4H WLM 12

Bluebirds and Other Cavity-Nesting Birds

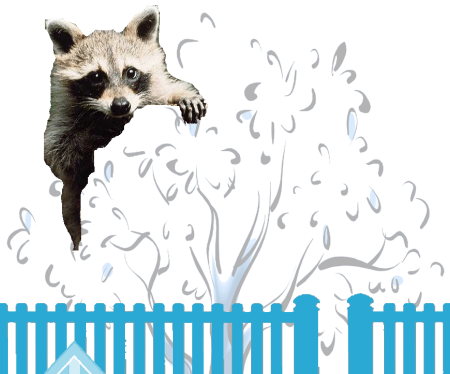
Youth Project Book

UF UNIVERSITY of FLORIDA
IFAS Extension

Prepare to Take Flight

This guide has been created to help you become the best bird-watcher you can be! Bird watching involves a lot more than just sitting outside looking at the skies! However, you won't be looking for just any bird. This guide will introduce you to a very special type of bird - the small cavity-nesting bird. During your project you may find many small cavity-nesting birds in your area. Even though this book often refers to the bluebird, you can use any of these cavity-nesters to complete your project.

The activities are arranged to help you learn all the necessary information to make the best possible bird habitat for your area. You will also learn how to become a careful observer and monitor while collecting scientific data. Don't be afraid to jump into an activity and give it a try. Don't quit if an activity doesn't work the first time. Learning takes place even when you don't succeed. Once you have tried the activity, discuss what happened with your leader.



Objectives

What are the objectives for completing this project?

- Evaluate your before and after knowledge and set your goals on page 3.
- Complete the activities in each section.
- Practice and develop life skills: goal setting, organizing information, learning to learn, research skills, following instructions, planning and organizing, observing and collecting data, keeping records, and career exploration.
- Increase your knowledge and skills about caring for cavity-nesting birds.
- Evaluate experiences with your leader.

Activity Elements

Look for these symbols (or icons) to guide you through different project activities.

This icon shows you which lesson you are on.

This icon (***Fly Into Action***) is located at the beginning of each activity.

This icon (***Wiggle It Out***) comes before the reflect questions for each lesson.

This icon (***Yoki Tales***) gives a scenario with questions to help you apply the life skills practiced in each lesson.

This icon (***Eggsplore***) highlights other activities you may do to enhance your study of cavity-nesting birds.

This icon (***Feathered Facts***) contains information that may help you complete an activity or give you some interesting avian facts.

My Project Helper

Your project helper gives you support while you work on this project. This person might be a parent, project leader, or someone in your community that is knowledgeable about bluebirds.

When you are working on an activity, your helper may help you find resources to successfully complete the activity. Your helper will also create a well-rounded experience by asking questions to help you think through the information as you move through the activities. Once you finish an activity, your helper will date and initial your Flight Plan (page 4). By completing the Bluebirds and Other Cavity-Nesting Birds Achievement Program, you will have earned the Certificate of Achievement (page 5).

My Project Helper's Information

My Helper's Name:

Phone Number:

Email Address:

Table of Contents

Prepare to Take Flight 1
- Objectives & Activity Elements 1
- Table of Contents & Helper's Info 2

My Flight Plan 3
- What Do I Know? & What Are My Goals? 3
- My Project Plan & Eggsplore More 4
- Certificate of Completion 5

Birds of a Feather… 6
Bird Basics: This lesson is designed to help you become familiar with basic bird anatomy as well as characteristics that are used to classify various cavity-nesting birds.

Come Fly with Me 12
Observations: This lesson allows you to combine the knowledge from previous lessons and observe local bird activity.

Happy Habitats 16
Discovery: This lesson uses research techniques to discover common habitats where cavity-nesting birds are typically found.

Home, Tweet Home 24
Building a Birdhouse: This lesson leads you through the process of building a bird house suitable for small cavity-nesting birds.

E.G.G. Security Systems 32
Predator Prevention: This lesson presents common predators of cavity-nesting birds and concludes with the construction of a guard for your bird house.

Bountiful Banquet 36
Food Preparation: This lesson leads you through the process of creating a food supply for the cavity-nesting birds living in your area.

On the Look Out 40
Monitoring: This lesson is designed to lead you through the process of monitoring and reporting your bird house.

Ready, Set, Fledge! 46
Maintenance: This lesson explains how to maintain your bird houses once the birds have fledged.

Egg-cellent Job! 50
Avian Careers: This lesson highlights some of the career opportunities available in the avian world.

Resources 54

Notes for the Project Helper 62

My Flight Plan

What Do I Know?

Here is a great way to see if you learn something new or develop certain skills throughout a project. Before you start *this* project, identify what you know about bluebirds and other cavity-nesting birds using the BEFORE column. Once you have completed the activities for this project, indicate what you know now using the AFTER column.

Use the phrase ***I know how to…*** before each skill.

Then rate your knowledge of the topic by circling
1 (I don't really know anything about it.)
2 (I know a little about it.)
3 (I'm an expert!)

	Before	After
Identify the basic parts of a bird.	1 2 3	1 2 3
Identify characteristics used to classify (or group) birds.	1 2 3	1 2 3
Observe local bird activity.	1 2 3	1 2 3
Recognize a cavity-nesting bird.	1 2 3	1 2 3
Identify credible and reliable sources.	1 2 3	1 2 3
Describe the environment(s) preferred by cavity-nesting birds.	1 2 3	1 2 3
Identify materials used to construct nests.	1 2 3	1 2 3
Construct a suitable birdhouse for bluebirds or other cavity-nesting birds.	1 2 3	1 2 3
Analyze predator risks for cavity-nesting birds in your area.	1 2 3	1 2 3
Design an effective predator guard.	1 2 3	1 2 3
Describe the feeding habits of cavity-nesting birds.	1 2 3	1 2 3
Create a food supply for local cavity-nesting birds.	1 2 3	1 2 3
Record nesting activity in your bird house.	1 2 3	1 2 3
Describe the characteristics of fledglings.	1 2 3	1 2 3
Explore careers in the avian world.	1 2 3	1 2 3

What Are My Goals?

What do I want to do and learn?

1.

2.

3.

4.

5.

My Project Plan

	Date Completed	Helper's Initials
My Flight Plan: **Before** Survey		
Lesson 1: Birds of a Feather...		
Lesson 2: Come Fly With Me		
Lesson 3: Happy Habitats		
Lesson 4: Home, Tweet Home		
Lesson 5: E.G.G. Security Systems		
Lesson 6: Bountiful Banquet		
Lesson 7: On the Look Out		
Lesson 8: Ready, Set, Fledge!		
Lesson 9: Egg-cellent Job!		
My Flight Plan: **After** Survey		

Project Guidelines

This project book can be completed in one year or used over multiple years.

To use over multiple years it is recommended that in the **First Year** you complete activities **1, 2, 4, 5, 7, 8** and at least **one** of the *Eggsplore More* activities of your choice.

For the **Second Year** complete activities **3, 6, 9** and **four** of the *Eggsplore More* activities of your choice.

For the **Third Year**, complete all the remaining *Eggsplore More* activities.

Eggsplore More...

List the projects you have chosen to complete in addition to the ones above.

	Date Completed	Helper's Initials

Certificate of Completion

Bluebirds and Other Cavity-Nesting Birds

I certify that _____

has successfully completed the requirements of the

Bluebirds and Other Cavity-Nesting Birds Achievement Program.

Bluebird Helper: _____

Date: _____

Birds of a Feather...

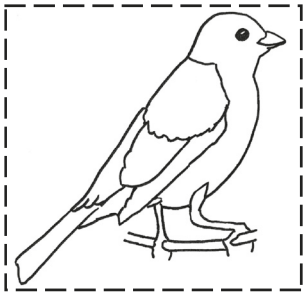
Can you identify a bluebird?

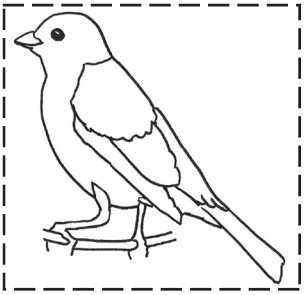
Life Skill:
Making Observations

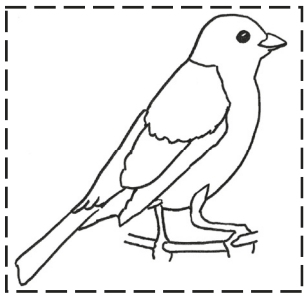
Think you can identify a cavity-nesting bird? Lets find out! How would you describe to someone the different birds you saw? Do they sound different? How do they look different? Could you describe how the bird looks without knowing the names of its body parts? Chose one day to spend some time outside looking for different birds. Go out three times that day (once in the morning, once at noon time, and then at dusk). Use the spaces below to make notes about the different birds that you observed (what sounds did they make, how did they look, what color were they, where did you see them, etc.). You can add additional pages to the back of your project book if needed for describing your sketches and including any photos.

Fly Into Action

Use this space to make notes about the different birds you observed, and color in the bird pictures to look like the ones you saw. In the space below each bird, write its breed's name. Then, on the next page, sketch or photograph the area that you observed these three birds.





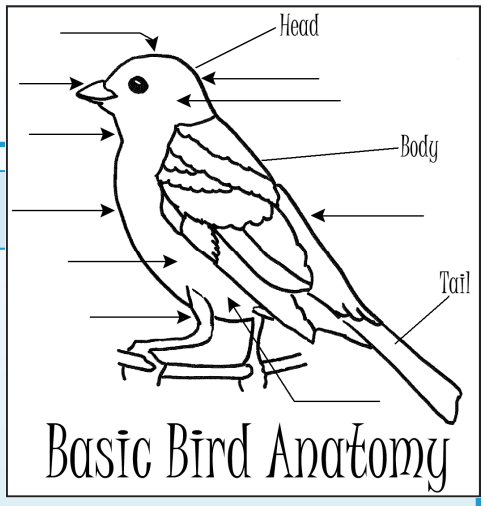


Sketch or photograph your bird surroundings here.

Wiggle It Out!

How could you use your senses to identify a cavity-nesting bird? Which sense would be most helpful?

Why would it be important to know a bird's body parts if you are trying to identify what kind of bird it is?



Use the letters to label the different body parts.

A. **Back:** the area on each side of the backbone
B. **Belly:** contains the stomach, intestines, and other vital organs
C. **Bill:** the beak or mouth
D. **Breast:** the chest of the bird
E. **Crown:** the top part of the head
F. **Ear-coverts:** the small feathers that cover the area of the ear (sometimes distinctively colored)
G. **Flank:** each side of the body of a bird between the last rib and the hip, found above the thigh
H. **Nape:** the back part of the neck
I. **Thigh:** the top of the leg, between the knee and the hip
J. **Throat:** the front part of the neck; area from the end of the bill to the start of the chest

Fly Into Action

Classify the following three birds by color. Use the chart to organize the information. If you are having trouble figuring out the colors from these pictures, you can use the internet or a field guide from your local library to fill in the chart below.

	Eastern Bluebird	Western Bluebird	Mountain Bluebird
Back	Dark Blue	Dark Blue	Silvery Blue
Belly			
Breast			
Head			
Wings			
Throat			
Location	East of the Rocky Mountains	West of the Rocky Mountains	Mid-to-west United States

If you have been a careful observer, another person should be able to use your chart to identify an American bluebird. Try this out with members of your club or family. Show them the picture of a bluebird below and have them figure out which bird you've shown them using only your chart as a guide.

This images from this page are available in FULL COLOR on the project website: http://florida4h.org/projects/bluebirds/.

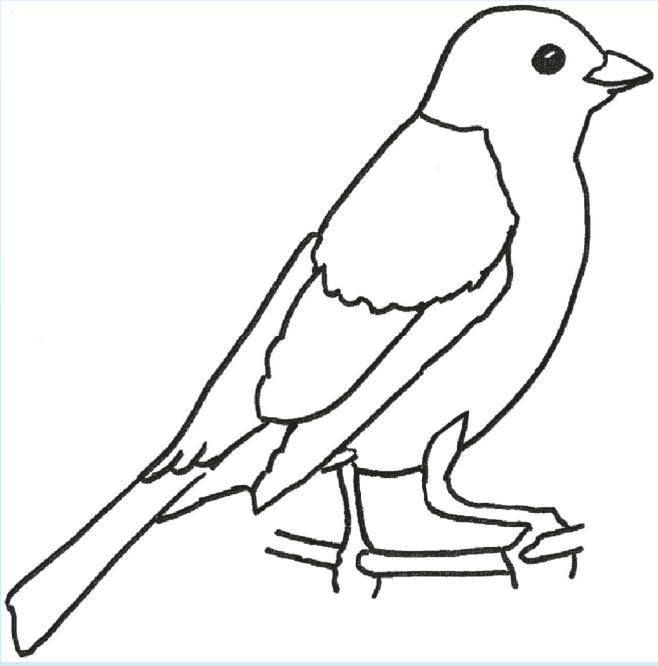
Wiggle It Out!

Look at the bluebird chart you just created. What are some characteristics that all the bluebirds share?

What differences would you look for to determine which North American bluebird you were looking at?

Let's see what you have learned about bluebird colors. Choose one of the three bluebird species in North America, and then color in the bird below using the proper colors for the one you chose.

Type of bluebird: _____



How can using charts to group information together help you with your research?

Many things can be grouped by color, even the jobs that people have. List 3 different professions and the colors associated with each. ***Example: Army - camouflage (greens, browns)***

Why do you think we associate some of these professions with certain colors?

Feathered Facts

*Birds are unique — while they share characteristics with several types of **vertebrates** they have some of their own distinctions. A bird's heart has four chambers and they are warm-blooded animals (just like humans). But they also develop as embryos in eggs outside the mother's body (just like snakes).*

*Does that mean all birds are part human and part snake? **NO!** But those differences do make them special enough to have their own category when scientists classify animals.*

***Vertebrate:** Animals that have backbones.*

YOKI TALES

Yoki went to the grocery store to buy bananas, milk, fish, and cereal. She found the bananas in the fresh produce aisle. Then, she started looking for fresh milk. She searched all through the produce aisle, but she could not find it. She started wandering around the store and finally spotted the milk in the dairy aisle. After wandering in circles and circles around the store, Yoki finally made it home with her groceries.

Why did Yoki have such a hard time in the grocery store? Why is it important to understand the "system" of organization (in this case, how grocery store items are grouped together) when looking for things or information?

How could Yoki have used visual clues in the supermarket to help her locate her items faster and more efficiently?

How does understanding the characteristics of things help you take better care of them or use them correctly? (For example, how do you know not to feed a kitten food that was made for dogs, or not to keep meat in a breadbox?)

Find a cavity-nesting bird that lives in your area and create a poster about that type of bird. Include its size, coloring, what it eats, where it lives, and what it uses to build its nests. Be sure to use a combination of facts, pictures, and fun facts to make your poster interesting and visually appealing. Use the space below **(My Poster Plan)** to sketch out your ideas for your poster. Check with your local county 4-H to see what size your poster should be if it is used as a Fair Exhibit or during a judged demonstration.

My Poster Plan

After color, the size of a bird is the next characteristic an observer probably notices. Think of ten different birds. Using what you already know about those ten birds, organize them from smallest to largest. Once you have compiled your list, look up the average sizes of those birds using either a field guide on birds or the Internet. One helpful site is Cornell University's The Birds of America Online at http://bna.birds.cornell.edu/BNA/.

Come Fly with Me

Where does a bluebird live?

Life Skill:
Observing
Collecting Data

Now that you know some basic information about the anatomy and color patterns of birds, like the bluebird, you might be wondering, "Where are these birds!" Your second activity will give you the opportunity to see what types of birds are living around your home and neighborhood.

A **habitat** is the natural environment or home of any living thing. The different types of habitats and environments influence the animals and people who live in them. After all, you wouldn't expect to see the same animals in a desert that you would in a rainforest, would you? Animals in the same habitat share, and sometimes compete for, resources like food, shelter, and water.

Bluebird Habitats

Bluebirds like wide open spaces and low grassland areas dotted with a few shrubby bushes or trees. You might also find bluebirds close to a forest edge, since they like to hide in the trees right after their young have fledged. You probably would not find them in a thick forest, a swampy area, or an area that is heavily populated. Bluebirds love high perches. Telephone wires are perfect for them to look down on grassy areas for their food, which are mostly insects.

Fly Into Action

Read the instructions below to conduct your observations of local bird life.

Begin by thinking about three areas that you could visit to observe bird life. This could include your front yard, back yard, school yard, around your neighborhood, a nearby park, or any other area where you could spend some time looking for various cavity-nesting birds. Pick a spot where you can see a large area (preferably in a shaded area). Take this booklet and a pencil. Write down your observations in the chart on the next page. Spend at least 30 minutes or more observing.

Make sure you look everywhere. Look around all building structures like your house, garage, fences, and any telephone poles and wires. Look around all the trees and bushes, and then all along the ground.

Now fill in the blanks in your project book: bird's name (if you know it) or what it looked like; what noises it made; where you found it; what it was doing when you saw it; how many birds like it you may have seen; and observations of any other animals. Once you have looked everywhere, close your eyes, and listen. The birds you cannot see are important, too. What do you hear? Use the "What did it sound like" row to record what you hear. Example: 'Pee Whee...Pee Whee', or 'Caw Caw'. You may want to have a bird identification book to help you identify the birds you find. If you do not already have a book, borrow a bird identification book from your local library.

Repeat this process in two other locations. Be sure to write down where you visited and what you were able to find in each location. You can download additional record pages from the project website: http://florida4h.org/projects/bluebirds/.

Come Fly With Me

Location 1:		***Time of Day:***	
Type of bird or What did it look like?			
What did it sound like?			
Where was it?			
What was it doing?			
How many were there?			
Other Animals (Seen or Heard)			

Location 2:		***Time of Day:***	
Type of bird or What did it look like?			
What did it sound like?			
Where was it?			
What was it doing?			
How many were there?			
Other Animals (Seen or Heard)			

Location 3:		***Time of Day:***	
Type of bird or What did it look like?			
What did it sound like?			
Where was it?			
What was it doing?			
How many were there?			
Other Animals (Seen or Heard)			

How did you use different senses to observe animals in your environment? (sight, hearing, smell)

What were some advantages and disadvantages of the spot you chose to make your observations?

Which bird was the easiest to identify? The hardest? Why?

Were there any birds you couldn't identify? What information from your chart could you use to research and identify that bird?

Use the charts to compare and contrast the animals you found in the different locations:

- Which ones where the same?
- Which ones were different?
- Why do you think this was so?

YOKI TALES

One day, Yoki and her friend Lorie were getting ready to do an experiment in science class. In the experiment, they were suppose to see how long it took for a boiled egg to float in the water. Unfortunately, Lorie began telling Yoki a very funny story. So, instead of paying attention to the experiment in front of them, the pair was too busy laughing and joking around. When it came time to write up their observations for their class work, they had no data!

How can each of the five senses help you make observations?

How can becoming a good observer help you better collect information?

What types of things in your environment should you observe carefully in order to stay safe?

- You might want to repeat the Come Fly With Me observation activity in a county, state, or national park; or you might choose to do this activity when you go somewhere on vacation. Since different birds are found in different habitats, you should see birds that were not common in your front yard. You can either make copies of the pages of your project book or you can download additional record pages at the project website: http://florida4h.org/projects/bluebirds/.

- You can also repeat the Come Fly With Me activity every three months to see the differences that seasons make on the birds which you would be able to see during your observations. Be sure to include which months you are recording your data in. You can download additional record pages at the project website: http://florida4h.org/projects/bluebirds/.

- Contact your 4-H office to find a Bluebird Trail near you. Plan a trip with your family, friends, or club members. *Bluebird Trails* were started in the 1970's as an attempt to protect the bluebird, who at that time was near extinction. Today, a group of five or more boxes located in close proximity is considered a *Bluebird Trail* and there are *Bluebird Trails* in most of the fifty United States. A *Transcontinental Bluebird Trail* has been created by thousands of people who monitor bluebird boxes. Learn more about Cornell University's nest-monitoring database at their website: http://watch.birds.cornell.edu/nest/home/index.

Happy Habitats

What makes a source credible?

Life Skill:
Learning to Learn
Research Skills

Now that you've spent some time looking at the birds in your area, it's time to find out some specific details about the birds you saw.

When you conduct **research**, you are searching for facts about your topic. This lesson leads you through the process of finding credible resources and gathering trustworthy information, that can help you answer questions about any topic.

Often, books and magazines contain both facts and opinions. Becoming a good researcher includes being able to find trustworthy sources.

Where Have the Habitats Gone?

Due to the loss of so much land from humans altering the environment, bluebirds and other cavity-nesting birds have lost much of their naturally-made cavities. The removal of native plants in an area also limits the amount of insects, fruits, and seeds that birds eat. Natural events — such as fires, floods, and hurricanes — also do a lot of damage to cavity nesting birds' natural habitats. Bluebirds are also being pushed away from areas with too many predators. Pesticides and other chemicals have been harmful as well; for example, the chemical DDT (now a banned pesticide) thinned the eggshells, making the eggs break and a successful breeding almost impossible.

Fly Into Action

Use the two steps below to find four credible books for your bluebird habitat research. Record your answers on a separate sheet of paper.

First Step: Check the Sections

Examine each book for the following sections. On a separate sheet of paper, write a brief description for each, and give an example of how each section can help you do research.

Table of Contents:

Index:

Glossary:

Resource List/Bibliography:

Second Step: Investigate the Source - Ask these questions as you look through each book. Remember to record your answers on your separate sheet of paper.

- How much of the information is based on facts? On opinions? How can you tell?
- Is the author a respected professional in his/her field? How can you tell?
- What type of audience is the book written for?
- What organization(s) is the author associated with?
- What is the date of the information? Is it the most recent information on the subject?

Of the four book sections you defined in step one, which would be the most helpful to you while doing your research?

Which sections will you use in future research?

List the steps you will take the next time you have a research project:

Feathered Facts *For more information on your cavity-nesting bird, you can continue your research using other sources, such as the Internet. However, caution must be used when doing Internet research. You need to choose sources that are credible and accurate. Lots of people publish things on the Internet these days, and it is important to select sources with information that you can trust. Ask yourself the following questions about a website to help you decide if the information is trustworthy:*

- Is the website personal or part of an organization or company?
- Does the website have a date? When was the information last updated? Who is responsible for updating the information?
- If the website is from a company, is it a commercial or a non-profit organization? Is there anything for sale on the website?
- Do the authors of this website provide a section of references or additional resources?

Another tip to finding reliable information on the Internet is to look at the Web address or URL. The domain name can be very informative; it shows the type of source the information came from.

Fly Into Action

Draw a line to match the following website domain names to the kinds of pages they represent.

.com

website maintained by a government entity, includes information about local/state offices and services, politics and citizenship, government statistics, etc.

.gov

Indicates that information is connected to an educational institution, such as a college or university. Often, you can find research that the institution has performed, as well as fact sheets for the public on a wide range of topics.

.edu

This type of website is maintained by a specific organization, usually a non-profit, the information is mostly credible, but may be presented in a way that supports the agency's missions or beliefs.

.org

Commercial website which contains a combination of facts and opinions that may not come from credible, scientific sources. Often, these sites may be promoting products or services they sell.

Keep in mind, these are just guidelines - every website is different. There are some very beneficial .com sites, such as http://www.myflorida.com and http://solutionsforyourlife.com, for example.

If you've decided to include Internet sources in your research, find three websites that provide accurate information about your cavity-nesting bird:

#1 _____

Why did you choose this website? What makes it a credible source?

#2 _____

Why did you choose this website? What makes it a credible source?

#3 _____

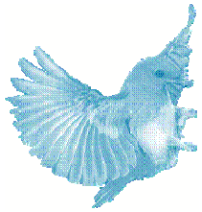
Why did you choose this website? What makes it a credible source?

Once you have selected your resources, use the *A.I.R.* worksheet on the next page to help you organize your new information. You'll be using this information for the next part of this lesson, so be sure to include all the details you think are important.

Feathered Facts

All animals are classified into groups by a system of levels that distinguish similarities between different breeds. If you use the traditional Linnaean classification system, the levels include Kingdom, Phylum, Class, Order, Family, Genus, Species.

*Birds are all members of the **Aves** class. **Aves** is the Latin word for bird, so it is appropriate that it is used to group all birds into their proper class.*



My A.I.R. Worksheet

*A*ves *I*nformation *R*esearch on _____

Fill in Your Cavity-Nesting Bird

You are going to create a brochure for a “Bird Resort.” Your goal is to convince the birds that your “resort” is the best choice because it has everything they need.

Find information about the environment, available food, nesting supplies, and protection from predators. Be sure to include a combination of facts and pictures to make the brochure appealing to “your audience”. Does your resort have a “general store”, a “restaurant”, water access? Come up with a catchy name for your resort and use an 8½ x 11 inch sheet of paper folded into thirds to create your brochure. Use the sections below to organize your ideas.

Environment/Habitat (Where do birds like to hang out?)

Nests (What materials do birds choose to create their nests?)

Food (What do birds like to eat? Do different birds prefer different foods?)

Predators (What dangers do birds have to look out for? Are there different predators in different areas?)

Fledglings (What is it like to be a young bird?)

Other Interesting Information

Did any of your resources have a great picture of your cavity-nesting bird? Place a copy of the picture in the frame.

My cavity-nesting bird

Wiggle It Out!

Think about why you trust the opinions of scientists, doctors, nurses, and school teachers. What have these people done to prove themselves as credible sources of information?

What kinds of things will you have to do to show that you are a trustworthy source in your career when you grow up?

YOKI TALES

One afternoon, while she played soccer with her friends, Yoki got stung by a bee. Yoki's friends suggested they look up what to do about the sting on the Internet. They went to the first website they found and saw a recommendation to use peanut butter. The next day Yoki went to the school nurse because the sting wasn't looking, or feeling, any better. The nurse told Yoki she should have used ice to bring down the swelling instead of peanut butter. When the nurse found out that Yoki gathered this information from the Internet, she warned Yoki to be more careful when checking health advice — finding the wrong information can be really dangerous and painful!

Why can it be dangerous to use the first source you find? Explain why it's helpful to use more than one source in your research.

What should Yoki and her friends have looked for before they decided to trust the website? What other types of sources could they have checked?

What kind of websites or sources should you look for when researching important information such as health matters? How will you know that the information is reliable?

Interested in learning more about bluebird habitats and their particular needs? Visit the website below. Then, compare/contrast this video clip to what you learned from your research. What are some similarities and differences between the information you found and this video? Did you learn anything new?

1. Go to http://video.nationalgeographic.com
2. Click on “view all” under the **Animals** link on the right side of the page
3. Click on the **Birds** video link on the left side of the page
4. Click on the **Perching Birds** link on the left side of the page
5. Click on the **Bluebirds** video on the right side of the page

Write down the website address (URL) for the bluebirds video here:

_____

Add it to your Web browser bookmarks— ask your helper how to bookmark a website if needed.

Home, Tweet Home

How do you make a nest box?

Life Skill: Following Instructions

Is there a place where you feel at home, a place where you feel comfortable and safe? Birds like to make their young feel safe and comfortable, too. Now that you have researched bluebirds, let's build them a home. Building a bird home will not only help attract bluebirds (or other cavity-nesting birds), but also it will offer the birds protection from weather.

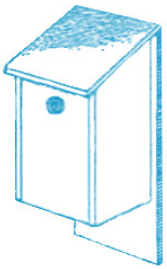
There are two kinds of cavity nesters: **excavators** and **adopters**. An excavator creates its own cavities (holes) with its beak and then lines its nest with woodchips. Adopters cannot dig out their own natural nesting areas with their beaks, so they will use old, abandoned, nesting cavities. Such a cavity might be found in a tree that has died, fallen down, or broken in half.

Bluebirds: A Cavity-Nesting Bird

Bluebirds are adopters. What are some natural nesting areas that you think they might use in the wild?

Fly Into Action

Use the following plans to create a bluebird house for you to monitor.



Note: *This bird house design is based on housing for Eastern Bluebirds and is only one possible way to construct a bluebird house. Additional plans can be found at the project website:* http://florida4h.org/projects/bluebirds/.

Step 1: With an adult's help, purchase or obtain the supplies needed to construct your bird house (below). You also need an adult to assist you in cutting out the pieces for your birdhouse. Exercise extreme caution while operating power tools. Dress for SAFETY (wear goggles and closed-toe shoes; do not wear loose, hanging clothing).

MATERIALS LIST

2 wood planks (plywood, cedar, or cypress**):

- 1 x 6 (3 feet long) makes floor, front, & sides
- 1 x 8 (2 feet long) makes the back & roof

20—25 galvanized 5d nails (5 penny, or 1¾). Buy normal nails with heads, not finishing nails to secure the boards together

2 latch nails or double-headed nails

Heavy-gauge wire (refer to page 26)

Pole (refer to page 26)

TOOLS NEEDED

Power drill with:

- 1½ hole drill bit
- 1/16 and 1/8 drill bit

Circular power or hand saw

Hammer

Straight-edged ruler, or yardstick

Pencil or marking pen

Hot glue gun and hot glue sticks

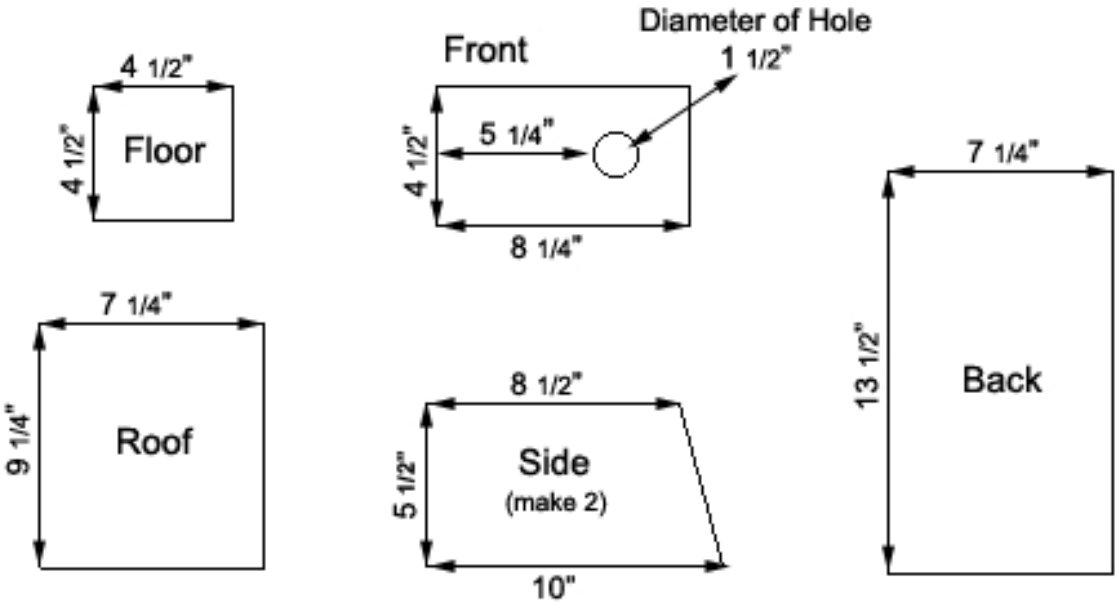
Safety goggles

** Though plywood is inexpensive, it will need to be painted to preserve the wood. Many choose to make their bluebird houses out of more sturdy woods like cedar or cypress, which do not need to be painted.

Step 2: Before you begin cutting the pieces for your birdhouse, you need to consider several factors that will help you determine important details about your birdhouse and habitat. Next to each section, describe your plans:

PAINTING Any box does not have to be painted, but it may help them to last longer. If you choose to paint your nest box, do not use treated wood or paints that contain lead or wood preservatives. The nesting box should be painted with opaque stain, or primer and acrylic latex paint. Use light colors only in order to prevent overheating and paint only the outside of the box.	**PAINTING PLAN**
LOCATION Bluebird boxes should be placed in open areas with short grass and scattered trees and shrubs. Golf courses, cemeteries, pastures, and open meadows provide ideal habitats for bluebirds. Do not place boxes close to bushy shrubs to help avoid attracting House Sparrows.	**LOCATION PLAN**
MOUNTING Boxes are best mounted on a free standing pole, of either metal or PVC materials. Bluebirds will nest as low as 3 feet and up to as high as 20 feet; however, a height of 5-6 feet should be used for boxes that will be monitored. It is always best to use a predator guard. A box could be mounted on a fence post, but this makes it too easy for predators such as snakes and raccoons to get to the box.	**MOUNTING PLAN**
MAINTENANCE Boxes need to be cleaned after each nesting. They should be inspected and any repairs should be made or a change in location done at the end of a breeding season. All boxes should be inspected, cleaned, and repaired in the late fall or early winter. Bluebirds begin their nesting cycle in March.	**MAINTENANCE PLAN**

Now, it's time to make your own nest box...

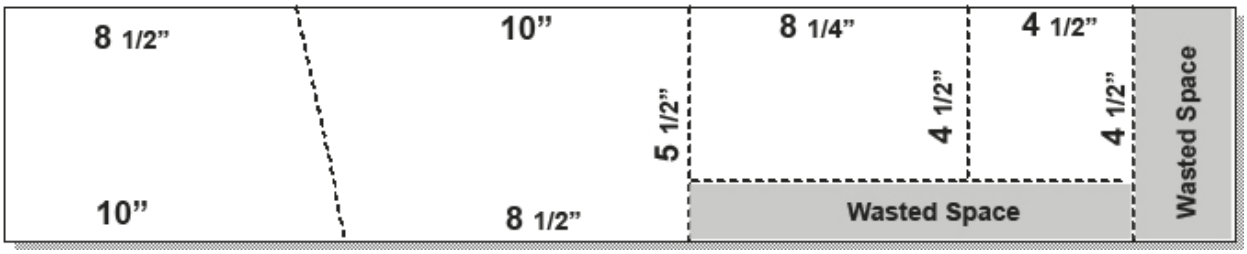


Selecting and cutting the pieces for your birdhouse.

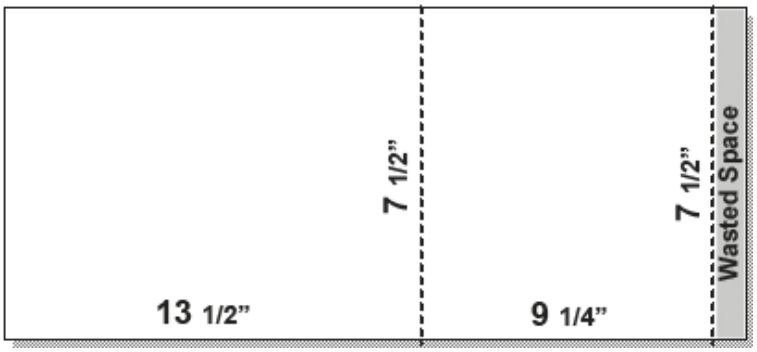
Step 3: When you go to the lumber yard or hardware store, you will need to buy 2 pieces of wood.

- One is a 1 inch deep x 6 inches wide board. This board needs to be 3 feet in length. This is the board that you will use to make the two sides, and the front and back. See below.

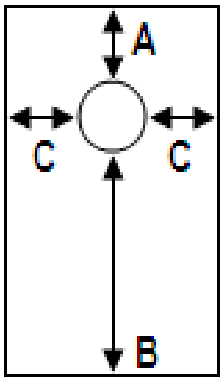
NOTE: *To create the diagonal for the side pieces, measure 8½ inches on one edge of the board and place a mark. Then, measure 10 inches on the opposite facing edge of the board and mark. Use a straight-edge to connect these two points with a line. Then just cut along that diagonal line.*



- The second board is 1 inch deep x 8 inches wide. This board needs to be 2 feet in length. Use the dimensions in the diagram below to cut out the pieces of your birdhouse.



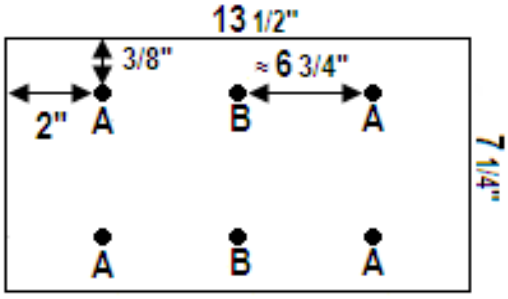
Drilling the holes for your birdhouse.



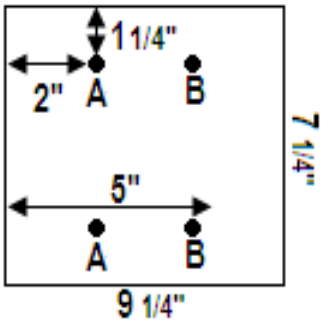
Step 4: Using a drill, create a 1½ inches entry hole for the front.

A. Top edge of the hole is 1½ inches from the top.
B. Bottom edge of the hole is 5¼ inches from the bottom.
C. Side edges of the hole are centered so that they are 1½ inches from the edge.***

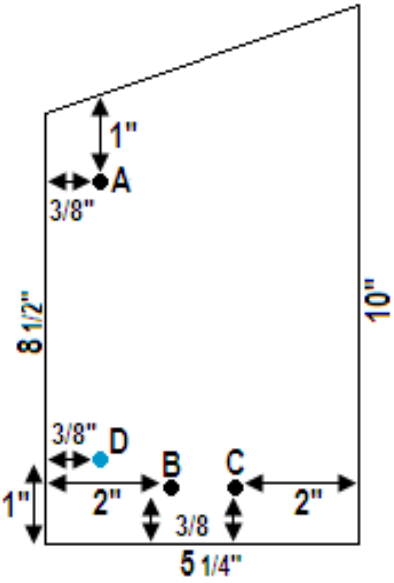
******You can also place one dot that measures 6 inches from the bottom and 2¼ inches from the long edge. Center your drill bit over this spot and then create your hole.***



Step 5: Take the **BACK** (13½ x 7¼) and mark the places you need to drill holes, using this diagram. There are 6 small holes on the back. Three on each 13½-inch side. The holes marked **A** are all 2 inches from the 7¼-inch side and 3/8 inches from the 13½-inch side. Holes marked **B** are also 3/8 inches from the 13½-inch side, but they are placed in the middle, approximately 6¾ inches from either corner hole. Once you have marked all 6 locations and have checked your positioning with the diagram, use the 1/16-inch drill bit to make the holes.



Step 6: Take the **ROOF** (9¼ x 7¼) and mark the places you need to drill holes, using this diagram. There are 5 small holes on the roof. The holes marked **A** are 2 inches from the 7¼-inch side and 1¼ inches from the 9¼-inch side. The holes marked **B** are 5 inches from the 7¼-inch side and 1¼ inches from the 9¼-inch side. Hole **C** is 3/8 inches from the 7¼-inch side and centered along that same side. Once you have marked all 5 locations and have checked your positioning with the diagram, use the 1/16-inch drill bit to create the holes.



Step 7: Take both **SIDE** pieces (10 x 5¼) and mark the places you need to drill holes, using this diagram. There are 3 small holes on each side piece. The first hole **A** is 1 inch from the diagonal side and 3/8 inches from the 8½-inch side. Hole **B** is 2 inches from the 8½-inch side and 3/8 inches from the 5¼-inch side. Hole **C** is 2 inches from the 10-inch side and 3/8 inches from the 5¼-inch side. Once you have marked all 3 locations, check your positioning with the diagram, then use the 1/16-inch drill bit to create the holes. Make sure you repeat these steps for both side pieces.

Note: Hole **D** is 1 inch from the 5¼-inch side and 3/8 inches from the 8½-inch side. Mark it on both side pieces, but DO NOT DRILL yet (see step 8d).

Putting the pieces together for your birdhouse.

Step 8: Follow the diagrams and instructions, using the nails to secure the pieces of your birdhouse. **Hint:** You may find it helpful to hot glue the birdhouse pieces together before you hammer in the nails.

a. Attach the sides to the back and nail them in, making sure all the outside edges and corners are even and flush.

b. Attach the floor according to the diagram at right. There should be a 3/8-inch gap between the edge of the floor and the back of the birdhouse. This gap provides ventilation and drainage. The floor should be flush with the sides of the house.

c. The door is attached with regular nails on the two top sides and latch nails on the two bottom sides. This will allow you to open the box so that you can clean it. Make sure the door is even with the bottom and front of the house (there should be a gap of about 1/2 inch at the top.) Nail in the top two nails — be sure to leave a little slack so that the nails can act as hinges for your door.

d. Now that the two top nails are in place, use the hole D marks from Step 6 to drill a hole (with the 1/8-inch drill bit) through the sides and into the front piece. Use your fingers to insert the latch nails on the bottom. They should slide in easily and help keep the door secure.

e. Now you are ready to attach the roof! Using the holes you drilled, hammer in 5 nails to secure the roof down.

Continue your bird house plans by examining a few crucial details in the Feathered Facts section below before mounting your new bird house!

Feathered Facts

Basic Bird-Box Tips

- Make small holes in the floor to allow water to drain out or cut a small piece off each corner of the bottom of the box to allow for drainage.
- Drill several small ¼-inch holes in each side, or leave a ¼-inch space at the top of each side, to provide birds with ventilations which could be especially useful in areas with hot weather.
- You can use the sharp point (like the end of a screwdriver) to make many X marks up the inside front wall below the entrance hole so that young birds can get a grip when they try to exit the box.
- Never add a perch on a bird nest box.

Wiggle It Out!

What types of environments do bluebirds and other cavity-nesting birds need in order to nest happily?

How does building a birdhouse help those birds?

Other types of birds might also use your birdhouse for nesting. Which of your neighborhood birds might use your house instead of a bluebird?

Why are there so few natural cavities for cavity-nesting birds to make their nests in?

What was the hardest part of building the birdhouse?

What would you do differently next time?

Feathered Facts

Pairing Nest Boxes

One common threat to a bluebird's nest box are other birds, like the House Sparrow or Tree Swallow. These birds are also cavity-nesting birds and will attempt to take over all the available boxes.

The idea behind pairing boxes is that if two nests are provided close to one another, then the competition for the nest box is reduced, and both can live together in the same area, each in its own nest box. Paired nest boxes should be placed within 10-15 feet of one another.

YOKI TALES

Yoki bought a new table and chair set that had to be assembled before she could use it. She took all the materials out of the box and tossed the instruction manual aside, because, after all, how hard could it be to put together some chairs and a table? A couple of hours later, Yoki was done, or so she thought. The patio set looked great, but she had a bunch of spare parts left over. When she sat down in the chair, it broke! She opened the instruction manual and saw that one of the left-over pieces was supposed to keep the chair legs from folding. Next time, she will read the instructions first!

Can you think of a time in your life when you did not follow directions and something unpleasant happened?

Whose instructions *do* you follow?

What makes those people reliable sources?

Now that your birds have a place they can call home, you might want to add some furnishings to help them settle in. Birds spend a lot of time gathering materials to make the perfect nest for their offspring. Sometimes they will make hundreds of trips to collect all the materials they need. Help your birds by building a scrap sack. Even though bluebirds prefer pine needles, the other cavity-nesting birds in your yard will appreciate the supply of building materials.

MATERIALS LIST

mesh bag (from a bag of onions)
scraps of cloth
paper
leaves
twigs
pine needles
soft grasses
yarn
unspun-cotton or lint from your dryer

INSTRUCTIONS

1. Cut the top part of the bag.
2. Lay it out flat and fill it with the other materials you gathered.
3. Cut a piece of yarn and use it to lace the mesh bag closed.

Now, find a tree or shrub branch close to your birdhouse from which you can hang your bag. Be on the look out to see which birds prefer borrowing from your scrap sack.

Use your research skills to find the answers to the following questions:

1. What are the two most used materials used by bluebirds?
2. What materials does a Tufted Titmouse put in its nest? Why do you think they do this?
3. What kind of materials does a woodpecker use?
4. What should we do when we find a House Sparrow building a nest?
5. What are three things we can do with a nest once the nesting is over?

E.G.G. Security Systems

What makes a home safe?

Life Skill:
Planning & Organizing

You have finished building a home for bluebirds. However, just building a bird house is not enough. There are many predators who can harm the birds during their nesting season. So, let's setup a security system for your bird house!

All animals need to be aware of their natural surroundings. A **predator** is a living organism that eats another part of an animal. A **parasite** lives on or in a host animal, sometimes killing it. **Competitors** are organisms that share similar environments and use the same resources.

Common Predators, Parasites, and Competitors

Snake	European Starling	House Sparrow
Raccoon	Flesh Fly	Blow Fly
Squirrel	Ant	

Below are 3 popular predator guards for protecting cavity-nesting birds. Determine what predators are specific to your area and choose the one that will best keep your birdhouse safe. Additional plans can be found at the project website: http://florida4h.org/projects/bluebirds/.

Predator Baffle

A predator baffle is the most complex, but the most effective type of guard. It is made of 8-inch snap together stove piping. Hardware ¼-inch cloth and plumbing straps are used for the top. Stove pipe of less than 8 inches has been proven ineffective.

Conical Guard

This guard works well for boxes that are attached to free-standing poles. The collar is a circular piece of galvanized sheet metal that is placed around the pole underneath the nest box.

Noel Guard

The Noel guard is a rectangular tube of hardware cloth stapled to the front of the nest box. The edge of the tube has sharp points that will jab creatures that try to reach into the entrance hole while still allowing the occupants to easily come and go. This type of guard is most effective after the eggs have been laid.

Now, design and build the predator guard you chose for your birdhouse.

Name some of the bluebird predators that live in your area.

Which predator guard would offer the most protection for your cavity-nesting bird? Why?

Consider where you will place your guard, how much materials for the guard will cost, and how long the guard will take to build and install. Estimate the time and cost of construction below.

TIME:

COST:

Steps I followed to make a predator guard:

Feathered Facts

Bluebird Predators...

Ants: Follow the scent of death; so, if one baby bird has died, the other babies are in danger of being covered in a swarm of ants and bitten until they are killed.

Squirrels: Chew on the nest box opening, making it easier for other predators to enter. They can also be a nuisance to nesting birds, and flying squirrels may want to take the box to nest in.

Cats: Can jump on the nest box up to 8 feet high from nearby trees and eat the fledglings.

Raccoons: Can climb or jump on top of the nest box and eat the fledglings/eggs.

House Sparrows*:** In searching for available nesting areas, may take over a box being used by another cavity-nesting bird, which results in the loss of eggs or babies.

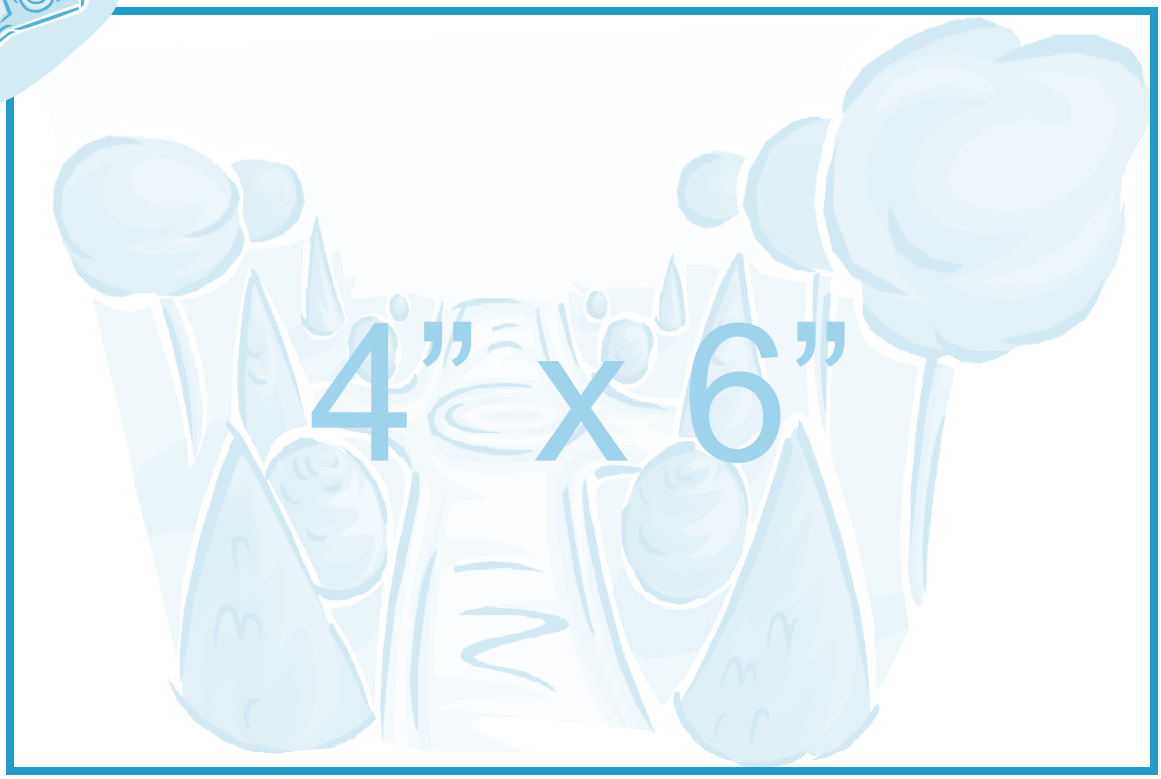
Snakes: Crawl into the nest box and eat the fledglings/eggs.

Cuban Tree Frogs: Use nest boxes to live in; keeps nesting from happening

Wasps/Hornets: Use empty boxes to build nests in; keeps out nesting birds. They can also be harmful to those monitoring the box.

**** One way to limit House Swallows is to use **pairing boxes**. Information about pairing boxes was included in the Feathered Facts on page 30.*

Take a picture of your predator guard and place it in the space below!



Wiggle It Out!

Were you surprised at any of the animals that were on your list of local predators?

During which steps did you need adult supervision or help in order to accomplish that step?

What predators do *you* have to be careful to avoid? What steps do you take to keep yourself safe?

YOKI TALES

Yoki decided that she was going to create a butterfly garden. So she went to the store and purchased a pack of sunflower seeds and planted them. But for some reason, the butterflies never came. Yoki did some research and thought about her problem with attracting butterflies. During her research she analyzed several factors such as what kind of butterflies lived in her area, what kind of flowers they liked, and which plants would grow best in her area. Through her research, she realized she had chosen a plant that butterflies in her area simply did not care for. Yoki went back to the garden, this time with azaleas. In a couple of months, her garden was the favorite place of all the neighborhood butterflies. And so it became one of Yoki's favorite places, too!

How can you save time, money, and effort by doing research and planning ahead?

Can you think of a time where you rushed into something and ended up doing it wrong or having to do it over?

Can you think of a time you did something well because you planned ahead?

- Using reliable websites research how to protect cavity-nesting birds from their various predators. Then create a skill-a-thon using this information. For example, make a matching card game with three sets of cards. One set will have the name and picture of the predator, a second set will have the threat, and the third set will have the solution. Test your club members' knowledge by having them try and match different predators with the threats they pose and with the solutions to stop them.

Example:

Ant 	**Threat:** Climbs into the nest and bites fledglings.	**Solution:** Place heavy motor oil on the pole.

- One predator that has caused significant damage to other cavity-nesting birds is the House Sparrow. Learn more about this very dangerous predator on the project website: http://florida4h.org/projects/bluebirds/.

- Compare the differences (time, cost, customization) between making a guard and buying one at a wildlife store. If you do not have a wildlife store in your community, you can use an online source as a reference.

Bountiful Banquet

What do bluebirds eat?

Life Skill:
Following Instructions
Planning Ahead

Your bluebirds now have a safe home to build their nest in. Depending on the time of year, your nesting bluebirds might have a hard time finding food. So, let's help them by creating a nutritious meal for this feathered family.

When it comes to eating, various bird species enjoy feasting on different delicacies. Bluebirds primarily feed on insects during the summer and insects, fruits, and some seeds during the winter. Having a variety of native plants provide birds with a diverse amount of insects, fruits, and seeds. Other cavity nesting birds, like the House Sparrow, prefer the weed seeds, grains, and livestock feed. Help your birds out by preparing a bountiful bird banquet.

Bluebird Banquets

While bluebirds prefer insects, mealworms, and berries, they sometimes sample or even gobble up peanut butter mixtures. They may be more likely to try suet if it is placed in a feeder next to or mixed in with some mealworms during the winter (≤40°F or after the first freeze, when insects become inactive) or early spring. In the meantime, these recipes will be adored by downy, hairy, and red-bellied woodpeckers, chickadees, titmice, nuthatches, juncos, Carolina wrens, and a host of other banqueting birds.

Fly Into Action

Follow the instructions below to create a feast for your fine feathered friends to enjoy.

Begin this activity by visiting the website http://www.sialis.org/plants.htm to find out common plants that have seeds and fruits that bluebirds may eat. Look for plants that are native to your area. If you need help figuring out which plants are in your growing zone, you can ask your County Extension agent or contact a Master Gardener for help.

List the plants that are native to your area that would attract bluebird:

Now, use the plant identification website (http://plants.ifas.ufl.edu/) to search for pictures and additional information about the plants you listed above.

Print off pictures of the plants you listed above. Paste or tape them onto a piece of paper.

Once you have the names and pictures of these plants, go on a scavenger around your yard to find these plants that might provide food sources for your bluebirds during winter months. Remember, some plants only have berries in the winter (which is good for our bluebirds). So, if you are looking during the summer, you might not see berries.

Fly Into Action

Follow the instructions below to create a feast for your fine feathered friends to enjoy.

MIX
1 cup peanut butter
4 cups yellow cornmeal
1 cup unbleached or whole-wheat flour

ADD
1 cup fine sunflower seed chips
1 cup peanut hearts (or finely ground nuts)
1/2 - 1 cup Zante currants (or raisins cut in halves)

DRIZZLE and STIR IN
1 cup **rendered** (melted suet) let cool

Note: The resulting mix should be crumbly and have pea sized lumps after mixing in the suet. If too sticky after cooling, mix in a bit more flour. If too dry, drizzle in more melted suet.

Refrigerate any mix you are not using.
This will prevent it from spoiling or turning rancid.

Suet is beef or mutton fat. It melts at 21°C (70°F) and it is mostly saturated fat. Its main use is to make tallow, which can be stored for extended periods of time without refrigeration. Tallow is used for making soap, cooking, and preparing bird food. It was once also used to make candles.

You can use a ready-made, pure, bird's suet cake, or you can make your own: Grind or cube butcher store suet. Melt over low heat or in a microwave. If you are using the oven, be careful because suet is a fat and extreme heat can cause a fire. Use a strainer to remove the cracklings or stringy bits. Cool. Melt the mixture a second time.

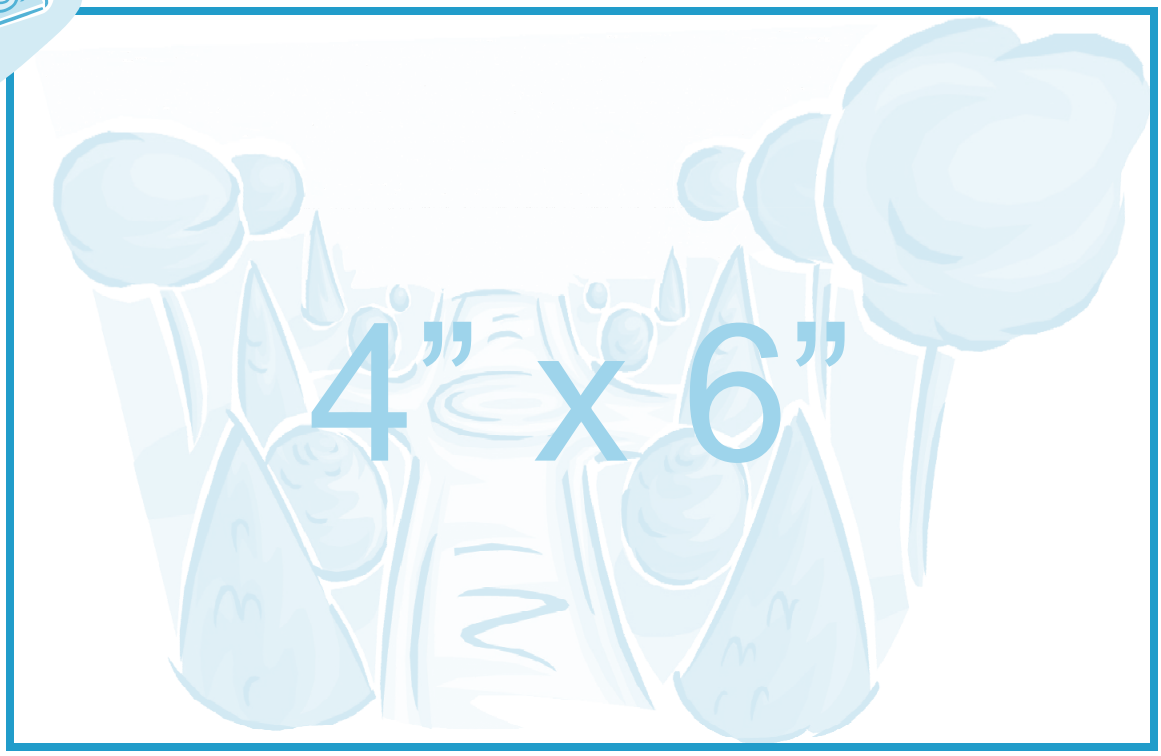
Wiggle It Out!

You now have a wonderful banquet for your feathered friends, but what kind of host just throws the food on the ground? How are you going to provide the feast to your friends? Write out a brief description of **how** and **where** you will serve your meal. Don't forget to think about predators!

Feathered Facts

Some birds will eat three times their body weight during the winter months!

Let's see what kind of chef you are.
Take a picture of birds feasting at your Bird Banquet!



Wiggle It Out!

What types of food do bluebirds prefer? Did you see any bluebirds eat your suet?

Remember, not all birds like suet. Observe the birds that choose to eat your suet creation. Which birds seemed to like the suet most?

What parts of your menu will be the most appealing to the birds in your area? The least?

Did you have to make adjustments after the first cup of suet? How did you decide whether to add more flour or more suet?

What factors did you consider when deciding where and how to place your food?

Observe your bluebirds for a few weeks in order to estimate how long your bird feed will last. What ingredients will you need to buy to make another batch?

YOKI TALES

One day, Yoki decided that she was going to bake a cake. She had baked one before and felt that she did not need to follow the recipe. She was also pretty sure that she had all the ingredients she needed. She mixed together eggs, butter, milk and flour, then she noticed she did not have baking powder, so she decided it was not that important and placed this mixture into the oven, which was not pre-heated. Thirty-five minutes later, smoke started to come out of the oven. She took out the cake— it was burnt on the outside, but undercooked inside. It was also very flat and tasted awful. It was nothing like the other cake she had made when she followed the recipe and made sure she had all the ingredients before she started. So she decided that next time she would plan and make sure she had all the ingredients so that her cake would taste better.

Think of an example where planning ahead is very important. Why is it so important?

What consequences might you have faced if you had not planned ahead?

What happens when you don't prepare and plan something out? What happens to the chances of something going wrong?

- Write a 30-second radio or TV commercial advertising your recipe for cavity-nesting birds. Come up with a creative title and slogan for your brand of bird feed. Think carefully about your audience (cavity-nesting birds) and your product (the food). Some examples of selling points might include information about the taste and location of your food.

- Suet is commonly used during the cold winter months. However, you can learn about raising meal worms for your cavity-nesting birds throughout the year. Just visit the project website: http://florida4h.org/projects/bluebirds/.

7 On the Look Out

How do you monitor a bluebird?

Life Skill: Record Keeping

You have created a friendly bluebird nesting area: house, security system, and food. Now you must decide if you are going to assume the responsibility for monitoring your new bluebird resort. **Monitoring** is a term used to describe careful and repeated observation. Scientists monitor animals in their natural habitats to collect research about animal lifestyles and behaviors. Birds can be very social animals and do not mind being observed by people who respect their habitats as long as we respect them and their environment.

Bluebird Monitoring

In warm states, bluebirds may seek nearby habitats or remain in the area where they hatched. In cold states, they will migrate south to spend the winter and travel back north again for the breeding season. Bluebirds will only seek shelter in a cavity or nest box when it gets extremely cold (below 30°). The only other time bluebirds will use a nest cavity is during breeding season. Bluebirds start breeding activities as early as the middle of January in the deep south, and with most first eggs for the rest of the United States, starting to be laid by the middle of March.

Fly Into Action

Based on the descriptions below, put the eggs in order of size, from smallest (1) to largest (4).

Bluebird eggs are always blue, right? Not always! Even though white eggs are rare, 4-5% of female bluebirds will lay a clutch of white eggs. Each clutch is either all blue or all white. Eastern bluebird eggs are about the size of a nickel (or 20.7 mm x 16.3 mm) no matter what color they are. Bluebird nests are cup-style nests, usually made of grasses or pine needles, and are occasionally lined with fine feathers and animal hair.

Titmice build their cavities using damp leaves, green moss, dried grass, hair, strips of bark, and sometimes feathers. They also include snake skin in their nest. When threatened, they sound like a snake hissing, so the snake skin helps fool would be predators. About the size of a dime (16.0 mm x 12.2 mm), their eggs are white to creamy white in color, finely speckled or spotted with chestnut red, purplish red, brown, purple or lilac. The dots are evenly distributed, except for some concentration at the larger end.

European Starlings fill their cavities with grass, pine needles, or similar materials. Their cavities have a depression near the back. Feathers, rootlets, paper, plastics, cloth, string, etc. may also be included as nesting materials. The amount of material depends on the size of the cavity. Their eggs can be blue or white, like the bluebird eggs, but are much larger, averaging about 29 mm x 21 mm in size.

House Sparrows use dried vegetation to form the outside of their nests and line the inside with finer material. They often include feathers, string, and paper. Their eggs are spotted, usually with dark brown spots. The last egg laid will have less dense spotting. A house sparrow egg averages about 22.8 mm x 15.4 mm in size.

This page is available in FULL COLOR on the project website: http://florida4h.org/projects/bluebirds/.

Responsible monitoring can help you avoid problems and catch possible dangers to the birds or nest. Below are some great tips for monitoring your birdhouse.

MONITORING TIPS

- Check your nest box once every three days during the nesting season, but not between 7 AM and 10 AM or dusk as this may upset the birds.
- It is not good to look in your nest box during the first few days since opening the box would change the temperature inside the box which might be too drastic for the hatchlings.
- After the young are 12 to 14 days old, do not open the box, because they may **fledge** prematurely, before they are ready.
- Do not open the box during bad weather.
- Learn to recognize House Sparrow nests and remove them.
- Clean out the nest as soon as the young fledge.
- Keep detailed records of the activity in and around your birdhouse.
- **NEVER** open someone else's birdhouse — **NEVER!** Opening a box that you are not monitoring can cause dangerous situations. Young birds may jump out of the nest before they are ready to fledge. Once young birds leave the nest before they are ready, they may not be able to be put back in, because they will not want to stay. If they are left out in the open, a predator may find them. You might also be opening a house which could have a snake, or wasps, or bats occupying the box.

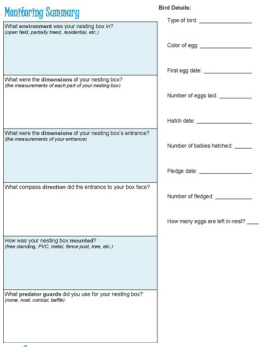
Think about participating in Cornell University's NestWatch Program. This citizen-science project allows you to contribute your observations to a national database. For more information about participating in NestWatch, visit their website at: http://watch.birds.cornell.edu/nest/home/index.

Fly Into Action

Use the resources and instructions on the following pages to properly monitor your nest box.

There are two records that you will be keeping while you monitor your nest box: the **Monitoring Sheet** and the **Monitoring Summary**. The Monitoring Sheet is the form that you will use every three days to record your observations about your nest box. These details will include which box you are looking at (if you have more than one), what species of bird is nesting there, and other information about eggs, hatchlings, or fledglings. An example of the Monitoring Sheet is provided on page 42. Monitoring Sheets are in the back of the book (pages 58—64), but you can also download additional pages from the project website: http://florida4h.org/projects/bluebirds/.

Box #: 2	Nest (describe)	Adults	Eggs	Young
Species: Eastern bluebird	Small cup made out of pine needles, grass, and one red string.	How Many? 2	How Many? 3	How Many? 1
		Banded: Yes (No)	In Box: (In) Out	In Box: (In) Out
Date: 12 August 07		In Box: IN 1 Out 1	Appearance: Eggs are a light blue color.	Appearance: No real feathers, small.
Brood #: 2nd		Appearance: Typical color on both.		
Comments: The eggshell from the first nestling is gone. I wonder what happened to it.				
Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:				


Monitoring Summary

Bird Details:
Type of bird: _____
Color of egg: _____
First egg date: _____
Number of eggs laid: _____
Hatch date: _____
Number of babies hatched: ____
Fledge date: _____
Number of fledged _____
How many eggs are left in nest? ___

What environment was your nesting box in? (open field, partially treed, residential, etc.)

What were the dimensions of your nesting box? (the measurements of each part of your nesting box)

What were the dimensions of your nesting box's entrance? (the measurements of your entrance)

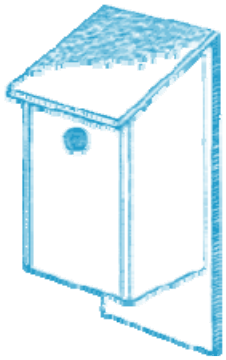
What compass direction did the entrance to your box face?

How was your nesting box mounted? (tree standing, PVC, metal, fence post, tree, etc.)

What predator guards did you use for your nesting box? (none, noel, cornice, baffle)

The Monitoring Summary, located on page 43, contains information that you can fill in throughout your monitoring process. Some of the information (like location or nest box dimensions) can be filled out in the beginning. However, some of the information must be collected over time. Be sure to read over the summary sheet so that you are aware of the information you need to be looking for while you monitor your nest box.

Using Your Monitoring Sheets



- Each time you inspect a box, record your observations. Make sure to note even the smallest of changes. Details will be helpful when you want to review the progress of your birds. If there are no signs of birds using the box, record that information as well.
- As previously stated, birds are generally very social animals and do not mind being observed by people. However, be careful to respect their space and do not interfere with any of their young.
- Don't be discouraged if your box is not used the first year. It may take them a few seasons to find your box. Think about changes you might make to improve your chances in the next season.

Avian Etymology: *There are many terms that are specific to birds. For example, a* ***brood*** *is a group of birds hatched from the same clutch.*

Remember: Monitoring Sheets are in the back of the book (pages 58—64), but you can also download additional pages from the project website: http://florida4h.org/projects/bluebirds/.

Example of Monitoring Sheet

Box #: 2 Species: Eastern bluebird Date: 12 August 07 Brood #: 2nd	Nest (describe)	Adults	Eggs	Young
	Small cup made out of pine needles, grass, and one red string.	How Many? 2	How Many? 3	How Many? 1
		Banded: Yes (No)	In Box: (In) Out	In Box: (In) Out
		In Box: IN 1 Out 1	Appearance: Eggs are a light blue color.	Appearance: No real feathers, small.
		Appearance: Typical color on both.		
	Comments: The eggshell from the first nestling is gone. I wonder what happened to it.			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Monitoring Summary

What **environment** was your nesting box in?
(open field, partially treed, residential, etc.)

What were the **dimensions** of your nesting box?
(measurements of your nest box as a whole)

What were the **dimensions** of your nesting box's entrance?
(measurements of your entrance)

What compass **direction** did the entrance to your box face?

How was your nesting box **mounted**?
(free standing, PVC, metal, fence post, tree, etc.)

What **predator guards** did you use for your nesting box?
(none, noel, conical, baffle)

Bird Details:

Type of bird: _____

Color of egg: _____

First egg date: _____

Number of eggs laid: _____

Hatch date: _____

Number of babies hatched: _____

Fledge date: _____

Number of fledged: _____

How many eggs are left in nest? ____

Wiggle It Out!

Do you think it is easier to record your notes on a pre-planned worksheet, or to write free-flowing observations? Why?

What information from your monitoring sheets could you turn into a series of graphs?

How could you translate your monitoring sheets into words, as in a research paper?

How consistent were you with your monitoring and recording? If you were inconsistent, how could this affect your data?

Important Note: If your nesting boxes are not being monitored, PLEASE take them down. More harm may come from giving the House Sparrows a convenient place to breed. If you are not going to use your nest boxes, consider donating them to someone who would like to set them up and properly monitor and maintain them. THANKS!

YOKI TALES

Yoki was out buying her mom a birthday present. Instead of checking her bank account, she thought to herself, *I'm sure I have enough money* and headed to the store. Yoki found a great present for her mother and walked up to the checkout. When she got there and tried to use her debit card, the cashier informed her that the card was denied. Once Yoki returned home with no present, she checked her bank statements and realized she had forgotten about going to the movies with her friends last week and using $20.

What other things do you have to keep careful records of in life?

Why do you need to be careful and consistent when keeping records?

What steps would you recommend to Yoki to keep better records about her spending?

Each birdhouse that attracts bluebirds can be reported to your local 4-H office. Many times community organizations, such as Extension offices, collect information from bird watchers just like you. Information from hundreds of people is grouped together and used by scientists for research purposes. Find an agency or organization that collects public information on birds and report your findings. Be sure you have your completed monitoring worksheet handy so that you can report all of the details of your bluebirds accurately.

Every bird has a special way of attracting a mate. Research the mating ritual of a cavity-nesting bird in your area. On a separate sheet of paper, record the answers to the questions below. Discuss your findings and any other questions you have with your project helper.

1. How do the male birds act?
2. How do the female birds act?
3. Who picks the cavity?
4. Who builds the nest?

8 Ready, Set, Fledge!

What happens once bluebirds have fledged?

Life Skill: Being Responsible

Your bluebirds have built their nest and laid their eggs. The eggs have hatched and now you have four or five baby birds. Mommy and Daddy are taking care of the nestlings, using some of the food you prepared. So now what? It is time to **fledge**! To "fledge" means that the young bird's muscles and feathers are sufficiently developed for flight, which means it can now leave the nest!

Once a nestling has grown its flight feathers it is called a **fledgling**. It is important to know the nesting time-frame for the birds in your box, because after a certain point, it will be important for you not to open the box. The young birds may try to fledge too early, making them vulnerable to predators when they are unable to fly.

The Birth of a Bluebird

A first-year female bluebird usually lays three to four eggs, following years will be four to five, and even six to seven have been recorded. She will lay one egg a day, usually in the early morning, and will continue laying one egg a day until they are all laid. That's when she will start to incubate them; all at the same time. The incubation time for bluebirds is 12-14 days, with shorter times usually in warmer states. The female is the only parent capable of incubating the eggs. She creates a brood patch by plucking out feathers from her belly region. The blood vessels close to the skin work like a hot water bottle to transfer heat from the mom's body to the eggs. The eggs' temperature will stay at about 95°F. Eggs will fail to hatch if it gets hotter than 107° F. This usually happens because of the outside temperature and/or the size of the box, not by the female sitting on them.

Bluebird Fledglings

The hatching baby bluebirds will stay in the nest between 12—17 days, with the shorter times in found in the warmer states. This time varies due to weather and available food. The birds instinctively know how to fly out of the nest when its time and will head for a tree to land on. The parents will continue to feed them for the next couple weeks, and then they are on their own. The young birds will never go back to the birth nest once they are out. The parents can start their next clutch within just a number of days (and most likely will do so within a couple of weeks at most). The juvenile birds can stay in the area, and may even help with the next clutch of baby birds by helping the parents to feed them. By the next breeding season, the babies will be ready to become parents.

After the babies have fledged, clean out the old nesting material to encourage another breeding. Remember to put the nest in the trash and not on the ground, so predators will not be attracted to this nesting site. When cleaning the nest box, wash and wipe the walls, since the walls are most likely marked with bird feces. Wipe out the dust from the bottom of the box; do not blow it out. You do not want to get this dust in your lungs since birds can carry many diseases.

Bluebirds can easily breed twice in a year, and in the warmer states they may breed as many as three times, with even a rare 4th breeding reported by experienced bluebird monitors on occasion. So, it is important to provide your feathered friends with a clean nest box after each nesting.

Fly Into Action

Let's clean house! Use the steps below to prepare your nest box for the next brood.

Materials you need to clean your box:

- Stiff-bristled brush
- Mask
- Putty knife
- Bleach water (1 part bleach, 9 parts water)
- Spray bottle
- Step ladder (if your box is above eye-level)
- Face mask (recommended), protective gloves (optional)

To clean out the nest box:

1. Remove the old nest. Put it in a zippered bag.
2. Dispose of the nest in the trash to avoid attracting predators.
3. Use a stiff-bristled brush to remove loose debris from the box. Wear a mask To avoid breathing in fecal matter.
4. Scrape any additional debris out with a putty knife.
5. Once all the debris is out, spray it with a dilute mixture of bleach water (1 part bleach, 9 parts water).
6. Open up the box and let it dry for a day.
7. After the box is dry, close the door.
8. Wash your hands with soap and water once you have finished cleaning your box.

At the end of the nesting season, repeat the cleaning process. Do any needed repairs (caulking, staining exterior, re-nailing, etc.) Leave boxes up all winter for roosting. If you find mice using the boxes during the winter, be sure to clean the boxes out in the early spring also. If you have created a Bluebird Trail (5 or more bluebird houses in an area), make sure you clean out and maintain each nest box.

Wiggle It Out!

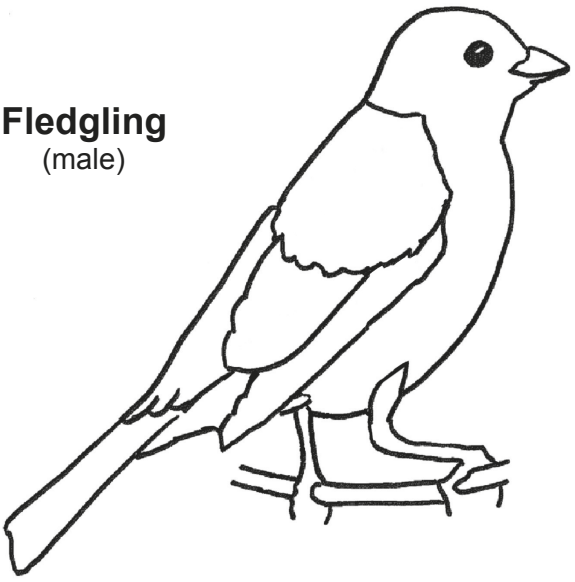
Why is it important not to open a nest box once bluebird nestlings are about 12 days old?

List several reasons it important for you to clean out the nest box.

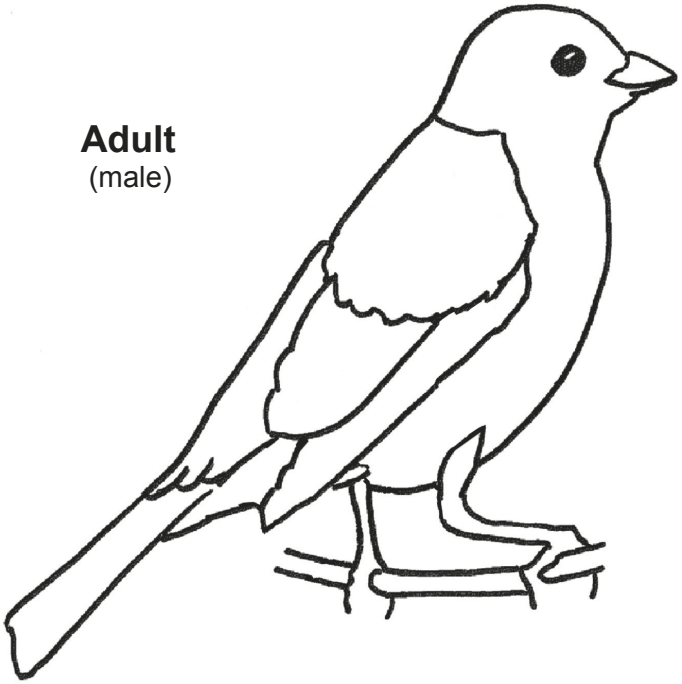
Fly Into Action

A bluebird fledgling is colored differently than when it becomes an adult. Color the birds below to demonstrate the differences in color between a male fledgling and a male adult.

Fledgling
(male)



Adult
(male)



Wiggle It Out!

Describe the similarities and differences between a bluebird fledgling and an adult bluebird.

YOKI TALES

It was the first week of school, and Yoki was excited. She told her pet fish, Mr. Bubbles, all about her new classes and her new friends. As the week went on, Yoki was busy doing homework and talking on the phone with some of her new friends. In the back of her mind, though, she felt like she was forgetting something. It was something very important, but she just couldn't figure out what it was. On Saturday morning, she woke up and noticed a strange smell in her room. She followed her nose over to the fish tank. Mr. Bubbles was swimming around in a very dirty bowl of water. Suddenly, Yoki realized that it had been days since she fed Mr. Bubbles, and even longer since she cleaned out his bowl. She spent the rest of the morning cleaning out his bowl. She promised not to forget about him again. He blew her a bubble in agreement.

What types of things are you responsible for?

How do you schedule your time so that you can take care of your responsibilities?

What would happen if you didn't take care of those things?

Explore other types of cavity-nesting fledglings. Look for the similarities among the fledglings. Describe the reasons why fledglings are colored the way they are. You have finished compiling basic information about bluebirds in your area. Now, using a 22x28 inch size poster, create a poster board to be entered in the County Fair. You can also use this poster for demonstrations. Check with your local county 4-H to see what size your poster should be if it is used as a Fair Exhibit or during a judged demonstration. ***Note:*** *Do not use feathers, nests, or eggs. It is against the law to possess any type of these bird materials. There are very large fines if one was to be found with bird items, plus it could mean a felony or misdemeanor charge. Ideas of things you could show are:*

- Pictures of the three types of North American bluebirds
- Bluebird habitats
- Foods preferred by bluebirds
- Your community and bluebirds
- Pictures and Map of your Bluebird Trail

Egg-cellent Jobs!

Can you name some avian careers?

If you have enjoyed completing this project book, especially observing and monitoring birds, then you are in luck! Did you know that there are a number of professional jobs that allow you to interact with birds on a daily basis? Want to know more? Just complete the following activities to see some jobs available for those who love working with members of the avian community.

Life Skill:
Career Exploration

Fly Into Action

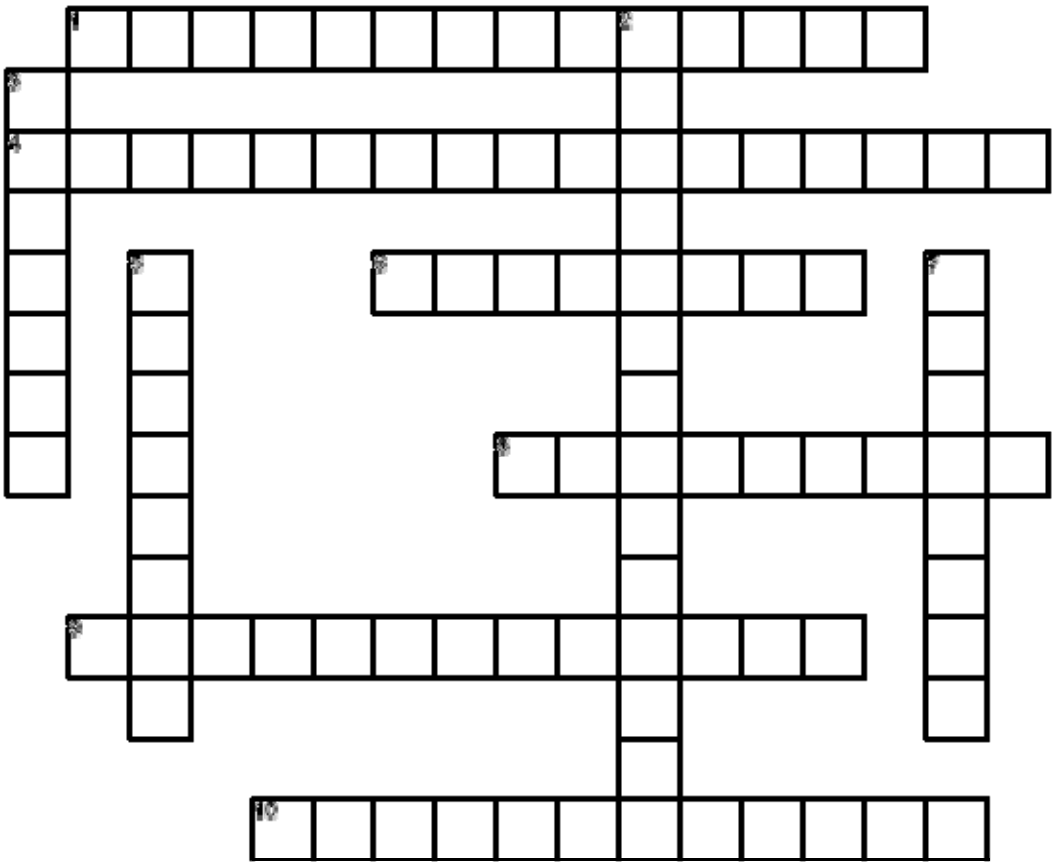
Use the space below to think of as many avian (bird-related) jobs as you can in 1 minute. Be sure to time yourself

Awesome Avian Jobs!

Use the crossword puzzle below to discover a few career paths that involve birds.

WORD BANK

Aviculturist
Avian ecologist
Avian veterinarian
Banding
Breeders
Classification
Ornithologist
Pet store
Taxonomy
Zookeeper



Across

1. organizing or arranging things by class or category
4. a professional who studied specifically to treat the medical needs of birds
6. the scientific method for naming organisms
8. a professional who is responsible for the feeding and daily care of animals in captivity
9. a professional scientist who studies the lives and behaviors of birds
10. a general term for one who cares for and raises birds

Down

2. a professional who examines the interrelationship between birds and their environments
3. the act of attaching small, individually numbered, metal or plastic rings to a bird's leg or wing in order to aid in the study of birds in the wild
5. a place where bird supplies can be purchased for bird owners
7. people who raise a specific breed of bird, in keeping with the accepted standards for the breed

What other professionals do you trust to help you take care of other animals or pets in your environment?

Out of all the jobs in the crossword, which seemed the most appealing to you? Why?

Which career seemed the least appealing to you? Why?

A **breeder** is someone who raises a specific breed of animal, according to the accepted standards for the breed. Why would it be important for breeders to maintain a standard for a certain breed?

YOKI TALES

Yoki decided to get a part-time job and went to a local job fair. When she arrived, she realized that there were a lot more booths than she expected. Yoki didn't even know where to start, and then she realized that she didn't even have a resume with her like most of the other people did. The whole afternoon was wasted as she wandered around without a solid plan.

What kind of research and preparation should you do when thinking about a part-time or full-time job?

What strengths do you have that will help you reach your employment goals?

What types of things would you like to get better at doing or learn more about?

- Find out what kinds of careers that relate to birds are available in your area. Find resident experts, such as zoo workers, vets, aviary supply stores or pet store workers. Interview them about birds in your area and the work that they do. Create a script for introducing yourself and your project, along with a list of questions for your interview subject.

- Give a 20-minute talk on 'Bluebirds and Other Cavity-Nesting Birds'. Begin your demonstration by explaining your poster (Lesson 8: Eggsplore) and why you created it as you did. As to the rest of your demonstration, you can do anything pertaining to bluebirds and other cavity-nesting birds. You may cover all topics you have learned about this year, or you may talk only on one specific topic: types of bird boxes, predators, habitat, food choices, Bluebird Trails, bluebirds in your community, bird education, or the future of the bluebird. Practice this demonstration in front of your parent(s) or guardian, grandparents, neighbors, or other adult friends. Finally, present your demonstration to your 4-H Club.

Resources...

FIELD GUIDES

A field guide is a book created to help the user identify certain parts of nature such as wildlife (plants or animals) or other objects that naturally occur (minerals). It is generally designed to be brought into the 'field' or local area where such objects exist to help distinguish between similar objects. Typically, these books include descriptions of the various objects, paintings or photographs, and an index.

A Guide to Field Identification: Birds of North America
By: Robbins, Bruun, and Zim,
ISBN: 1-58238-091-0 (hc)
ISBN: 1-58238-090-2 (pbk)

National Geographic Field Guide to the Birds of North America
ISBN 0-7922-5314-0

The Sibley Field Guide to Birds of Eastern North America
Written and illustrated by: David Allen Sibley
ISBN 0-679-45120-X

WEBSITES

Cornell Lab of Ornithology
http://www.birds.cornell.edu, www.allaboutbirds.org
The Cornell Lab of Ornithology website contains many tools for learning about birds as well as current research being done throughout North America.

Sialis
http://www.sialis.org/index.html
This website was developed as a resource for people interested in helping bluebirds (like the Eastern Bluebird - *Sialia sialis*) and other native cavity-nesters survive and thrive.

Department of Wildlife Ecology and Conservation
http://www.wec.ufl.edu/extension
This website contains a variety of tools and information regarding the conservation of wildlife. In particular, the “Landscaping for Wildlife” section is most useful.

What Bird
http://www.whatbird.com
This website contains a broad set of tools that can aid in identifying over 880 birds in North America. Here are some of the interactive activities this website offers:
- Interactive game: ***Avian Sleuth***
- Online search engine to identify birds
- Learn to identify birds by song
- Glossary of bird terms

PRINT RESOURCES

~~Berger, Cynthia, Keith~~ Kridler, and Jack Griggs. 2001. ***The Bluebird Monitor’s Guide to Bluebirds and Other Small Cavity-Nesters.*** New York: HarperCollins Publishers, Inc.

**This is an excellent book to add to your library because of its complete coverage of Bluebird Monitoring.*

Scriven, D. H. 1999. ***Bluebird Trails: A Guide to Success 3rd Edition.*** Minneapolis: Bluebird Recovery Program.

Stokes, Donald W., and Lillian Q. Stokes. 1991. ***Bluebird Book The Complete Guide To Attracting Bluebirds.*** Boston: Little, Brown, and Company.

Stokes, Donald W., and Lillian Q. Stokes. 1999. ***Bluebird Basics Getting Started With Bluebirds.*** [Video]

Toops, Connie, 1994. ***Bluebirds Forever.*** Stillwater, MN: Voyageur Press.

Zeleny, Lawrence. 1978. ***The Bluebird: How You Can Help Its Fight for Survival.*** Bloomington: Indiana University Press.

Zickefoose, Julie. 1993. **Enjoying Bluebirds More.** [Pamphlet] Bird Watcher’s Digest, Marietta, OH.

ONLINE PRINT RESOURCES

Cavity-Nesting Birds of North American Forests
http://www.na.fs.fed.us/spfo/pubs/wildlife/nesting_birds/
Forest Service; U.S. Department of Agriculture
Agriculture Handbook No. 511
November 1977

Helping Cavity-nesters in Florida
http://edis.ifas.ufl.edu/UW058
By: Joe Schaefer, Urban Wildlife Extension Specialist, Wildlife and Range Sciences Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611-0304.

COMMUNITY & RESEARCH ORGANIZATIONS

Cornell Lab of Ornithology:
159 Sapsucker Woods Rd.
Ithaca, NY 14850

Phone: Toll free: 1-800-843-BIRD (1-800-843-2473)
Email: cornellbirds@cornell.edu
Web Address: http://.birds.cornell.edu/

Ornithological Society of North America:
Ornithological Society of North America (OSNA) is the combined effort of a number of ornithological societies. Its main purpose is to combine the individual efforts of these societies and produce a print and online version of their ornithological newsletter, *The Flock*.

5400 Bosque Blvd.
Suite 680
Waco, TX 76710

Phone: 1-254-399-9636
E-mail: business@osnabirds.org
Web Address: http://www.osnabirds.org/

North American Bluebird Society
The North American Bluebird Society is a non-profit education, conservation and research organization that promotes the recovery of bluebirds and other native cavity-nesting bird species in North America.

PO Box 43
Miamiville, OH 45147

Phone: 1-812-988-1876
E-mail: info@nabluebirdsociety.org
Web Address: http://www.nabluebirdsociety.org/

Aviary and Caged Bird Society of South Florida
The Aviary and Caged Bird Society of South Florida offers its membership information and education concerning the care and breeding of avian species. It promotes the science of Aviculture, while trying to ensure the preservation of cage birds in the United States.

Flamingo Gardens
3750 Flamingo Road
Davie, FL 33330

Web Address: http://www.feathers.org

FLORIDA ZOOS AND AVIARY FACILITIES

Aviary Zoo of Naples - Naples, FL
http://www.aviaryofnaples.com/

Brevard Zoo - Melbourne, FL
http://www.brevardzoo.org/

Busch Gardens - Tampa, FL
http://www.buschgardens.com/BGT/default.aspx

Gatorland - Orlando, FL
http://www.gatorland.com

Jacksonville Zoo and Gardens - Jacksonville, FL
http://www.jaxzoo.org/

Lowry Park Zoo - Tampa, FL
http://www.lowryparkzoo.com/

Miami Metrozoo - Miami, FL
http://www.miamimetrozoo.com/

Palm Beach Zoo at Dreher Park - West Palm Beach, FL
http://www.palmbeachzoo.org/

Santa Fe College Teaching Zoo - Gainesville, FL
http://inst.santafe.cc.fl.us/~zoo/

Sea World - Orlando, FL
http://www.4adventure.com/SWF/default.aspx

Glossary

Aves (n) - the Latin word for "bird" and also the name of the class of animals that have wings and feathers, are warm-blooded, and lay eggs.

Avian (adj) - of, relating to, or derived from birds.

Avian Ecologist (n) - a professional who examines the interrelationship between birds and their environments.

Avian Veterinarian (n) - a professional who studied specifically to treat the medical needs of birds.

Aviculturist (n) - a general term for one who cares for and raises birds.

Adopter (n) - one of two distinct types of cavity-nesting birds; adopters use old, abandoned nesting cavities, such as a tree that has died, fallen down, or broken in half in order to create their nest; unlike excavators, they do not carve out their own cavities.

Back (n) - the area of a bird's body on each side of the backbone.

Banding (v) - the act of attaching small individually numbered, metal or plastic rings to a bird's leg or wing in order to aid in the study of birds in the wild.

Belly (n) - the body part that contains the stomach, intestines, and other organs.

Bill (n) - the beak or mouth.

Bluebird Trail (n) - consists of five or more bluebird houses in the same locale.

Breast (n) - the chest of the bird.

Breeder (n) - people who raise a specific breed of bird, in keeping with the accepted standards for the breed.

Brood (n) - the young of an animal cared for at one time; **(v) -** to sit on (eggs).

Brood patch (n) - a bare patch of skin on the belly region of a bird, where downy feathers either fall out or are plucked out, by the female just before she begins incubating; becomes engorged with blood vessels during breeding season, and works like a hot water bottle to transfer heat from the parent's body to the eggs.

Camouflage (n) - attributes, such as natural coloring, that helps hide an animal.

Carrion (n) - the dead and rotting body of an animal.

Clutch (n) - the term used for the group of eggs that a bird lays at one time.

Conical Guard (n) - this guard uses a circular piece of galvanized sheet metal, placed around the pole beneath the box.

Crown (n) - the top part of a bird's head.

Ear-coverts (n) - the small feathers that cover the area of the ear, sometimes distinctively coloured, which aids in identifying the bird species.

Environment (n) - the air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at any time.

Excavator (n) - one of two distinct types of cavity-nesting birds; creates its own cavity (holes) with its beak and then lines its nests with the resulting woodchips.

Extinction (n) - the coming to an end or dying out, of a species.

Flank (n) - each side of the body of an animal, between the last rib and the hip.

Fledge (v) - to acquire the feathers necessary for flight; when a baby bird first leaves the nest.

Fledglings (n) - a young bird that has recently acquired its flight feathers.

Habitat (n) - the natural environment of an organism; place that is natural for the life of an organism.

Incubation (n) - the act of maintaining favorable temperature and other conditions that promote egg development.

Migrate (v) - to change location periodically, especially by moving seasonally from one region to another.

Monitor (v) - a term used to describe careful and repeated observation. Scientists monitor animals in their natural habitats to collect research about their lifestyles and behaviors.

Nape (n) - the back part of the neck.

Noel Predator Guard (n) - the Noel guard is a rectangular tube of hardware cloth stapled to the front of the nest box. The edge of the tube has sharp points.

Ornithologist (n) - a professional scientist who studies the lives and behaviors of birds.

Plumage (n) - the entire feathery covering of a bird.

Predator (n) - an organism that lives by capturing and eating other organisms.

Predator Baffle (n) - a predator guard made of stove or PVC pipe that encircles the pole where the box is located.

Resources (n) - the air, water, minerals, organisms, and all other external factors needed for an organisms survival.

Scientific Classification (n) - organizing or arranging things by class or category.

Secondary Cavity-Nesting Bird (n) - a bird that uses the cavities hollowed out by other birds to build their nests and raise their young; also known as *adopters*.

Species (n) - regarded as the basic category of biological classification, composed of individuals that resemble one another and are able to breed amongst themselves, but not with members of another species.

Suet (n) - beef or mutton fat used in cooking, or processed to yield tallow.

Tallow (n) - hard-processed animal fat used for making soap, cooking, and preparing bird food. It was once used to make candles.

Taxonomy (n) - the scientific method for naming organisms.

Thigh (n) - the top of the leg between the knee and the hip.

Throat (n) - the front part of the neck; the part of the airway and digestive tract between the mouth and both the esophagus and the windpipe.

Transcontinental Bluebird Trail (n) - a bluebird trail that extends through the United States created by thousands of people who monitor bluebird houses.

Vertebrates (n) - members of the subphylum Vertebrata, a primary division of the phylum Chordata that includes the fishes, reptiles, amphibians, birds, and mammals, all of which are characterized by a segmented spinal column and a distinct well-differentiated head.

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

<table>
<tr><td rowspan="6">Box #:

Species:

Date:

Brood #:</td><td>Nest (describe)</td><td>Adults</td><td>Eggs</td><td>Young</td></tr>
<tr><td rowspan="5"></td><td>How Many?</td><td>How Many?</td><td>How Many?</td></tr>
<tr><td>Banded: Yes No</td><td>In Box: In Out</td><td>In Box: In Out</td></tr>
<tr><td>In Box: In Out</td><td rowspan="2">Appearance:</td><td rowspan="2">Appearance:</td></tr>
<tr><td>Appearance:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td colspan="4">Other Important Dates: Be sure to record when these events occur!
First Egg Laid:

Hatch Date:

Fledge Date:</td></tr>
</table>

<table>
<tr><td rowspan="6">Box #:

Species:

Date:

Brood #:</td><td>Nest (describe)</td><td>Adults</td><td>Eggs</td><td>Young</td></tr>
<tr><td rowspan="5"></td><td>How Many?</td><td>How Many?</td><td>How Many?</td></tr>
<tr><td>Banded: Yes No</td><td>In Box: In Out</td><td>In Box: In Out</td></tr>
<tr><td>In Box: In Out</td><td rowspan="2">Appearance:</td><td rowspan="2">Appearance:</td></tr>
<tr><td>Appearance:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td colspan="4">Other Important Dates: Be sure to record when these events occur!
First Egg Laid:

Hatch Date:

Fledge Date:</td></tr>
</table>

<table>
<tr><td rowspan="5">Box #:

Species:

Date:

Brood #:</td><td>Nest (describe)</td><td>Adults</td><td>Eggs</td><td>Young</td></tr>
<tr><td rowspan="4"></td><td>How Many?</td><td>How Many?</td><td>How Many?</td></tr>
<tr><td>Banded: Yes No</td><td>In Box: In Out</td><td>In Box: In Out</td></tr>
<tr><td>In Box: In Out</td><td rowspan="2">Appearance:</td><td rowspan="2">Appearance:</td></tr>
<tr><td>Appearance:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td colspan="4">Other Important Dates: Be sure to record when these events occur!
First Egg Laid:

Hatch Date:

Fledge Date:</td></tr>
</table>

<table>
<tr><td rowspan="5">Box #:

Species:

Date:

Brood #:</td><td>Nest (describe)</td><td>Adults</td><td>Eggs</td><td>Young</td></tr>
<tr><td rowspan="4"></td><td>How Many?</td><td>How Many?</td><td>How Many?</td></tr>
<tr><td>Banded: Yes No</td><td>In Box: In Out</td><td>In Box: In Out</td></tr>
<tr><td>In Box: In Out</td><td rowspan="2">Appearance:</td><td rowspan="2">Appearance:</td></tr>
<tr><td>Appearance:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td colspan="4">Other Important Dates: Be sure to record when these events occur!
First Egg Laid:

Hatch Date:

Fledge Date:</td></tr>
</table>

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Box #:	Nest (describe)	Adults	Eggs	Young
		How Many?	How Many?	How Many?
Species:		Banded: Yes No	In Box: In Out	In Box: In Out
		In Box: In Out	Appearance:	Appearance:
		Appearance:		
Date:				
Brood #:	Comments:			
	Other Important Dates: Be sure to record when these events occur! First Egg Laid: Hatch Date: Fledge Date:			

Notes *for the* Bluebird Project Helper

Thank you for volunteering your time and talents to assist one or more youth in this project. *Bluebirds and Other Cavity Nesting Birds* is aimed primarily at 11-13 year olds, although this age range may vary with the member's previous experiences and activities. The curriculum takes youth on a journey through bird basics, habitats, birdhouses, predators, food, and observing/ collecting data. There is also a lesson which focuses on different careers related to birds and the study of birds.

This project has no time limit. The goal is to have members understand birds in their community, while creating a habitat to support their local cavity-nesting birds. This project can be repeated as many times as necessary if youth are unable to attract subject birds with their first attempt.

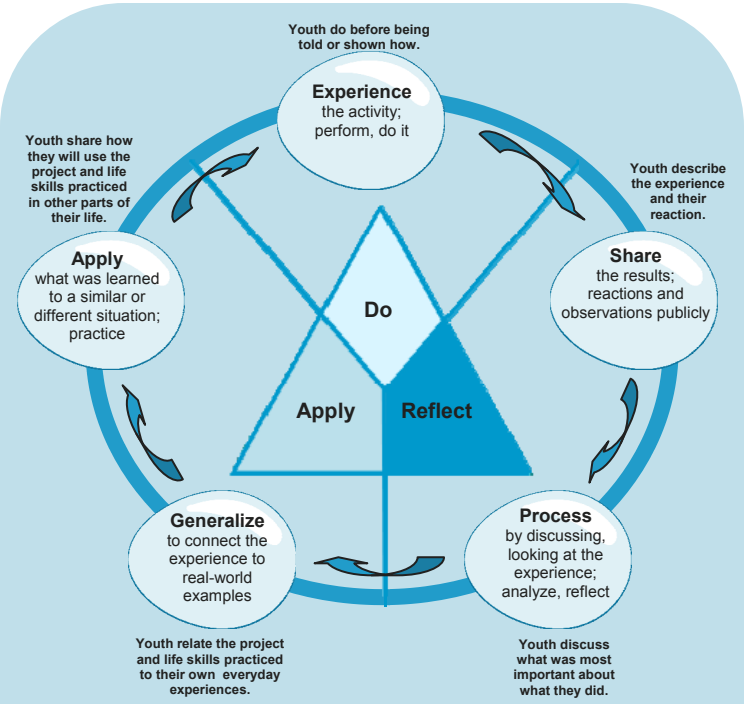
Your Role

- Become familiar with the material in this activity guide and the correlating *Helper's Guide.*
- Provide support for youth in their efforts to complete the activities indicated in their project goals.
- Date and initial the activities as the youth complete them.
- Incorporate the use of the experiential learning cycle in each learning opportunity.

Outcomes

- Youth will practice life skills such as planning, organizing, and record keeping.
- Youth will identify the different types of cavity-nesting birds in their area.
- Youth will develop a habitat that promotes the health and safety of local cavity-nesting birds.

Experiential Learning Model



This five-step model is used in each activity in this series. The youth first attempts the activity independently, completing as much as possible. Once the youth is finished with the initial attempt, have an open discussion with him/her. Ask thought-provoking questions to help clarify and expand on the experiences.

- *What did you do?*
- *What was important about what you did?*
- *How does your accomplishment relate to your lives?*
- *How might you use the life and project skills you practiced in the future?*

Adapted from Kolb, D. (1984)

Photograph and Illustration Credits

Bill Adams (www.momentsnow.com): Veterinarian with Cockatoos (p. 51)

Steve Baranoff: Eastern Bluebird (p. 8)

Hester Jane Burch: Scrap bag (p. 31)

Barbara Dunn: Bluebird nest box (p. 47)

Brant Faircloth and Timbers Research Station and Land Conservancy, Tallahassee, FL: Man holding falcon and bird being banded (p. 51)

Pat D. Hemlepp: Eastern Bluebird (cover and p. 8)

Dave Johnson: Western Bluebird (p 8)

Jessica Kochert: Bluebird house dimension diagrams (pp. 26 and 27)

Dave and Steve Maslowski (Maslowski Productions): Bluebird feeding offspring (p. 56)

Loretta Rodriguez: Bluebird sketch (pp. 6, 7, 9, and 48)

University of Minnesota Turkey School, 2004: Turkey autopsy (p. 51)

North American Bluebird Society: Baffle guard, conical guard, and Noel guard (p. 32)

Mike Yip: Mountain Bluebird (p. 8)

Bet Zimmerman and Wendell Long (www.sialis.org): Bluebird eggs (white and blue), titmice eggs, European Starling eggs, and House Sparrow eggs (p. 40); Fledglings and newborns in nest (p. 46)

COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, Millie Ferrer-Chancy, Interim Director, in cooperation with the United States Department of Agriculture, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and is authorized to provide research, educational information, and other services only to individuals and institutions that function without discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions, or affiliations. Single copies of extension publications (excluding 4-H and youth publications) are available free to Florida residents from county extension offices. Information about alternate formats is available from IFAS Information and Communication Services, University of Florida, PO Box 110810, Gainesville, FL 32611-0810. Original publication date January 2010.

I Pledge

my **HEAD**
to clearer thinking,

my **HEART**
to greater loyalty,

my **HANDS**
to larger service, and

my **HEALTH**
to better living, for
my club, my community,
my country,
and my world.

My Name:

My Club:

Special thanks to Christina Packard, a 10-year alumni of Florida's Sarasota County 4-H. She created Christy's Bluebird Project, used in Sarasota and Manatee Counties, after learning about bluebirds. Christy learned that bluebird monitors across the United States wanted to get youth involved. Thanks to Christina for spearheading this project development and funding effort to engage 4-Hers across the country in bluebird education and monitoring.

The ***Bluebirds and Other Cavity Nesting Birds*** curriculum package was developed by Loretta Rodriguez, 4-H Project Assistant, Joy Jordan, 4-H Curriculum Specialist, and Mark E. Hostetler, Associate Professor and Wildlife Ecology and Conservation with the assistance of Christina Packard, 4-H Alumni and Jessica Kochert, Graphic Design, University of Florida, Institute of Food and Agricultural Sciences, Department of Family, Youth and Community Sciences. Thanks to Amy Duncan, 4-H Agent, Citrus County, for reviewing this project.

Visit the Florida 4-H website for more information about this and other projects:
http://www.florida4h.org/projects/index.shtml.

UF UNIVERSITY of FLORIDA
IFAS Extension