

BirdSleuth INVESTIGATOR 2018



Science reports and original art
for and by students

Dear Students

Over the years, *BirdSleuth Investigator* has changed and grown. From a new look to a new name, and even new editors, the one thing that has stayed the same is that these pages are full of inspiring and creative work from students like you. My first year of editing this magazine has been a wonderful treat. I've been very impressed by the beautiful artwork, stories, and exciting studies from students of all ages.

As you read through this issue of *BirdSleuth Investigator*, you'll notice that many of the investigations focus on feeder birds. That's because we tried something new this year. With the help of our friends at 3-D® Pet Products, Wild Delight® Outdoor Pet Products, and Better Bird™, we launched our first National



Ruby-crowned Kinglet
by Lia, Grade 5, Woodfield
Macon, GA, Mrs. Alderman

Challenge! As part of this challenge, we asked teachers and students to help us explore the behavior of feeder birds across the country. We were thrilled by the response, and the finalists are featured in this issue. We'll be releasing another National Challenge this year, so we hope you'll join us!

Sincerely,

Kelly Schaeffer
Editor *BirdSleuth Investigator* 2018

Front Cover: *Hawaiian Iiwi and flowers* by Finley, Grade 1, Homeschool, Fortson, GA



Northern Cardinal by Allison, Grade 5, St. Stanislaus School
Winona, MN, Mrs. Nadeau



Townsend's Warbler by Daniel, Grade 5
Homechool, Rogers, AR



Blackburnian Warbler by Lizzy, Grade 5, St. Stanislaus School
Winona, MN, Mrs. Nadeau

Homemade vs. Store-Bought Suet: Who will win?

by *The Early Bird Club, Grades K–4*
Hamilton Elementary School
Hamilton, MI
Ms. Sikma

Do the birds around our school prefer the store-bought suet cakes or our own homemade suet cakes?

Introduction

We are a group of students at our school called the Early Bird Club. One of our jobs is to keep the feeders filled around our school. Many people in our community donate birdseed and also suet cakes. We started to notice that the suet cakes were not getting eaten so it made us start to wonder. We began this investigation to see if we could create a suet cake that our birds **would** eat.

Hypothesis

If given the choice, the birds will eat our homemade suet cake instead of the store-bought cakes.

Variables

Independent: Type of suet cake

Dependent: Weight of the suet cake

Constant: Shape of the suet cake, placement of the suet cakes, weighing day

Materials

- 8 store-bought suet cakes
- 8 homemade suet cakes
- 1 double hook stand
- 2 suet cages
- 1 digital scale
- 1 recording sheet

Procedure

We decided to take the month of February to research and eventually create the homemade suet cakes. Using a combination of recipe ideas

from different resources we made a total of 8 suet cakes that looked to us like giant granola bars. We kept an eye on the weather forecast through March and due to continued snow and rain, we decided to wait until the last week to start our investigation. Right before spring break on March 28th, we placed a double hook stand outside in the area with our other feeders. We put one of the homemade cakes on one side and a store-bought cake on the other. Then we waited.

When we returned to school the next week after vacation we were surprised to find that the homemade suet cake was completely gone and the store bought cake had lost some mass but not very much. A few group members had used suet cakes at home and they usually lasted way over a week. We reloaded with another homemade cake and left the first store-bought one. Each time we met over the month of April to fill feeders, we would find that the homemade cake was gone and the store-bought one was being eaten but at a much slower rate. During a four-week time span, we used a total of four of our homemade suet cakes (one each week) while the same store-bought cake stayed for the entire month.

DATA Collected each Wednesday in April

Date	Homemade Cake	Store-Bought Cake
3/28/18	Cake 1 229 grams	Cake 1 338 grams
4/11/18	Cake 1 0 grams	Cake 1 301 grams
4/11/18	Cake 2 260 grams	Cake 1 301 grams
4/18/18	Cake 2 0 grams	Cake 1 251 grams
4/18/18	Cake 3 312 grams	Cake 1 251 grams
4/25/18	Cake 3 0 grams	Cake 1 134 grams



Our chefs weighed each homemade cake before they went into the freezer for storage. We needed this information to keep track of data for our investigation. Photo by Ms. Sikma

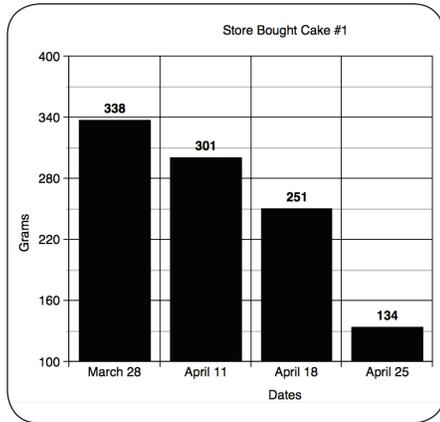
Results and Analysis

We really believe that we have a recipe for a suet cake that our birds like much better than the store-bought suet cakes we have. Each Wednesday morning in April, we would find the same thing: the homemade cake was gone, and the store-bought one had lost some grams but was still big enough to keep using. When we wondered about some things during this investigation a couple of things came up. We had a rainy, snowy spring. We wonder if that affected our homemade suet cakes. Did they fall apart or were they truly being eaten? We know that birds were eating them because we saw birds on the homemade cake more than once. We just can't be totally sure that all the suet cake was gone because birds ate it. We were surprised how fast the homemade cake was eaten. We wondered if birds were extra hungry during the study because of the bad weather. Maybe during a normal spring, the homemade cake would have lasted longer than 5–6 days.

(cont.'d on page 4)

(cont.'d from page 3)

Store-Bought Suet Cake #1



We decided not to graph the homemade cakes because each time we put one out, it was gone (measured 0 grams). The store-bought suet cake made a more interesting graph.

Want our recipe?

- 1 cup of crunchy peanut butter
- 2 cups of quick oats
- 2 cups of cornmeal
- 1 cup of lard
- 1 cup of flour
- 1/3 cup of sugar
- 2 cups of birdseed
- 1 cup of raisins
- 1/2 cup of walnuts
- 1/2 cup of dried cranberries

Mix it all together and push it into your molds. We recycled some plastic suet cake containers. Store in the freezer until ready to use.



Photo by Ms. Sikma



April 25, 2018 – Homemade cake #3 is gone! Our store-bought one is hanging in there. It weighed 134 grams. Photo by Ms. Sikma

BirdSleuth says: You may have noticed we have two suet investigations this year. This provides us with a great opportunity to compare and contrast the studies. Both investigations compare two types of suet to find out which birds prefer, but they use different ways to measure results. The Early Bird Club measured the weight of the suet cakes, while the Owen's study monitored the number of bird visits. As you read through the investigations, consider the advantages and disadvantages of each method. Which method would you use in a suet investigation?

Tallow vs. Coconut: The Bird's Favorite Flavor

by Owen, Grade 6
Homeschool
Downingtown, PA

Introduction

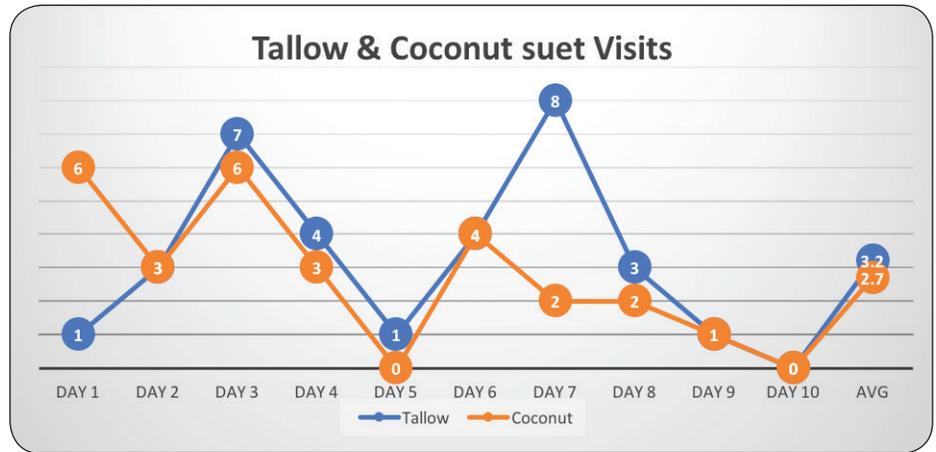
I decided to base an experiment on the amounts of birds that visited a homemade coconut oil suet versus a homemade tallow (beef fat) suet. My hypothesis stated that the results would show that more birds came to the tallow than the coconut oil suet, because that is the type of suet they are used to.

Materials and Methods

The suet feeders were observed on a total of 10 weekdays from 8:00 to 9:00 a.m. in the weeks of March 5 to March 16. Each suet contained the same amounts of sunflower seeds, millet, and chopped walnuts. They were both at equal heights, about five feet off the ground, and were about two feet away from our house. Unfortunately, daylight savings time began during our experiment so the results in week two could have been slightly skewed. We tracked the weather at the start of each count.

Results and Analysis

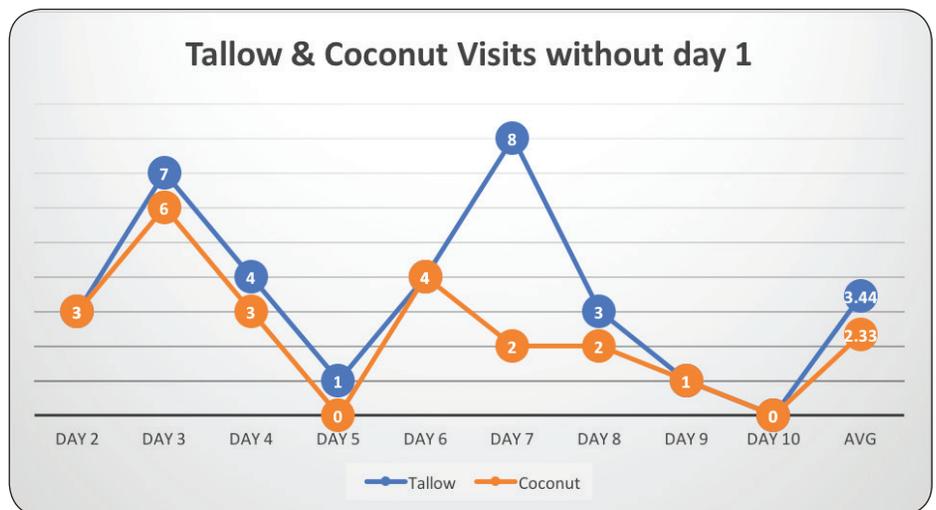
All of the days bar the last, we saw at least one bird. The highest amount of birds seen on the coconut oil suet in one day was six. The highest number on tallow in a day was eight. It was snowing during the count day when the highest number of birds was observed, and the weather was always between 27 and 35 degrees Fahrenheit at 8:00 a.m. See my graph below for the exact numbers of birds throughout the count days. The average number of birds for tallow and coconut were 3.2 and 2.7 respectively.



Conclusion

My data suggests that the coconut suet may have been more popular at first because it was in the placement of our regular suet. The birds likely thought it was the regular suet at first and came to it more, but my graph also shows that they probably realized the difference in flavor from tallow suet as they came to it less and less over the two weeks. The tallow suet also was mostly eaten by the end of the two weeks, and the coconut still had more than half left. Furthermore, they likely realized that the tallow suet was what they were used to, because the store-bought suet is tallow, so the ratio of tallow to

coconut became more weighted toward tallow. Without the first day, the average number of birds were 3.44 and 2.33 for tallow and coconut respectively, as well as tallow having 31 visits and coconut having 21. There is also a graph below showing the count without the first day. If I did this experiment again, I would make sure that the suet was not in the vicinity of our original suet feeding station. My experiment supports my hypothesis "If I make two suet cakes, coconut and tallow, then the tallow will be visited more because birds are more accustomed to tallow than coconut."



National Challenge Grand Prize Winning Investigation

Do Birds Prefer Music?

by Jane, Grade 6
New Canaan Country School
New Canaan, CT
Ms. Mackey

Purpose

The objective of this study was to determine whether or not birds preferred to feed at a feeder with the music of Ludwig van Beethoven No. 9 in D minor or a feeder with no music at all.

Hypothesis

My hypothesis was that birds would like silence more than classical music because the music would scare them away. I thought that this would be true because birds are sometimes scared of loud noises like humans or music. I believed that if birds were to come, they would be more fearless birds. I thought that Blue Jays would feed more often at the feeder with the music than smaller, skittish birds.

Variables

Independent: Whether or not classical music was playing

Dependent: How many/what type of birds feed at each feeder

Constant: The placing of the feeder, the seeds, the song, the time of day, the person observing

Materials

Tube bird feeder, feed, pencil, data sheet, journal, pens, and a phone, (that plays the music)

Methods

The experiment was conducted in Jane Walsh's front yard. The feeder was hung from a medium sized tree. Near the feeder, there was a window, a driveway, a hill, different types of bushes, the front door and a generator. There was a phone placed in the window between the screen and the glass. A tube feeder was used. In the feeder, songbird



Western Tanager by Makayla, Grade 5, St. Stanislaus School, Winona, MN, Mrs. Nadeau

seed was used to feed the birds.

The feeder was observed from a window inside. Binoculars were not used to observe. The data was collected at 7:20 a.m. each morning, for ten minutes. Overall, the data was collected for a total of a month. The data that was collected depended on whether or not birds prefer to feed at a feeder with music or silence.

Results

All in all, twelve individual observations were collected at a squirrel-proof feeder in a front yard in Connecticut. Figure 1 is a bar graph that represents the total amount of birds seen during each condition. Over the course of the collection days, 81 birds were seen. Forty birds were seen at the feeder when music was playing, and 41 were seen when it was silent at the feeder. Figure 2, a bar graph, conveys the number of birds seen at the feeders by their species. When it was silent, White-throated Sparrows tended to appear the most. On the other hand, when Beethoven was playing, Dark-eyed Juncos made the biggest appearance. The first pie chart, Figure 3, exhibits the percentage of the whole that belongs

to each species when music was not playing. Universally, four bird species took up slices that were over 10% of the whole pie. Finally, Figure 4 shows the type of birds seen when music was playing. Surprisingly, all the birds seen came either two or more times. Six out of the 12 days, three or fewer birds were seen. When music was playing, three species were only seen once. The difference between the birds seen with music and no music was only one bird. On days 2/20, 2/21, 2/15, it was foggy and damp or raining. On those days, not many birds came by. This shows that weather was a big factor for the data collections.

Discussion

After conducting the experiment, I have found that birds prefer to feed at a feeder that has music playing as opposed to a feeder where no music is playing. Figure 1, a total collection of the overall result, shows that birds prefer to come when music is playing by a one-bird difference. When Symphony No. 9: in D minor was playing, 41 birds came. On the other hand, when no music was playing, 40 birds came. While the majority of the birds came to

Figure 1

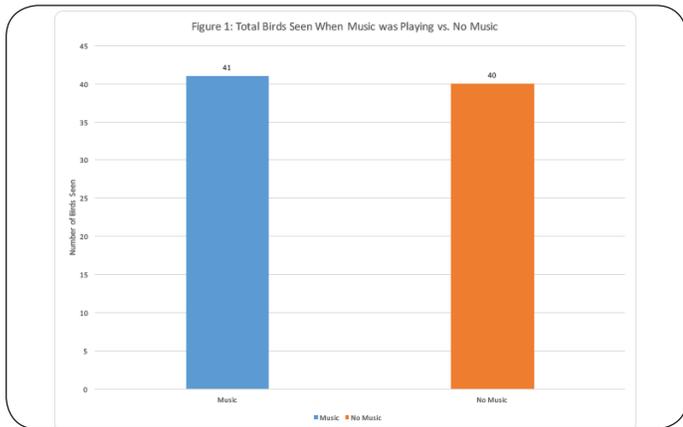
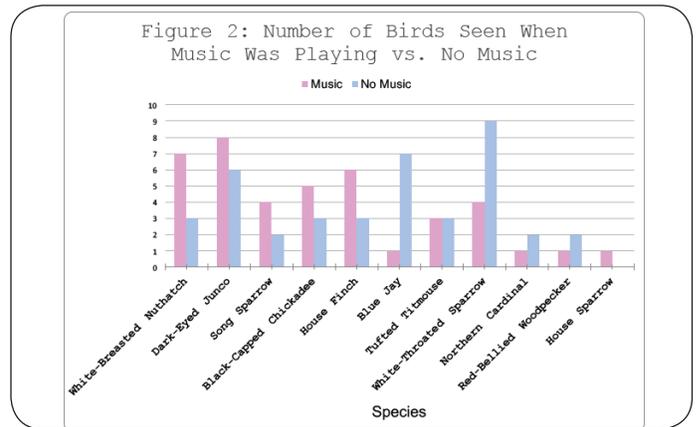


Figure 2



the feeder when music was playing, Blue Jays, White-throated Sparrows, Northern Cardinals, and Red-bellied Woodpeckers went to the feeder when it was silent more often than not. (Tufted Titmouse went equal amounts to both feeders.) From the two pie charts; Figure 3 and Figure 4, Dark-eyed Juncos came the most when music was playing while White-throated Sparrows came more often when it was silent. I think that the birds of New Canaan, CT came more often to the tube feeder when the sound of Ludwig van Beethoven for a number of reason. Since the differentiator was one bird, the music wasn't that big of a difference. Since birds themselves, sing, the classical music was just a normal factor that played into their lives.

There were a few things that contributed to my study being less-

accurate than hoped. First of all, the feeder was lowered on a wire halfway through the observation schedule. The feed, which was consistently songbird seed was not consistently added to the feeder. In other words, some days the seed was one-third full and on other days it was only one-fifth full. The weather, although it couldn't be controlled, played into the ultimate results. On days where snow and rain occupied our town, birds tended to stay out of the precipitation. Another source of inaccuracy was the music that was played. The phone that played the music was placed in between the window glass and the screen to the outside. To check the music and time, I sometimes opened the window, causing the birds to fly away.

If I were to redo my experiment there would be a few components that I would improve. I would be

more thorough with the food that was put in the tube feeder; perhaps mark a line that the food would be filled to each day. In addition, I would observe on a tighter timetable; strictly watching through the window at 7:20 a.m. to 7:30 a.m. every day except Fridays. Following that aspect, I would check the weather before I observed so that the full ten minutes was dedicated to a careful and all-inclusive data collection. Going back, I would also find the weather statistics on a different, more accurate, site. If I were to do another experiment similar to the one I conducted, I would be interested in testing whether or not birds like different genres of music or if they would like the sounds of other birds. Furthermore, I would be interested if birds liked the calming music of a distinct climate like the rainforest or forest itself.

Figure 3

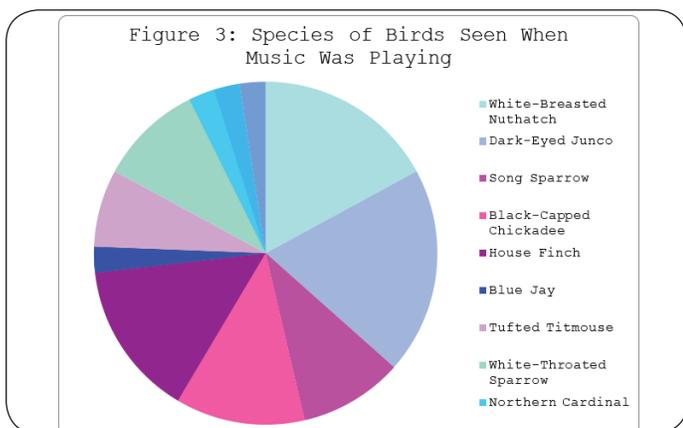
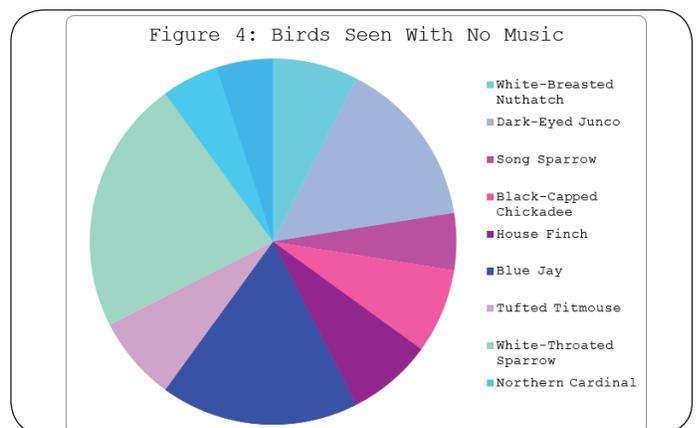


Figure 4



The Effect of the Type of Feeder on Bird Visits

by Jenna and Adriana
Grade 6
Essex Middle School
Essex, VT
Mrs. Dunn

Introduction

Many people love to hang up bird feeders and watch birds nibble on birdseed, and birds love it too! It's a free meal with not much effort, but do birds prefer a certain type of feeder? The types of bird feeders are very different from each other. The tube feeder is a cylinder shape and is designed for smaller birds to feed from because of the distance between the perch and the feeding hole ⁽¹⁾. A reason birds may like this feeder is because squirrels have a harder time getting to the seed. Finches, chickadees, and titmice are some of the bird breeds that are smaller and would be the birds that fit on the type of feeder. The house feeder can be wooden and looks like a basic house that holds food. This feeder accommodates birds that range from small to medium and more birds are able to stand at this feeder than at the tube feeder ⁽¹⁾.

We decided to test if birds like a tube feeder or a house feeder better. We decided to test this because we have bird feeders at our house and our neighbors do too. We wanted to know if more birds would come if they had a feeder that they preferred more. Our hypothesis was

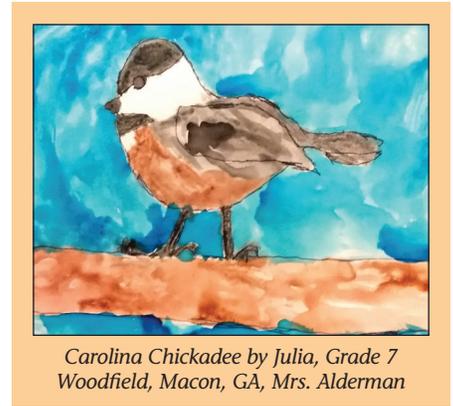
that the tube feeder will have more taken from it because we thought we have more small birds in our area where other areas may have more big birds. We based our hypothesis on the area around us.

Materials and Methods

The materials used in our project were black oil sunflower seed, a large graduated cylinder, a house and tube feeder, and a data sheet. First, the feeders were hung up, and 500 ml of black oil sunflower seed was put into both the house feeder and the tube feeder. The feeders were watched for ten minutes each day to see how many birds came to the feeders at roughly around the same time each day. One thousand more ml of black oil sunflower seed was added to the house feeder because it was almost empty on day two. The project lasted for seven days, but there were two days where we did not watch the feeders (Saturday and Sunday). The project was conducted in March.

Results and Analysis

Our results were fourteen bird visits for the house feeder. For the tube feeder, we only saw one bird throughout the entire week. The amount of seed in the tube feeder at the end of the week was 300 ml. The tube feeder first started with 500 ml of seed; this means that 200 ml of seed were taken. For the house feeder, 1,500 ml was put in, because lots of birds and squirrels were coming to it. At the end of the week, only 200 ml remained, so 1,300 ml were taken from the house feeder.



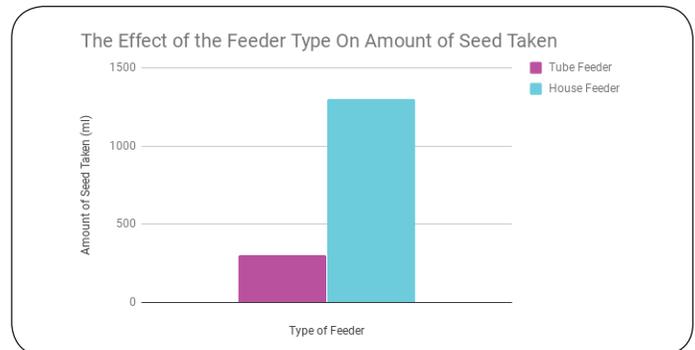
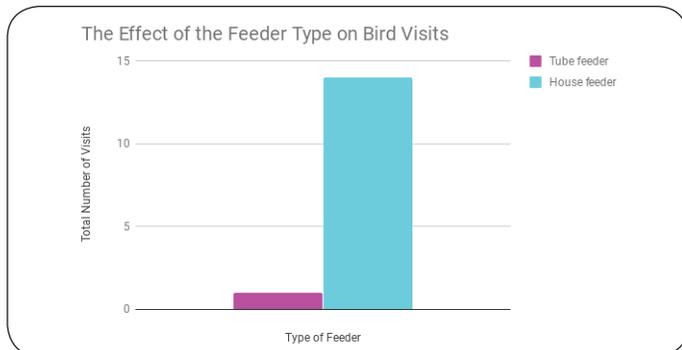
Carolina Chickadee by Julia, Grade 7
Woodfield, Macon, GA, Mrs. Alderman

Discussion and Conclusion

Our hypothesis was that the tube feeder would have more bird activity than the house feeder because we thought we had smaller birds in our area and the tube feeder accommodated smaller birds. It turns out our hypothesis was incorrect. More birds ended up coming to the house feeder. The house feeder definitely had a lot more squirrel visits, the tube feeder had none. When we collected our data, we concluded that if you want more bird activity, then a house feeder would be a better choice than the tube. However, squirrels also love to have parties on the house feeder. Tube feeders have less bird activity but no squirrel visits were observed. So if you wanted a bird feeder with squirrel activity and bird activity, a house feeder would be best. If you wanted a feeder with no squirrels but less activity, then a tube feeder is best for you.

References

"How to Choose the Right Kind of Bird Feeder." *All About Birds*, 15 Nov. 2017, www.allaboutbirds.org/how-to-choose-the-right-kind-of-bird-feeder/



Will Pictures of Cats Scare Birds?

by Lucas, Grade 1
 Reyes Elementary School
 El Paso, TX
 Ms. Tolentino

Note: The bird drawings were done by Lucas. The text of the manuscript was drafted through time. Luca's Dad kept a notebook to write down Luca's ideas as they both talked about, planned, and implemented the project.

The Problem

At my apartment, I have seen birds bathing in the pool. Birds carry diseases and diseases make people really sick. Since I noticed that birds are afraid of cats, maybe they can guard the pool so the birds stay away.

I read in the *BirdSleuth Investigator* magazine about a project in which a student put a stuffed cat near the feeder to see if the birds get scared. I also watched a TV show called *The Lion in Your Living Room*. In this show, the scientist said that outdoor cats like hunting; they can kill lots of birds. They do this because it is part of their behavior. They actually bring the killed bird to the house to share it with their owners. My grandpa's cat does that. So since cats do this, I thought that pictures of cats would scare the birds away from the pool.

Question: Will the birds fly away if they see bird images at the pool?

Hypothesis

If I put pictures of cats on the side of the pool where the birds bathe, then they will fly away from the pool.

Variables

Controlled: Place (side of the pool), time of the day I observed

birds (late afternoon), and amount of time I observed the birds (30 minutes)

Independent: Cat pictures (calm and aggressive)

Dependent: Number of birds at the pool

Materials

1. Hand counter clicker
2. Camera
3. Pencil
4. Notebook
5. Cat pictures

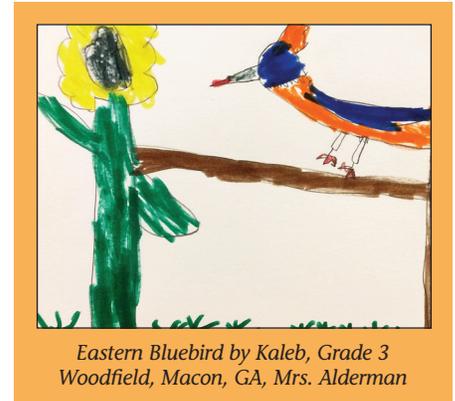
Procedure

My Dad helped me find pictures of cats on the Internet. We laminated them and put them in the shallow area of the pool where the birds come to drink water and bathe (Figure 1). We secured the pictures in the shallow part of the pool with small rocks to hold them in place. We chose four pictures showing calm cats and four more of aggressive cats (Figure 2). We sat about half a block away from the pool

Figure 1



Figure 2



and I got ready with a hand counter clicker to count the birds on that side of the pool when the pictures were in the water and when there were no pictures in the water (Table 1). I always observed the birds for 30 minutes. On a notebook, I wrote the number of birds I observed, the date, and the temperature. I

Table 1

Pictures	# Birds that Flew Away
Calm	33
Scary	27
Without pictures	0

counted birds at the pool without cat pictures in the water during 6 days, and with cat pictures during 7 days (4 days with scary pictures and 3 days with calm pictures). I did my experiment in the months of January and February of 2018. At this time of the year, people in my apartment building do not use the pool because the water is too cold, so that helped a lot because I did not want people around the pool to scare the birds away.

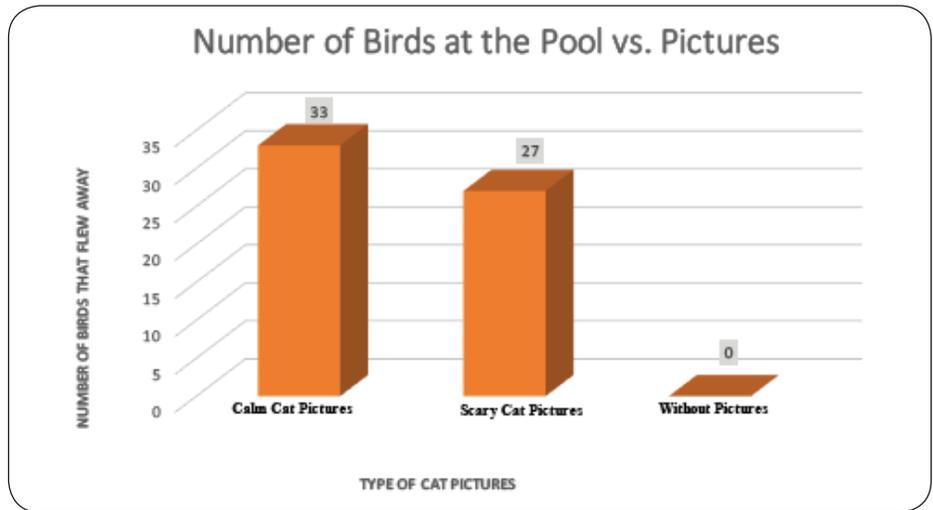
(cont.'d on page 10)

(cont.'d from page 9)

Results

- I found out that both scary and calm cat pictures scared most of the birds away, except the grackles. I saw the doves jumping and walking around the side of the pool where the pictures were placed; they tried to go into the water several times but then decided to fly away or to the other side of the pool that did not have pictures. The grackles, however, were not afraid of the pictures; they jumped into to water right away while the doves were being a little skittish.
- Without cat pictures, all the birds that came to the pool went into the water and bathed, and with cat pictures, 60 birds, out of 66, flew away when they came to the pool and saw the pictures. The other 6 birds (3 grackles and 3 white-winged doves) went into the water (Graph 1). I noticed that when the pictures drifted away, the birds went into the water.
- Of the 60 birds that flew away when they saw the pictures, 33 of them were scared by pictures of cats with a calm face, and the other 27 were scared by pictures of cats with scary faces.
- I do not think the temperature was a problem for the birds, they came to the pool no matter if it was cold or warm. For instance, on the coldest day (50F) I counted 13 birds.
- In total, I saw the following species of birds: 1 mockingbird, 2 Rock Pigeons, 3 grackles, and 116 White-winged Doves (Figure 3). My Dad helped me find the names in the Sibley Guide to Birds.

Graph 1



I think the White-winged Doves are the most common birds around here, that's why they were the most numerous species at the pool. They were jumpy when they saw the cat pictures probably because they are not comfortable around big animals or people; they fly away when I pass them. The grackles are less afraid, even near people, and that is why they were comfortable going into the water; these birds are

noisy and sort of bold and would go anywhere in the city to find food. The other birds I saw, the mockingbird and the Rock Pigeon, were really nervous, like the White-winged Doves when they saw the pictures in the water. I guess these birds are not as adventurous as the grackles, and because of that, they were afraid of something that looked like a predator.

Figure 3



Conclusions

After doing my experiment, I can say that:

- My hypothesis was supported but not completely because almost all the birds got scared with the cat pictures.
- The cat pictures scared the birds away, except the grackles.
- The most common bird coming to the pool was the White-winged Dove, and the least common, the mockingbird.
- The faces of the cats (calm and aggressive) did not make a difference, both scared the birds away.
- I wonder if in the long run the birds would get used to the cat pictures and they will get smart and think that they are just pictures, and do not fly away.
- I learned that birds were afraid of cats, more than what I imagined. This may remind them of cats as predators and help them stay safe, away from the pool.
- In the future, the same experiment can be done using actual real cats as guards versus cat pictures only. I do not know if the cats will stay put.

Bibliography

1. Cornell Lab of Ornithology. (2015). Investigating evidence. Ithaca, NY.
2. Sibley, D. (2001). *The Sibley guide to birds*. National Audubon Society.
3. The Nature of Things. Netflix. The Lion in your Living Room. September 20, 2017.

Acknowledgments

My Dad, the birds that were scared, my cat Milo, my Mom, Marco, and my dog Tank.

Squirrels, Chipmunks, and Birds

by JJ, Grade 7
Tualatin Valley Academy
Hillsboro, OR
Mr. Kahler

Purpose

I was watching a bird eat on a feeder until a squirrel chased it away. Although the bird did fly to another feeder, it seemed there were fewer birds when there was a squirrel around. So I made a hypothesis that if there are squirrels, then the number of birds will be less.

Chipmunks are about 6–10 cm in length and squirrels are about 10–18 cm. They are brown and nearly identical. Chipmunks are smaller and have a stripe down their back. “Squirrels and chipmunks are opportunistic foragers and eat a variety of food including acorns, tree buds, berries, leaves, twigs, insects, fungi, and eggs. However, seeds and nuts are their main food source” (Paws Wildlife). Bird feeders provide an easy way to get food.

Squirrels hibernate, living off their stored fat, and will go outside their den only if they have to eat. Chipmunks hibernate like squirrels do but don’t store fat. My data was recorded in winter so that meant fewer squirrels and chipmunks were observed. This is another reason why I think that squirrels and chip-

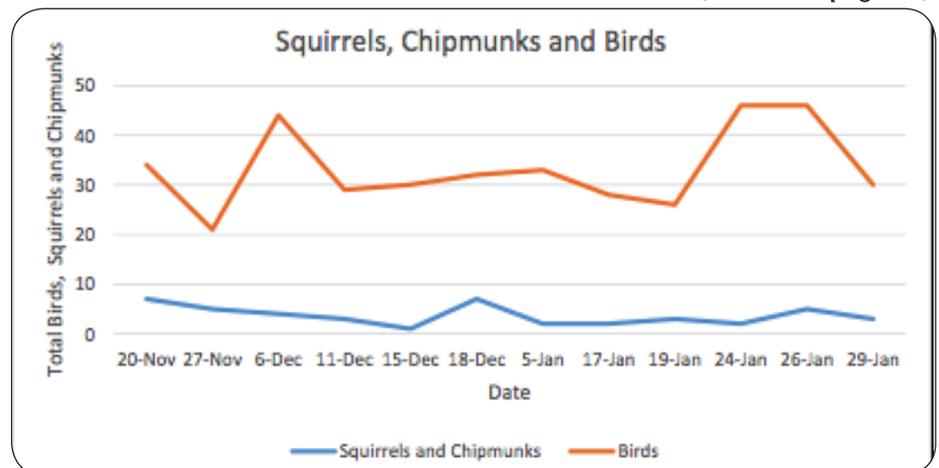


munks will not affect the number of birds in the winter.

Procedure

To record this data, we got binoculars, a pencil, and a notebook. Then we recorded weather data from the weather station to get data such as the temperature, precipitation, and more. We would then go to the bird blind, which was located across the soccer field and by a pond. The bird blind is a small area with benches and a roof. There we would watch birds eat at about 15 feeders. Once there, I would focus on how many squirrels and chipmunks there were, then get the bird that I missed from my teacher or my friends.

The independent variable affects the dependent variable. The independent variable is the chipmunks and squirrels. This is the independent variable. (cont.'d on page 12)



(cont.'d from page 11)

dent variable because I suspect the chipmunks and squirrels affect the birds by scaring them away to hog the feeders.

The dependent variable is the variable being affected by the independent variable. The dependent variable is the birds. The birds are the dependent variable because the number of birds depends on the chipmunks and squirrels scaring the birds away and then the birds fly away.

Results

I collected this data in my school bird blind across the field. I got this data between the months of November and January. It was difficult to not count the squirrels and chipmunks twice. Sometimes I had to rely on a peer to count squirrels and chipmunks I missed. The most squirrels and Chipmunks I saw at the bird blind was seven. The most birds I saw at the bird blind was forty-six.

Conclusion

My data shows that the number of birds is not affected by the squirrels and chipmunks. Although my hypothesis was not supported, I recorded this data in the winter. Chipmunks and squirrels dislike the cold, therefore are out less in the winter.

When a squirrel or chipmunk would chase a bird out of a bird feeder, the bird would just fly to the next feeder. The squirrels and chipmunks would chase each other away more than the birds. It seems like the squirrels and chipmunks are more of a threat to each other than to the birds.

If I would have recorded my data year long it would be more accurate because I would have seen more squirrels and chipmunks to compare to the number of birds.



Red-headed Woodpecker by Carson, Grade 5, St. Stanislaus School, Winona, MN, Mrs. Nadeau

References

1. Chipmunks. (2010, April 11). Retrieved January 17, 2018, from <https://www.nationalgeographic.com/animals/mammals/group/chipmunks/>
2. PAWS - People Helping Animals. (n.d.). Retrieved January 17, 2018, from <https://www.paws.org/wildlife/having-a-wildlife-problem/mammals/squirrels/>
3. What Do Squirrels Do in Winter? (n.d.). Retrieved January 17, 2018, from <http://www.lpzoo.org/blog/what-do-squirrels-do-winter>

Date	20-Nov	27-Nov	6-Dec	11-Dec	15-Dec	18-Dec	5-Jan	17-Jan	19-Jan	24-Jan	26-Jan	29-Jan
Squirrels and Chipmunks	7	5	4	3	1	7	2	2	3	2	5	3
Birds	34	21	44	29	30	32	33	28	26	46	46	30

Will a Stuffed Squirrel Affect the Number of Birds that visit a Feeder?

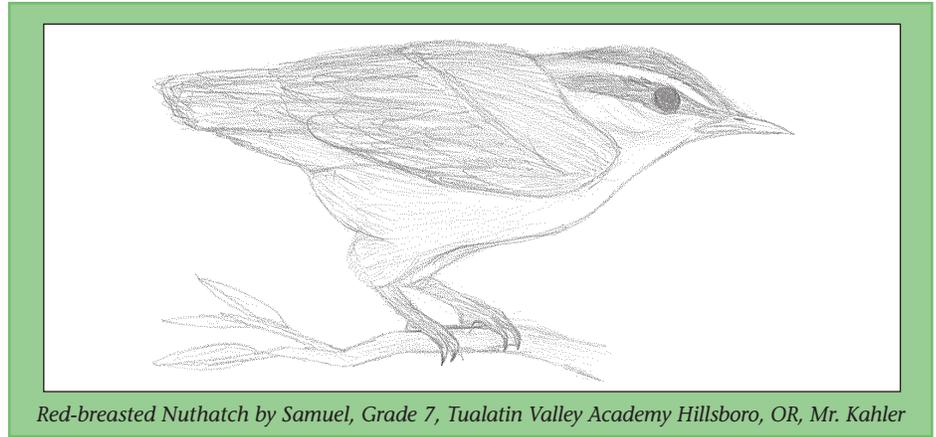
by Zach and Sam
Grade 6
Essex Middle School
Essex, VT
Mrs. Dunn

Introduction

Squirrels are very common pests in Vermont. They are sometimes called tree rats and can be annoying when they eat your garden plants, knock over your feeders, and steal all your seed. We wondered if they also scare off birds. At our school our class puts recycled bird feeders outside during winter. All of the squirrels come and take the seed. When we go bird watching, we noticed when we see squirrels we never seem to see any birds. Our project was to find out how much the squirrels affect birds' feeder visits. We put a stuffed squirrel next to a feeder and saw if the squirrel scared off birds. Our hypothesis was that very few birds would actually visit the feeder with the squirrel near it.

Materials and Methods

Two identical bird feeders were put up outside in the woods behind our school. One feeder had a fake stuffed squirrel on top of it and the other didn't. Both feeders were watched on five different days in March for 15 minutes at around 9:30 a.m. We also compared the difference in how much seed was left over after



Red-breasted Nuthatch by Samuel, Grade 7, Tualatin Valley Academy Hillsboro, OR, Mr. Kahler

the five days by starting with 950ml of mixed seed and measuring how much seed was left after seven days of having the feeder outside.

Results and Analysis

Our group started with 950 ml of mixed seed in each feeder. The feeder with no squirrel had 530 ml left and the one with the squirrel had 580 ml left so there was only a 50 ml difference between the two feeders. The birds did prefer the feeder with no squirrel but not by much. Overall we did not get very many visits on either feeder.

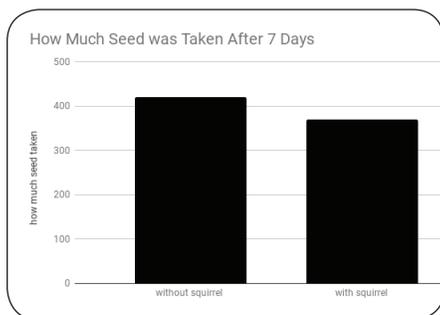
Discussion and Conclusion

Our hypothesis was that hardly any or no birds would visit the feeder with the stuffed squirrel and an average amount of birds would visit the regular feeder. Our hypothesis

was incorrect. It is possible that the birds found out that the squirrel was fake and started regularly visiting. More birds visited the feeder with no squirrel but not by much. Our group learned that birds appear to know if squirrels are fake or not. If we did another project we would do it on if a stuffed dog would scare away birds from a feeder.

References

1. "Tree Squirrels." *PestWorld.org Your Partner in Pest Prevention*
2. www.pestworld.org/pest-guide/nuisance-wildlife/tree-squirrels/.



BirdSleuth says: Have you ever watched a squirrel at a feeder and wondered what the birds think about sharing their space? These last two studies look at how squirrels affect birds at feeders. Did you notice any differences between them? JJ's investigation was observational, meaning he simply watched a bird feeder and took notes on bird and squirrel behavior. Zach and Sam's investigation was experimental, meaning they altered the feeder area by adding a stuffed squirrel, then watched how that changed bird behavior. Based on these two studies, how do you think birds are affected by squirrels? How would you set up an investigation looking at squirrel and bird behavior at a bird feeder?

A Reflection on Bird Field Guides

by Isabella, Grade 4
 St. Jude Catholic School
 Erie, PA
 Ms. Carone

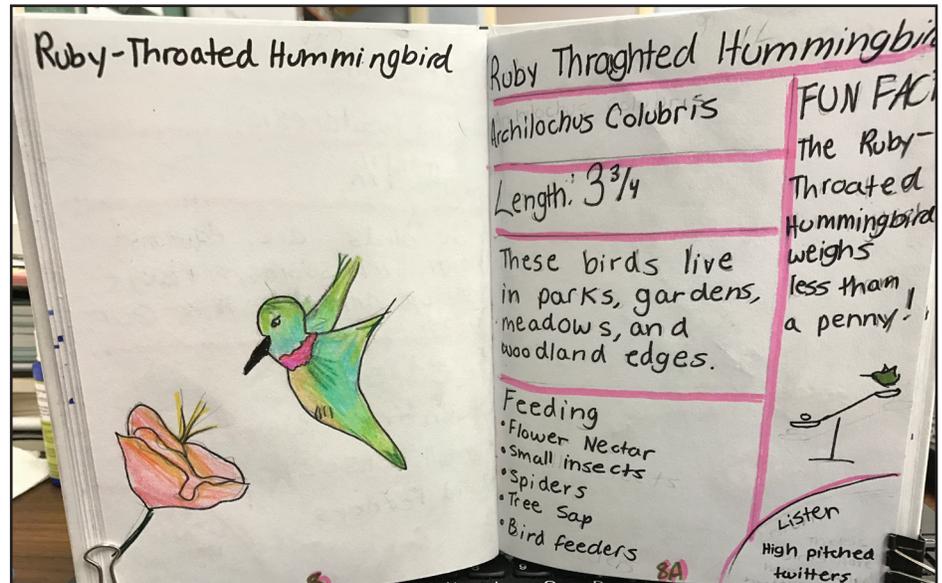
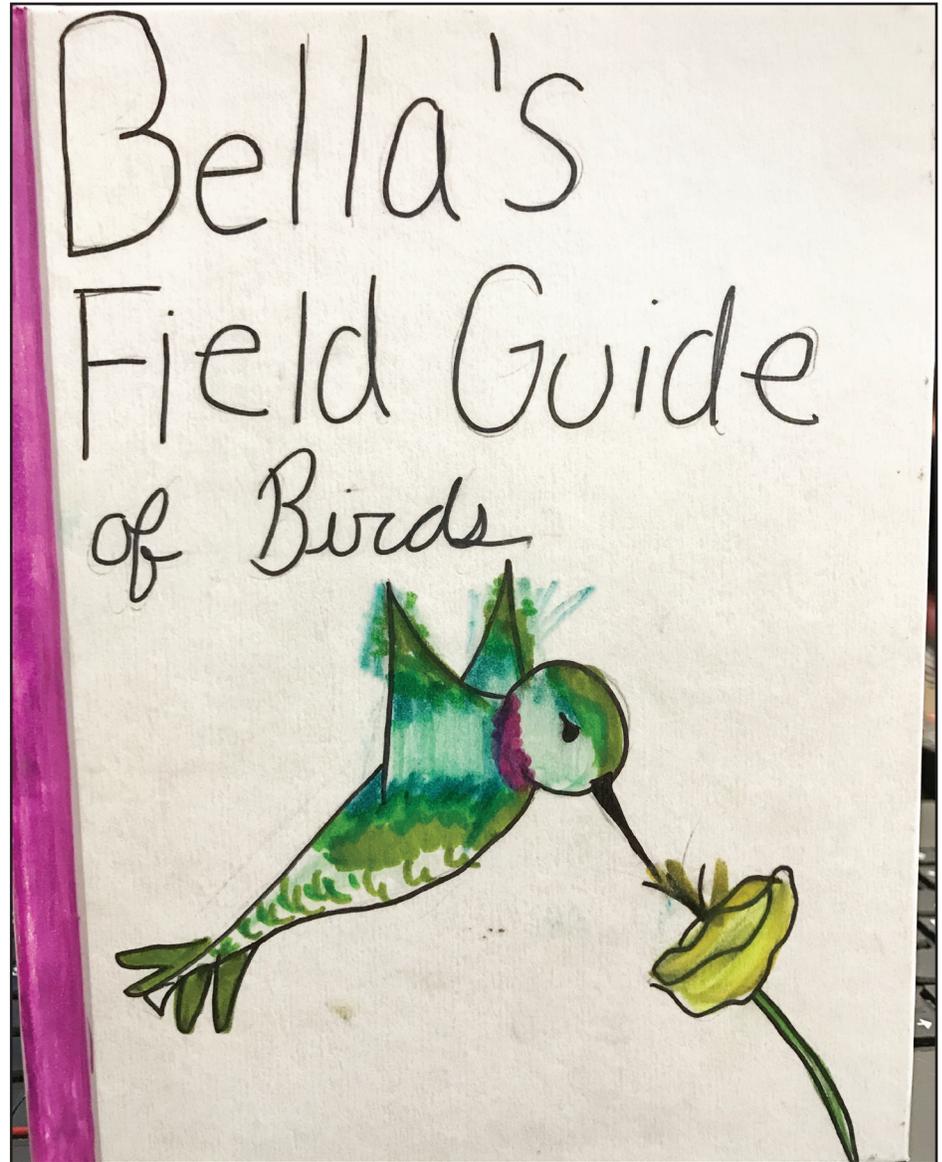
DThis is a reflection of my Bird Field Guide, which I have named, "Bella's Field Guide for Birds." I have included information about nonfiction, how a Field Guide is organized, some information about my favorite bird and more!

I have had a great time while working on my Bird Field Guide. I have learned so many new things about birds and how they live, eat, breed, and carry on with their daily lives. Field guides have taught me the importance of nonfiction and how they have helped so many ornithologists while bird watching and even just collecting information.

Different field guides are organized in different ways, but most field guides have a Table of Contents, and sections that categorize a bird by where they live, how they look, what they eat, and other characteristics. There is almost always pictures of birds in a Field Guide because if someone goes bird watching, they need to know what they look like. Naturalists use field guides when they go bird watching to collect information in the wild, that way, they can identify the birds right away. Before people invented cameras, naturalists drew or painted pictures of birds and that is what we did in our field guides.

My favorite bird that I put into my field guide is the Ruby-throated Hummingbird. I love the vibrant pink color of the throat and the pretty green wings. All in all, I think Hummingbirds are really fascinating. Did you know that they could fly backwards? I think that is really an amazing fact.

It has been a great learning experience and I had a lot of fun while making my Bird Field Guide. I just cannot wait to see what kinds of birds I can find this summer!



Wings of Sapphire

by Katherine

Grade 7

Santa Fe Preparatory School

Santa Fe, NM

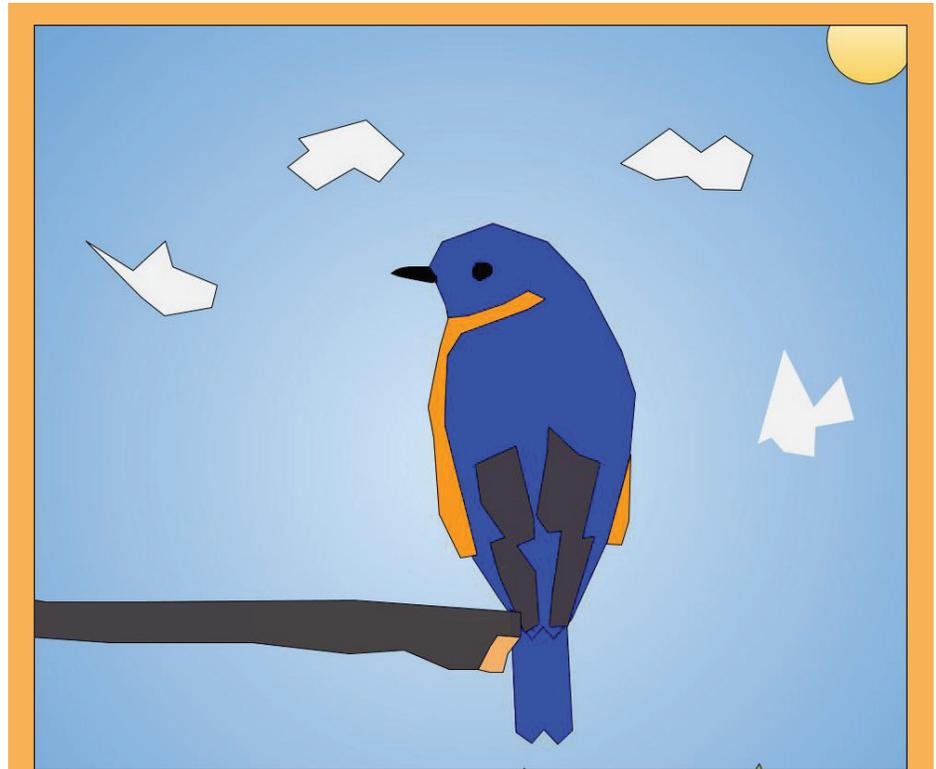
Mrs. Koval and Ms. Stark

I sat in the dirt, shivering in the shadows of a spring evening. The sky was a vast blue marble, beginning to turn pink as the sun descended into the horizon. I was in my backyard outside of Santa Fe, New Mexico, looking down at the arroyo filled with junipers and piñon pine. Piñons, or *Pinus edulis*, are the state tree of New Mexico. They bear pine nuts, which are a common ingredient in New Mexican cuisine. Spider webs sparkled in the trees, reflecting light like prisms.

Gnats zipped by my head, piercing the quiet atmosphere. I looked down at the assignment on my clipboard. “Go out into the woods... Be still... Be silent.” Done, done, and done. Now I just had to wait for an interesting animal to come along. I’d tried yesterday, but all I’d gotten was a small brown bird about a quarter mile away. I was out again to try to see something more exciting.

I closed my eyes and listened to the symphony of birds around me. They surrounded me in the trees, but out of my sight. I wondered if I was scaring them and other animals away, and doubted I would see anything special. “Come on, animals,” I whispered. “Just one bird, that’s all I need.” Just then, there was a rustling in the tree behind me. I crossed my fingers for an exciting bird, not just a small grey one or the wind. I twisted around and there it was, at the very top of the tree... a small bird facing me. I could only see its front side, which was grey with a rust-colored throat. Just another grey bird. My face fell.

A loud whistle interrupted my thoughts. The small grey and brown bird became alarmed and took off, swooping in front of me through the arroyo. Its wings spread as it flew, re-



Mountain Bluebird by Presley, Grade 3, Mark Fine Elementary School, Las Vegas, NV, Ms. Murtaugh

vealing its colors. Its back was a sapphire. It shimmered bright blue in the dying sunlight. Only then did I see its beauty and identify it as a Western Bluebird. It landed on a small branch across the arroyo and I followed. It looked down and examined me, rotating its head back and forth like a disapproving teacher. Its branch wavered as it hopped lower to keep its balance. I scrambled halfway up the side of the arroyo trying to take a picture. The bird seemed annoyed that I was near its tree. Western Bluebirds are aggressive creatures. They will tackle each other out of the air and jab each other with their beaks in order to defend their territory.

I balanced my clipboard on my knee and began to draw the bird. Up close, I noticed its neck was fiery rust-orange all the way around. Its grey belly was made of soft down feathers. The shiny blue of its head and neck was not just one blue, but several different shades. The tips of its wings were light like the New Mexican sky, while the center of its back was dark like the ocean. I looked down at my

paper again to note these colors when the bird whistled once more and opened its brilliant blue wings. It lifted from the branch and flew off, far away. I followed the blue dot with my eyes as it soared over the treetops and disappeared.

I turned away from the tree and walked up to my original spot, where I stood and scanned the arroyo for any other wildlife. The birds’ singing was becoming softer as the sun dropped low in the sky. I turned around and headed back to the house. I had seen wildlife, and though it wasn’t the most spectacular display I could’ve seen, it was still beautiful. It’s funny how we are so quick to judge and only find rare or colorful things spectacular, when in reality, everything around us has its beauty.

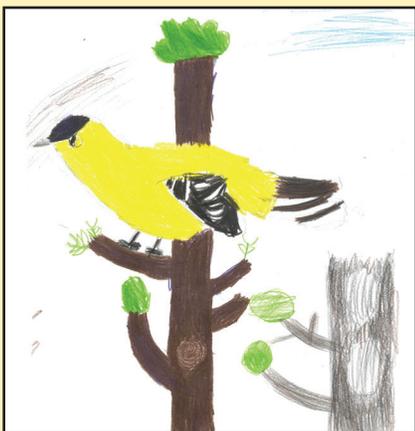
I pulled the door closed behind me, once again separating myself from the trees and dirt, from the breeze, and from the singing of the bluebirds, and went back inside to the warmth of my house and the smell of dinner on the stove.



Pileated Woodpecker by Lucy, Grade 5
St. Stanislaus School, Winona, MN, Mrs. Nadeau



Woodpeckers by Melani, Grade 4, Homeschool, Concord, MA



Goldfinch by Corinne, Grade 2, Lilja Elementary
Natick, MA, Mrs. McEnaney

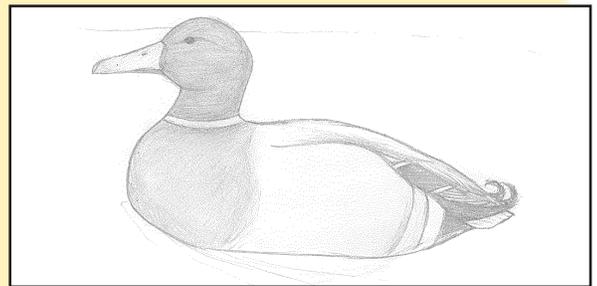


The Orange Crowned Warbler

by Anna, Grade 3, Victoria, BC
Homeschool

As pretty as lace,
As orange as fire,
With wings as brown as aged paper,
Orange crowned warblers!

Orange-crowned Warbler by Anna, Grade 3, Homeschool, Victoria, BC

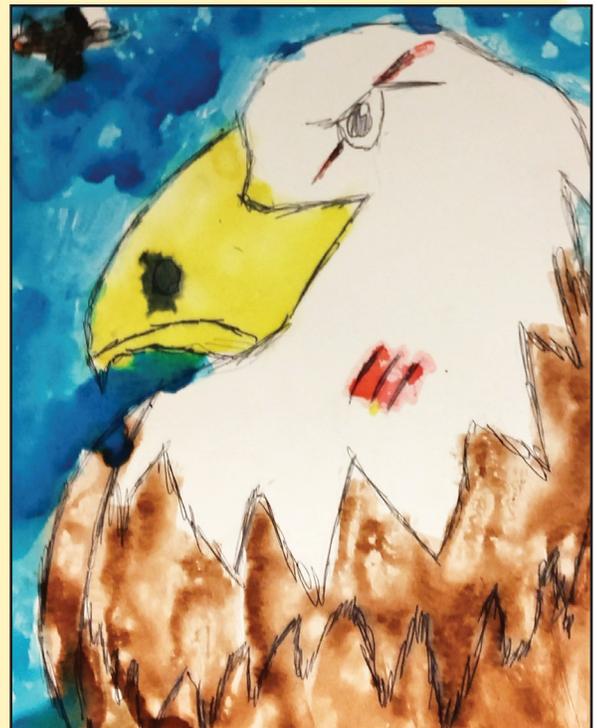


Mallard by Samuel, Grade 7, Tualatin Valley Academy
Hillsboro, OR, Mr. Kahler

Marvelous Goldfinch

by Connor, Grade 2
Lilja Elementary School
Natick, MA
Ms. Altchek

A streak of starlight
Falls from the sky,
Lands on a branch,
Flutters up high,
Disappears in the tress
And the clouds.
The marvelous goldfinch



Eagle in Battle by Carson, Grade 6, Woodfield
Macon, GA, Mrs. Alderman



Blue Jay by Lucas, Grade 7, Woodfield
Macon, GA, Mrs. Alderman



Ruby-throated Hummingbird by Finley
Grade 1, Homeschool, Fortson, GA



Hummingbird by Landon, Grade 7
Woodfield, Macon, GA, Mrs. Alderman

Blue Jay

by Keiraly, Grade 2
Lilja Elementary School
Natick, MA
Mrs. McEnaney

Blue Jay, Blue Jay
As blue as the sky
The shimmering blue
Shines in your eye
Please open your wings
And fly, fly, fly



Blue Jay by Kyra, Grade 2, Lilja Elementary
Natick, MA, Ms. Altchek

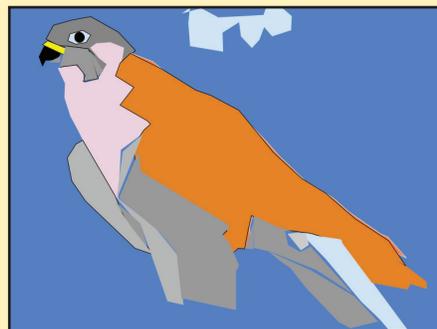


American Kestrel by Coleman, Grade 5
St. Stanislaus School, Winona, MN, Mrs. Nadeau

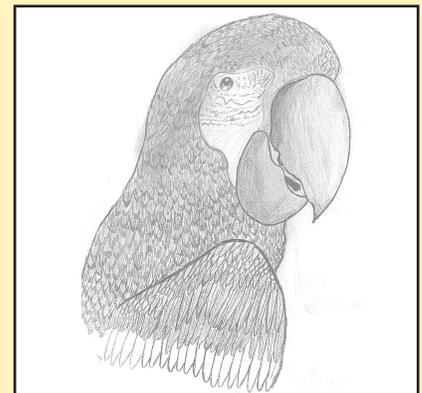
Sounds of the Northern Goshawk

by Gabriel, Grade 4
Mark Fine Elementary School
Las Vegas, NV
Ms. Murtaugh

It sounds like...
a playground steering wheel
vultures calling out
a broken music box
someone playing a trumpet horribly
a creaky door
someone scratching metal
a broken train wheel
a broken chair leg
someone scratching a chalkboard
feedback from a microphone
a singer's voice cracking up
metal bending
a machine creaking
a bug call
a chipmunk squeaking so much



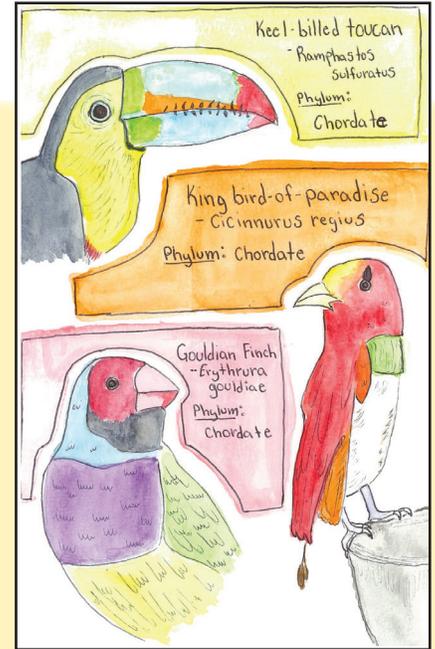
Peregrine Falcon by Alexandru, Grade 3
Mark Fine Elementary School, Las Vegas, NV
Ms. Murtaugh



Parrot by Jairo, Grade 8, Tualatin Valley
Academy, Hillsboro, OR, Mr. Kahler



Rose-breasted Grosbeak by Claire, Grade 5, St. Stanislaus School, Winona, MN, Mrs. Nadeau



Tropical Birds by Sarai, Grade 8, Tualatin Valley Academy, Hillsboro, OR, Mr. Kahler



Mourning Dove by Daniel, Grade 5 Homeschool, Rogers, AR

The Mourning Dove

by Aiden, Grade 1
Lilja Elementary School
Natick, MA
Mrs. McEnaney

The pretty Mourning Dove
Flying through the air.
With wings so dark
They're like night sky.
The tail so pointy
Like an arrow
Shooting through
The clear blue sky.



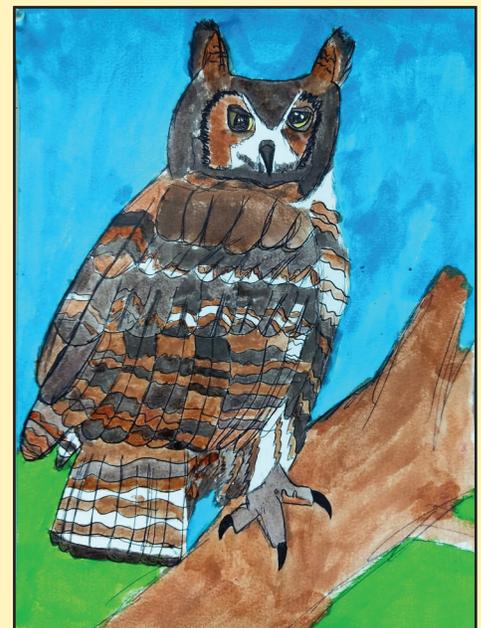
Red-headed Woodpecker by Grace, Grade 7 Woodfield, Macon, GA, Mrs. Alderman



Owl by Christian, Grade 12, Woodfield Macon, GA, Mrs. Alderman



Wise Owl by James-Gregory, Grade 11 Woodfield, Macon, GA, Mrs. Alderman



Great Horned Owl by Sutekh, Grade 7 Woodfield, Macon, GA, Mrs. Alderman



by Alyssa, Grade 5
Mark Fine E.S., Las Vegas,
NV, Mr. Jessesky



by Bianca, Grade 5 Mark
Fine E.S., Las Vegas, NV,
Mr. Jessesky



by Christianna, Grade 5
Mark Fine E.S., Las Vegas,
NV, Mr. Jessesky

Imaginary Tropical Birds

What imaginary bird can you draw?



by Erica, Grade 5
Mark Fine E.S., Las Vegas,
NV, Mr. Jessesky



by Peyton, Grade 5 Mark
Fine E.S., Las Vegas, NV,
Mr. Jessesky



by Brianna, Grade 5
Mark Fine E.S., Las Vegas,
NV, Mr. Jessesky

The **Cornell Lab** 

K-12 Education

BirdSleuth INVESTIGATOR

Volume 7, Fall 2018

BirdSleuth Investigator Editor
Kelly Schaeffer

K-12 Education Team

Nancy Trautmann—Director of
Education
Jennifer Fee—Manager of K-12 Programs
Jaquie Kennedy—K-12 Business &
Communication Specialist
Lindsay Glasner—Outreach Coordinator
Kelly Schaeffer—Education Specialist
Anita Tendler—Student Assistant

Design Director

Diane L. Tessaglia-Hymes

Graphic Designers

Joanne Avila
Janet Menninger

BirdSleuth Investigator is a publication of works by students participating in K-12 Education, an education program at the Cornell Lab of Ornithology. K-12 Education resources are designed to promote science literacy through hands-on indoor and outdoor science learning experiences and student participation in citizen science.

To learn more about
K-12 Education resources,
visit birds.cornell.edu/K12

We would like to thank 3-D® Pet Products, Wild Delight® Outdoor Pet Products, and Better Bird™ for their generous support of this publication.

The K-12 Education Team values your feedback. If you have questions or comments, you can use any of the following methods to reach us:

By email: K12Lab@cornell.edu

By phone: (607) 254-2489
or (800) 843-BIRD

By mail: K-12 Education
Cornell Lab of Ornithology
159 Sapsucker Woods Road
Ithaca, NY 14850



Dear Educator

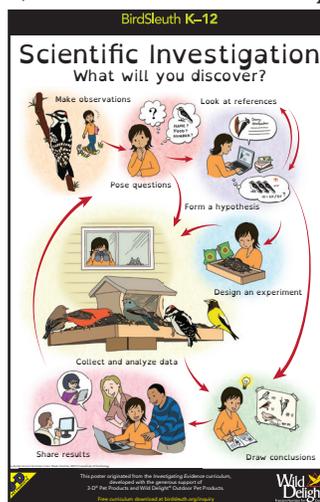


Inspire investigations through
outdoor observations and citizen science—Free Download!

Investigating Evidence, one of our most successful free resources, is aligned with both Common Core and Next Generation Science Standards and will help you transform your students into scientists. From coming up with curious questions to drawing evidence-based conclusions, these lessons will help guide your students through exciting inquiry investigations.

This free unit includes a Teacher's Guide, accompanying Resource and Journal pages, and rich online resources that will support you in using citizen-science projects and outdoor explorations that generate authentic scientific questions. You'll lead your students in making observations, crafting and testing hypotheses, collecting and graphing data, drawing meaningful conclusions, and sharing their work in publications like *BirdSleuth Investigator*!

This resource is available as a free download thanks to the generous support of 3-D® Pet Products, Wild Delight® Outdoor Pet Products, and Better Bird™.



Cornell University



Indigo Bunting by Izzie, Grade 5, St. Stanislaus School, Winona, MN, Mrs. Nadeau



The Cornell Lab 
K-12 Education
www.birdsleuth.org

Wild 
Delight
Premium Nutrition For Outdoor Pets