



Methods Used by Biologists to Study Birds Avian Science Center for the Grant-Kohrs Ranch NHS

Birds can be a tricky animal to track down: they fly, are good at hiding, are smart and many migrate hundreds to thousands of miles every year. Birds are a vital part of the world's ecosystems; they are also very sensitive and are a good "indicator." This means that by studying how the birds are doing in an area, we can learn about the health of the ecosystem. This is very important on the Grant-Kohrs Ranch as much of the riparian area along the river has been contaminated by mines up river. The birds can tell us whether the river is still in trouble or recovering. Below are several methods commonly used by biologists to study how bird populations are doing, whether they are successfully reproducing, returning to the same areas annually, and much more.

Bird Banding

To band birds means to place a metal identification bracelet around their tarsus, i.e. lower leg. These bands each have a unique number on them, which is recorded by the biologist and reported to a database maintained by the USGS Bird Banding Lab. To capture birds, the biologists set up mist nets. These are fine woven nets of small squares that are 10 meters long and 2 meters tall and are attached to tall metal poles. The birds, not seeing the nets, will fly into them. The biologist checks the nets often to remove the birds, which are usually just lightly tangled. Birds are carried to the banding station where they are fitted with a band and the number on it recorded. Biologists also measure and record the wing length, weight, body condition, feather condition, skull ossification (this can help determine age), species and sex. Depending on the species, different measurements, feather molts and plumage characteristics can be studied to determine a more specific age and sex (if the species are not obviously sexually dimorphic). All this is recorded on a data sheet, which is then entered into a nation-wide database.

This way, if a bird is recaptured elsewhere or again at the same station the next year, the biologist may determine the birds' origins, age and migration/traveling patterns. Because a banding station often stays in the same location for many years, the data can be compared and questions answered such as: is this species still very common? Are the young of a certain species being caught every year? Are the individuals coming back or is something possibly happening to them in their wintering grounds? Banding is the only way we can learn about birds as individuals. We can measure their annual survival, body condition, and productivity. All this is important for monitoring birds and their habitats.

Point Counts

A point count is a stationary survey in which the biologist records all birds seen or heard within a fixed amount of time. There are countless variations on point count methods, the one used on the Grant-Kohrs ranch was developed for a regional bird monitoring program called Integrated Monitoring by Bird Conservation Region (IMBCR), which is implemented by the

Rocky Mountain Bird Observatory in Colorado and its partners. A grid is laid out of 16 points; each point is 250 meters apart in a 4x4 square, making a 1 km plot. The counts are started early in the morning, a half hour before sunrise. The points are entered into a GPS unit in order to guide the point counter to each point. Once at the point the biologist does a quick vegetation overview, recording primary habitat and estimating cover in different vegetation layers. Then the biologist records birds for six minutes, using a watch that lets him/her know each time a minute is up. Some point count methods may require them to stay at a point for 10 minutes. Each minute the biologist stands in one place, but turns to look in all directions to record the species of the birds heard singing, calling or making another noise, like a woodpecker drumming, as well as birds observed visually. The biologist records the distance to the bird using a rangefinder to obtain an accurate estimation of distance. They then walk to the next point and start the process again.

Point counts give us valuable information on the birds over the landscape. Point counts are especially useful when a large area needs to be surveyed, as a km block can be covered in one morning. By doing replicate counts very large expanses can be surveyed, giving information such as species abundance, percent of sites occupied by certain birds species, and species diversity.

Nest Searching

Nest searching is yet another method used to study birds. To nest search it is important to know the calls of the birds as well as the song. By listening and watching, a pair can often be spotted; females of most species are harder to find, as they may be duller in coloration, sneakier and quieter. Once a pair has been located, the next key is to watch for "nesting behavior," this includes carrying food, nest material or fecal sacs to and from the same location. Often the birds have a specific "chip" call they use only when flying to and from the nest, another helpful tool when finding the nests. Using binoculars and being as inconspicuous as possible is the key, because birds see us as predators, and will be careful not to "show" the predator the nest. The nest can usually then be located and checked to see the stage of the nest, i.e. are they building, laying eggs, incubating or feeding nestlings. Sometimes the nest will be revisited by the biologist to see whether the pair was successful at raising young. When nest searching, it is very important to not leave a trail to the nest or disturb it. Birds are very smart and sensitive and will abandon nests if they feel threatened in any way.

Nest searching gives the biologist important information on whether the birds are successfully reproducing, and productivity by allowing the number of fledglings (young that leave the nest) to be counted. By knowing the reproductive success of the birds, the biologist can obtain habitat and resource information as well. While nest searching can only be completed over a small area since the sites need to be revisited many times throughout the season, it does give valuable territorial and behavioral information. For instance the biologist can learn how often the birds feed young, whether the males or females do most of the feeding, as well as nest building habits and timing.

References for more detailed information:

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