Identification

Background Information

The difference between animal classification and identification is so subtle that the two terms are often used interchangeably. Both classification and identification describe the same subject, but they describe it from different perspectives. Classification describes what scientists do when they place animals in categories, and identification describes the process non-scientists go through when they see an animal in the environment and want to know its name (i.e., the categories into which scientists have classified the animal).

Identification is a natural progression from the previous section, External Anatomy and Classification of Vertebrates, where the students learned about classification by examining the Animal classification chart, studying examples of animal groups, and determining the characteristics that make animals members of particular groups. In this section, the students build on the techniques and knowledge they acquired in External Anatomy and Classification of Vertebrates. If, for example, the students see a squirrel while on a nature walk, they will immediately recognize the squirrel as a furry vertebrate. From their studies in External Anatomy and Classification of Vertebrates, they will likely know that this furry vertebrate is a mammal. This section takes the students a few steps further, guiding them as they try to discover the exact name of the mammal.

In order to establish the identity of animals, the students will hone their observation skills and learn to use field guides. There are several steps to identifying animals.

- First, look at the big picture — the general size and shape of the animal — and then narrow the focus to look for details. In the example of the squirrel, seeing the big picture means observing a small, furry vertebrate with a bushy tail.
- The second step involves a combination of observation and using a local field guide that will guide the students as they look for details on the animal. Using this process, it is quick work to discover that the small mammal is a rodent.
- The third step is to identify the type of small rodent. This requires more acute observation skills, and most students will not need much encouragement to stay very still and quietly observe the animal for a while. Important clues to the rodent's identity are its color and exact markings, as well as the size, shape, and the bushiness of its tail.

Learning the identities of animals in the local area strengthens the students' connection with the natural environment and can be an exciting experience. Once children can identify animals, they then discover how these animals survive in the area, and from this develops an awareness of the interrelationships between animals and the environment. As the students' understanding and awareness of the environment develops, they grow up to become knowledgeable, and most likely, responsible stewards of the land.

When planning an outing to observe wildlife, select a field guide that focuses on

the type of habitat the group will visit. If the group is visiting a wetland, select a field guide that applies to wetlands. If the destination is a forest, select a guide that focuses on forest animals. Before the outing, it is worth spending a few minutes examining the manner in which the author of the field guide has organized the information. Most field guides include a section explaining how to use them, and taking the time to read this section will speed up the process of identifying animals in the field.

In addition to noting how guide information is organized, look for information about the animal pictures. Many animals change color or appearance at different stages of their lives or when the seasons change. Also, the appearance of males and females of a species is frequently different. This is particularly true of birds. The authors of the field guides, however, usually have space for only one picture of an animal, and so many illustrate the adult male of the species, either in its most common coloration or in its breeding colors. Generally, the authors provide a note at the beginning of the guide telling users which animal is pictured. Where the male is illustrated, look for information in the text about the coloring of the female of the species.

The first step when viewing animals in their natural environment is to find the animals. Here are some tips for finding animals:

- Look in places where animals make their homes. For birds, depending on the type of bird, this could be up in trees, in the grass, or on water.
- Look for spoor, or animal trails. These include animal feces or tracks made by the animal in the soil. Fresh tracks suggest the animal could be nearby.
- Listen for animal sounds. Stop periodically to stand very still and quiet, and just listen. Try to locate the direction and source of the sound, and then quietly approach it.

Animal spotting outings are most enjoyable when everyone in the group follows a few general guidelines. Here is a list of suggested “dos” and “don’ts” that apply to wildlife outings.

Do:

- tell someone where you are going
- wear appropriate footwear
- pack supplies for all anticipated weather conditions (hat, sunscreen, rain jacket, extra socks, sweater, water bottle)
- take binoculars, if they are available
- be alert and aware of the surroundings
- be quiet (noise will scare away animals)
- select vibration mode on cell phones

Don’t:

- poke sticks or hands into holes
- wander off alone
- follow the tracks of potentially dangerous animals
- touch any animals, no matter how cute or tame they look

Useful items to pack for a half-day hike

When identifying animals it is often the little things, the details, that lead to a precise identification. Slight differences in the color or markings of two similar animals can provide clues to each animal's identity.

Viceroy and monarch butterflies are an example of two different butterflies with remarkably similar wing patterns. Viceroy butterflies have mimicked monarch butterflies so effectively that birds, mistaking them for the poisonous monarchs, avoid eating them. Close inspection, however, shows that viceroy butterflies have a dark line roughly midway across their hind wings — a line that is not present on monarch butterflies. What is most interesting is that these two butterflies are not closely related. The scientific classification of the monarch butterfly is *Danaus plexippus* and of the viceroy butterfly is *Limenitis archippus*.

Did You Know?

It is particularly important that people observe and do not touch or try to feed wild animals. Most wild animals run away from humans, but injured animals or baby animals might not be able to run away, and offering food invites trouble.

- Injured animals are frightened and in pain and are likely to lash out. They should be considered dangerous. Rather than try to help the animal, alert the group leader to the animal's presence and report it to a park ranger.
- Touching baby animals can be dangerous. It could cause the parents to attack the person touching their offspring. Even getting between a mother bear, for example, and her cub is considered dangerous.
- Offering food to wild animals puts both the person offering the food and other people at risk. Wild animals are just that — wild. Unlike pets, most wild animals are not accustomed to being fed by people. And even if the person feeding the animal is lucky enough to escape unharmed, the animal learns that where there are humans, there is food. In the future, the animal may approach humans rather than run away, resulting in people being attacked and the animal being put down.

Birds provide good examples of the features that people need to examine to identify an animal and learn about its lifestyle. All of the 10,000 **extant** or living species of birds have wings, feathers, bills, and feet. What distinguishes them from one another, apart from their size, is not only the color of their feathers, but the shapes of their bills and feet. Bills and feet also provide observers with clues about the birds' lifestyles: what they eat, how they move on their hind limbs, and where they live.

Birds with webbed feet, for example, spend much of their lives on water, and because webbed feet are totally unsuitable for gripping branches or prey, these birds do not perch or prey on other animals. Perching birds such as sparrows have slender feet adapted for gripping branches, while owls and other birds of prey have strong feet that end in talons for gripping and tearing.

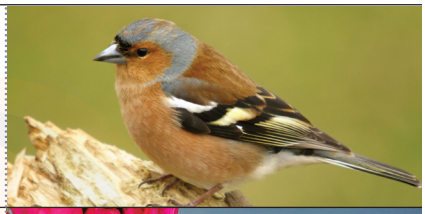
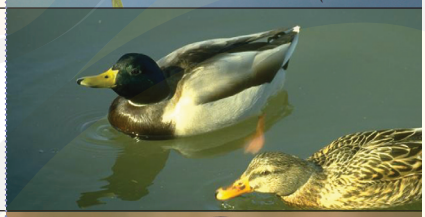
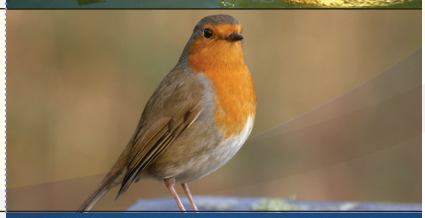
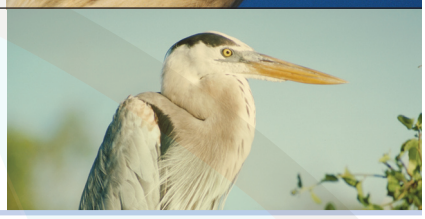
Often, the bills of birds match their feet, so a bird with webbed feet has a flat bill adapted for straining small organisms in the water, and birds with sharp talons have sharp curved beaks adapted for tearing flesh.

The table on the next page provides examples of the variety of shapes of bird bills and explains possible reasons for the shapes. There are many other bill shapes, and the students may enjoy researching examples.

While a bird's anatomical features are important for identification, its behavioral characteristics are also important. Observers need to watch a bird closely, noting whether it hops or runs, listening for its song or call, and if possible, observing its nest. Successful identification is often the result of the picture that develops after examining the bird's physical appearance, observing its behavior, and listening to the sounds it makes.

The key features when identifying birds are also important for identifying other animals. The feet of snowshoe hares, for example, differ from those of other hares because snowshoe hares need to be able to move effectively on the surface of the snow without falling into it. Consequently, these hares have adapted by developing larger hind feet than other hares, spreading the weight of the hare over a larger surface area and reducing the chance that it will sink into the snow. The size of the snowshoe hare's feet relative to those of other hares might not be a significant factor when identifying these animals in winter when its fur is white, but in summer when its fur is the same color as that of other hares, foot size could be the factor that distinguishes it from the others.

Types of Bird Bills

Bill Shape	Example	Illustration
small, thick, conical-shaped for cracking seeds	finch, cardinal	
long and slender for reaching into flowers and sucking nectar	hummingbird	
flat with a straining mechanism at the edges for catching small food items	duck, goose	
straight and slim for eating insect or plant matter	blackbird, chickadee, robin	
sharp, sturdy, and hooked for tearing flesh	owl, eagle, hawk	
spear-shaped for fishing	kingfisher, heron	

ACTIVITY 3

Going Out Activity

Purpose

To learn to identify common animals in a natural environment using a field guide.

Material

Whiteboard and marker.

Field guides of local animals such as birds, mammals, insects, or amphibians.

Map of the area where the outing will occur.

Binoculars.

Basic hiking supplies: water bottles, sunscreen, hats, rain gear, sweaters.

List of dos and don'ts.

Field notebooks and pencils.

Zoology journals and pencils.

Presentation

- Most Montessori teachers introduce this concept in Year 4 and present in more detail in Years 5 and 6.
- This activity is divided in two parts. The first part, planning, takes place in the classroom and will likely take place over several days. The second part, the outing, takes place in a local natural environment.

Part 1: Planning the Outing

- Announce to the students that they will have the opportunity to practice identifying animals in the natural environment, and that this is a going out activity.

- Invite the students to suggest possible venues for the outing such as a local conservation area, forest, or wetland.
- With the students, plan the outing: date, time, whom to contact, and supplies to pack. Write the information on the whiteboard as it is discussed.
- Ask the students to use their journals to write the outing information, including the list of items to pack.

Part 2: Preparing for the Outing

- Contact the people who need to be involved in the activity such as the park manager or guide if the group plans to visit a park, parents of the students, and potential drivers.

- Select suitable field guides for both the geographical area and the type of animals the students will observe.
- Divide the students into groups and give each group one field guide.
- Ask the student groups to look at the guides and explore how the information is organized. For each group, name one animal example and ask the group to find the animal in the guide.
- Give the students about 15 minutes to examine the field guides. Then ask the groups to briefly note the name of the guide they examined, how the information is organized, and how to find one animal in the guide.
- With the students, discuss rules and guidelines for the outing. Explain why it is important to have rules and guidelines. On the whiteboard, write the heading, Rules and guidelines for a successful outing. Beneath this write two column headings, "Dos" and "Don'ts." Ask the students to suggest items they think apply to each heading. Then add items they have omitted.
- When the students have agreed on the lists, ask them to copy the lists into their journals.

Part 3: Going Out

- On the day before the outing, ask the students to review the list of items to pack.

- Review, if necessary, the concept of identification and the importance of being observant when identifying animals.
- Ask the students to use their field notebooks to make notes about each animal they observe, including the time and place of the observation, a description of the animal, what it was doing, and its identity.
- After the outing, ask the students to work in groups to create posters that include information about the habitat they visited, as well as pictures and information about the animals they observed.

Extension

- Write a story, using some of the animals from the trip as the characters. Be sure to include in the story some of the information learned from observing these animals.