DISCOVER

4-H WILDLIFE CLUBS

EXTENSION
UtahStateUniversity

DISCOVER

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Description

The Discover 4-H Clubs series guides new 4-H volunteer leaders through the process of starting a 4-H club or provides a guideline for seasoned volunteer leaders to try a new project area. Each guide outlines everything needed to organize a club and hold the first six club meetings related to a specific project area.

Purpose

The purpose is to create an environment for families to come together and participate in learning activities while spending time together as a multi-family club. Members will experiment with new 4-H project areas.

What is 4-H?

4-H is one of the largest youth development organizations in the United States. 4-H is found in almost every county across the nation and enjoys a partnership between the U. S. Department of Agriculture (USDA), the state land-grant universities (e.g., Utah State University), and local county governments.

4-H is about youth and adults working together as partners in designing and implementing club and individual plans for activities and events. Positive youth development is the primary goal of 4-H. The project area serves as the vehicle for members to learn and master project-specific skills while developing basic life skills. All projects support the ultimate goal for the 4-H member to develop positive personal assets needed to live successfully in a diverse and changing world.

Participation in 4-H has shown many positive outcomes for youth. Specifically, 4-H participants have higher participation in civic contribution, higher grades, increased healthy habits, and higher participation in science than other youth (Lerner et al., 2005).

Utah 4-H

4-H is the youth development program of Utah State University Extension and has more than 90,000 youth participants and 8,600 adult volunteers. Each county (Daggett is covered by Uintah County) has a Utah State University Extension office that administers the 4-H program.

The 4-H Motto

"To Make the Best Better!"

The 4-H Pledge

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.

4-H Clubs

What is a 4-H Club? The club is the basic unit and foundation of 4-H. An organized club meets regularly (once a month, twice a month, weekly, etc.) under the guidance of one or more volunteer leaders, elects its own officers, plans its own program, and participates in a variety of activities. Clubs may choose to meet during the school year, only for the summer, or both.

Club Enrollment

Enroll your club with your local Extension office. Each member will need to complete a Club Member Enrollment form, Medical History form, and a Code of Conduct/Photo Release form (print these from the www.utah4h.org website or get them from the county Extension office).

Elect Club Officers

Elect club officers during one of your first club meetings. Depending on how many youth are in your club, you can decide how many officers you would like. This will typically include a president, vice president, pledge leader, and secretary. Other possible officers or committees are: song leader, activity facilitator, clean-up supervisor, recreation chair, scrapbook coordinator, contact committee (email, phone, etc.), field trip committee, club photographer, etc. Pairing older members with younger members as Sr. and Jr. officers may be an effective strategy to involve a greater number of youth in leadership roles and reinforce the leadership experience for both ages. Your club may decide the duration of officers 6 months, 1 year, etc.

A Typical Club Meeting

Follow this outline for each club meeting:

- ☐ Call to order–president
- ☐ Pledge of Allegiance and 4-H Pledge–pledge leader (arranges for club members to give pledges)
- ☐ Song–song leader (leads or arranges for club member to lead)
- ☐ Roll call–secretary (may use an icebreaker or get acquainted type of roll call to get the meeting started)
- ☐ Minutes of the last meeting–secretary
- ☐ Business/Announcements–vice president
- ☐ Club Activity–arranged by activity facilitator and includes project, lesson, service, etc. These are outlined by project area in the following pages.
- ☐ Refreshments–arranged by refreshment coordinator
- ☐ Clean Up–led by clean-up supervisor

Essential Elements of 4-H Youth Development

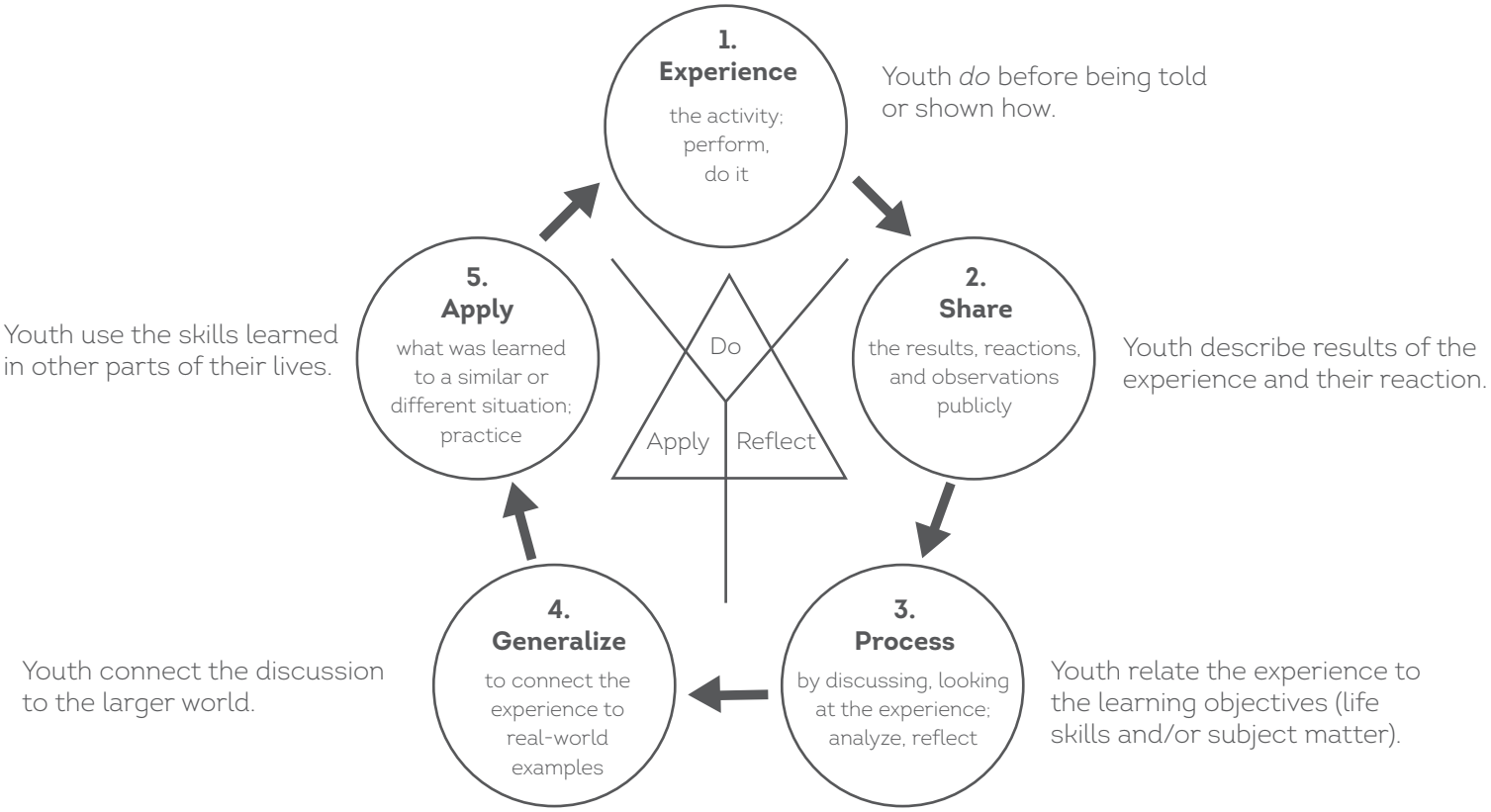
The essential elements are about healthy environments. Regardless of the project area, youth need to be in environments where the following elements are present in order to foster youth development.

1. **Belonging**: a positive relationship with a caring adult; an inclusive and safe environment.
2. **Mastery:** engagement in learning, opportunity for mastery.
3. **Independence:** opportunity to see oneself as an active participant in the future, opportunity to make choices.
4. **Generosity:** opportunity to value and practice service to others.

(Information retrieved from: http://www.4-h.org/resource-library/professional-development-learning/4-h-youth-development/youth-development/essential-elements/)

4-H "Learning by Doing" Learning Approach

The Do, Reflect, Apply learning approach allows youth to experience the learning process with minimal guidance from adults. This allows for discovery by youth that may not take place with exact instructions.



4-H Mission Mandates

The mission of 4-H is to provide meaningful opportunities for youth and adults to work together to create sustainable community change. This is accomplished within three primary content areas, or mission mandates - citizenship, healthy living, and science. These mandates reiterate the founding purposes of Extension (e.g., community leadership, quality of life, and technology transfer) in the context of 21st century challenges and opportunities. (Information retrieved from: http://www.csrees.usda.gov/nea/family/res/pdfs/Mission_Mandates.pdf)

1. **Citizenship:** connecting youth to their community, community leaders, and their role in civic affairs. This may include: civic engagement, service, civic education, and leadership.
2. **Healthy Living:** promoting healthy living to youth and their families. This includes: nutrition, fitness, social-emotional health, injury prevention, and prevention of tobacco, alcohol, and other drug use.
3. **Science:** preparing youth for science, engineering, and technology education. The core areas include: animal science and agriculture, applied mathematics, consumer science, engineering, environmental science and natural resources, life science, and technology.

Getting Started

1. Recruit one to three other families to form a club with you.
    a. Send 4-H registration form and medical/photo release form to each family (available at utah4h.org).
    b. Distribute the Discover 4-H Clubs curriculum to each family.
    c. Decide on a club name.
    d. Choose how often your club will meet (e.g., monthly, bi-monthly, etc.).
2. Enroll as a 4-H volunteer at the local county Extension office (invite other parents to do the same).
3. Enroll your club at the local county Extension office.
    a. Sign up to receive the county 4-H newsletter from your county Extension office to stay informed about 4-H related opportunities.
4. Identify which family/adult leader will be in charge of the first club meeting.
    a. Set a date for your first club meeting and invite the other participants.
5. Hold the first club meeting (if this is a newly formed club).
    a. See *A Typical Club Meeting* section above for a general outline.
        i. Your activity for this first club meeting will be to elect club officers and to schedule the six project area club meetings outlined in the remainder of this guide. You may also complete a-d under #1 above.
    b. At the end of the first club meeting, make a calendar outlining the adult leader in charge (in partnership with the club president) of each club meeting along with the dates, locations, and times of the remaining club meetings.
6. Hold the six project-specific club meetings outlined in this guide.
7. Continue with the same project area with the 4-H curriculum of your choice (can be obtained from the county Extension office) OR try another Discover 4-H Club project area.

Other Resources

Utah 4-H website: www.Utah4-h.org
National 4-H website: www.4-h.org
4-H volunteer training:
To set up login:
http://utah4h.org/volunteers/training/
To start modules: (password = volunteer)

References

Information was taken from the Utah 4-H website (utah4h.org), the National 4-H website (4h.org), the Utah Volunteer Handbook, or as otherwise noted.

Lerner, R., M. et al. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth grade adolescents: Findings from the first wave of the 4-H Study of Positive Youth Development. Journal of Early Adolescence, 25(1), 17-71.

We would love feedback or suggestions on this guide; please go to the following link to take a short survey:
Go to https://goo.gl/iTfiJV or Click here to give your feedback

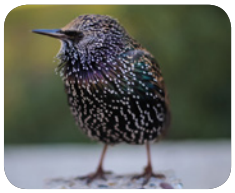
4-H WILDLIFE CLUB *Meetings*

Club Meeting 1
The Nature of your Neighborhood ---- 2

Club Meeting 2
Bird Beaks ---- 6

Club Meeting 3
Animal Tracks and Traces ---- 12

Club Meeting 4
Designing a Species ---- 17



Club Meeting 5
The Web of Life ---- 30

Club Meeting 6
Designing an Ecosystem ---- 34

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DISCOVER
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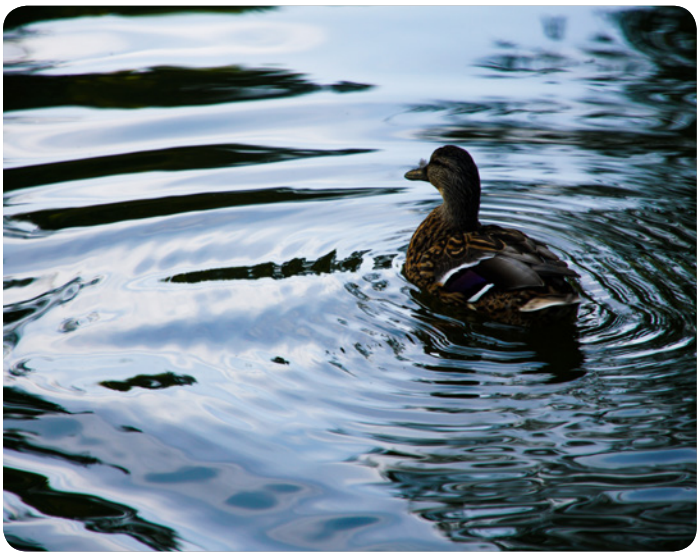
4-H Club Meeting 1
The Nature of Your Neighborhood



Supplies

- Scavenger hunt lists (found on pages 4-5)
- Paper bags
- Ink pens
- Cameras (optional)

INTRODUCTION

The function of this club meeting is to introduce the club members to the world around them and develop friendships with their fellow members. Even residents of urban areas are surrounded by nature. The exercise demonstrates that natural objects are nearby, but sometimes we overlook them. If we look, we will find many natural elements right outside our door.

PRIOR TO MEETING

- Make copies of the scavenger hunt lists found on pages 4-5. Print list one if your club meets at a school or area with concrete and green space. Print list two if your club meets near an area of natural space, such as a park, trail or small woodland
- Purchase paper bags and ink pens
- Ask club members to bring a device with a camera on it

Activity #1
Scavenger Hunt

SCAVENGER HUNT

TIME: 35 MINUTES

Gather the club members together. Have everyone introduce themselves and talk about an outdoor activity they enjoy doing. This should break the ice and allow members to start developing friendships. Move the discussion toward the natural environment. Discuss how nature is everywhere and influences our daily lives.

- **What is nature?** What elements make up nature? [water, minerals, soil, plants, invertebrates, vertebrates, microbes, etc.]
- **How do we use nature?** [To play, to eat, to build, to stay warm, etc. For advanced discussion: Without plants there would be no oxygen, without the minerals we could not build roads, buildings, or cars.]
- **What natural elements do club members notice outside the window/near their school/near their house?**

Activity #1
Scavenger Hunt

It is time to discover the natural world around you.

- Pass out the paper bags, pens, and scavenger hunt guides.
- Divide into groups of one or two.
- Tell the students to gather the objects on their guides and put them in their paper bags. Some of the items will be too large or heavy.
- Instruct them to take a picture or draw a picture when they find something like that. If they are drawing a picture, they can place it in the bag.
- Give them 20 to 30 minutes to complete the scavenger hunt.

Reflect

- Who collected or saw all of the items on the list?
- Did anyone see anything that wasn't listed?
- Why is it important to be aware of the nature that surrounds us?

Apply

- How will you be more mindful of the world around you?
- What can you do to show your appreciation for nature?

4-H MISSION MANDATES

Science

This activity opens the children's minds to the world around them and allows them to see how the natural world interacts with their daily life. It provides a foundation for the club activities that will follow this lesson.

ESSENTIAL ELEMENTS

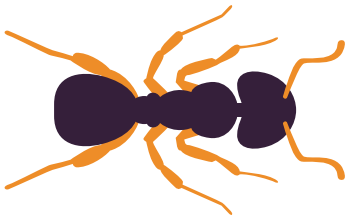
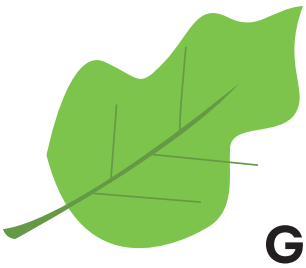
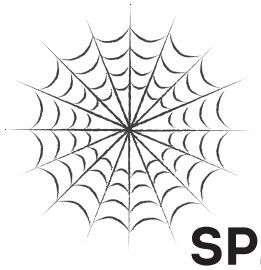
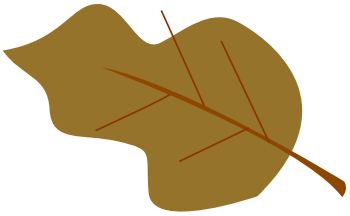
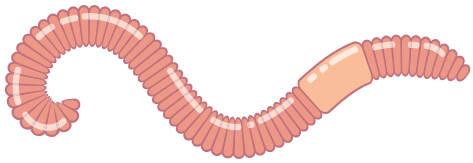
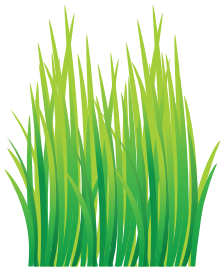
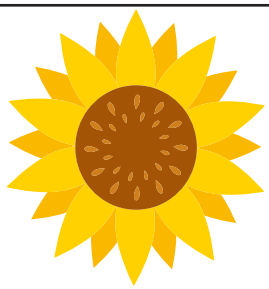
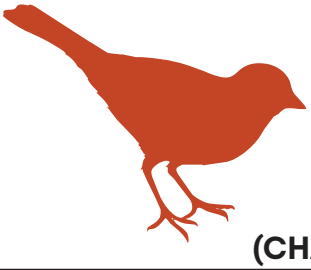
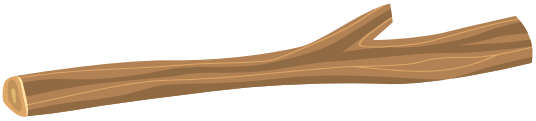
Belonging

Having the members work in groups allows them to develop friendships and what it's like to work with other people.

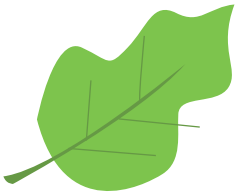
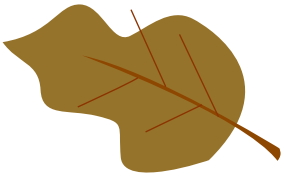
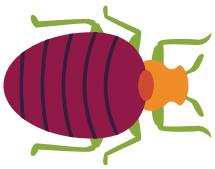
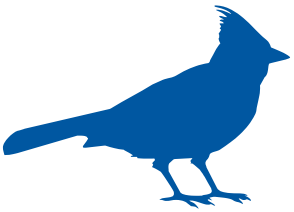
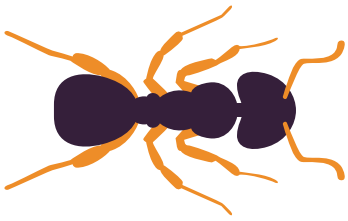
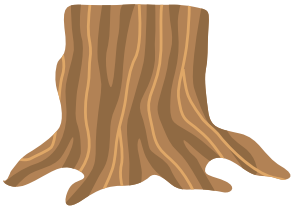
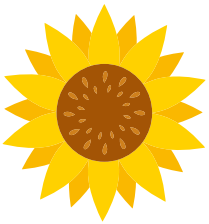
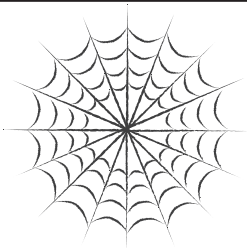
Independence

When conducting the scavenger hunt individually, the activity allows them to see that they can be involved with the world around them on their own. They can discover new things about their world with their own eyes and intelligence.

SCAVENGER HUNT LIST 1

 ANT	 GREEN LEAF
 SPIDERWEB	 DEAD LEAF
 WORM	 GRASS
 FLOWER	 BIRD (CHALLENGE BIRD: ROBIN)
 TWIG	 SOIL
 SHRUB	FREE! (FIND YOUR OWN NATURE ITEM)

SCAVENGER HUNT LIST 2

 GREEN LEAF	 DEAD LEAF
 INSECT	 GRASS
 SOIL	 ANIMAL SIGNS (TRACKS, FECES, HAIR)
 BIRD	 ANT
SEED POD OR SEED	 FEATHER
 TREE STUMP	 FLOWER
 SPIDERWEB	 ROCKS

4-H Club Meeting 2

Bird Beaks: Bird Identification and Function

Supplies

- Printer (color optional)
- Bird beaks illustrations page: 8
- Bird beak matching page: 9
- Toothpicks (about 50 for a group of 8)
- Small washers (about 50 for a group of 8)
- Marbles (about 50 for a group of 8)
- Tweezers (2 for a group of 8-9)*
- Plastic spoons (2 for a group of 8-9)*
- Clothespins (2 for a group of 8-9)*
- Scissors (2 for a group of 8-9)*
- Photos of bird beaks and food illustrations
- Optional: plaster casts of bird beaks to pass around and look at.
- Paper
- Pens
- Timer

INTRODUCTION

This lesson will illustrate how bird beaks have evolved to their lifestyle and eating habits. Members will learn how the shape of the beaks can give clues to what the bird may eat, even without knowing what the bird is. Then, they will practice being different birds with different "beaks" and experience how this affects the type of food they can gather. Finally, they will test their memory and match birds with their proper beak shapes.

PRIOR TO THE MEETING

- Print off enough bird beak and food illustrations for everyone to have a copy of each.
- Purchase supplies listed above, and review the rules of the Bird Hunt game.
- Determine a place to play the Beaks Eat activity. This area should be about 15' x 15', to allow you to spread the materials out and for students to be able to "hunt." It can be outside in the grass or inside on carpet.

Activity #1

Bird Beak and Function

BEAK FORM AND FUNCTION

TIME: 15 Minutes

1. Pass out the handouts provided with this lesson on page 8.
2. Instruct students to take a look at the pictures and ask: What do you notice about these birds? (Let them keep noticing things until somebody mentions the beaks.)
   a. Correct. Each one has a different bill shape. Ask, why do you think that is?
   b. Correct. They have evolved to eat different things.
3. Have the students take out their Beaks and Food sheet found on page 8.
4. Give the students 5 minutes to complete the activity by drawing a line from the bird to the type of food it eats.

5. Go over each bird and talk about what it eats. Start at the top and go clockwise:

   a. **Chickadee** – eats small insects, and in winter very small seeds and berries.

   b. **Pileated Woodpecker** – Uses hard straight bill to make holes in wood to eat grubs and worms.

   c. **Robin** - Eats bugs and worms on the ground. (Make a pincher with your finger and thumb and demonstrate picking bugs up off the ground.)

   d. **Yellow-billed Cardinal** – look at how triangular the beak is. This is a seed eater. The strength in the beak creates a lot of force to crack seeds. But there isn't much to the beak, it couldn't hold a lot of food, like long beaks can. Does anyone have a pet bird? I bet its beak is shaped like this (unless it is a parrot!).

   e. **Saffron Finch** - (grey and white) – tiny little tweezer beak. It eats insects off of twigs. (use your fingernails of finger and thumb to demonstrate the precision of this type of bill). It doesn't need a wide beak to hold and crack seeds. It just needs to be precise.

   f. **Flycatcher** - Can you guess what this little bird eats? (With its tiny, tweezer beak, much like the chickadee. It captures insects while flying in the air).

   g. **Gila Woodpecker -** Can you guess what this guy eats? (looks a lot like a Flicker and eats worms and insects it finds on the desert ground. (not many grubs live inside cacti.)

6. Optional: Pass around skulls and discuss birds beak shapes to illustrate these principles.

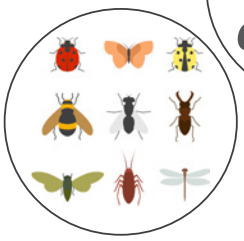
BEAKS AND FOOD

Can you guess which birds eat mostly seeds? Which ones eat mostly bugs? And which ones do something else?
Draw a line from the bird to the type of food it most likely eats.


g.


a.


b.




f.


c.


e.


d.

BEAKS EAT

TIME: 30 Minutes

1. Divide students in groups of 4. Pass out the activity sheet found on page 11.
2. While the students read the rules on the sheet, spread the toothpicks, washers, and marbles around the hunting ground. These represent various food sources in the environment.
3. Have students pick either a clothespin, spoons, or tweezers. These represent different bird beaks. Each student will choose one implement of these 3. Implements should be equally distributed. For example, in a group of 8, this might be 3 tweezers, 3 spoons, and 2 clothespins.
4. Explain the rules of the game as follows:
   - You will have 3 minutes to hunt for food.
   - In one hand you hold your beak, which will pick up food.
   - Your other hand is your stomach.
   - You are competing with other species of birds as well as birds of your own species.
   - You may physically compete to get the most food, as long as there is no hard pushing or shoving.
   - Ready, set, go!
5. Once the 3 minutes are up, students will tally up the number of each food item that they gathered. Have members of the same species pair up and find the average number of food items that they found of each species. They will fill these numbers out in the chart provided.
6. As a group, tally up the results, and have each beak type report their success or failures to the group so that in the end, each type has a full spreadsheet with all the data.
7. As a group, work to discuss the questions provided in the handout.

BEAKS EAT ACTIVITY HANDOUT

You are going to pretend that you are a bird with 1 of the 4 beak types below. When we begin the activity, you will use the beak to hunt for food. You will have 3 minutes to hunt and see how much food you can collect with your beak!

Beak Types:

1. Spoonbill (a real species that scoops up insects in water)
2. Scissorbill (a real species that you just learned about)
3. Tweezer bill (an imaginary insect type eater)
4. Clothespin bill (an imaginary seed and insect type eater)

Bird/Beak Type	Number of collected Stickworms	Number of collected Marble Beetles	Number of collected Washer Weevils
Spoonbill Average:			
Scissorbill Average:			
Tweezerbills Average:			
Clothespinbills Average:			

Discuss the following questions as a group.

1. Which 'beaks' were the best at harvesting washer weevils?
2. What is the difference between the way a tweezer and a clothespin work? How do you think this affected what food you were able to get?
3. If all the marble beetles died for some reason, what birds would likely disappear from the habitat?
4. How did the different beak shapes make it easier to find food?
5. By having different beak shapes, birds in the same environment are reducing competition for food. Those that are great at finding one thing in particular can focus on that food type, and leave the rest for the others. These are called "specialist."
   a. What beaks were specialists in your group?
   b. Some birds avoid competition by being able to eat anything. They eat what is the most abundant and don't waste time looking for any one particular thing. These are called "generalists."
   c. What beaks in your group were generalists?

Reflect

- When we change our environment by building houses, roads, schools, etc. how do we affect bird species?
- Are all of these changes bad? Good?
- What are ways we can help support a wide variety of bird species in our towns, neighborhoods, and our own backyards?

Apply

- What information can we learn about birds from looking at their beaks?
- How do birds reduce competition in nature through their beak shape?
- Would you want to have a specialized diet or a generalized diet? Explain your choice.

4-H MISSION MANDATES

Science

The group will make predictions and conduct tests to see if they were correct. This will help them gain factual knowledge of the evolution process and the different types of bird beaks.

ESSENTIAL ELEMENTS

Belonging

This lesson has the kids practice working separately, and then as part of a team. Skills in searching, math and discussion are highlighted, providing several avenues for a particular student to excel. Discussion is group based, and "correct" answers are based on the data, allowing a safe venue for exploring different possible answers, fostering a sense of teamwork.

Mastery

The group was introduced to general scientific knowledge that helps them apply that knowledge through the activities. It encourages them think for themselves and see if they were able to determine the correct answers based on facts and evidence.

Animal Tracks and Traces

Supplies

- Track identification link
- Plaster of Paris
- Water
- Pitcher (to mix plaster in)
- Flagging and/or pin flags (to mark track location)
- Binder clips (1 per student)
- Cardstock paper or note cards (10 per student)
- Pencils
- Scissors
- Alternate Activities 1 and 2: track casts (see acornnaturalist.com for example) of a mixture of carnivore, herbivore, small mammal, etc.
- Alternate Activity 2: track quiz handout

PRIOR TO THE MEETING

- Review Animal Track ID website www.naturetracking.com to familiarize yourself with site. Bookmark the site for easy access. If you have the capability, you can download the app to ID tracks and traces in the field. If not, you will need to return to the meeting location to ID the animals. This activity focuses on mammals, but you can adjust it to include birds too, depending on your location.

- If desired, print off photos of common animal tracks for where you are going to look for tracks, such as: domestic cat, domestic dog, raccoon, skunk, rabbit, crow, etc.

- You'll want to scout around your club's meeting location for a good place to look for tracks. The best places are those with a little bit of mud or a lot of sand. Riverbanks, edges of fields, sides of the road, and hiking trails are terrific places.

INTRODUCTION

This lesson will provide a general knowledge of animal tracks and how to identify them. Participants will investigate the areas around them to determine what animals live among their communities. They will make plaster casts of tracks they find, collect scat (or photos of scat), and make note of other signs of wildlife they encounter during their investigation. Participants will discuss what we can learn from animal tracks and traces.

TRACKS AND TRACES INVESTIGATION

Time: 10 Minutes

1. Take the students to the site you located previously.
2. Divide them into groups of two or three.
3. Give students 10 minutes to explore the site. Have them spread out and look for any signs of wildlife life, such as tracks, scat, feathers, tree rubs. When they find a sign, have them place a pin flag or a piece of flagging nearby.
4. While the groups look, mix the plaster and water together, according to instructions. Thick plaster will dry faster, which is good for creating tracks, but you must keep watch on the remaining plaster in the pitcher so that it doesn't harden.
5. Continue to activity 2a

TRACKS AND TRACES INVESTIGATION-ALTERNATE

Time: 60 minutes (10 minutes hands on, 50 minutes to dry)

1. Gather 1 track mold per participant, preferably of at least 6 species.
2. While the students choose their mold, mix the plaster and water together, according to instructions. Thick plaster will dry fast, which is good for creating tracks, but you must keep watch on the remaining plaster in the pitcher so that it doesn't harden.
3. Pour the plaster into the molds, then set aside.
4. Continue to activity 2b.

TRACK IDENTIFICATION

Time: 40 Minutes

1. After 10 minutes, have students gather and visit each pin flag or flagging tape.
2. *Visit all tracks first then visit the other animal traces. At each track, pour plaster into the impression to make a mold. It will take 30 minutes to dry.*
3. Have the students guess what animals the tracks/traces come from.
4. Have students draw the track on their notecards with the name of the animal the group thinks it is. Write down the characteristics of the habitat that the track was found in.
5. If you have the app on your phone or some handouts, have the students identify the animal by its track or trace.
6. Once the plaster has dried, retrieve the plaster molds.
7. Make a list of all the animals you found during your investigation.

TRACK IDENTIFICATION

Time: 40 minutes

1. Place 6-8 different species of tracks on a table for students to look at.
2. Identify them as track A, B, C, etc.
3. Pass out Activity 2B handout found on page 17 and let students investigate and try to determine the answers themselves.
4. Once students have filled out the sheet, review the answers.

Reflect

- What kind of things can we learn about an animal from its tracks?
- What are the different roles animals play in nature?
- What do we know about this habitat's community by collecting tracks and traces?
- What did you expect to find that you didn't? Why do you think you didn't see it?

Apply

- What kind of tracks/signs do we leave behind?
- Are all of our tracks good?
- How can we leave less negative tracks on the world around us?

4-H MISSION MANDATES

Citizenship

The youth learn about tracks and signs animals leave behind them as they go about their daily lives. They are then prompted to think about what tracks and signs they leave behind. They are asked to determine ways they can reduce negative tracks on the environment around them. This helps them be more aware of the community around them and reducing their negative impact on it by reducing trash and waste.

Science

This activity helps youth learn how to use deductive reasoning and evidence learn information from the world around them. In this case using animal tracks to deduce what kind of animal left them behind.

ESSENTIAL ELEMENTS

Belonging

Club members feel belonging as they work together to find animal tracks. They are able to develop new/stronger friendships as they explore the world around them.

Generosity

This lesson helps club members think about the effect they have on the world around them as they live their daily lives. We all share this world, and if we work to reduce our negative impact on the environment, it benefits everyone.

MAMMAL TRACK IDENTIFICATION

On the table are several mammal feet or tracks (footprints). In the spaces below, write what kind of animal you THINK has that foot shape or makes that track. (Example: rabbit, squirrel, bobcat, deer.) Does the animal run, walk, or hop? Circle the way you think the animal moves. Fill in how big you think the animal is.

a. _____ Run Walk Hop How big is the animal? _____	b. _____ Run Walk Hop How big is the animal? _____	c. _____ Run Walk Hop How big is the animal? _____
d. _____ Run Walk Hop How big is the animal? _____	e. _____ Run Walk Hop How big is the animal? _____	f. _____ Run Walk Hop How big is the animal? _____

Draw the shape of the track for each activity below. Hint: Keep it simple.

Small Hopping

Digging

Walking/Chasing

Designing a Species

Supplies

- Animal Information Cards page 21-24
- Wildlife Bingo sheets page 25-30
- Bingo chips or other similar marker
- Paper
- Pencils
- Scissors
- Tape/glue
- Blank index (4X6) cards
- Binder clips

PRIOR TO THE MEETING

We have provided templates for the Wildlife Bingo Sheets and Animal Identification cards. On these templates we included animals that are common throughout America. You may wish to add or swap out some animals, depending on your area. Feel free to do so. The Animal Identification Cards have general information for several herbivores, carnivores, omnivores, and scavengers. The information gained from these cards will be used to make a food web in the next meeting.

- Print off Wildlife Bingo Sheets
- Print off Animal Information Cards

INTRODUCTION

This lesson combines a game and learning. The club members will play bingo. As the instructor works through the animals the participants will learn facts about each animal, leading to improved knowledge about the animals in the participants' natural communities. The information cards and bingo sheets will be used in the next lesson, to strengthen the youths' understanding of these animals.
For advanced students, or older students, print a blank copy of the Animal Information Cards for each student. As you provide the information, they can fill it out on their own, reinforcing what they have learned.

WILDLIFE BINGO

Time: 30 minutes

1. Hand out Wildlife Bingo cards, (pencils, and paper), and marker pieces.
2. Explain the rules of Wildlife Bingo
   a. The instructor will select an animal card.
   b. The instructor will state 3-5 facts about each animal.
   c. Students will guess or determine which animal is being identified, and mark the appropriate square if they have that animal.
   d. If information cards are being created, students will put the information on a blank card. They may not know what animal they are filling information out for. That is ok. It will get filled out as the game progresses.
   e. When a student has BINGO, they should raise their hand. The instructor will check the animals that have been identified to what the student has marked on the BINGO card.
   f. At this point, information for the animal info cards can be written down for those species or cross-checked.
   g. Markers are cleared, and the game begins again. Alternately, if working with a younger-aged group, you can leave the markers on for a few rounds to increase how often a person gets BINGO.
3. Play BINGO
4. You can choose to return animal cards to the pile and repeat them, or simply go through each card once. If clearing your board after each BINGO, it works better to return the animal cards to the pile.

ANIMAL IDENTIFICATION CARD

Time: 15 minutes

1. After the BINGO game has moved through all the Animal Identification Cards, it is time for students to make their own Animal Identification Cards.
2. Hand out the scissors, tape/glue, and a binder clip for each student.
3. Students will cut their BINGO cards into squares for each animal.
4. Recalling what they've learned, they will glue or tape the photo of the animal to its appropriate information card. You will most likely have to read through the Animal Identification Cards again to help them along. Or have students take turns guessing as part of the group.
5. After the glue has dried, the students will use the clip to bind their cards together.
6. Bring the cards to the next class!!

Reflect

- Did anyone learn anything new about an animal?
- Why is it important to know about the animals in our area?

Apply

- How can knowing information about the animals around us be more eco-friendly?
- How does knowing how an animal lives reduce human-animal conflicts?

4-H MISSION MANDATES

Science

This lesson helps club members gain factual knowledge about the world around them. This knowledge can help them know how to reduce human-animal conflicts. This is especially important for those going into agriculture.

ESSENTIAL ELEMENTS

Mastery

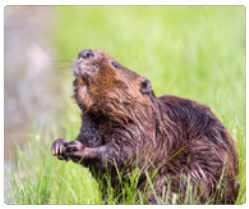
This lesson helps the club members gain factual knowledge of the animals around them. Writing the information down for themselves increases knowledge retention and mastery of the subject.

RESOURCES

Photo of California Condor. By Frier/ Nikon, Scott - U.S. Fish and Wildlife Service Digital Library System, Public Domain, https://commons.wikimedia.org/w/index.php?curid=658318. Page 22.

ANIMAL IDENTIFICATION CARDS

American Beaver



Castoridae *Castor canadensis*

Size: Head/Body length: 23-39 inches
Tail length: 7.75-12 inches
Weight: 35-50 pounds

Distribution: Widely distributed throughout North America above Mexico. It is not found in Florida, Southern California and Southern Nevada.

Diet: Leaves, bark, twigs, roots, and aquatic plants.

Habitat: Permanent aquatic environments near or in forests.

Offspring: 1-9 young per litter with 3-4 being the average.

Fun Facts: Beavers are able to change their environment to their favor. Only man does this better than the beaver. They can stay underwater for 15 minutes without surfacing.

North American Porcupine

Erethizon dorsatum Erethizontidae

Size: Length: 24-50 inches
Weight: 8-40 pounds

Distribution: Most of Canada and the Western U.S. down to Mexico. It is also in Wisconsin, Michigan, Pennsylvania, New York, and New England.

Diet: Leaves, twigs, green plants, roots, berries, fruits, seeds and bark.

Habitat: Coniferous, deciduous, and mixed forests.

Offspring: 1 offspring per liter.

Fun Facts: They can have as many as 30,000 barbed quills. They love to climb trees.

Black-tailed Jack Rabbit

Lepus californicus Leporidae

Size: Length: 18-24 inches Weight: 4-8 pounds

Distribution: Western United States from Washington to California over to Nebraska and Texas

Diet: Grasses, forbs, hay, buds, bark, and leaves.

Habitat: Meadows, prairies, desert scrubland, and farmland.

Offspring: 1-8 per litter with 1-4 litters per year.

Fun Facts: It is not really a rabbit! It is actually a hare because its babies are born with open eyes and fur. All of its water is obtained from the plants it eats so the Black-tailed Jack Rabbit doesn't need to drink!

Colorado Chipmunk

Tamias quadrivittatus Sciuridae

Size: Length: 9 inches
Weight: 2 1/3 ounces

Distribution: Colorado, Arizona, New Mexico, and Oklahoma

Diet: Seeds, plant fruits, and insects.

Habitat: Coniferous forests, woodlands, shrub lands, and alpine tundra habitats in rocky areas.

Offspring: 1-2 litters per year consisting of 2-6 young.

Fun Facts: Chipmunk have pouches in their cheeks that they use to store food as they transport it back to their burrow. Their cheeks can expand three times the size of their head!

Mountain Cottontail Rabbit

Sylvilagus nuttallii Leporidae

Size: Length: 15.5-18.75 inches
Weight: 2 ½ pounds

Distribution: West of the Rocky Mountains.

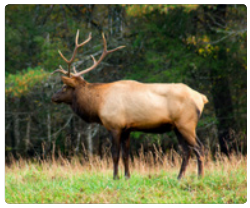
Diet: Grasses, herbs, bark, twigs, and buds.

Habitat: Open grassy areas with plenty of food and shrub to hid in.

Offspring: 3-7 litters of four to 3-6 young every year.

Fun Facts: They can jump between 10 and 15 feet. They can run up to 15mph.

Elk



Cervus canadensis Cervidae

Size: Male height at shoulder: 4.9 feet
Female height at shoulder: 4.3 feet
Male weight: 705-730 pounds
Female weight: 496-531 pounds
Length: 6.5-8 feet

Distribution: Mostly in the western half of the continent. There are small reintroduced populations in states like Minnesota, Michigan, and Arkansas.

Diet: Plants, grasses, leaves, and bark

Habitat: Forest and forest edge habitat

Offspring: 1 calf

Fun Facts: The Native American name for elk is wapiti. Elk antlers can grow up to 1 inch per day.

House Mouse

Mus musculus Muridae

Size: Body length: 3-3.9 inches
Tail length: 2-3.9 inches
Weight: ½ ounce

Distribution: All of America and Mexico into Southern Canada.

Diet: Primarily feed on plant matter but they are omnivorous

Habitat: Urban areas, fields, wood piles, desert, forest, and anywhere there are dark places to hide with access to food.

Offspring: 5-6 offspring per litter. 5-10 litters per year.

Fun Facts: Has an 18 inch vertical jump. Can crawl through ¼ inch holes.

Meadow Vole

Microtus pennsylvanicus Cricetidae

Size: Male height at shoulder: 4.9 feet
Female height at shoulder: 4.3 feet
Male weight: 705-730 pounds
Female weight: 496-531 pounds
Length: 6.5-8 feet

Distribution: Alaska and Canada south through the northern half of the United States. Also in Chihuahua, Mexico

Diet: Roots, leaves, and stems of plants and herbs, bark, seeds, grains, and bulbs.

Habitat: Wet meadows, swampy pastures, and moist grassland.

Offspring: 1-9 young per litter with 5-10 litters per year.

Fun Facts: They establish communal toilets.

ANIMAL IDENTIFICATION CARDS

Moose

Alces alces Cervidea

Size: Height (shoulder to foot): 6 feet
Male weight: 838-1,543 pounds
Female weight: 441-1,080 pounds

Distribution: Alaska, Western Canada, and Western U.S.

Diet: Leaves, twigs, buds, water lilies.

Habitat: Forested areas near lakes, bogs, swamps, streams, and ponds.

Offspring: 1 calf

Fun Facts: It is the tallest animal in North America. Their antlers can be as wide as 6 feet!

Mule Deer

Odocoileus hemionus Cervidae

Size: Height (shoulder to foot): 3 feet
Length: 4.5-6 feet
Male weight: 121-331 pounds
Female weight: 95-198 pounds

Distribution: Southeaster Alaska down to Texas. It stays in the western half of the U.S.

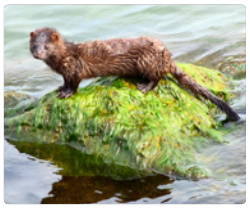
Diet: Leaves and twigs of woody plants, and herbaceous plants.

Habitat: Desert, forest, field, shrub land, suburban, and woodland.

Offspring: 1-2 fawns.

Fun Facts: Mule deer have a form of running called stot. This happens because all four of their feet hit the ground at the same time. It is more like bouncing.

American Mink



Neovison vison Mustelidae

Size: Male body length: 13-18 inches
Male tail length: 6-10 inches Female body length: 12-15 inches Female tail length: 6-8 inches
Male weight: 1-3 pounds Female weight: 1-2 pounds

Distribution: Most of the United States and Canada.

Diet: Muskrats, rabbits, mice, chipmunks, fish, snakes, frogs, and birds.

Habitat: Forested areas near rivers, lakes, ponds, streams, and marshes.

Offspring: 2-10 per litter.

Fun Facts: The mink can dive up to 16 feet deep in water. It sprays animals with a stinky spray like a skunk!

Northern River Otter

Lontra canadensis Mustelidae

Size: Length: 35-44 inches
Male weight: 25 pounds
Female weight: 18 pounds

Distribution: Most of the United State and Canada.

Diet: Fish, crayfish, crabs, frogs, bird's eggs, birds, and some reptiles. Occasionally aquatic plants and other small mammals.

Habitat: Any aquatic environment with enough food.

Offspring: 1-6 pups.

Fun Facts: They can stay underwater up to 8 minutes. They can dive 50 feet deep. They can close their nostrils to keep water out.

Badger

Taxidea taxus Mustelidae

Size: Length: 23.5-29.5 inches
Male weight: 20 pounds
Female weight: 15 pounds

Distribution: Primarily in the Great Plains, but they do extend into Canada and the Western U.S. if the necessary habitat is there.

Diet: Pocket gophers, ground squirrels, moles, marmots, prairie dogs, wood rats, deer mice, voles, nesting birds, burrowing owls, lizards, fish, amphibians, carrion, hibernating skunks, insects, corn, and sunflower seeds.

Habitat: Dry, open grasslands, fields, and pastures.

Offspring: 1-5.

Fun Facts: Badgers can live up to 26 years in captivity.

Golden Eagle

Aquila chrysaetos Accipitridae

Size: Length: 30-40 inches
Wingspan: 80-88 inches
Weight: 6-15 pounds

Distribution: Mexico up to Alaska. They can appear in the East but aren't very common.

Diet: Rabbits, marmots, ground squirrels, carrion, reptiles, birds, fish, and large insects.

Habitat: Mountainous and hilly areas. Found in valleys and western plains during winter and migration.

Offspring: Lay 1-4 eggs with 1-2 young surviving.

Fun Facts: Golden eagles live in pairs that watch over a territory as large as 60 square miles.

Bobcat

Lynx rufus Felidae

Size: Head and body: 26 to 41 in Tail: 4 to 7 in
Height: 12 to 24 in at the shoulder
Male weight: 14 to 40 pounds
Female weight: 8.8 to 33.7 pounds

Distribution: Southern Canada through most of the U.S. down to central Mexico.

Diet: Rabbits, hares, insects, reptiles, chickens, geese/birds, small rodents, and deer.

Habitat: Forests, swamps, deserts, and sometimes suburban areas.

Offspring: Average of 3 kittens per litter.

Fun Facts: Bobcats can swim, but like most cats they avoid water. They can jump up to 10 feet horizontally.

Bald Eagle

Haliaeetus leucocephalus Accipitridae

Size: Length: 31-37 inches
Wingspan: 70-90 inches
Male weight: 9 pounds
Female weight: 12 pounds

Distribution: All of the continental U.S., most of Canada, and Northern Mexico. Most common in Alaska and Northwestern U.S.

Diet: Fish, small mammals, and carrion.

Habitat: Near seacoasts, rivers, large lakes, marshes, and any large body of water with fish. Large trees surrounding the water is important for nesting.

Offspring: Two eggs a year.

Fun Facts: Bald eagles mate for life. The largest bald eagle nest on record was nearly 10 feet wide and 20 feet deep.

ANIMAL IDENTIFICATION CARDS

Long-tailed Weasel

Mustela frenata Mustelidae

Size: Length: 12-14 inches

Distribution: Found in all of the continentalUnited States with the exception of Arizona and southeastern California and Nevada. Also in Southern Canada

Diet: Mice, voles, rabbits, gophers, chipmunks, and the occasional bird and insect.

Habitat: Woodlands, thickets, open areas, and farmland near a water source.

Offspring: Litter of 1-12 young once a year.

Fun Facts: It can climb trees and swim really well!

Cooper's Hawk

Accipiter cooperii Accipitridae

Size: Male Length: 14-18 inches
Female Length: 17-20 inches
Male Weight: 7.8-15.5 ounces Female Weight: 12-25 ounces Wingspan: 29-37 inches

Distribution: Southern Canada to Northern Mexico. All of the continuous United States.

Diet: Southern Canada to Northern Mexico. All of the continuous United States.

Habitat: Mixed deciduous forest and open woodlands. Also can survive in urban and suburban areas.

Offspring: 3-5 eggs per year.

Fun Facts: Cooper's Hawks use stealth to catch their prey and often fly at high speed through trees.

Mountain Lion

Puma concolor Felidae

Size: Height: 24 to 35 inches at the shoulder
Male length: 7.9 feet Female length: 6.7 feet
Male weight: 115-220 pounds
Female weight: 64-141 pounds

Distribution: The Canadian Yukon to the southern Andes of South America. Most concentrated in Western U.S. There is a small population in Florida.

Diet: Deer, elk, livestock, insects, and rodents.

Habitat: Places with dense underbrush and rocky areas are its favorite, but it can also live in open areas.

Offspring: 1 litter every two to three years of usually 3 cubs.

Fun Facts: It is the second heaviest cat in the Eastern Hemisphere. The Jaguar is the first. They can run 40 to 50 mph. It has over 40 common names in English.

Ferruginous Hawk

Buteo regalis Accipitriformes

Size: Length: 20-27 inches
Wingspan: 48-60 inches
Weight: 2-5 pounds
Females are larger than males.

Distribution: Western United States and parts of Canada.

Diet: Small and medium-sized mammals, birds, reptiles, and insects.

Habitat: Arid and semiarid grasslands.

Offspring: 1-8 eggs per nest.

Fun Facts: It is one of two species of hawk that has feathered legs.

Black Bear

Ursus americanus Ursidae

Size: Length: 75 inches, Height: 3 feet at shoulder
Male weight: 125-551 pounds
Female weight: 90-375 pounds

Distribution: Most of Canada and America down to northern Mexico. It has been pushed out of most of the Midwest due to agriculture.

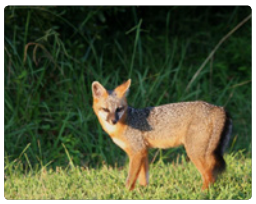
Diet: Roots, berries, meat, fish, insects, larvae, grass and other succulent plants. As well as deer, sheep, human garbage, and honey.

Habitat: Versatile habitat due to their flexible diet. They prefer areas with lots of trees such as coniferous and deciduous forests. They also live in open alpine areas.

Offspring: 2-5 cubs every other year in January or February. Most commonly they have 2 cubs.

Fun Facts: Black bears climb trees.

Common Gray Fox



Urocyon cinereoargenteus Canidae

Size: Length: 32-45 inches
Weight: 7-15 pounds

Distribution: Southern Canada to Northern South America

Diet: Rabbits, voles, shrews, birds, rodents, insects, and fruits

Habitat: Woodland, shrub land, desert, forest, suburban, woodland, and grassland

Offspring: 3-5 kits per litter

Fun Facts: It is the only American canid that can climb trees! It has the most varied diet of all wild canids.

Coyote

Canis latrans Canidae

Size: Length: 30-49 inches
Male weight: 18-44 pounds
Female weight: 15-40 pounds

Distribution: All of Central and North America

Diet: Deer, rabbits, hares, rodents, birds, reptiles, amphibians, fish, insects, and occasionally fruits and vegetables

Habitat: Grassland and semiarid areas.

Offspring: 4-7 cubs per litter on average.

Fun Facts: Coyotes are very vocal and have a wide range of noises they communicate with.

Deer Mouse

Peromyscus maniculatus Cricetidae

Size: Length: 5-8 inches
Weight: ½ -1 ounce

Distribution: Most of North America except for Southeastern U.S. and the far north of Canada.

Diet: Seeds, fruits, arthropods, leaves, and fungi

Habitat: Wooded areas, grasslands, and brush

Offspring: 1-9 young per litter with an average of 3-4 litters per year.

Fun Facts: Their furred tails are bicolored. They have dark fur on the top and light fur on the bottom.

ANIMAL IDENTIFICATION CARDS

Golden Mantled Ground Squirrel

Callospermophilus lateralis Scuiridae

Size: Length: 9-11 inches, Weight: 4-14 ounces

Distribution: Southeastern British Columbia to New Mexico and Southern California

Diet: Seeds, nuts, and fruits, green plants, fungi, bird eggs, and insects.

Habitat: Mountains, the edges of woodlands, meadows, sagebrush flats, and rocky areas.

Offspring: 2-8 young per litter in July.

Fun Facts: Their burrows can be 100 feet long.

Raccoon

Procyon lotor Proycyonidae

Size: Length: 23-37 inches
Height: 9-12 inches at the shoulder
Weight: 9-34 pounds

Distribution: Common in all of North America except for the desert of the Southwest.

Diet: Insects, fruits, nuts, fish, amphibians, small rodents, bird nestlings, fish, mollusk, crayfish, and bird eggs.

Habitat: Deciduous and mixed forests, mountainous areas, coastal marshes and urban areas.

Offspring: An average of 3-4 kits per litter in April or May.

Fun Facts: They can remember things for up to 3 years. Raccoons rotate their hind feet to face backwards while climbing down trees headfirst.

Red Fox

Vulpes vulpes Canidae

Size: Height: 14-20 inches at the shoulder
Length: 33-43 inches
Weight: 7-15 pounds

Distribution: Tall of North America except northern Canada.

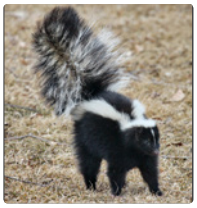
Diet: Small rodents, birds, porcupines, raccoons, opossums, reptiles, insects, fish, fruit, grasses, and tubers.

Habitat: Cropland, forest, grassland, field, savanna, shrub land, suburban, woodland.

Offspring: 1-10 kits, usually 5, once a year.

Fun Facts: They store extra food in caches. It is the largest of the foxes. They can jump distances up to 16 feet.

Striped Skunk



Mephitis mephitis Mephitidae

Size: Body length: 23-31 inches
Weight: 3-11 pounds

Distribution: Southern Canada, the U.S., and northern Mexico

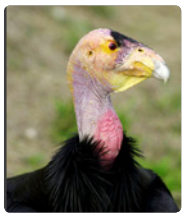
Diet: Insects, carrion, mice, voles, eggs, frogs, crayfish, eggs, bird chicks, fruits, and corn.

Habitat: Mixed woodlands, brushy corners and open fields.

Offspring: 2-10 kits per litter.

Fun Facts: They have scent glands that produce a nasty smelling musk that it can spray up to six meters. The striped skunk will not spray in confined spaces or their own dens.

California Condor



Gymnogyps californianus Carthartidae

Size: Length: 43-55 inches
Wingspan: 8.2-9.8 feet Weight: 15-31 pounds

Distribution: California, Arizona, Southern Utah, and Baja California, Mexico.

Diet: Carrion.

Habitat: Rocky shrub land, coniferous forests, and oak savannas.

Offspring: 1 egg every other year.

Fun Facts: It is the largest land bird in North America. In December 2015 there were only 435 Condors in the world. A Condor will travel up to 160 miles in search of food. They can live up to 60 years. Condors mate for life.

Common Raven

Coruus corax Corvidae

Size: Length: 21-26 inches
Wingspan: 45-51 inches Weight: 1.5-4.4 pounds

Distribution: All of North America.

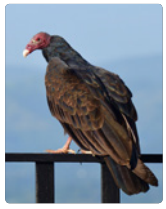
Diet: Carrion, insects, rodents, grains, berries, fruit, amphibians, reptiles, birds, eggs, and human food waste.

Habitat: Wooded areas near open land, and coastal regions.

Offspring: 3-7 eggs.

Fun Facts: Ravens are as big as a Redtailed hawk! Ravens don't like populated urban areas and avoid them. They can fly upside down.

Turkey Vulture



Cathartes aura Cathartidae

Size: Length: 24-32 inches
Wingspan: 63-72 inches
Weight: 1.8-5.1 pounds

Distribution: All of North America except for northern Canada and Alaska.

Diet: Carrion.

Habitat: Open country, subtropical forests, shrub lands, deserts, foothills, pastures, grasslands, and wetlands.

Offspring: 2 eggs per year.

Fun Facts: Turkey vultures find their food by smell. It is really unusual for a bird to have a good sense of smell.

WILD BINGO CARDS

Card 1

Card 2

WILD BINGO CARDS

Card 3

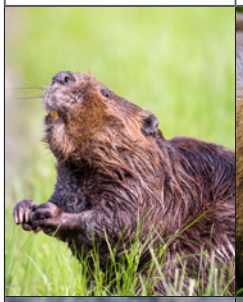
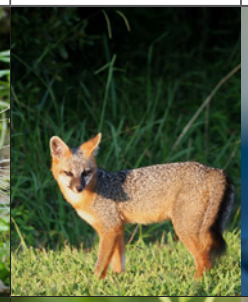
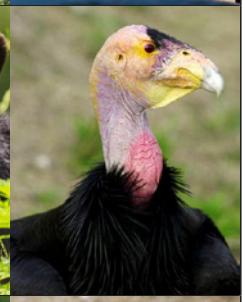
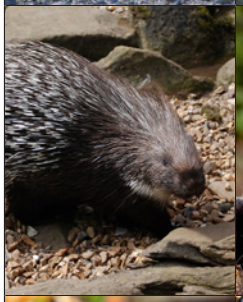
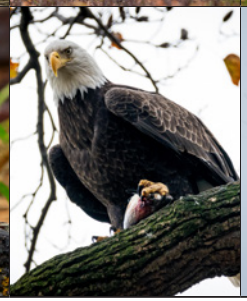
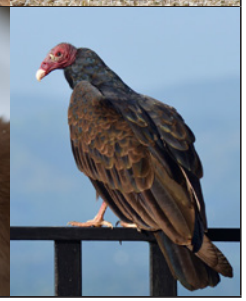
Card 4

WILD BINGO CARDS

Card 5

Card 6

WILD BINGO CARDS

W	I	L	D
			
			
			
			

Card 7

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	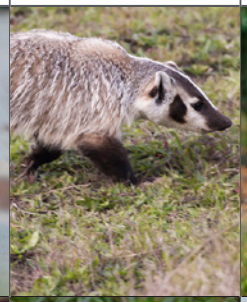		
			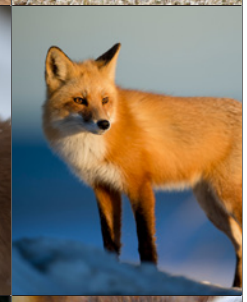
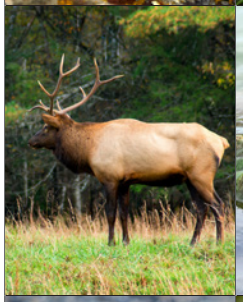			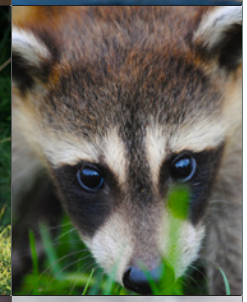
			

Card 8

WILD BINGO CARDS

Card 9

Card 10

WILD BINGO CARDS

Card 11

Card 12

4-H Club Meeting 5
The Web of Life-Who Eats Who?

Supplies

- Track identification books or website info from activity 3
- Wildlife Bingo animal information cards
- Paper
- Pencils
- String or Ribbon
- Tape
- Scissors

PRIOR TO THE MEETING

Remind club members to bring their track identification books and Wildlife Bingo animal information cards.

INTRODUCTION

It is important for us to understand how all organisms are related and work to keep our ecosystem operating and healthy. By knowing a few of the animals in our community, we can construct food chains and food webs. Sometimes, we can guess what else must be in our ecosystem, even if we haven't seen traces of it, because animals that eat it, or are eaten by it, are present in the ecosystem. The following are some key definitions that need to be understood by the group to complete the assignment.

Terms *to know*

FOOD CHAIN: Food chains illustrate how living things get their food. They are a linear example of the exchange of energy. Some organisms use the sun to create energy, some eat plants and some eat other animals. A food chain always starts with plant life and ends with an animal.

FOOD WEB: A food web diagrams many connections between organisms, creating what looks like a spider web of lines.

PRODUCERS: Organisms that make their own food, often called autotrophs. They convert inorganic compounds into organic compounds. Plants are an example of producers. All species of an ecosystem are dependent on them.

CONSUMERS: Organisms that cannot make their own food. They obtain food by eating other organisms. These organisms are called consumers because they depend on others for food.

PRIMARY CONSUMERS: Organisms that feed directly from producers. They are most often referred to as Herbivores. These organisms eat plants or the products of plants, such as fruit and nuts. Examples are mice, rabbits, deer, beavers, moose, cows, and sheep.

SECONDARY CONSUMERS: Organisms that feed on primary consumers. They are most often referred to as Carnivores. Some examples are foxes, frogs, snakes, hawks, and spiders.

OMNIVORE: An organism that eats producers and consumers. They act as a primary and secondary consumer. Examples are bears, raccoons, turtles, monkeys, and squirrels.

DECOMPOSER: Organism that feeds on the decaying matter, such as dead trees or dead animals. These are usually bacteria or fungi.

PHOTOSYNTHESIS: The process green plants and some other organisms use to transform sunlight, CO2, and water into food.

THE PROCESS

A food chain begins with a producer. Without producers, no other form of life could exist. Producers start this process with photosynthesis. They produce their own food and grow. Consumers eat the by-products of these plants.

Primary consumers eat the plants and their products themselves. Some examples are deer that eat shrub leaves, rabbits that eat carrots, and grasshoppers that eat grass. The energy and nutrients in the plants are then transferred to the organisms that eat them.

Secondary consumers then eat the primary consumers. Examples of this is a lion eating a deer, a fox eating a rabbit, and a bird eating a worm. This chain of transferring energy can continue for a long time, but it will eventually end.

It ends with the death of an animal, which is then broken down and used as food or nutrition by bacteria and fungi. These are decomposers and they break down the complex organic material into simple nutrients. Plants then use the broken down nutrients and the cycle starts again. Food webs are more complex than food chains. They consist of many interdependent, complex food chains. This takes on the appearance of a web, and thus they are called food webs.

OBJECTIVES

- Gain an understanding of what food chains and food webs are.
- Remember the past lesson and create a food chain and web for the animals studied.
- Learn how altering an ecosystem alters the food web, and in turn the ecosystem.

FOOD WEBS

Time: 15-25 Minutes

1. Now it is time to link the food chains together. Each student can work with their own cards and tracks. Each child will need a few feet of working space. This is best done on a floor or large table.
2. FOR AN OUTSIDE ACTIVITY – REPEAT THE SCAVENGER HUNT, AND USE THOSE ELEMENTS TO INCLUDE IN YOUR FOOD WEB.
3. Begin with the pieces of paper listing the different plants at the bottom. Then place the herbivores (primary producers) around the papers, leaving a few inches of space.
4. Cut pieces of string or ribbon and tape a "connection" from each herbivore to a food source. There can/should be more than one string for each herbivore.
5. Continue to add layers to your web. Add omnivores to the web. Make all the connections. Remember, omnivores can eat plants as well as animals. Also, consider eggs, young and adult stages of animals.
6. When all animals and connections have been made, have the students "tour" the food webs to see the results of their peers.
7. Discuss the connections that were made and any observations the students had.

CHANGING AN ECOSYSTEM

Time: 15 Minutes

1. Explore the impact of removing pieces of the ecosystem.
2. Beginning with a top carnivore, remove it from the food web. Example, remove the Golden Eagle. What happens to the remaining carnivores? To the prey species of Eagle?
3. Place your carnivore back in the food web. Now, remove an herbivore (preferably one eaten by many species, such as the deer mouse). How many strings are affected? How does that change how the carnivores get their food? How does it affect the remaining prey species.
4. Place your herbivore back. Now, remove a plant species, and repeat the discussion process with your class.
5. Summarize the experience, highlighting the major changes that might happen. Did any species have to "leave" the ecosystem because their food source disappeared?

Reflect

- What is the difference between a food web and a food chain?
- What is an ecosystem?
- What happens when we alter an ecosystem?

Apply

- How do humans fit into the food web?
- What can we do to reduce our negative effect on an ecosystem?

4-H MISSION MANDATES

Citizenship

This lesson promotes citizenship because it encourages club members to think about the effects their actions have on the world around them.

Science

This lesson allows the club members to see how the information they have been learning applies. It allows them to formulate it into cohesive and understandable groups and see how those groups interact with each other.

ESSENTIAL ELEMENTS

Belonging

This lesson promotes belonging because as they work in groups, it also teaches them that everything and everyone has importance.

4-H Club Meeting 6
Designing an Ecosystem

Supplies

- Scissors
- Glue sticks
- Poster boards
- Markers
- Old National Geographic Magazines, Ranger Rick, Highlights, or similar magazines that have many animal photos.

PRIOR TO THE MEETING

Gather old magazines. These will be ripped and cut during the activity, so make sure you don't need to give them back! Estimate 4 -5 magazines per participant

INTRODUCTION

This final exercise was designed to synthesize what you've learned in the past 5 lessons. Students should be able to determine if an animal is an herbivore or an omnivore/carnivore by the photos. Particularly with the birds, they can recognize beak shapes and determine their place in a food chain.

In the Western United States, prairie dogs are an easily recognizable animal by most young people. They dig extensive burrows underground, where they have latrines, nesting rooms, and rooms for rearing their young. To maintain the grassland habitat that they prefer, prairie dogs remove shrubs and tree saplings as they grow near their burrows. The establishment of a prairie dog colony – a group of several burrows, creates a unique ecosystem of plants and animals that depend on the burrowing animals to create homes and food for these associated animals. For more information visit http://www.nationalgeographic.com/animals/mammals/group/prairie-dogs/ http://www.defenders.org/prairie-dog/basic-facts

This exercise is a great way to explore what animals live in burrows, especially those that may depend on prairie dogs for their homes. This exercise also cements the concept of food webs for the participants.

OBJECTIVES

- Investigate burrowing animals and how they create ecosystems
- Practice creating a food web for an ecosystem

CREATE YOUR OWN ECOSYSTEM

Time: 30 Minutes

1. Explain burrowing animals and what they do
2. Explain how this behavior creates habitat and food for other animals.
3. Therefore, a burrowing animal that creates a colony, like prairie dogs, ground squirrels, and voles, can support an ecosystem.
   a. Have students go through the magazines and cut out the following: picture of animals that may live underground in a burrow – prairie dogs, ground squirrels, meerkats, aardvarks, ferrets, mice, etc. Use the included photos to help you guide the students.
   b. As they gather photos, instruct them to now cut out photos of what those animals eat.
   c. Then, cut out photos of what may eat those animals.
4. On a poster board, have each student draw an (empty) burrow system.
5. Then, have the student create an ecosystem by gluing their photos and pictures onto the board in the appropriate location.
6. Next, have the student draw lines to create a food web of their ecosystem.
7. Have each student present their results to the class.

Reflect

- What did you learn about burrowing animals?
- How do burrowing animals work together to stay safe?

Apply

- What can we do to help burrowing animals?
- What happens if burrowing animals are removed from the environment?

4-H MISSION MANDATES

Identify from citizenship, healthy living and/or science and explain why.

Science

This activity helps students develop an understanding of the lifestyle of burrowing animals.

ESSENTIAL ELEMENTS

Identify tips to include during the lesson and how it applies.

Independence

This lesson allows students to work on their own to model what they have learned. It helps them develop their creativity as well.

Continue Discovering

More to Discover

Congratulations on completing your Discover 4-H club meetings! Continue with additional curriculum in your current project area, or discover other 4-H project areas. Check out the following links for additional 4-H curriculum.

1. www.discover4h.org
2. http://www.4-h.org/resource-library/curriculum/
3. http://utah4h.org/curriculum/

Become a 4-H Member or Volunteer

To **register** your Utah club or individuals in your club visit and contact your County Extension Office

http://utah4h.org/about/

http://utah4h.org/join/index

For help registering in 4-H online visit:

http://utah4h.org/staffresources/4honlinehelp

Non-Utah residents, please contact your local 4-H office:

http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/

Stay Connected

Visit Your County Extension Office

Stay connected with 4-H activities and news through your county Extension office. Ask about volunteer opportunities, and don't forget to register for your county newsletter. Find contact information for counties in Utah here:

https://extension.usu.edu/locations

Enjoy the Fair!

Enter your project or create a new project for the county fair. Learn about your county fair and fair judging here:

http://utah4h.org/events/index

Participate in Local or State 4-H Activities, Programs, Contests, or Camps

For Utah state events and programs visit:

http://utah4h.org/events/index

http://utah4h.org/projects/

For local Utah 4-H events and programs, visit your county Extension office.

https://extension.usu.edu/locations

Non-Utah residents, please contact your local 4-H office.

http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/

Discover *Service*

Become a 4-H Volunteer!

http://www.youtube.com/watch?v=UBemO5VSyK0

http://www.youtube.com/watch?v=U8n4o9gHvAA

To become a 4-H volunteer in Utah, visit us at:

http://utah4h.org/join/becomevolunteer

Serve Together as a 4-H Club or as an Individual 4-H Member

Use your skills, passions, and 4-H to better your community and world. You are needed! Look for opportunities to help in your area or participate in service programs that reach places throughout the world (religious groups, Red Cross, etc.).

Hold a Club Service Project

USU Collegiate 4-H Club hosted "The Gift of Giving" as a club activity. Club members assembled Christmas stockings filled with needed items for CAPSA (Community Abuse Prevention Services Agency).

http://tinyurl.com/lu5n2nc

Donate 4-H Projects

Look for hospitals, nursing homes, or other nonprofit organizations that will benefit from 4-H projects. Such projects include making quilts for CAPSA or Primary Children's Hospital, or making beanies for newborns. During Utah 4-H State Contests, 40 "smile bags" were sewn and donated to Operation Smile.

Partner with Local Businesses

92,000 pounds of processed lamb, beef, and pork were donated to the Utah Food Bank in 2013 by multiple companies.

http://tinyurl.com/pu7lxyw

Donate Money

Clubs or individuals can donate money gained from a 4-H project to a worthy cause. A nine-year-old 4-H member from Davis County donated her project money to help a three-year-old battle cancer.

http://tinyurl.com/mqtfwxo

Give Us Your *Feedback*

Help us improve Discover 4-H curriculum. We would love feedback or suggestions on this guide.
Please go to the following link to take a short survey: Click here to give your feedback
Or go to: https://goo.gl/iTfiJV