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Notes of a Naturalist

A newsletter bringing you the species, landscape, history, and happenings of the Taft-Nicholson Center

Birds Taking Flight

Spring is in the air. Temperatures are slowly warming, and migratory birds have begun their northerly travels. Over the years, ornithologists have documented restlessness in migratory birds around this time of year. They've given it the name *Zugunruhe*, a German-derived compound word that translates to movement or migration restlessness. This restlessness is most often spurred by the photoperiod, or the number of hours of daylight, though many other environmental cues can influence when birds migrate.

Some birds' migrations are fixed, occurring at nearly the same time year after year. These birds are known as obligate migratory species - they travel at predictable times each year based on the photoperiod, and tend to travel long distances. Conversely, facultative migratory species are more influenced by environmental conditions. They may delay their travels by a few days or even a few weeks if weather is unfavorable. Or, if spring comes early, they might make a head start up north. These birds tend to be shorter-distance travelers. They can sometimes predict what conditions will be like in their breeding grounds based on the weather patterns they are seeing in their wintering grounds. Obligate migrators traveling long distances, on the other hand, have no way to predict if there is an early spring or prolonged winter in their breeding grounds.

Birds use a variety of cues to navigate as they travel. Some birds have an iron-rich mineral in their bills. This mineral, called magnetite, helps them detect the earth's magnetic field and can be used as a navigational tool. Polarized light and other cues from the sun are also useful for many birds, but only those traveling during the day. Most songbirds travel at night. These birds mostly rely on the stars to orient themselves. They can determine which way is north by watching the rotation of the stars throughout the night.

The journeys that migratory birds embark on are unparalleled by most terrestrial animals. These round-trip journeys, year after year, are incredible physiological feats. Similar to mammals preparing for hibernation, migratory birds enter a stage of hyperphagia where they double or triple the amount they eat in preparation for their long flights. A bird preparing for migration can expand their digestive tract to keep up with the increased food intake. Once this hyperphagia phase is over, their digestive tract shrinks along with the liver and kidneys to make room for the extra fat that will fuel their journey.

Even for well-fed and well-prepared birds, migration is a very vulnerable time as they face inclement weather and exhaustion along their journeys. Large-scale changes to the environment are putting them at even more risk. Habitat degradation and fragmentation along migratory pathways have impacted key stopover sites that are needed for rest and refueling. Light pollution can disorient migrating birds, and we are still learning the various ways that climate change is impacting these migrations.



Red-winged Blackbird, Photo Credit: Gordon Dietzman/NPS



Mountain Bluebird, Photo Credit: Chris Montgomery

Signs of Spring

One of the most exciting signs of spring is the arrival of early migratory birds. Mountain bluebirds and red-winged blackbirds are some of the first to make an appearance in Centennial Valley. These early birds do indeed get the worms – those that arrive earliest get the best pick of breeding territory and access to the best food resources.

The trade-off, however, is a higher possibility of encountering late-season snowstorms and inclement weather. Sometimes such storms will cause birds to leave and return once the weather has once again become mild. Resident birds, like great-horned owls and nutcrackers, are already getting a head start on nesting. Sage-grouse have begun lekking.

Hibernating animals are beginning to wake up, triggered by the warmer weather. Bears may begin to emerge from their dens starting in early March. Males are often the first, while females with cubs will be seen later. They will survive off carcasses of animals that died over the winter until plant growth increases.

Trees are also starting to wake up from their dormant state. Some of the first plants to flower in the springtime are members of the Salicaceae family. These trees include willows, aspens, and cottonwoods. Their flowers, called catkins, appear before their leaves do. They aren't particularly showy flowers, but the first catkins of the season are an exciting sight nonetheless.

Some early wildflowers may begin popping up as April rolls around. Yellow fritillaries, or yellowbells, are one of the first to appear with the snowmelt. These small, vibrant lilies are a welcome sign of spring.

Bird Migrations in a Changing Climate

It is thought that modern bird migrations in North America have been evolving since at least the last Ice Age. These migrations have become fine-tuned to allow birds to take advantage of peak food availability in their breeding habitats. Climate change-caused desynchronization between birds and food sources has already been documented. The internal clocks of birds, plants, and insects are all impacted by a variety of factors. But for birds, photoperiod is the most important, while for plants and insects, temperature and other environmental factors are the most crucial cues. So as plants and insects appear earlier, birds will have a hard time keeping up. This will be especially challenging for long-distance migratory species.

Because short-distance migrators can adjust their migration time based on weather cues, many have been seen migrating earlier in years of earlier spring warming. These species are at an advantage when it comes to maintaining synchronicity with plants and insects. For long-distance migratory species, on the other hand, the timing of their migrations is hard-wired and primarily based on seasonal daylight patterns. Such species will take longer to adjust to the changing climate. Their migration patterns may take multiple generations to shift. The long-term effects of climate change on migratory species are still, of course, largely unknown.

Yellow Fritillary

