

# WHO GOES THERE?

## Michigan Lesson Plan

### Objectives:

1. To increase powers of observation as evidenced by spotting man-made objects along the Unnatural Trail. Discuss how the “man made” objects came into being through science and technology.
2. To increase students' abilities to observe animals and understand their behavior as evidenced by describing at least four types of evidence of animal presence noticed in the wild.

### Key Vocabulary:

1. **Inference** = The reasoning involved in drawing a conclusion based on evidence rather than on the basis of direct observation (determining there was a raccoon by the water by looking at the signs but never seeing the actual animal).
2. **Scat** = Animal poop.
3. **Observation** = The act of making and recording a measurement (determining how many and what type of foot prints).

**Equipment:** 10 man-made objects; rubber animal feet, stamp pads, paper and pencils; blindfolds; one stone for each two people in the group; tracks guides

### Pre-Class Procedures:

1. Set out the man-made objects for the observation activity behind the Nature center on the trail down to the fen.
2. Hike the trails to find good places for animal evidence.

### Procedures:

#### 1. Brainstorm ways that we know animals are around (5min).

- **Sight the actual animal** - birds, squirrels, snakes, insects, etc.
- **Sound** - bird calls or pecking, rustling grass or leaves, hum of insects, etc.
- **Homes** - bird nests, holes in ground or trees (groundhogs, snakes, woodpeckers, skunk), paper wasp nests, squirrel nests, etc.
- **Eating Places** - chewed leaves, owl pellets, snapped off twigs (rabbit), chewed off twigs (deer), nut shells on stump (squirrel), etc.
- **Territorial Markings** - rubbing on trees, bear claw marks on trees (not!), etc.
- **Scat or Droppings** - rabbit, raccoon, skunk, dog, etc. You can tell a lot from scat: what types of food the animal eats, whether the animal is well or sick, if it is getting its regular diet or if food is scarce.
- **Tracks** - You can tell if an animal was walking or running (calm, or chasing or escaping something).
- **Miscellaneous** - galls (irregular growths on plants caused by insects - oak galls, goldenrod galls, pine cone galls on willows), insect tunnels on trees (where beetles have laid eggs, the eggs hatch and the young make tunnels as they move through the tree; these make interesting patterns).

#### 2. Rubber stamp and scat activity (15min)

- Show them the rubber animal feet and tell them that they will be creating their own guide to animal tracks. Point out interesting features of a few feet (cottontail rabbit has fur on the bottom of its feet, raccoon foot looks like a human's, possum has a toe that looks like a thumb, etc.).
  - Hand out paper and pencil to each student. Have rubber feet arranged around a table with stamp pads. Have students make a print of each foot on their paper and write the animal's name below it.
  - Once everyone has finished, pass around the rubber scat for students to look at.
    - Scat to a scientist is almost as good as having the animal there, since DNA is found in the scat and can be used to tell many things about the animal. Vets use it to tell if an animal is sick, researchers can use it to prove a new species exists (big reason why Bigfoot is regarded as a hoax), and you can tell many things about the animals daily habits.
3. **Explain how historians discover about civilizations by what they leave behind (5min).**
- Historians find a wealth of information about ancient life by looking in the dumps and privies (similar to toilets).
  - By looking at the things they find, historians can tell a lot about the society, habits and people of an area.
4. **Discuss how important observation skills are when looking for evidence of animals. Introduce and do the Unnatural Trail (15min).**
- Unnatural Trail*
- Lay out ahead of time approximately 10 small man-made objects along a 40-50 foot section of trail. Some should be rather obvious, others should be more hidden. Keep the number of hidden objects secret. Have a theme to the object laid out (school girls belongings, a business man, a farmer).
  - Have the students walk the trail single file. They should try to **spot (but not pick up)** as many of the objects as they can. They should not speak while doing this, and should **keep the total number of objects secret**. At the end of the trail, have students raise their hands and take turns telling the group one man-made object which they saw. If there were objects which anyone missed, tell the group that there are still more hidden objects. **Go back over the trail a second time**, allowing students to point out the hidden objects to the whole group.
  - Discuss why some things were easy and some difficult to spot. (They may have been well-covered, blended in well with the surroundings, or other reasons.) Introduce the concept of camouflage.
  - Emphasize the importance of looking carefully so that they can see as much as possible.
  - Ask the kids what they can tell about the person who left these things. Can they tell who might have left them? They are using inference to tell about someone they have not meet.
5. **Prepare for a natural hike (15min).**
- Tell the students that they are detectives assigned to find out what kind of animals are in the area and make as many observations about them as they can from their signs.

- Discuss why we do not see animals, especially the large mammals, very often (they are active only at certain times, often at night, and are careful to avoid being seen to avoid being killed or to catch their food; animals use hiding, camouflage, and other tactics to keep from being spotted). The animals use their senses all the time in their quest for food and survival.
- Go on the hike. You may have to point out some things; hopefully they will begin to point some out for discussion.

**6. Closing Discussion (5min).**

- Distinguish between inference and actual observations. For example you see a raccoon track (actual observation), you infer that a raccoon has been here in the last week (inference).
- If the students have notebooks, they can write down their actual observations, and then what they can infer from the observations. If they don't have a notebook, they can tell and show you their observation and what they infer from the observation.

**7. Optional closing activity (10min).** Play the “silent hunter” game.

- Half the group is blindfolded and placed within the playing boundaries with a stone between their feet.
- When the signal is given the other half become hunters and attempt to get as many stones from the blindfolded players (prey) as possible without being heard and getting caught. Hunters are “caught” if the prey hears them and points at them. If they are heard and get caught they switch places with the blindfolded player and become the new prey. Play so that each student gets a chance to be blindfolded and a hunter.
- Choose a place that will give the hunters a challenge to move silently. If the hunters and prey are unable to switch places silently, you may need to stop the action momentarily each time someone is switching (so that other hunters cannot sneak up on other prey under cover of the others' noises).
- Another way to play is to have the students stand in a circle with one or two blindfolded “prey” in the middle, with stones between their feet. One or two students at a time are (silently) chosen by the group leader to be hunters. Once they have been caught, other students take their place until someone succeeds in getting the stones.

**Post-Class Procedures:**

1. Pick up the man-made objects for the observation activity.
2. Return the equipment.

## **Standards**

### **Indiana Science**

#### **4th Grade**

- 4.2.5 Write descriptions of investigations, using observations and other evidence as support for explanations.
- 4.4.3 Observe and describe that organisms interact with one another in various ways, such as providing food, pollination, and seed dispersal.
- 4.4.8 Know and explain that artifacts and preserved remains provide some evidence of the physical characteristics and possible behavior of human beings who lived a very long time ago.

#### **5<sup>th</sup> Grade**

- 5.1.7 Give examples of materials not present in nature, such as cloth, plastic, and concrete, which have become available because of science and technology.
- 5.2.4 Keep a notebook to record observations and be able to distinguish inferences from actual observations.

#### **6<sup>th</sup> Grade**

- 6.4.1 Explain that one of the most general distinctions among organisms is between green plants, which use sunlight to make their own food, and animals, which consume energy-rich foods.
- 6.4.10 Describe how life on Earth depends on energy from the sun.

### **Michigan Science**

#### **3<sup>rd</sup> Grade**

- L.OL.03.42 Classify animals on the basis of observable physical characteristics (backbone, skin, shell, limbs, scales).

## Who Goes There? Review Sheet

1. How many man-made items did you observe along the “unnatural trail”? \_\_\_\_\_

2. Name four different ways you can notice that animals are around.

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3. What is the difference between an inference and an actual observation?

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4. Name two observations that you made that animals were/are along the trail.

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5. What was the most interesting animal track? Why?

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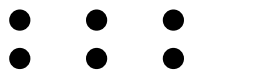


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6. What was the most interesting animal scat? Why?

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Complete the following table:

List the four basic TRACK PATTERNS	The pattern will something like this	A characteristic of this pattern is:	Name two or more animals that fit in this category.
<i>Trotters</i>		Back foot generally lands in exact location as front foot, so looks like single set of	Canines, felines, and Ungulates
<i>Bounders</i>		Front feet land together, hind feet land just behind or on the front prints	Mink, Weasel Otter, Marten,
<i>Gallopers</i>		Larger hind feet land ahead of the smaller front feet	Rabbit, Squirrel, Mouse, Vole, Shrew
<i>Waddlers</i>		Larger hind feet landing beside or overlapping smaller front feet	Raccoon, Muskrat, Opossum, Beaver

Identify the following tracks:

Opossum



Fox



Beaver



Deer



Raccoon



Red Squirrel





**WALKING/TROTting**



-done by moving left hind leg and right front leg, then right hind leg and left front leg.

-dogs, cats, hooved animals

**WADDLING**



-done by moving both legs on the left side, and then both legs on the right side.

-raccoons, opossums, skunks, beavers and muskrats

**BOUNDING**



-done by stretching the front feet out together and following with the hind feet together, with the hind feet landing just behind the front feet or almost in the front prints.

-weasels, otters

**GALLOPING**



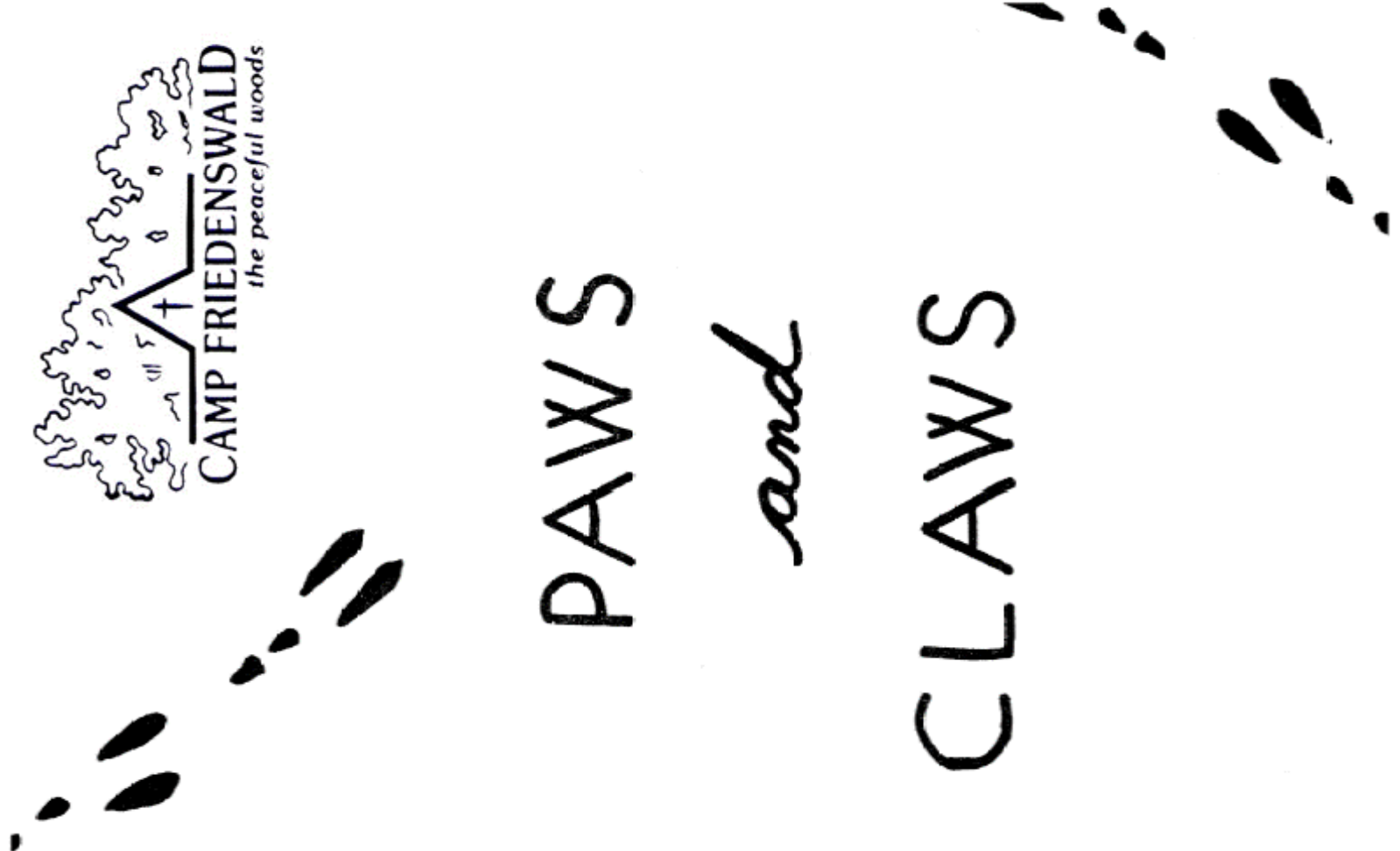
-similar to bounding except the hind feet land either side or ahead of the front feet.

-rabbits, squirrels, all long-legged animals when trying to move fast

**PAWS**

*and*

**CLAWS**



**Cats:**

(Walking/Trotting)



Foot length: 1½"

**Turkey:**

(Walking/Trotting)



Foot length: 4"

**Deer:**

(Walking/Trotting)



Foot length: 3½"

**Raccoon:**

(Waddling)



Front



Back

Foot length: Front 2¼"  
Back 3¼"

**Fox Squirrel:**

(Gallop)

Front

Back

Foot length: Front 1½"  
Back 2"

**Chipmunk:**

(Gallop)



Front



Back

Foot length: Front ¾"  
Back 1½"

**Shrew:**

Foot length: ¼"



**Dogs:**

(Walking/Trotting)



Foot length:  
Fox: 2-2¼"  
Coyote: 2¼-2½"  
Dog: 3-4"

**Opossum:**

(Waddling)



Front



Back

Foot length: Front 2"

**Rabbit:**

(Gallop)



Back



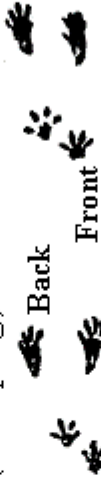
Front



Foot length: Front 1¾"  
Back 4"

**Deer Mouse:**

(Gallop)



Back

Front

Foot length: Front ¼"  
Back ⅝"

