Bird Migration in New Mexico

by Karen Herzenberg

The theme of migration can cover many topics in New Mexico, but the focus of this unit is on the species of migratory birds that make the Middle Rio Grande Valley of New Mexico their home for at least part of the year, and the importance of habitat here in the valley as well as in the places these birds call home during the rest of the year.

Suitable habitat may not be available in one location for all the stages of an animal's life and migration is an adaptation that addresses this issue. **Migration** is the seasonal, cyclic movement of a population of animals, which includes a return to their original location. Food abundance, nest site availability and the ability to tolerate seasonal variations in moisture and temperature are all factors that contribute to whether a particular animal species is migratory. The ability to fly, in some cases long distances, has made this strategy especially useful for birds because they can access a much larger variety of habitats over the course of a year than non-flying animals. The bird species with the longest annual migration is the Arctic tern with an almost pole-to-pole trip twice per year. Most migrations, however, are much shorter. Movements that are daily or a very short distance are not considered to be migration.

The riparian cottonwood forest, or bosque, of New Mexico's Middle Rio Grande Valley is part of a major route of travel for migratory birds. Most avian migration follows natural land forms such as coasts, mountain ranges and rivers. In North America, this occurs primarily in a north-south direction and the various species follow many different routes. Scientists and regulatory agencies in North America have divided up these routes into four flyways through which most migratory birds tend to confine their travels: Pacific, Central, Mississippi and Atlantic. These four flyways converge in Panama and then diverge again in South America.

Most of New Mexico lies in the Central flyway, though the western-most part of the state is considered to be part of the Pacific flyway. In our state, birds tend to travel along the Rio Grande and other rivers and the main mountain chains. Humans, too, have tended to travel along and settle in these locations. If you look at a map of New Mexico's rivers, you can see that many of the original human settlements and current large cities are located in riparian areas.

Avian migrants also converge at other bodies of water and forested areas in flat, open country along the way. These so-called "islands" include Rattlesnake Springs, a spring with riparian vegetation in the middle of the desert near Carlsbad, and the "Melrose Trap," a small patch of trees in the otherwise flat, open plains near Melrose.

Birders (people who observe birds as a recreational activity) travel to these locations during migration and are able to see many species of birds at once in a small area and often have the opportunity to see a rarity or a species that has wandered off its typical migratory route and is not expected in New Mexico. These areas near bodies of water and other habitat corridors or islands tend to have a higher number of avian species, or species richness, because of the habitat resources available. See Activity 22 "Mapping Species Richness" for a Grade 6-12 level classroom activity on this topic.

About 500 of the world's approximately 10,000 bird species have been reported over the last 100 years in New Mexico. About 100 of these are year-round **residents**. These birds have adapted to the climate and geography of New Mexico and are able to find the water, food, shelter and territory (**habitat**) they need to both nest and over-winter. Just because a species is found in New Mexico year-round, does not mean that its range is limited to New Mexico. For example, New Mexico's state bird, the Greater Roadrunner, is a year-round resident but can be found living throughout the Southwestern US.

Most other birds observed in the Middle Rio Grande Valley of New Mexico are migratory: they spend only part of the year here and the rest of the year in other locations. Some are here only in summer, some only in winter and others make a brief stopover on their way between their wintering and nesting grounds. New Mexico's Bosque del Apache National Wildlife Refuge is world-famous for the large numbers of waterfowl and Sandhill Cranes that spend the winter there. The sights and sounds of the Sandhill Cranes' arrival in New Mexico go hand-in-hand with the smell of roasting green chile to announce the beginning of autumn. The following section will highlight several species that follow these migratory patterns.

Hummingbirds

There are more than 300 species of hummingbirds in the world (all in the Americas) and they are adapted to many different habitats including deserts and rainforests and locations at sea-level up to mountain environments above 4,000 meters (13,000 feet). They are primarily nectar-feeders but they eat insects too, and must have insect-protein in order to raise healthy young.

Black-chinned Hummingbird nestlings
photo by Laurel Ladwig

Hummingbirds are astonishing for many reasons. They can fly backwards, upside-down and hover. They are avian record-holders for the most wingbeats per minute and for their extraordinary metabolisms. They are among the smallest birds in the world (adults of most species compare in weight to a penny and the eggs of most species are about the size of a dry pinto bean) and yet some of them migrate huge distances, non-stop, over water.

Four species of hummingbird are typically observed in New Mexico and all are migratory. Broad-tailed and Black-chinned Hummingbirds spend their nesting season here (mid-April through mid-October). Broad-tailed prefer higher elevation habitats and Black-chinned lower, such as the bosque. Black-chinned hummers are the primary patrons of New Mexico's backyard hummingbird feeders. Two other species, Rufous and Calliope Hummingbirds, are observed moving through New Mexico during late summer and early fall. Rufous hummers fight with the Black-chinned over backyard feeders; Calliope are only infrequently observed in urban and rural locations.

North American hummingbirds, along with about 75% of migrants that fly south of the border, go to Mexico and Central America. Only 25% of North America's migratory birds go further into South America.

Human impact on habitat and threats to birds

Humans have had a huge impact on migratory birds. Because of increased human population size and specific human behaviors, migratory birds are facing many threats including decreased habitat, predation by cats, collisions with windows and wind turbines, disorientation due to light pollution and, of course, climate change. Thankfully, humans are now engaged in efforts to decrease these threats around the world and in New Mexico.

The United States is made up of many different biomes and ecosystems which provide suitable habitat for a great diversity of wildlife. There are coastlines, mountains, deserts, prairies, tundra, wetlands and swamps amongst many others. A diversity of birds (and other living things) requires a diversity of habitats. All of these areas include people and have been affected by our activities.

Hairy Woodpecker nestling in cottonwood cavity
photo by Laurel Ladwig

Habitat has been lost at a great rate over the last 150 years due to increases in human population and population density. In urban areas, "empty" lots have been paved, wetlands have been filled in and much of the landscape is "hardscape:" pavement, concrete, stone and metal. Rural areas have seen many thousands of acres of rangeland overgrazed, forest cleared for timber. Various types of habitat have been converted into huge agricultural fields that are chemically treated to prevent other types of plants (or insects) from growing there. Due to habitat loss, birds find fewer stopover points along migration routes. All of these factors have contributed to a decline in bird numbers and diversity in both rural and urban areas. See Activity 23 for a grade 2-6 activity related to avian habitat loss, "Crane Migration."

Climate change only worsens these effects. Some species of birds have begun to migrate or nest earlier, corresponding with earlier warm temperatures. This is problematic because the plants or prey needed to survive migration or to raise young may not yet be available earlier in the year. Conversely, some populations of insects now hatch out or end dormancy earlier, becoming available before birds have begun breeding and effectively making them unusable as a food source for nesting birds. Birds' ranges are changing as well. For example, some birds that formerly were only seen in the southern part of New Mexico have begun to appear with some regularity in the Albuquerque area. Increases in severe weather events due to climate change such as drought and heavy rainstorms have an impact on avian life as well. Growing numbers of wildfires and escalating fire severity are destroying vast swaths of forest habitat with effects made worse by years of fire suppression. Coastal wetlands and deltas have been altered by tropical storms and by rising sea levels. All of these shifts affect not only birds, but humans as well.

Research and monitoring of birds

People are beginning to make the changes necessary to address threats to birds, including climate change. Many projects are underway to increase, improve and restore bird habitat in urban and rural areas. Long-term monitoring by professional researchers and citizen scientists has paved the way for us to address the effects of climate change (including loss of habitat). Bird banding is one of many such efforts. Research collected by banders can contribute to habitat conservation efforts, to education about threats to birds and to advances in the science of climate change.

Bird banding is a method of monitoring in which birds are captured, tiny metal or plastic bands engraved with unique identification numbers are placed on one or both of their legs, data about the birds are collected and, finally, the birds are released. All of this occurs over a span of minutes. If and when the birds are recaptured by other scientists or rescuers of injured birds, or found dead, the person encountering that bird can report the band number to the U.S. Geological Survey at the web site https://www.pwrc.usgs.gov/bbl/bblretrv/index.cfm. If nothing else, the original banding data together with recapture data can give insights as to the bird's age and the distance it traveled. Most birds are not recaptured repeatedly but for those that have been, information about a particular bird's life can contribute to the big picture of the natural history of that species. All of the data together from banders throughout the world and over the course of scores of years begins to show patterns in timing and movement, and this information, when compared with other knowledge and data about natural history and climate, can help us to understand and inform our past, present and future actions.

Rio Grande Bird Research (RGBR) is a team of biologists and volunteers who have been monitoring songbirds at the Rio Grande Nature Center State Park since 1979. Like similar data collected around the world, their work shows some dramatic changes in bird populations and habits over this period in time. The lessons in this section are based on data collected by RGBR.

The Rio Grande Bird Research banders conduct monitoring either once or twice a week for ten week periods in fall and winter. They do not band birds at the Park

during breeding season. The duration of each daily monitoring session is six hours.

Twenty 2 x 6 meter (6 x 20 foot) mist nets are set up between poles at different locations around the premises of the Park just before dawn. Mist nets are lightweight mesh with holes for the capture of songbirds (see photo at right). Occasionally an insect or hummingbird is caught or, at the other end of the spectrum, a raptor or a roadrunner. The banders go on a round checking for captured birds every 25 minutes. Any birds that are caught are gently removed from the net, placed in a small cloth bag for their protection and brought to the banding station.

Photographs by Laurel Ladwig

Each bird's species and its time & place of capture are logged in and the following data are collected for each bird: band number (new or recapture), wing and tail length; weight; condition of wing, tail and body feathers; and amount of muscle and fat present. Using these data and other observations of plumage, the species (and sometimes subspecies) is identified and the age and sex of some birds can be determined. Information about weather conditions and other birds and animals observed during the course of the monitoring session is also recorded. All of these data are then logged into the bird banding database where they become accessible to scientists all over the world.

> "But to the old timer the banding of new birds becomes merely pleasantly routine; the real thrill lies in the recapture of some bird banded long ago, some bird whose age, adventures, and previous condition of appetite are perhaps better known to you than to the bird himself."
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> - *Aldo Leopold, A Sand County Almanac*

A note about names

Birds and other animals and plants have many common names (see the box belowabout Greater Roadrunners) and because of this, there can sometimes be confusion about which thing is being discussed. Sometimes it doesn't matter (you say toe-may-toe, I say toe-mah-toe) but in other contexts it can be important: it can mean life or death if we're discussing which mushrooms are or are not edible! For more information about scientific names, see the background section of Activity 10, "A Rose by Any Other Name."

In addition to names, scientists use four-letter "alpha codes" to save time when collecting data or writing notes. If the name is one word, the code will be that word's first four letters (MALL for Mallard). If the name is two words, the code will usually be the first two letters of each name (COHA for Cooper's Hawk). If the name includes a hyphenated first name, the code uses the first letter of the first hyphenated word, the first letter of the second hyphenated word and the first two letters of the second word (WCSP for White-crowned Sparrow). There are a few exceptions like LAZB for Lazuli Bunting which differentiates it from LARB for Lark Bunting...otherwise they'd both be LABU. There are also six-letter codes in use, but, for the purpose of this curriculum we will stick with the four-letter codes.

The Migratory Bird Treaty Act

The Migratory Bird Treaty Act regulates the acquisition, possession and disposal of migratory birds in the U.S. and is administered and enforced by the U.S. Fish and Wildlife Service. Living or dead birds, and their feathers, bones, nests and eggs may only be handled according to special regulations — and law-breakers may face time in prison and up to $10,000 in fines. Scientists, bird rehabbers, bird banders and other professionals receive special training so that they may work with these protected species, and are then issued a permit which must be renewed annually. For more information on the act, contact the U.S. Fish and Wildlife Service's Migratory Bird Program or visit https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php.