Helpful Hints:
This study guide will focus on wild canines found in Illinois as well as those widespread in North America. The Eco-Meet test may consist of multiple choice, true/false, fill in the blank, matching, identification, label a diagram, or short answer. Pay close attention to words in bold, diagrams, charts, and identification. Questions come directly from the study guide.

What is a Canid:
All dogs, wild and domestic, belong to the family Canidae. Members of this family generally have an elongated muzzle, upright ears, long legs, and a long, bushy tail. The name Canidae is based on the Latin word for “dog.” This family is native to all continents except Antarctica. In historic times, five wild canine species lived in Illinois.
- The red wolf is critically endangered and no longer found in Illinois.
- The gray wolf is also no longer found in Illinois, but its population has rebounded in other parts of North America.
- The three remaining Illinois wild canine species are coyote, red fox, and gray fox.
All canids walk on their toes. Their paw prints can be distinguished from members of the cat family by the shape and number of lobes on the **heel pad**, as well as the presence of toenail markings. Members of the dog family lack the ability to retract their claws, so the claws are evident in prints.

Most all canines have three sets of layers to their **pelage** or fur: **Undercoat**, **guard hair** and **whiskers**. The undercoat is closest to the skin and is usually soft and provides warmth. Guard hair is a hard texture and protects from rain and other elements. Whiskers act as sensors or feelers for the animal.

Wolves have strong jaws and sharp teeth to help them hold and tear through prey. **Canines** are the long, pointed teeth in the front used for grabbing and holding prey. The small **incisors** in the front of the mouth are used to gnaw meat off the bone. Behind the canines and incisors are the **cheek teeth**. These include the **carnassial** teeth, which are specialized teeth designed for slicing flesh and crunching bones.
### Distinguishing Characteristics:

<table>
<thead>
<tr>
<th></th>
<th>RED WOLF</th>
<th>GRAY WOLF</th>
<th>COYOTE</th>
<th>RED FOX</th>
<th>GRAY FOX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ears</strong></td>
<td><img src="red_wolf_ears.png" alt="Ears Image" /></td>
<td><img src="gray_wolf_ears.png" alt="Ears Image" /></td>
<td><img src="coyote_ears.png" alt="Ears Image" /></td>
<td><img src="red_fox_ears.png" alt="Ears Image" /></td>
<td><img src="gray_fox_ears.png" alt="Ears Image" /></td>
</tr>
<tr>
<td><strong>Ear Shape</strong></td>
<td>Large, pointed with red tint</td>
<td>Rounded</td>
<td>Pointy</td>
<td>Pointy with black tips</td>
<td>Rounded, no black tips</td>
</tr>
<tr>
<td><strong>Paw Print</strong></td>
<td><img src="red_wolf_paw.png" alt="Paw Print" /></td>
<td><img src="gray_wolf_paw.png" alt="Paw Print" /></td>
<td><img src="coyote_paw.png" alt="Paw Print" /></td>
<td><img src="red_fox_paw.png" alt="Paw Print" /></td>
<td><img src="gray_fox_paw.png" alt="Paw Print" /></td>
</tr>
<tr>
<td><strong>Paw Size</strong></td>
<td>~4 x 3 in</td>
<td>~5 x 4 in.</td>
<td>~2.5 x 2.25 in.</td>
<td>~2 x 15 in.</td>
<td>~175 x 125 in.</td>
</tr>
<tr>
<td><strong>Muzzle</strong></td>
<td><img src="red_wolf_muzzle.png" alt="Muzzle Image" /></td>
<td><img src="gray_wolf_muzzle.png" alt="Muzzle Image" /></td>
<td><img src="coyote_muzzle.png" alt="Muzzle Image" /></td>
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<td><img src="gray_fox_muzzle.png" alt="Muzzle Image" /></td>
</tr>
<tr>
<td><strong>Pelage (fur)</strong></td>
<td>Cinnamon red with peppering but usually cream colored legs.</td>
<td>White, black or mixtures of cream, grey brown and red.</td>
<td>Grayish cinnamon, brown, or a combination of those colors</td>
<td>Reddish Brown with white chest and white upper lip. Silver foxes are silver.</td>
<td>Peppered gray on top, reddish-brown on its sides, chest legs, and the back of its head.</td>
</tr>
<tr>
<td><strong>Body Length &amp; Weight:</strong></td>
<td>5 – 6 ft 45 - 80 lbs.</td>
<td>5 – 6ft 50 - 100 lbs.</td>
<td>3.5 - 4.5 ft 25 - 45 lbs.</td>
<td>2 - 3 ft 5 - 25 lbs.</td>
<td>2 – 3 ft 10 – 20 lbs.</td>
</tr>
<tr>
<td><strong>Identifying Characteristics</strong></td>
<td>Similar to coyote, but head is broader.</td>
<td>Also similar to a coyote but much larger and bulkier than a coyote</td>
<td>Shorter and sleeker than a wolf</td>
<td>Black tips on ears and black feet. Tip of tail is usually white.</td>
<td>Black stripe along tail.</td>
</tr>
</tbody>
</table>
Wolves

A wolf is a wild dog with many characteristics similar to domestic dogs. In fact, all wolves and domestic dogs are descended from a common ancestor. Wolves have a reputation of being savage and destructive. Many stories and fairy tales, like Little Red Riding Hood have enforced this false perspective by portraying wolves as villains or “bad” animals. In reality, gray wolves are among the most intelligent animals, are secretive, and typically avoid humans.

A wolf can smell prey more than a mile away and can hear other wolves howling from several miles away. A wolf’s pinnae, or outer ears, can turn from side to side so it can tell the direction a sound is coming from without turning his head. Wolves also have good eyesight that helps them to chase down prey after they have gotten close enough.

Wolves live in family groups called packs. A pack is usually made up of 5-8 members, but can be larger. Packs are made up of one breeding pair and several generations of their offspring. The entire pack hunts and cares for the youngest pups.

To function as a team and survive in the wild, members of a wolf pack must be able to communicate with each other and other packs. They do this by using their eyes, ears, fur, tails, body position, and vocalizations. The following is a list of ways wolves might communicate certain messages:

- **“Stay away!”**
  - Hard, direct stare
  - Growling or snarling
  - Ears pulled to side
  - Body tense
  - Tail held high

- **“I’m not a threat.”**
  - Eyes averted
  - Head held low
  - Ears flattened
  - Crouching position
  - Tail low or tucked

- **“I’m relaxed.”**
  - Soft eyes
  - Mouth open
  - Ears forward
  - Body relaxed
  - Tail in neutral position
Wolves are **carnivores**, or meat eaters. They are also predators and must hunt for their food. When wolves hunt in a pack, they hunt large prey called **ungulates**. Moose, deer, bison, mountain sheep, elk, and caribou are all ungulates. Wolves track their prey using their keen sense of smell, often traveling along the tops of ridges to look down on prey. Wolves look for an animal that is very young, old, sick, or injured. These animals cannot run as fast so they are easier targets for wolves. The wolves must work as a team to circle the animal so it does not have a chance to run very far. Once they make the kill, the breeding pair eats first and then the others join in. A wolf can eat up to 20 pounds at a feeding and can go as long as two weeks without food.

Lone wolves are not fast enough or big enough to take down large prey on their own. Ungulates are large, dangerous animals, and sometimes injure wolves. Lone wolves hunt smaller animals such as mice, rabbits, squirrels, birds, fish, and beavers.

**Gray Wolf (Canis lupus):**

Gray wolves, also known as **timber wolves**, was once common throughout North America. Today, it is listed as an **endangered species** in 48 states. Endangered species means “a species in danger of becoming extinct in the near future.” The gray wolf is only common in parts of Northern Minnesota, Northern Wisconsin, Alaska, and Canada. There are no wolves left in Illinois. What caused this decline in population? Loss of **habitat** was a big reason. As populations of people grew, forests were cut down to be used as lumber. People also began settling in these areas where wolves lived. They were afraid of wolves and thought wolves were responsible for killing their livestock. For this reason, wolves were hunted, trapped, and poisoned, which drastically reduced wolf populations.
As people learn more about the wolf and its important role in the ecosystem, there is hope for its survival. Wolf reintroductions have taken place in parts of the southeast to try to bring the wolf back to its former range.

Gray wolves give birth to 4-7 pups during the spring. Three or four weeks before the pups arrive, the female begins digging a den. Wolf dens can be as long as 15 feet and are dug in a soft soil. It must be on high ground to prevent water from seeping in and near a stream so there is plenty of water for her and the pups to drink. By three weeks, the wolf pups can hear and see very well and are ready to go outside the den. The wolf pack begins to help in the care of the pups and are very protective of them.

The areas highlighted in red show areas Gray Wolves once lived. They are now extirpated in those areas. This means the animal is completely removed from those areas. The green areas show where the Gray Wolves now live.
Red wolf (Canis rufus):

Red wolves are very similar to gray wolves, but there are a few key differences. It is smaller than the gray wolf. Its pelage is thinner and more reddish. Red wolves mate for life, but their packs are small and consist of just the breeding pair and one generation of offspring.

The red wolf is critically endangered, and it is the rarest species of wolf in the world. Red wolves used to roam throughout the southern half of Illinois and much of United States (see map with red below). Today, only about 40 individuals can be found in a small part of North Carolina. Habitat loss, predator-control hunting programs, and crossbreeding with coyotes have all contributed to the dwindling numbers of the red wolf.
**Coyote (Canis latrans):**

Another extremely misunderstood wild canine is the coyote. Many people mistake a coyote for a wolf. Coyotes are more solitary than wolves, but they are sometimes seen in pairs or small packs. Coyotes prefer living in brushy country, along forest edges, and in open farmland. Because of these habitat preferences, the coyote has been able to adapt to different habitats, even in urban areas. Like the wolf, coyotes are often blamed for killing livestock. For this reason, there have been several controversial campaigns to poison and trap coyotes on public and private lands.

Coyotes eat a wide variety of foods, but prefer small animals such as mice, rats, rabbits, and birds. Coyotes also scavenge for carrion (dead animals). With this type of diet they fill an important role, reducing the number of destructive rodents and cleaning up the dead animals in nature.

Coyotes mate for life and both parents care for the young, born each spring. There are usually 5-7 pups in a litter and they are born blind, deaf, and helpless. At 3 weeks old, they are ready to come out of the den.
This map shows coyotes historical range and their present range (yellow shaded area) – it really hasn’t changed!

**Red Fox (Vulpes vulpes)**

Despite their name, red foxes are not always red. They have several different color phases ranging from silvery black to dark brown to reddish-yellow. The distinguishing feature is that its tail always has a white tip.

Red foxes are found throughout Illinois, but are most common in the northern two-thirds of the state. They use a variety of habitats, but seem to prefer grasslands and open areas, especially along edges of forests and woodlands. Red foxes can also be seen venturing into urban areas.

Most of the red fox’s diet is made up of rodents and rabbits, but they also eat birds, carrion, plants, and insects. They eat about 1 pound of meat at a feeding, and often kill more than they need. They **cache** the surplus by burying it or covering it with leaves and grass.
Red foxes are most often seen alone, but may be in a small family group consisting of a **foxdog** (male), a **vixen** (female), their **kits** (baby foxes) of the year. The female chooses a den site to raise her young, usually 4-6 kits and both parents help to care for the offspring. Kits begin spending much of their time outside the den at about 4-5 weeks of age. By fall, they are fully grown and leave the area where they were raised.

**Gray Fox (Urocyon cinereoargenteus):**

Gray foxes are salt and pepper gray on their backs and have a black stripe made up of long, coarse hairs that extend along the top of the tail from its base to its tip, which is also black. The underside is a rusty yellow color.

Grey foxes prefer wooded or brushy areas. They are found throughout Illinois, but are most common in west-central and southern Illinois because of the high proportion of forest cover. The grey fox is the only member of the canine family that can climb trees. It does this by grasping the trunk with its front paws and using its hind paws to push upward. This habit is useful for escaping enemies, sunbathing, and eating fruits or other foods found in trees. The diet of the grey fox consists mostly of rabbits and rodents, but they are also known to eat other small mammals, birds, carrion, and plants. Corn, berries, and fruits like persimmons can also be important foods during certain times of the year.

As with other wild canines, they use dens for raising their young. The dens may be in rock formations, hollow logs or trees, burrows, or brush piles. 3-5 kits are born in the spring and leave the den to accompany their parents on hunting trips at about 3 months of age. They leave the family in late summer or early fall, but continue to grow until they are about 18 months of age.
Color it in: A gray wolf’s pelage can include any shade of gray, brown, black, white, or tawny.

- Red foxes have been documented playing with dog toys left outside. Here is a fun video to check out: [https://www.youtube.com/watch?v=yiwyDW2-b_c](https://www.youtube.com/watch?v=yiwyDW2-b_c)
- Gray foxes are only about the size of a house cat
- Coyotes are extremely vocal—theyir scientific name (Canis latrans) means “barking dog.”
- Gray wolves can sprint at speeds of up to 40 mph.