the species studied showed changes in abundance or productivity (the number of young produced) in relation to noise, but those changes were not always in the direction you might expect.

Increasing noise levels impacted abundance and/or productivity in over one-quarter of the species studied. "This indicates that the impacts of noise on bird communities are extensive enough to be detected at the continental scale," said Dr. Darren Proppe of St. Edward's University, a co-author on the paper. "Therefore, noise is an important issue of conservation concern if we aim to sustain songbird populations across their range."

Proppe cautions against using bird abundance alone to gauge what is happening with bird populations.

*Human noise reduced both abundance and productivity for American Redstarts in this study. Photo by Laura Wolf/Flickr*

"We often allow ourselves to assume that abundance can be used as a single stop population demographic for assessing environmental impacts on species sustainability. But the case where noise reduces both abundance and productivity, such as our results indicated for the American Redstart, is much more dire than the case where noise reduces only abundance, but coincides with stable (or increased) productivity, such as we saw for the Chipping Sparrow."

Proppe noted that the MAPS monitoring program was crucial for this study. First because it allows researchers to estimate productivity, not just abundance. Second, because it doesn't rely on hearing the birds to estimate their abundance. "Datasets using aural surveys are faced with a potential confound, in that ambient noise also reduces the likelihood of detecting singing birds," says Proppe.

### MAPS monitoring leaves a legacy

MAPS banders leave a valuable legacy for bird conservation. Your extensive training, early mornings, and careful work contribute to a database that is one of the best resources for avian conservation biologists in North America. The data you collect will be used for many decades to come to help conserve the birds we all love. Thank you for all you do.

## Using the Macaulay Library to study molt: a case study on hummingbirds

by Peter Pyle

As many of you know from a recent Bird *Pop!* post, I am currently revising Part 1 of my *Identification Guide to North American Birds* (IDG). I am most excited about updating the molt sections for terminology and content, but I hit a bit of a snag when I reached the hummingbirds.

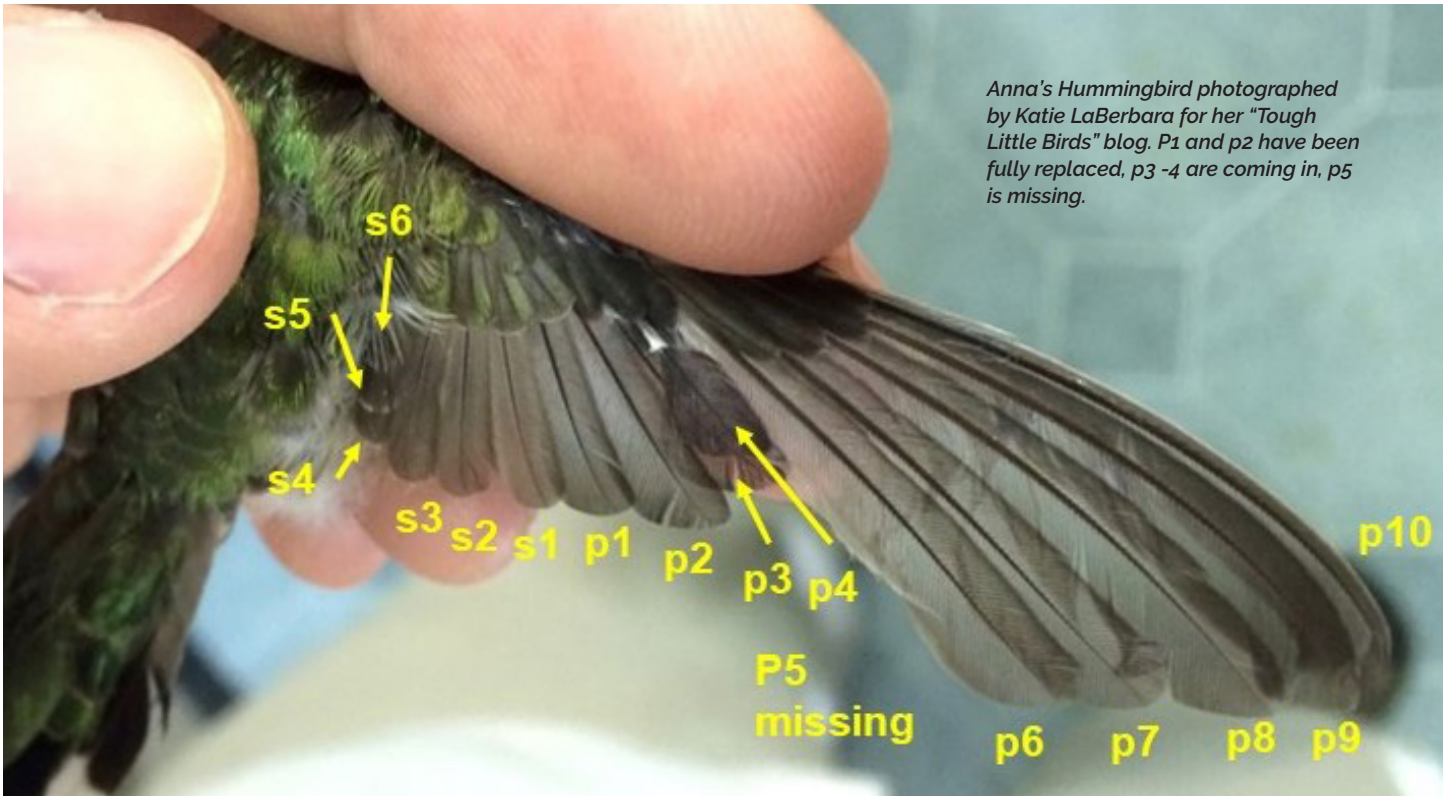
Molt in hummingbirds has always fascinated me, but I was particularly intrigued after it was discovered that Ruby-throated Hummingbird has a prealternate molt. A molt that 15-year-old (at the time) Desmond (Dessi) Sieburth and I later discovered occurred in Rufous Hummingbird as well link to paper here . In the paper with Dessi, we established a new, and what I believe to be superior, terminology for the complex molts of these two species, based on how these molts likely evolved from ancestral Apodiformes (including swifts). In this evolutionary context, molt strategies of the eight species of familiar migratory North American hummingbirds (Black-chinned, Anna's, Costa's, Broad-tailed, Allen's, and Calliope hummingbirds, in addition to previously mentioned Rufous and Ruby-throated) fall nicely into place. They are best considered as undergoing partial preformative molts during their first summer and fall and complete second prebasic molts at 6-8 months of age, rather than the latter being complete preformative molts as indicated in the IDG.

*"More and more I am turning to the Cornell Lab of Ornithology's Macaulay Library to study bird molt. The library primarily consists of photographs submitted with to eBird Checklists, and can be accessed through eBird. I encourage you to give it a spin, using the species, location, date, and other filters provided on the site."*

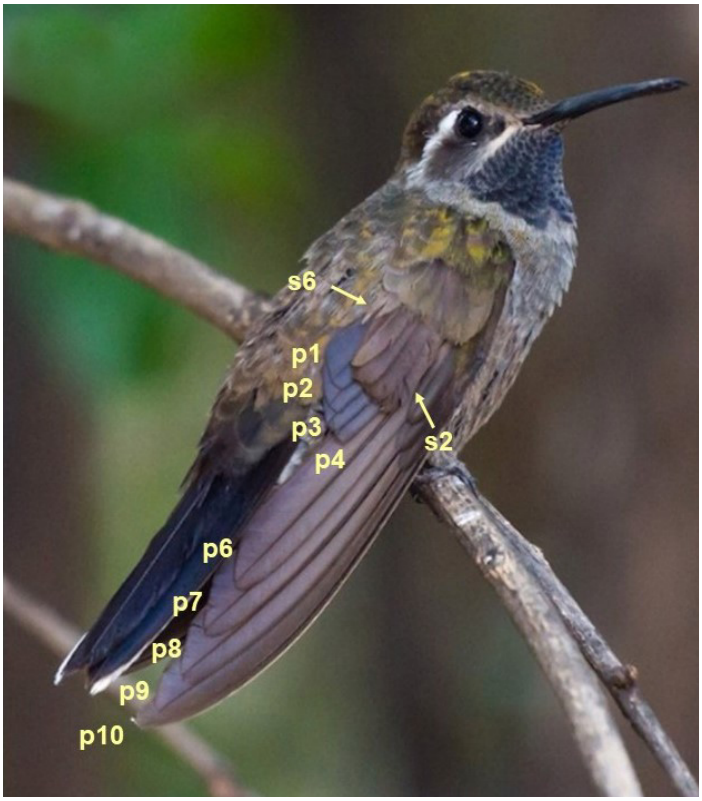
*- Peter Pyle*

But the IDG also includes eight other species of hummingbirds that are found primarily in Arizona and Texas. Molts in these species are poorly known and the literature is very inconsistent regarding when they occur, how many feathers are replaced, and what best terminology to apply. When I tried to fit these species into the evolutionary molt template for migratory species, I didn't get anywhere.

I think it was during my revision of the Broad-billed Hummingbird account, for which our understanding of molts was particularly muddled, that I decided to see if I could get somewhere by seeking photos of first-year and molting birds. I checked the Cornell Lab of Ornithology's Macaulay Library and, to my surprise and delight, there were 8,842 images of this species catalogued from the U.S. alone (over 12,000 including those from Mexico)! Although many of these 8,842




*Anna's Hummingbird photographed by Katie LaBerbara for her "Tough Little Birds" blog. P1 and p2 have been fully replaced, p3 -4 are coming in, p5 is missing.*




*This Blue-throated Mountain Gem (BTMG) is can be aged as an ASY (DPB) in August. It is undergoing the definitive prebasic molt with p1-p4 new, p5 dropped, and p6-p10 old. Note the molt clines among the old primaries and secondaries, with the p9 newer than p10 and p8, and clines from the outside and inside toward the newer s4 among the secondaries. These clines indicate a previous molt and, as we now know from this study that the preformative molt is partial in BTMGs, this bird is undergoing at least it's third prebasic molt and can be aged ASY. This photo was taken by Suzie McCann, on 9 Aug 2018 near Cochise, AZ. Arizona, and was uploaded to Macaulay Library (ML116501471). Contributors to Macaulay Library sign a license agreement permitting their use for scientific purposes, such as the study of molt.*

images were of the same individual, especially those of out-of-place vagrants at hummingbird feeders that birders flocked to see and photograph, accounting for these duplicates, I was still able to study molt in 2,413 individuals. Monthly totals of individuals ranged from 38 in December up to 639 in July, and 1,132 of these individuals were photographed while undergoing molt! This wealth of data made me wonder: How long would it take to capture this many birds at a MAPS station? How many specimen collections would need to be accessed? How do we get adequate representation from the full year, for species in which molts can occur in different places?

I became so engrossed studying these images, of this and the other seven species of "southwestern" hummingbirds (Blue-throated Mountain-gem and Rivoli's, Lucifer, White-eared, Violet-crowned, Berylline, and Buff-bellied hummingbirds), that I felt compelled to write a paper on how to use Macaulay Library to study molts. A preprint of this paper is available here.

Through this analysis I discovered that: 1) molt sequence among remiges was fixed among these hummingbirds (p10 being replaced before p9 and s4 usually being the last secondary replaced); 2) that prebasic molts for the most part occurred during well-defined periods, and; 3) that preformative molts are partial in most of these eight hummingbird species but complete in White-eared Hummingbird. The extent of the preformative molt in Broad-billed Hummingbird varied the most, from partial to complete, explaining previous confusion regarding its annual molt strategies. I also established new ageing and sexing criteria for these species and produced a primer that will appear as a Supplementary Materials file for the paper. You'll have to wait an extra month or so for the IDG revision to be completed (the time it took me to write this paper), but the addition of the new ageing and sexing criteria will be well worth the wait!

Following the hummingbird analysis, I've been turning to the Macaulay Library quite frequently to study molt, for example, in Long-billed Dowitchers and Pileated Woodpeckers. I can't wait until I get the IDG revision done so I can start looking at photos of Neotropical and other little-known species to see how they molt. Another interesting observation from my hummingbird analysis was that about 50% of the photos were of adult males in immaculate plumage. Sheesh, not a lot to learn there. So I make a call to birders and others to upload more photos of young birds, females, and those trashed individuals in molt! Among the hummingbird photos at Macaulay were a few taken by banders of open wings. Hmm, could this be the start of something?

*Left to right: Sarah Milligan, Dulce Flores, Bob Loy*

## Banding at Bandelier National Monument

by Sarah Milligan,
Natural Resource Program Manager,
Bandelier National Monument

Bandelier National Monument (BAND) in northern New Mexico has several of the longest-running MAPS stations in the National Park Service. Three of our MAPS stations were established in 2010, and in 2017 I set up a fourth location. We have also managed a migratory banding station since 2004. Each season, we have been able to hire an international intern from Central or South America to teach them how to band birds and take their skills back to their home countries. During their time here, these interns also create a 45-minute PowerPoint presentation to present to 4th-6th grade classes every September (over 200 students per year). Following these presentations, the students visit the banding sites to watch the banders in action. This has become a highlight for these classes and the students remember the experience for years. And questions like, "Have you ever banded a dinosaur bird?" asked with real enthusiasm keeps it interesting for us!

Amidst COVID restrictions, we had some challenges in 2020 and were unable to hire an international intern, but were able to hire an American intern who was interested in adding bird banding to her future career plans. Zoë Moffett created a wonderful online education program for the school children who were unable to visit the banding site in 2020 and also visited with the students via Zoom to teach them how scientists analyze data. Her presentation can be found here. Zoë also worked on a Science Fair project with one of the 5th graders; that presentation can be found here.

All four of the MAPS stations at BAND are located above 8,000 feet in elevation with primary forest composed of Ponderosa Pine, Douglas-fir, Aspen, New Mexican Locust, and Scrub Oak (elevation dependent). They have all been burned to varying degrees by wildfire across the years with the most recent being the Las Conchas fire in 2011. In eleven years of banding, 4,200 birds have been banded across all four stations and 960 of those have been recaptured! House Wrens and Chipping Sparrows have been banded more than any other species, consistently over the years. We have been pleased to see Western Bluebird (a species of concern) increase from one capture in 2010 to over 100 in 2020! Four species have been banded only once in 11 years: Cooper's Hawk, Sharp-shinned Hawk, Cassin's Finch, and Sagebrush Sparrow. Ten of the species caught at BAND are considered species of concern in New Mexico and tracking their trends is becoming more and more important. With the addition of the fourth banding station in 2017, the number of

*Bandelier National Monument's 2019 MAPS crew: Keegan Tranquillo, Dulce Flores (Mexico), Sarah Milligan, Bob Loy*

Virginia's Warblers increased from 1-2 per year to an average of 50 per year. Interestingly, birds like Pygmy Nuthatch have increased in numbers from one in 2012 to 19 in 2020, indicating that BAND's burned forests may be preferred habitat for this species. Other unique captures over the years have included a leucistic Chipping Sparrow, a House Wren with only half a beak, and an Audubon's Warbler with a crossed bill.

I joined the bird banding team as an NPS employee with absolutely no experience in 2015; I wasn't even a birder. My Master's degree is in Wildlife Management with a focus on large mammals. But after gaining some experience with our local banders and at several training classes I am a regular part of the banding crew. Over the past five years, I have banded over 2,000 birds and now hold the Master Bander's permit for BAND. My current staff consists of Keegan Tranquillo and Bob Loy. Keegan joined the banding team in 2018 as the Lead Bird Bander, arriving with eight years of banding experience.


*Intern Carolina May and Volunteer Bob Loy*

He has provided invaluable expertise and leadership, teaching the interns and volunteers with remarkable patience and positivity. Bob has been a super volunteer since 2018, banding over 1,000 birds and adding incomparablassistance to the banding station. Before becoming a regular member of the banding team, Bob worked with the local nature center to bring school groups to the banding site. Bob is also a qualified hummingbird bander and assists at the Bandelier Hummingbird Monitoring Network station.

Bird banding, for me, is a time of peace, a time to de-stress and enjoy nature while putting work and the world to the side for a moment. Waking up at 4am (or earlier) can be daunting to some, but for me, it's worth it. I've seen some of the best sunrises of my life, watched countless baby elk and deer follow their mamas around, heard the waking calls of the coyotes, listened to the elk bugling during mating season, watched black bears almost run through our nets, seen birds I never would have if we started later in the day, and spent some quality time with my fellow banders. My favorite day at the banding site was the day we caught a female American Kestrel; walking up


*American Kestrel*

to the net and seeing a large bird caught in it is exciting for anyone, no matter how long they have been banding. It's exhilarating to hold such a powerful bird in your hand and think about what an amazing hunter it is. The feeling of seeing birds up close versus in the air is irreplaceable (and worth waking up at 4am!). The highlight of my banding career has definitely been the opportunities I have had to band in Oaxaca and Chiapas, Mexico. I was able to band some amazing birds, learn some new techniques, see some amazing sites, and meet some amazing people, some of whom have become friends for life. Bird banding has been such a great experience that I wouldn't trade for anything!

## Caterpillars Count!
## Help assess the timing of bird food availability at your MAPS station

by Allen Hurlbert, Director, Caterpillars Count!
University of North Carolina

Banding data have been essential to our understanding of many aspects of bird biology including patterns in survivorship and breeding productivity. Another important factor that we can pull out from long-term banding data is the seasonal timing, or phenology, of birds' reproductive cycle. When does a given species tend to show up on the breeding grounds, when do we first start seeing evidence of reproductive activity via brood patches or cloacal protuberances, and when are hatch-year birds first caught in the nets? Most importantly, have these dates been changing over time?

Large-scale warming has meant the earlier onset of spring in many regions, but have birds been shifting their phenology as well, and if they have, have they been shifting it enough? The most obvious yardstick is the timing of the spring pulse in insects that birds rely on to successfully raise their young. MAPS is partnering with a citizen science project called Caterpillars Count! that aims to measure the phenology of bird food (caterpillars and other insects) relative to the phenology of the birds in those same locations.

Are the parts of the country where phenological mismatch between birds and their food resources also the parts of the country where population declines are greatest?

Caterpillars Count! is a standardized survey of foliage arthropods that can be done around your banding station. It requires the ability to identify arthropods to Order (i.e., distinguishing beetles from leafhoppers from caterpillars from spiders) and so can be done by almost anyone with some basic training, and we have some resources to make this easier. Data can be submitted via mobile apps or through the project website, and submitted data can instantly be visualized through our Maps and Graphs page.

### Interested in participating? Here are the next steps:

• Check out our Get Started page to read more about details of the methodology and site set up.

• Get a feel for the survey process by playing our Virtual Survey Game!

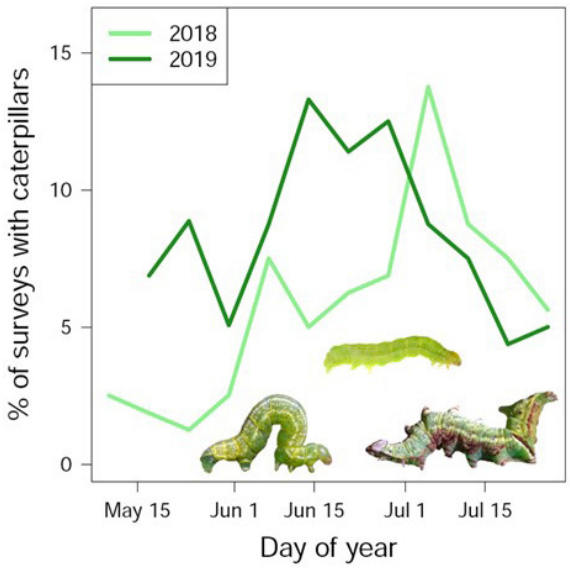
• Consider how many surveys could be performed at your site. We recommend conducting at least 30 surveys on a weekly basis (or per banding period), which should take less than 3 person-hours per period. The task is easily divisible among participants, so a group of 6 could complete the surveys in half an hour.

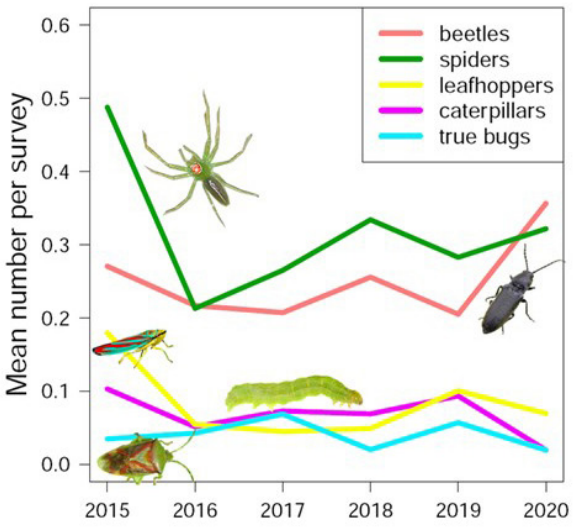
• In addition to the How To Host a Site information on the website, we welcome your registration for one of our free webinars offered in April

• Thursday, April 1, 1:00 – 2:30 pm EST
• Tuesday, April 13, 3:00 – 4:30 pm EST
• Wednesday, April 29, 12:00 – 1:30 pm EST

If you have any questions, check out our FAQ, or contact us at caterpillarscount@gmail.com.

***Below: Arthropod phenology and trends at the North Carolina Botanical Garden in Chapel Hill, NC. A) Caterpillar phenology varies from year to year. B) Trends in arthropod density for 5 important groups of bird food.***



## IBP bird banding classes!

As a new banding season approaches we are tentatively working with several host organizations to schedule banding classes. At this time these classes are still pending, but as they are confirmed we will post links for registration on IBP's banding class page. We are planning both beginning and advanced classes and expect they will fill quickly once registration is open. If you would like to be notified when registration opens for each class, please email Danielle Kaschube to be put on the training class email list. You will only get emails regarding scheduled classes if you are on this list.

• Two banding classes are planned for the Wolf Ridge Environmental Learning Center in northeastern Minnesota this summer. The tentative schedule: beginner class June 20-27, 2021 and advanced class June 29 - July 3, 2021. There will not be any youth classes offered in 2021 but we hope to have them back on the schedule in 2022. REGISTRATION LINK.

• A banding class is planned for Opossum Creek Retreat in south central West Virginia, near the New River Gorge National River. Tentatively scheduled for August or September 2021.

Note: Classes will only be held if strict COVID safety guidelines are agreed upon by IBP, the host and participants. Classes may be cancelled if COVID numbers are deemed unsafe for travel, so do not make travel arrangements too far in advance without cancellation insurance.

*Northern Cardinal with flight feather molt, banded at a class in Virginia.*

## Bird genoscape and feather sampling update

by Danielle Kaschube

Feathers collected by MAPS operators for the Bird Genoscape Project (BGP) have helped link the breeding and wintering grounds of six distinct populations of Wilson's Warblers (see page 3), which will help direct conservation efforts to areas where the species is in decline. This is only one of many projects made possible by the feathers that MAPS operators have contributed throughout the years and continue to collect.

More information about happenings at the BGP, including projects, publications, and grants is available in their newsletter. One exciting piece of news is that researchers with the BGP are also beginning to use the genoscape framework to understand how individual migrants track climate across their full annual cycle (Bay et al 2021), and they are refining methods to further prioritize populations of conservation concern (Ruegg et al 2020).

You may have also heard rumors about a short film on hemisphere-wide bird monitoring in which the Bird Genoscape Project was featured. This stunning short documentary, produced by Neil Loisin at Day's Edge Productions with funding from National Geographic, is about the importance of understanding the full annual cycle of migratory birds. One of BGP lab's favorite parts about the film is that it highlights the collaborative nature of the project and the important contributions of collaborators like you. Check it out on YouTube!


We hope that you will continue to support the work of the Bird Genoscape Project by participating in the feather sampling project. New contributors are always welcome and if you have questions we can help you get started. The 2021 protocols are available here.

*American Goldfinch*
*Photo by infiniteciel/Flickr*

## New MAPS operators join the flock - welcome!

The following operators joined MAPS in 2020 or 2021. Most are beginning operations at new stations but others have inherited a previously operated station or are starting a new station after being away for a while. We look forward to including them as part of the MAPS family for many years to come.

**Nicole Alonso** Leach Cotulla, TX

**Lisa Bate** West Glacier, MT

**Stephanie Bilodeau** Harlingen, TX

**Jameson Chace** Newport, RI

**Ariane Giudicelli** Kingston, NY

**Katharine Lewis** Conway, NH

**Leesia Marshall** Alexandria, LA

**Maureen McClung** Conway, AR

**Molly McDermott** Columbus, OH

**Paul Messier** Sainte-Anne-De-Sorel, QC

**Andy Rzeznikiewicz** Pomfret Center, CT

**Matthew Shumar** Columbus, OH

**Cassondra Walker** Douglas, AZ

## Molts and plumage: Always something new to learn

by Danielle Kaschube

The Wolfe-Ryder-Pyle (WRP) ageing scheme is fairly new, so questions about its usage come up regularly. I saw this photograph of the Downy Woodpecker taken by Erik Johnson of the Louisiana Bird Observatory on the Molt Forum: Bird Aging and Molt Analysis Facebook page I thought it would be a good way to discuss the ageing process and how to use the WRP system, and it reminds us that there is always more to learn about molt.

When most bird banders learned to age birds in hand, they utilized the calendar-based ageing system: Hatching-year (HY), After-hatching-year (AHY), Second-year (SY), etc. However, the new Wolfe-Ryder-Pyle (WRP) molt based ageing scheme is becoming more well-known and embraced by banders. The 2019 and 2020 MAPS Chats (click here for the archive of MAPS Chats) describe the WRP system in detail and provide several examples of how to use the system. We recommend banders take the time to read those articles as first steps to learning the scheme (this article assumes some experience with the system).

*Downy Woodpecker primary coverts. Photo by Erik I. Johnson, Louisiana Bird Observatory.*

The photo above is a close up of the right wing of a Downy Woodpecker (DOWO) captured in Louisiana in January 2021. The photo is focused on the primary coverts and you can see that the outer four primary coverts are dark and replaced (definitive basic; note that the outermost is short and spikey), there are some browner retained middle primary coverts (juvenile), and the innermost primary coverts also appear dark and replaced (definitive basic??). Looking at the generalized graphic representation of DOWO molts and plumages (shown on the next page; based on the molt account in Peter Pyle's *Identification Guide to North American Birds, Part I*), this individual doesn't fit any of the expected patterns. So, when it doesn't fit the expected pattern we have to look deeper for an explanation.

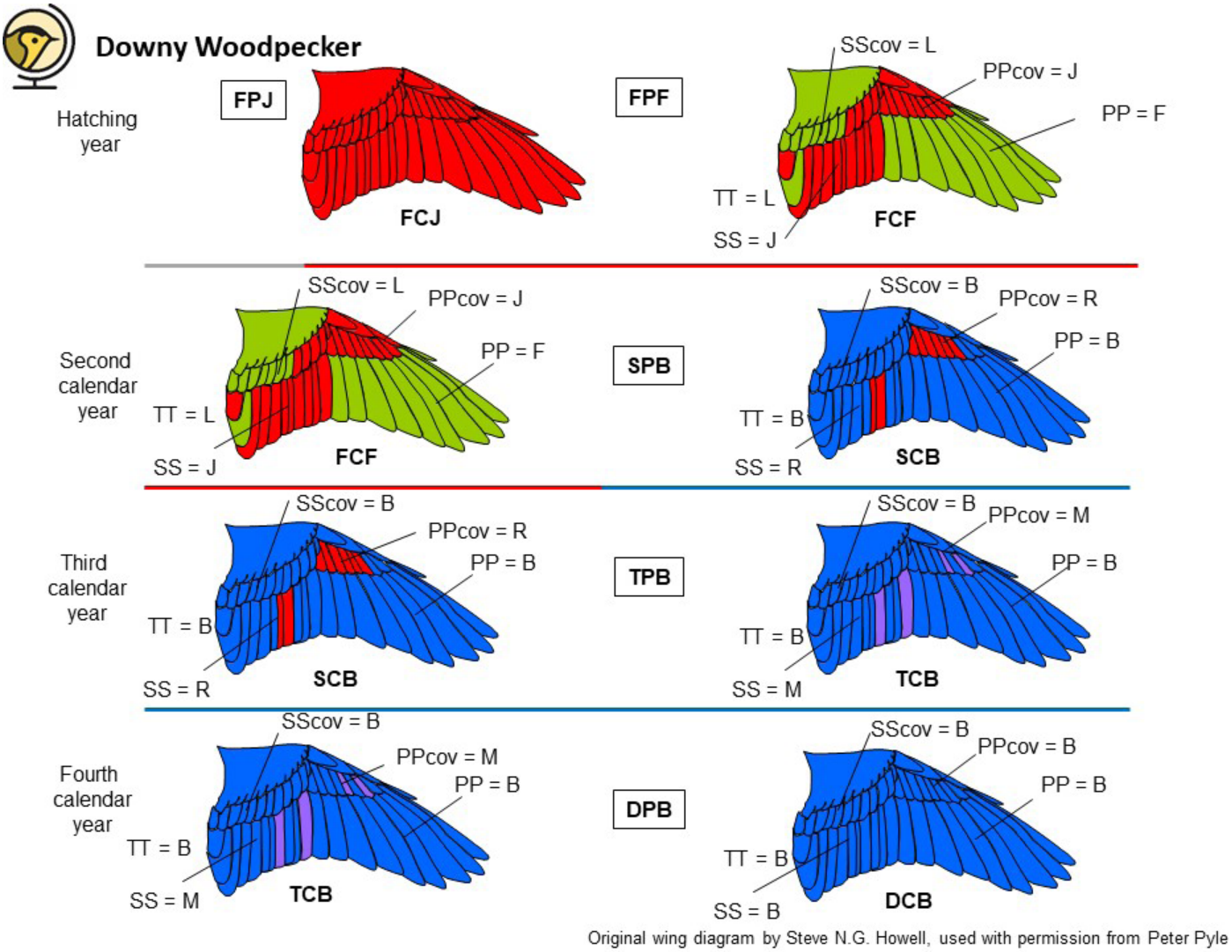
Without seeing the inner most primary coverts, this bird would be assigned WRP = SCB (second cycle basic plumage) and because of the month of capture, it would be aged TY (third year) using the calendar ageing system. But what is the explanation of the inner most primary coverts looking new? Maybe this is an older bird with interspersed old and new feathers? Maybe those inner feathers were adventitiously replaced? But it is unlikely that feathers would be retained in a big block in an older bird and symmetrically in both wings.

Several theories in the Facebook group were batted about, but a reference to the molt section of Downy Woodpecker on Cornell's Birds of the World (also written by Peter Pyle, by the way) provided a key piece of information: "Retained primary coverts include 4–7 consecutive medial feathers (among those corresponding to p3–p9) which are brown, very abraded, contrasting with 1–5 consecutive replaced distal feathers (among those corresponding to p5–p10);" This little nugget (that the inner primary coverts can be replaced in the second prebasic) allowed the Facebook discussion to come to the resolution to assign WRP=SCB, AGE=TY. And, yes, the generalized diagram of DOWO molts and plumages needs to be updated.

Peter provides some background, "When Steve Howell and I first figured out these patterns (see here) we were examining specimens prepared as round skins, in which the inner primary coverts cannot be examined without damaging them.

Since then, with the help of open-wing images from banders, we have a much better understanding of how molt of these coverts work. In fact, we found some WRP=FCF, AGE=SY birds that have replaced 1-2 inner primary coverts!" Peter adds, "In this photo, the basic coverts outside of the juvenile coverts are all of one generation. Had they been of two generations (say, with the outermost two more worn than the next two), this would be WRP=TCB, AGE=4Y. We've recently confirmed the ability to age to WRP=TCB, AGE=4Y in Black-backed Woodpeckers (here) and in some lighter reading in Pileated Woodpeckers (here)."

*continued*




*Generalized Downy Woodpecker molt based on molt pattern described in The Identification Guide to North American Birds, Part I by Peter Pyle.*

My takeaway from this one image of a few Downy Woodpecker feathers was to keep working on WRP coding, keep reading about molt, keep talking to my banding friends, and publish new findings. I hope you find a similar message and share it with your crews.

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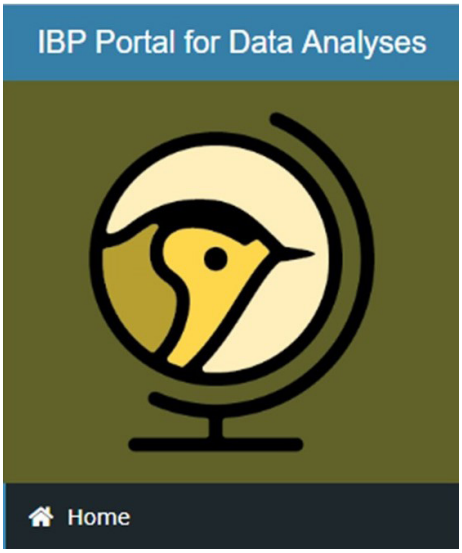
## New MAPS data analysis app in development!

We are excited to let you know that over the coming year we will be developing a new data analysis app to let you analyze your data! This app will allow you to upload your verified MAPS files and produce summaries of captures, trends in capture rates, population and productivity trends and survival estimates. We hope this easy-to-use app will help you explore your data and learn more about the birds that you are banding.



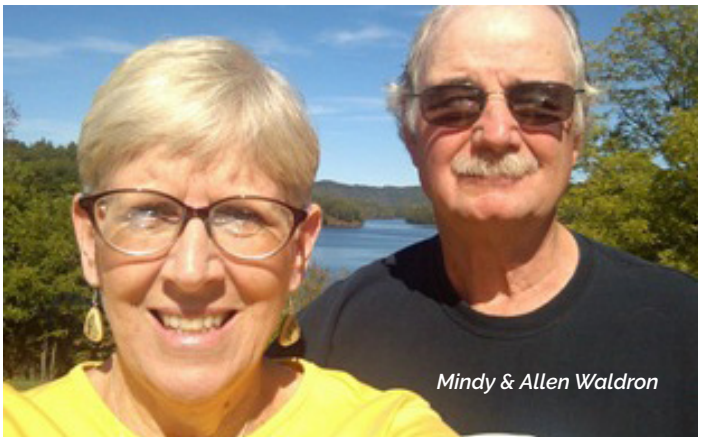
## 25-Year Operators

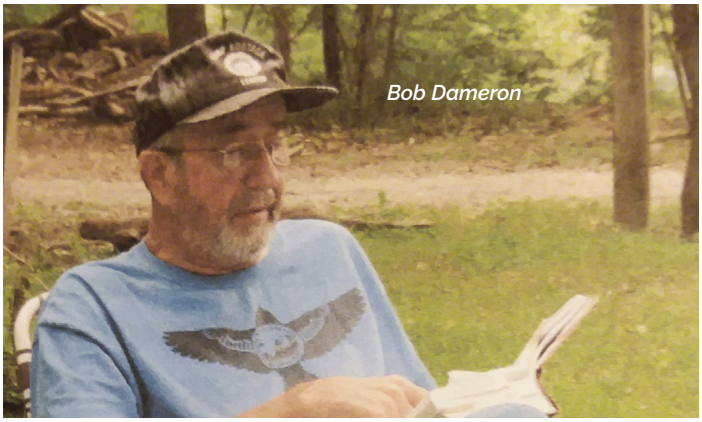
As the MAPS Program reaches its 32nd year mark during the 2021 field season, several individual stations will mark their 25th season! Happy birthday! Thank you to all MAPS Operators – whether 2021 is your first, 10th or 25th season.

**Happy 25th birthday to the St. Cloud station in Skamania County, WA!** The St. Cloud station on the Gifford Pinchot National Forest was started by Bob Altman and Cathy Flick took it over in 1999. One of Cathy's favorite birds, the Swainson's Thrush, is one of her most abundant captures. She has mentored many volunteers over the years and is looking forward to doing so again once COVID allows it.


*Cathy Flick*

**Happy 25th birthday to the Sandstone Falls station in Raleigh County, WV!** The Sandstone Falls station is located in the New River Gorge National Park (the United States' newest National Park!) and is a partnership between the National Park and private banders. It was started by Ronald A. Canterbury but Mindy and Allen Waldron took over operations early in the station's history. The Waldrons, Bob Dameron, their net tech and expert bird extractor, New River Gorge biologist Lenza Paul, make up the team that keeps this station going.


*Mindy & Allen Waldron*


*Bob Dameron*


*Lenza Paul*

**Happy 25th birthday to the Green Mountain station in Chittenden County, VT!** The Green Mountain station is located at the Green Mountain Audubon Center was and is operated by Audubon Vermont's Mark LaBarr and his interns. This station is open to visitors and many young (and old) visitors have had their interest in birds peaked by a trip to this station.


*Mark LaBarr*

**The following stations have also reached 25 years of operation this year:**

**Antelope Creek** - operated by Klamath Bird Observatory in Siskiyou, CA.
**Gurnsey Creek** - operated by Point Blue Conservation Science in Tehama County, CA.
**Fern Gully** - operated by Lesser Slave Lake Bird Observatory in Slave Lake, AB.