

**Introducing Alternate Food Sources to**

**Bird Populations in Natural Settings**

**Bridal Veil Basin and Ophir, CO.**

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## **Abstract**

The following study observes the effects of bird feeders on birds from residential and wilderness areas in terms of likeliness to change their summertime feeding behaviors. Throughout past years there has been a large bird diversity recorded in the area. (Jacobson) Bird feeders put up recreationally are very prevalent during the winter months. Yet, usually there are enough natural food sources for birds in the summer that they do not flock to feeders. The study was conducted on two separate plots in the mountainous southwest region of Colorado. The first was in Bridal Veil Basin located at 10,600 feet above sea level. The habitat is generally Engelmann Spruce and Sub-alpine Fir forest. The second plot was located in the town of Ophir at 9,800 feet. The site consisted of loose sedimentary scree and aspen trees, as well as fir and spruce trees. Both plots were mapped out with a 100 meter radius circle with the center at point (0,0). The experiment was set up with two birding observations for each plot. The first was without a bird feeder and the second, five days later was with feeder. The original hypothesis was the number and species diversity would increase at Bridal Veil and increase even more in Ophir due to it's proximity to town limits and birds thus being accustomed to using feeders. However, this was disproven as only the individual birds in Ophir increased and the species diversity decreased significantly for each plot. At the sample site in Bridal Veil Basin without a feeder, 12 different species were counted with 34 individual birds total. At the Bridal Veil site after a feeder was put up, 7 species were counted with 27 individual birds. At the Ophir plot the original count was 11 species and 22 individual birds while the Ophir count with a feeder resulted in 6 species and 28 individual birds. These results led to the new possibility that only a few aggressive birds were attracted to the feeder and pushed all the other birds out of the area. However, the largest challenge with this study was that none of the seed was eaten out of the feeders; five days was not enough time for the birds to find the feeder.

## **Introduction**

Putting out birdfeeders is a common practice all across the developed world. Birdfeeders allow easy, accessible birding for anyone in the convenience of your own backyard. Located in the Southwest corner of Colorado, Telluride has common feeder bird species such as Chickadees, Jays, Dark-eyed Juncos, Downy Woodpeckers, Evening

Grosbeaks, House Finches and Sparrows as well as the occasional Northern Flickers, Red Crossbills, and White-breasted Nuthatches. (“All Birds”) (“Project FeederWatch”) Bridal Veil Basin is located approximately five miles southeast and a thousand feet above the town of Telluride. The remote wilderness of the basin houses no bird feeders. Birds who live in that ecosystem eat only their natural foods. Ophir on the other hand, is 10 miles south and 200 feet above Telluride. Yet, with a human population of 200, there seems to be plenty of feeders in this town. This is especially true throughout the winter months. However, during the summer, there are enough natural food sources for the birds to survive without supplementing their diets. Therefore, feeders are not as prevalent during the summer months. In these sub-alpine life zones, birds can feed on pinecones, seeds, worms and insects. The following study questions whether birds will change their ordinary summer feeding patterns with the introduction of an alternative food source in a natural setting. Since there exists no data on this subject for these areas, it seems important that we find out if our entertaining bird feeders are harmfully disrupting the natural behavior of birds. This experiment looked at the effects of residential areas compared to wilderness areas in terms of birds using bird feeders as additional food sources. It is predicted that there will be increase at both sites after the introduction of feeders. However, it was also predicted that there would be a larger increase of birds at the Ophir site due to the fact those birds live in proximity to other bird feeders.

### **Site Description**

This study was carried out in the area around the small ski town of Telluride. This town is located on the eastern edge of San Miguel County, located in southwest

Colorado. This town is placed on the western edge of the San Juan Rocky Mountains. The area is full of glacial valleys carved out millions of years ago. It is now covered with steep slopes and peaks that reach up to 14,000 feet. The area up to approximately 10,000 feet is made up of sedimentary rock left over from times when the valley was underwater. Above 10,000 feet, is the San Juan Breccia, which is a volcanic ash deposit, formed over 35 million years ago. The sites and surrounding land are carved by headwater tributaries formed by snowmelt, which join into the San Miguel River downstream. The San Miguel River valley is full of various coniferous and deciduous trees common to the West.

Study site #1 is located in Bridal Veil Basin, above the Bridal Veil Waterfall at the southeast end of the Telluride Valley. Stretching from 10,200 feet to over 13,000 feet, the Bridal Veil Basin is made up of volcanic deposits. The slope of the study plot was situated about 100 meters from the north-flowing Bridal Veil Creek. This east-facing plot slopes downward at approximately a 30 degree angle towards the creek. The plot is a 100-meter radius circle with the center at point (0,0). The center of the plot sits in a steep mountain meadow with large snags and live Engelmann Spruce and Sub-alpine Fir around the edge.

The second study site sits on the south side of the Ophir Valley, approximately twelve miles to the southeast of the town of Telluride. The elevation is 9,800 feet. The plot is secluded in the forest but is still within 500 meters from the houses in town. The site is located at the top of a ridge separating two drainage systems near Ophir: Howard's Fork and Waterfall Creek. The slope facing towards Waterfall Creek slopes steeply with about a 40 degree angle. This slope is covered by loose scree and thin dirt. There are Engelmann Spruce, Sub-alpine Fir as well as a few scattered aspen trees. On the slope

facing the direction of Howard's Fork, there are many more tightly packed trees, especially aspen. This slope is less steep and therefore has more fertile, wet forest floor soil. Similar to the first plot, this study site consists of a 100-meter radius circle with the sides extending down both slopes. The center is also at (0,0) which is located at the zenith of the two slopes.

### **Methodology**

Both plots were visited twice over the duration of this experiment. At each site a preliminary observation was done to record the birds in their natural habitat. Starting at 9:30 am, a bird count was conducted for each plot from the center at point (0,0). Each bird located in the 100 meter radius circle plot was written down in a journal. Notes were written next to each bird to include species, whether the bird was sighted or only heard. Also, birds located outside of the plot were written down but with a note next to them specifying their location outside of plot. This data collection was continued for 35 minutes straight. After 35 minutes of time, a 5-minute point count was observed, in which all birds seen and heard within a 5 minute time span were meticulously recorded and plotted on a radial-grid data sheet. 5-minute point counts are a standardized, unbiased and efficient method for recording bird populations and are commonly used by ornithologists. The radial-grid data sheet represents the 100-meter radius plot observed and so all birds recorded were placed on the sheet with their approximate location in mind. This method of recording made it easy to visualize a bird's placement within the plot. For this observation a bird identification book and binoculars were necessary. It was also helpful to bring along an ornithologist to assist in bird identification.

After the 5-minute point count was concluded, a bird feeder was set up. The feeder was placed about 20 meters downhill from the center, where it could be easily observed without scaring away the birds. A neutral colored tarp was laid down under the feeder to catch any seed that might spill from the feeder. The tarp was held down against the wind with rocks around its perimeter. A small bird feeder was used that holds approximately 2 pounds of feed. It was fastened to the top of a wooden dowel about four to five feet tall. The dowel was sharpened on one end and stuck through the center of the tarp and then far enough into the earth where it would stand freely with a small amount of pressure exerted upon it. A small mallet was used to hammer the pole far enough into the earth. It was necessary to place rocks around the base of the pole to help it stand up straight and strong. The bird feeder was then placed on the top of the dowel. It fit snugly and securely where it would not be able to be pushed off the pole. Duct tape was helpful in accomplishing this task. After the bird feeder was secured on the wooden dowel and the dowel was pushed far into the ground, the feeder was filled completely to the rim with bird food. A plain, natural birdseed was used.

Five days after the original bird count and feeder set up, another bird count was completed at each plot. This, like the first one, started at 9:30 am and lasted for 35 minutes with a 5-minute point count recorded on the circular grid sheet. At the end of data collection, the bird feeders were taken down with caution. It was especially important to not spill any left over seed out of the feeder. This ensured non-native plants were not introduced to this ecosystem.

## **Results**

At the Bridal Veil Plot without a feeder, during the 35-minute observation period, 12 different species were recorded. This led to a total of 34 individual birds. This particular data collection period had both the highest total bird count and the highest species diversity. (See table-1 and table-2 below). However, for the 5-minute point count at the Bridal Veil plot without a feeder, the lowest species count and species diversity was recorded. Only 1 bird was seen during the entire count. (See table-3 below).

At the Ophir plot without a feeder, during the 35-minute observation period, 11 species were recorded, the second highest species diversity of the data collection. There were also 22 individual birds seen and heard; the lowest out of all four plots. (See table-1 and table-2 below). For the 5-minute point count, three bird species were recorded with a total of 7 individual birds. However, none of the birds in this point count were seen, only heard. (See table-3 below). Overall, the two sites that did not have bird feeders set up had a much higher species diversity during the 35-minute bird count, but not necessarily during the 5-minute point count.

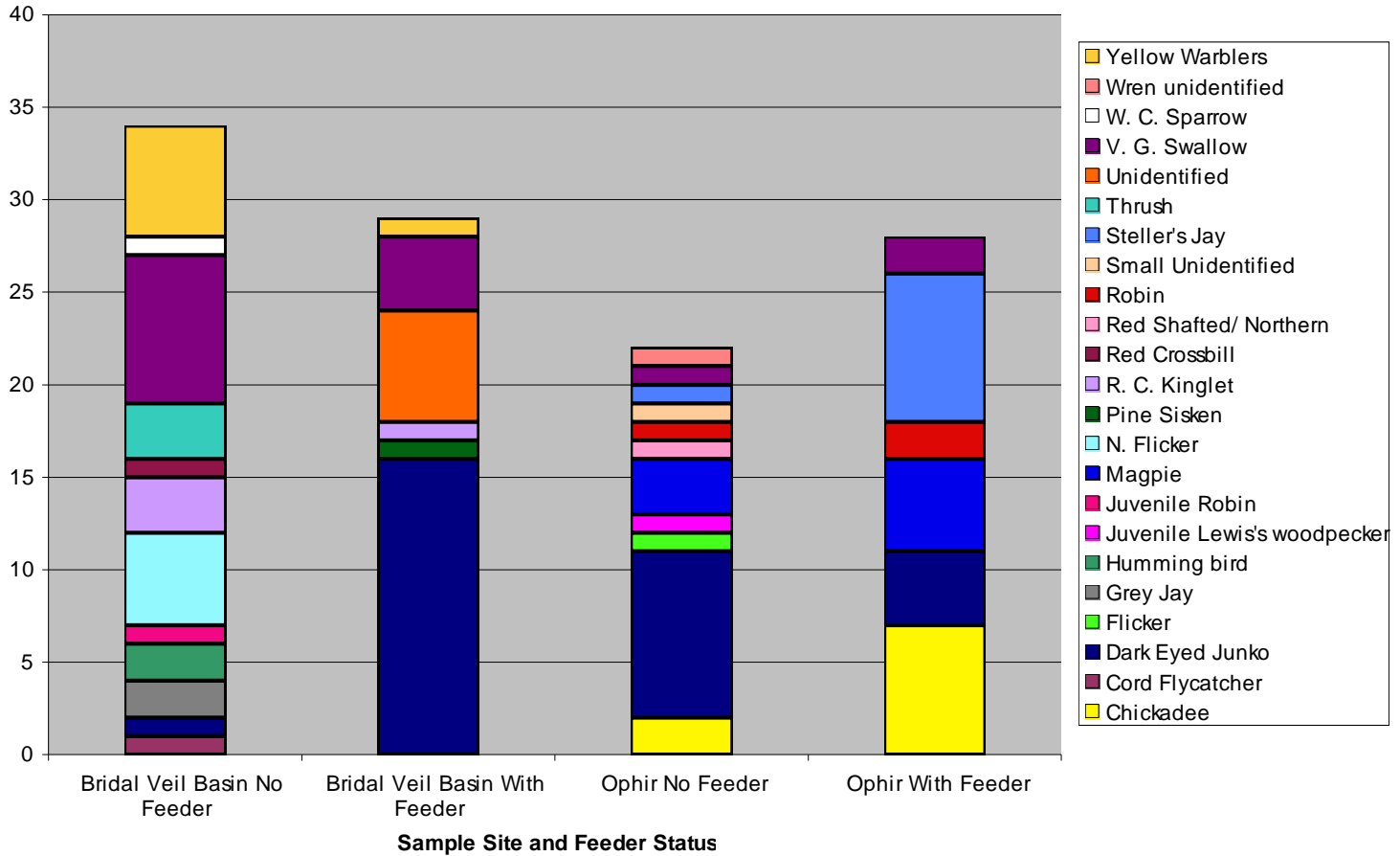
During the 35-minute bird count at the Bridal Veil plot with a feeder, only 7 species were recorded with 27 individual birds. (See table-1 and table-2 below). The Bridal Veil with feeder 5-minute point count had the highest species diversity (of 5-minute counts with feeder) with four species recorded. It also tied for the most individual birds identified with 9 birds counted. (See table-3 below).

For the Ophir plot with a feeder, the lowest species diversity was recorded with only 6 species prevalent. The number of individual birds counted was 28. (See table-1 and table-2 below). The 5-minute point count for the Ophir feeder site resulted in a tie

for the highest number of individual birds recorded (9), as well as three different species recorded. (See table-3 below). The sites with feeders set up, had a much lower species diversity than the plots without feeders.

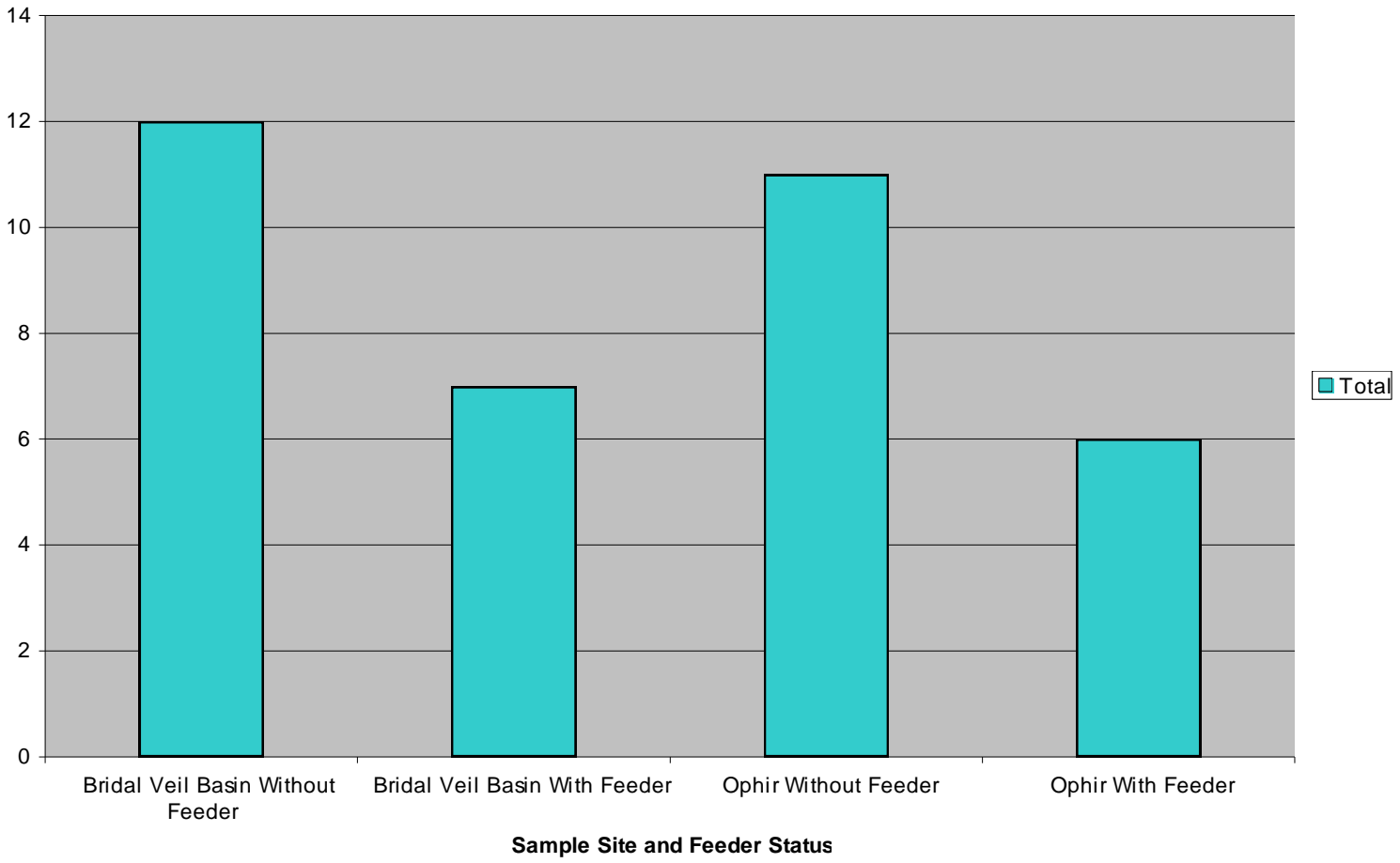
**TABLE 1**

**Total Bird Numbers and Species Composition For 35 Minute Observation**



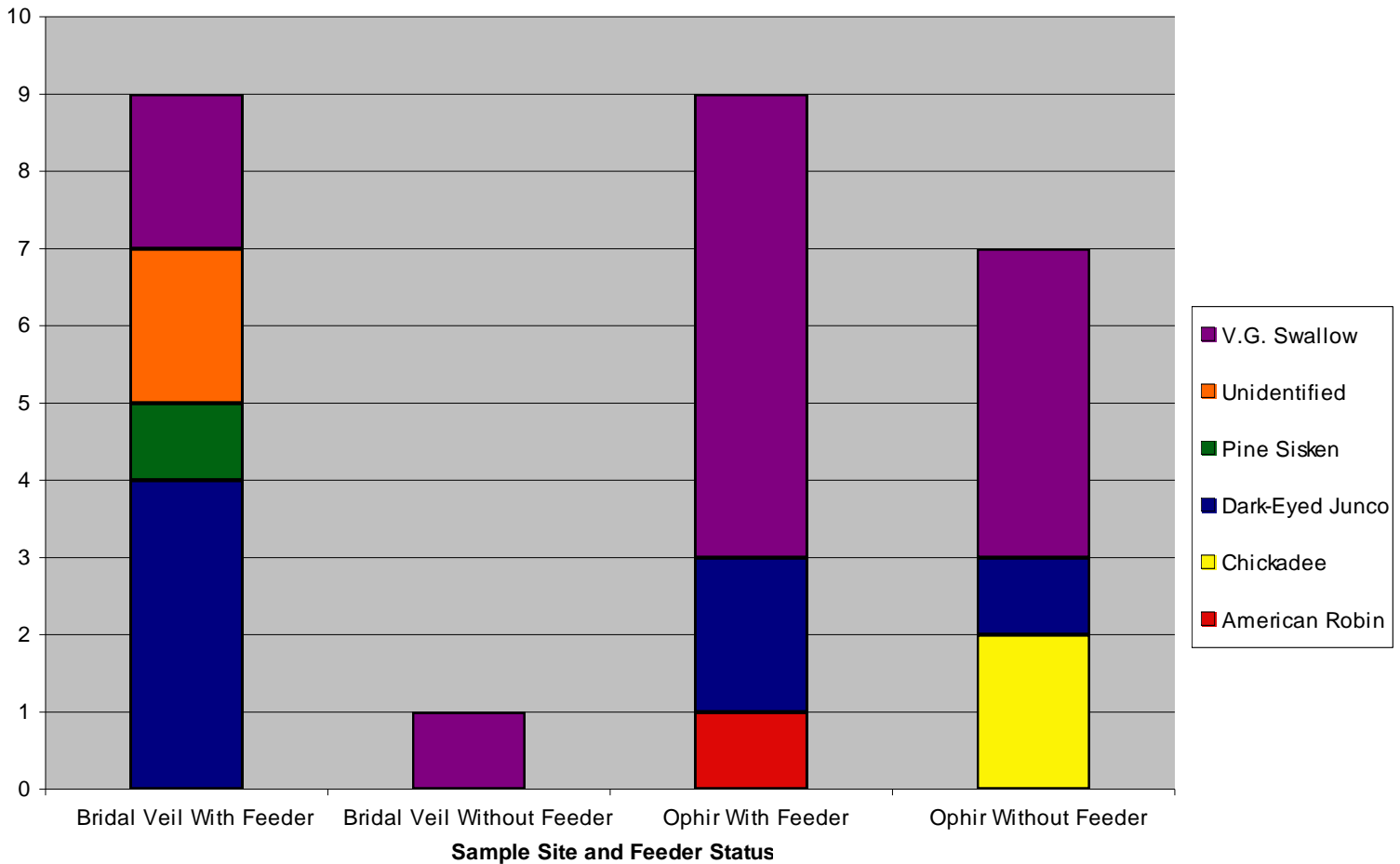
**TABLE 2**

**Bird Species Count For 35 Minute Observation**



**TABLE 3**

**Total Bird Numbers and Species Composition for 5-Minute Point Count**



**Discussion**

The original hypothesis for this study was that after the feeder was put up, there would be an increase in species diversity and individual number of birds at both sites. The second part of the hypothesis concluded that there would be a larger increase of birds at the Ophir plot due to the fact that those birds had likely already been introduced to bird feeders. However, the results of this study were far from the hypothesis. In actuality, the species diversity decreased at both plots with a feeder. The number of birds after the

feeder was put up only increased for the Ophir plot. At the Bridal Veil plot, the number of birds actually decreased.

From this new data a new hypothesis can be formed. At each site, regardless of the increase or decrease of individual birds, the species diversity went down. However, a certain number of birds became more prevalent. For example, the Steller Jay in Ophir went from only 1 sighting to 8 sightings after the feeder. At the Bridal Veil plot, the number of Dark-Eyed Juncos went from only 1 to 16. This data shows the possibility that a few specific feeder birds became aggressive and drove out other birds that were previously living in the area. When feeder birds find an easy source of food, they can become very aggressive and territorial. (Gaylord)

Although this new hypothesis makes sense in this context, there seem to be two major problems with believing this. One is that the 5-minute point count doesn't support this theory at all. In fact, the 5-minute point count does not seem to prove any hypothesis. The 5-minute point count seems to be completely random, unrelated data. The other problem with the new hypothesis is the fact that at both sites, the feeder seemed to be completely uneaten. At the end of the five days the feeders were still completely filled with birdseed. This proves that the patterns in the data collection were completely coincidental.

The fact that the birdseed was still uneaten after five days was a large problem in the design of this study. However, to test this, the Ophir bird feeder was left out for ten extra days after the last observation. When the feeder was taken down, all of the seed was gone. This demonstrates that the experiment would be much more accurate if the feeder was left up close to two weeks between observations.

If this experiment was to be reproduced, by making a point of leaving the bird feeder up longer, it would ensure the birds seen by the second observation were accustomed to the feeder. Five days may not have been enough time for the birds to “figure out” the feeder. A better suggestion would be to leave the feeder up for two weeks or more while regularly refilling the feeder as needed. It would also make the study easier if data sheets were made before the observation periods began. It would be a lot faster to put a check mark next to a bird species that has previously been recorded in the area rather than writing it down each time a bird is seen. If the suggested improvements were made to the study, it would be very interesting to observe the change in bird populations and diversity according to the introduction of feeders and proximity to residential areas.

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