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FOCUS ON NATURE

Celebrating 100 years of bird banding, Part 1

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This year marks the 100th anniversary of a research program dedicated to the scientific study of birds using the tool of bird banding. It is such an important event in the scientific world of ornithological research that I plan to devote three columns to it. Part 1 provides an overview of bird banding, Part 2 will give examples of what I have learned in my 64 years of bird banding, and Part 3 will give examples of what others have learned from bird banding to help birds.

The following information was provided by the United States Geological (USGS) Bird Banding Laboratory.

The Bird Banding Laboratory based at the Patuxent Wildlife Research Center in Laurel, Maryland, was established in 1920 to study and help protect North American birds. The Laboratory issues permits for banding in the U.S., distributes aluminum individually numbered bands—about 1 million a year—to participating scientists in the U.S. and Canada, and is a central repository for banding records in both countries.

People who see or catch a banded bird report that information back to the lab, which keeps records of all reported encounters. Laboratory staffers manage more than 77 million archived banding records and more than five million bird encounter reports, with an average of nearly 1.2 million banding records and 100,000 encounter reports submitted each year.

“Scientists can tap this powerful archive of bird sighting information and combine it with other research tools to track birds’ behavior, migration, lifespans, populations, diseases and levels of environmental contaminants,” said Antonio Celis-Murillo, acting chief of the USGS Bird Banding Laboratory. “The archived information helps experts make important management and conservation decisions, which is especially important for the protection and recovery of endangered and threatened birds.”

“In the 100 years since the Bird Banding Laboratory was established, scientists have acquired an immense amount of data on the changing status and trends in bird populations, and they have documented movement patterns across North America,” said Thomas O’Connell, center director for the USGS Patuxent Wildlife Research Center and Leetown Science Center. “Having long-term records is essential to seeing changes over time and learning about the state of the environment. The more we know about birds the better equipped land- and resource managers are to make the best decisions to protect them.”

Through banding research, scientists can learn a bird’s routine, such as where they spend most of the day, where they migrate to and from, what they eat and how much habitat they need to feed, rest, and reproduce. This information can help identify priority areas for bird and habitat conservation.



<<<Wisdom, a Laysan albatross and the oldest known banded bird in the wild at age 69, with one of her chicks named Kūkini. Only through banding could we find out long birds live. Photo by U.S. Fish & Wildlife Service.

Banding data can reveal other trends in life span and population. If there is a change in the age of birds caught at a certain location, life expectancy may be getting shorter or longer. The number of birds captured overall may indicate whether populations are increasing or in decline. Data such as weight and wingspan can show trends in overall health. Such insight can cue scientists to look for changes to birds’ food sources, predators, competitors, habitats or other factors that affect their survival and reproduction.

By sampling wild birds for diseases such as Lyme and avian influenza, scientists can help determine the diseases’ prevalence. Bird migration routes can identify which human and animal communities are at risk of exposure

to diseases. In toxicology research, banding data can also show birds' potential exposure to contaminants such as lead, pesticides, or other environmental threats.

In addition, the U.S. Fish and Wildlife Service and other partners analyze banding information from game bird species each year to help set hunting regulations. This helps ensure healthy populations while allowing sustainable hunting opportunities.

Our Nature Education Center has participated in some of the studies previously mentioned and I will go into some of those and other examples of what we have learned about birds through bird banding in my next column, Celebrating 100 years of bird banding, Part 2.



FOCUS ON NATURE—

Celebrating 100 years of bird banding, Part 2

By Thomas H. Nicholls, Nature Education Center, Fifield, WI | nicho002@umn.edu

(This article was published in part in the Price County Review & The Country Today)

Our Nature Education Center (NEC) in Fifield has an active educational and research bird banding program. I have held an official Master Federal bird banding permit for 64 of the 100 years the Federal banding program has been in existence. During that time, my banding team has banded thousands of birds of over 100 different species in four states. Our NEC has also trained several sub-permittee banders, one of whom went on to band more than 13,000 nestling eastern bluebirds and one who became a Master Bird Bander.

I can't tell you what a great privilege and learning experience it has been to hold and release thousands of banded birds over the years. Many of them were migratory birds on their way to or from Canada or Central and South America during spring and fall migrations.

Banding local resident birds, like black-capped chickadees and red-breasted nuthatches, only to have them return time and again to our bird feeders and banding traps over several years was also rewarding. This allowed us to determine how long they lived and what habitats they needed to survive to successfully carry out their life cycles.

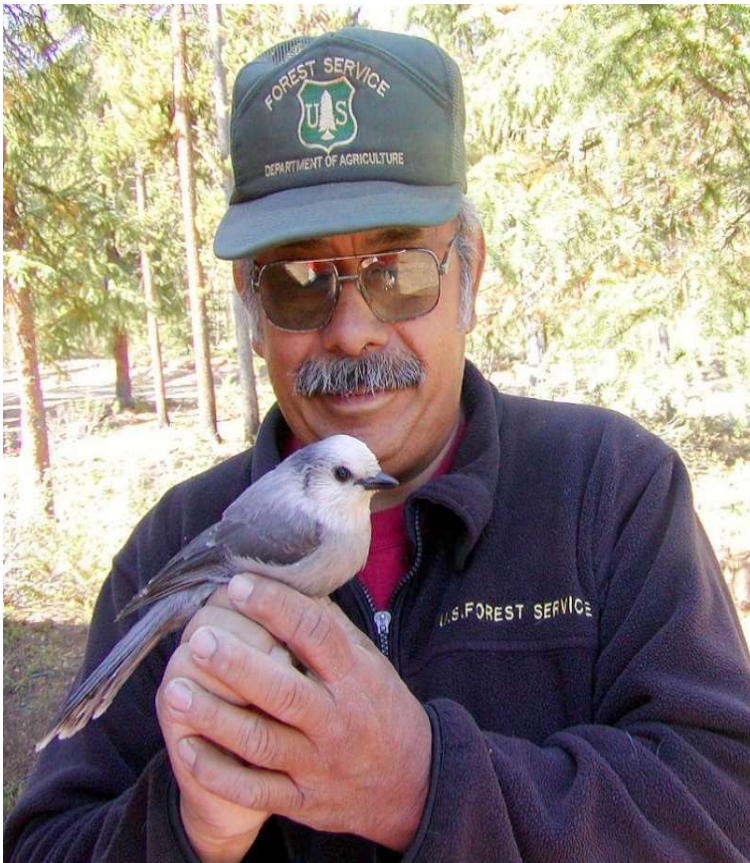
I am often asked what my most memorable banding experiences were over my 64 years of banding birds. There are too many to write about, but here are a few examples of my most enjoyable and scientifically important.

The first was my 28-year study of the gray jay, now called Canada jay, in the Colorado mountains in a study of lodgepole pine dwarf mistletoe vectors. My research team and I banded 704 gray jays during that study. We determined that gray jays were a chief vector of mistletoe when they carried mistletoe seed from infected lodgepole pine stands to healthy stands. **This finding of long distant dissemination of this disease by birds allowed forest managers to quickly find and eradicate new pockets of infected trees in otherwise healthy**

stands to help protect the remaining healthy trees. The mistletoe study led to a more in-depth study of this most remarkable bird, the gray jay.

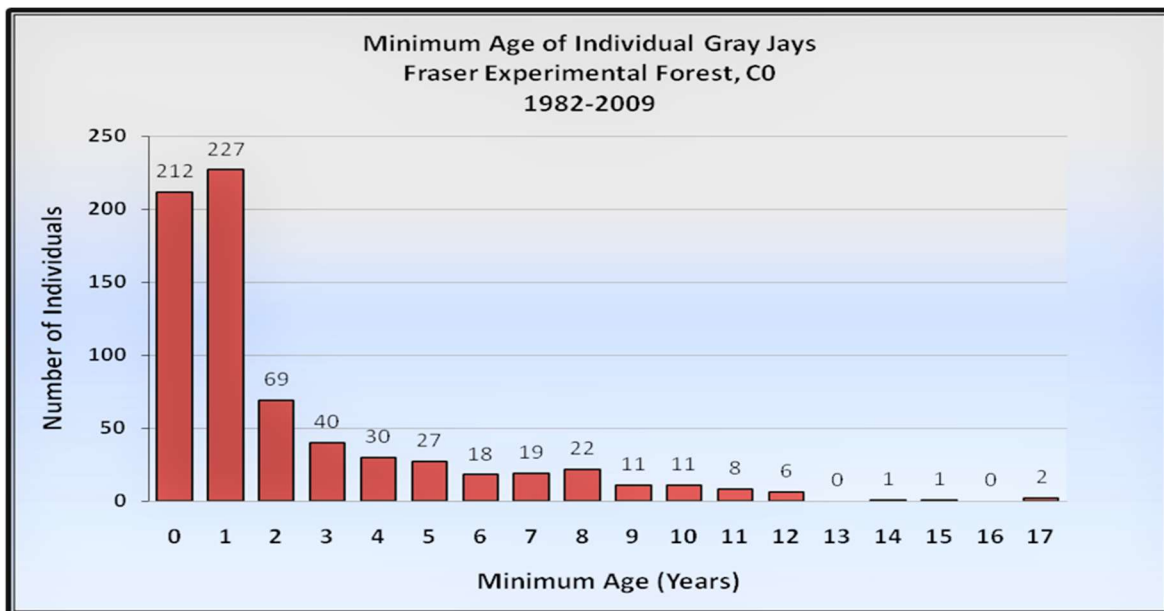


Dwarf mistletoe disease on lodgepole pine causes devastating economic damage. When the sticky seeds are explosively shot out from the berries (right) they stick to anything they hit including birds. Birds like to keep their bodies clean so, when preening to remove the seeds, sometimes seeds stick to their beaks. The birds ‘bill wipe’ on branches to remove the sticky seeds thereby inoculating susceptible healthy hosts causing new infections.



We determined the minimum ages of the 704 gray jays we studied by trapping, banding, and re-trapping them again many times over 28 years. We found two jays that lived to a ripe, old age of 17 years setting a USA record for the oldest gray jays living in the wild according to the USGS Bird Banding Laboratory. That record still stands today. Of the 704 gray jays banded, 29 lived to be ten or more years old. **Without banding, we would never have known how long gray jays lived in the wild.**

<<<<Forest Technician Manuel Martinez holds a 17-year-old gray jay, one of two Tom Nicholls banded on the Fraser Experimental Forest in Colorado. This bird was cited for being the oldest gray jay living in the wild in the USA according to the US Geological Survey Bird Banding Laboratory.



Based on sample size of 704 gray jays banded and recaptured.

My second memorable study was done right here in Fifield, WI on our NEC lands. My research team studied songbird habitat relationships over four spring and four fall migrations totaling eight seasons from 1989 to 1992. Mist nets were used to capture birds for a total of 186 days in 15 different habitats. During that time, we trapped, banded, and released 4,031 individual birds of 91 species. In addition, we retrapped 1,315 of our own previously banded birds. The results helped us identify what habitats contained resources, such as food, water, shelter, and space, that were important to different bird species as refueling and rest stops during their migratory journeys.



We found that songbirds used a mosaic of habitats during migration, but that wetland habitats, as pictured on the left, attracted more individuals and species of birds than all other habitats combined.

Given the diversity of species using wetland habitats, including many neotropical long-distant migrants and species of management concern, we made recommendations to land managers to conserve, restore, or develop a mosaic of diverse communities focusing on wetlands to serve as songbird resting and refueling refuges during migration. This concept is like the one successfully used for waterfowl wildlife refuges.

My third memorable and most rewarding example focuses on the educational value of bird banding as a tool for connecting people, especially young school children and ornithology students, to nature. Our NEC has hosted thousands of school kids from Park Falls, Butternut, Phillips, and Ashland as well as Boy Scouts, Girl Scouts, 4-H, home-schooled kids, and family groups, among others, teaching them the value of bird banding in the study of birds.



Fly free!

I especially valued the looks and excitement on students' faces as they got to hold, band, and release a wild banded bird—something few people will ever experience in a lifetime. That experience is often life-changing for many students.

The last example I would like to share with you comes from my sub-permittee bird bander, Ann Wick, from Black Earth, WI, in her own words.

“I began banding on May 27th, 1996 after being trained by Tom. I have now banded Eastern bluebirds for the past 25 nesting seasons, 1996-2020, banding my final adult on, August 4th, 2020. **My 25-year total banding (adults and nestlings) stands at 13,193!** Here are some major things I have learned.



Nature Education Center Sub-permittee bird bander Ann Wick was awarded the Joe O'Halloran Life Time Achievement Award by the Bluebird Restoration Association of Wisconsin for her work in restoring bluebirds to southern Wisconsin while banding over 13,000 bluebirds, mostly nestlings.

Adult migratory bluebirds tend to return to the same nest boxes and territories they have successfully nested in in previous years. Within a given nesting year, a female who has been unsuccessful in a nest box is unlikely to attempt a second nesting in that same box. Most of my adult bluebirds banded and recaptured have been females, so I can only speak for the females in this regard. If there is a second nesting in that nest box, it will be attempted by different female.

If a female is successful in fledging young from a given nest box, she will attempt a second and even sometimes a third nesting in that same box during the same breeding season. It is also likely, if she survives the winter, that she will return to that same nest box the following year.

The few recaptures/recoveries reported to us from outside my banding area of Dane County, WI have been bluebirds I have banded as nestlings. This leads me to believe that young fledglings disperse to new nesting territories other than the boxes from which they fledged. However, often the birds I banded as nestlings only dispersed to within a few miles of the boxes they were fledged from!

I believe more bluebirds overwinter in Southern Wisconsin than we had earlier known about. Based on observation of banded birds in my own yard, ones I more than likely banded, bluebirds have overwintered here the past three to four winters. One winter six bluebirds were observed roosting in a Peterson nest box in my lower garden. As a result, I plug the ventilation holes of the nest boxes in view of my house to keep them warmer just in case they decide to roost in them again during the winter. I am also receiving more and more winter reports of banded bluebirds drinking from heated birdbaths by my cooperators, those who have my nest boxes in their yards.”



A pair of Eastern bluebirds.

To find out more about what others have learned from bird banding, stay tuned for the next Focus column, Celebrating 100 Years of Bird Banding, Part 3.

PARTING SHOTS



Chequamegon school Park Falls third grade bird banding class at the NEC.

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