

**Bats, Bugs and Things That Go**

# **BUMP!**

**In the Night**



Teacher Idea Packet  
Pittsburgh Zoo & PPG Aquarium

# Bats, Bugs, and Things That Go BUMP in the Night

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## **Background Information**

Do spiders give you shivers? Do you think owls are creepy? Does the sight of a snake make you reach for the nearest shovel or rake? If so, you may be suffering from a serious case of myth-information!

Throughout history, stories and legends have circulated about these misunderstood animals which portray them in a less than flattering light. Consider the villain of the story in “Little Red Riding Hood,” “Dracula,” or “Little Miss Muffet.” The listener is left with the impression that wolves eat grandmothers, bats hunt humans and drink their blood, and spiders sneak up and jump on unsuspecting little girls. These stories and “old wive’s tales” were handed down, along with the prejudicial opinion of the animals involved, and many still persist today.

As a result of these perceptions, many of these animals have suffered considerable persecution. Wolves, for example, were seen as vicious killers of livestock and humans. They were hunted and killed whenever possible. Between 1850 and 1900, over 1 million wolves were killed, and in 1907, people called for the extinction of the entire species. Here in Pennsylvania, they have disappeared completely. Joe Kosack, wildlife education specialist for the PA Game Commission, writes:

Pennsylvania also has lost some species to extirpation as a result of unrelenting persecution. The timber wolf and mountain lion are two classic examples. These large predators were hunted, trapped and hounded from the early 1600s until they disappeared forever in the late 1800s because Pennsylvanians were unaccustomed to sharing wild game with them, and unwilling to tolerate any livestock depredation caused by them. Never overly abundant in the commonwealth, wolves and panthers were found statewide prior to colonization. Bounties surfaced a short time after the European colonists arrived. But bounties alone didn’t eliminate these predators. Their extirpations are also linked to habitat deterioration/elimination and declines in important prey species. Roughly 200 years after its colonization, Pennsylvania lost its big cats and wolves. At the time, most people didn’t seem to mind their passing. Even today, most people are probably ok with not having those large predators roaming our woods. That’s a sign of the times and a sign of our preferences. (“What is Happening to These Animals?” <http://www.pgc.state.pa.us>)

The truth of the matter is that these so-called “creepy creatures” are really beneficial members of the ecosystem. They all have their own niche – the role they play – that is essential to the function of the ecosystem. Wolves played a significant role in the control of the white-tailed deer population. When they disappeared, the number of deer in the state of PA skyrocketed. In 2000, there were an estimated 1.5 million white-tailed deer in PA. Almost everyone has had some kind of encounter with these large herbivores, many of which include dented vehicles and devastated gardens. The hunting season for deer is one way humans are now managing the population, something wolves managed to do for thousands of years. Despite this, wolves are still often perceived as cunning, dangerous marauders. Why? Because many people still do not know the facts. By separating fact from fiction, the true value of these animals can be recognized.

The information on these pages will help you and your students to ferret out fact from fiction and to get the REAL story about these marvelous misunderstood animals.

## **Bats**

**Description:** Bats are the only truly flying mammal. Found in every corner of the earth except the most extreme desert and polar regions, they vary widely in size, color, and diet. The largest bat is the Indonesian flying fox, with a wingspan of about 6 feet and weighing 3.5 pounds. The smallest is the butterfly bat (a.k.a. Kittie's hognose bat), with a 5 inch wingspan and weighing about 2 grams (less than a nickel). There are 9 species in PA: little brown bat, big brown bat, Eastern pipistrelle, Indiana bat, northern myotis, eastern small-footed bat, hoary bat, eastern red bat, silver-haired bat

**Status:** disappearing – now considered to be the most endangered land animal in North America. Of our PA bats, the Indiana bat is endangered, and the eastern small-footed bat is rare.

**Niche:** controls insect population; fruit bats are pollinators and seed dispersers

### **Mythbusters:**

- *Bats are blind* – False. Bats have good eyesight and use it to avoid large obstacles (like trees). Fruit bats even have color vision, and are often active during the day. Insect eaters rely on echolocation to find food.
- *Bats are rats with wings* – False. Bats are not rodents. They are insectivores – more like a shrew than a rat. Bat wings are actually elongated fingers with skin stretched between them. They even have thumbs!
- *Bats drink human blood* – True. However, of the nearly 1000 species of bats, only 3 drink blood. Bats eat a wide variety of foods, including fruit, insects, and fish. Those bats that do drink blood usually take the small amount they require from sleeping livestock. They use special heat sensors in their noses to find veins that are close to the skin, then use their sharp teeth to make tiny cuts in the skin. The bats then lap up the blood that oozes from the wound. The bats' saliva contains a chemical that numbs the animal's skin and keeps them from waking up. Another chemical in their saliva keeps the blood from clotting. Scientists have discovered that vampire bat saliva is better at keeping blood from clotting than any known medicine. Vampire bats may one day help prevent heart attacks and strokes
- *Bats fly into people's hair* – False. Bats have sophisticated echolocation which allows them to not only avoid trees, but also to tell the difference between a flying grasshopper and a moth! They will easily avoid humans. A likely root to this myth is that insect-eating bats seeking prey may dive erratically toward people, who attract mosquitoes and gnats, leading the squeamish to believe that the bats are trying to get in their hair.

## **Opossums**

**Description:** The opossum is North America's only marsupial. They are about the size of a cat, with gray coarse hair, hairless prehensile tails, and opposable digits on their back feet. Opossums have an unusually short life span, living only about 1.5 years in the wild, 2 to 4 years in captivity.

Opossums are extremely adaptable to different climates – they are one of the few animals that are extending their range. Pennsylvania marks the northern end of their range, but they can be found in forests, deserts, swamps and meadows across North America, and even in the rainforests of South America.

**Status:** common

**Niche:** scavenger – eats carrion, prey for larger carnivores

### **Mythbusters:**

- *Opossums play dead* – True. It fights only if attacked, surprised, or cornered, but prefers to run away or 'play possum,' which is said to be an involuntary reaction to danger. An opossum will hiss or growl and show its sharp teeth when frightened. If threatened, opossums will sometimes flop onto their sides and lie on the ground with their eyes closed or staring fixedly into space. They extend their tongues and generally appear to be dead. This ploy may put a predator off its guard and allow the opossum an opportunity to make its escape.
- *Opossums usually have rabies* – False. While any warm blooded mammal can carry rabies, it is highly unlikely that an opossum will. In many cases, the opossum will move to a more preferred

habitat away from people if left alone. Although the opossum has the most teeth of any land mammal (52, in all), it does not chew food. It does, however, tend to drool. Drooling, hissing, and swaying are all part of its defensive mechanism. Many people who see this behavior mistakenly think it has rabies. This is not the case. For reasons still unknown, opossums are amazingly resistant to rabies and other diseases. In general, an opossum presents a far lower health risk to humans than do dogs and cats because of this natural high level of immunity. An opossum does, however, carry fleas as do all wild animals and some domestic animals. Also, an opossum may bite if it perceives a threat to its well being, such as being grabbed or petted. The best thing for the opossum is to be left in its own territory where it can find food and knows where there is a safe shelter.

- Opossums are giant rats – False. Opossums are not rodents. They are marsupials. Like kangaroos, females have a pouch for their young. Opossums can have as many as 13 babies in the pouch at one time. As they grow, the young opossums learn to climb out of the pouch and cling to their mother's back. That hairless, rat-like tail is prehensile, and greatly helps in their ability to climb. While only the youngest opossums can actually hang by the tail alone, older, heavier opossums use their tails and hind feet, which have opposable digits, much like our thumbs.
- Opossums are nothing but pesky vermin – False. The opossum is very beneficial as a rodent and carrion eater. Besides eating all types of dead animals, it eats a variety of food including over-ripe fruit, grapes, and berries; insects such as cockroaches, crickets, beetles, slugs, snails, etc.; mice, rats, and roof rats; snakes; lizards; and eggs. It also cleans up uneaten food which would normally attract rats. An opossum will eat side by side with a cat out of a dish of cat food that is left outside, and it will consider the cat food a gourmet meal. An opossum may get into garbage cans, eat your pet's food, or eat cultivated fruits and vegetables. It may enter a home through ripped screens or vents and duct systems. To alleviate these problems, garbage can lids can be fastened with a rubber strap or bungee cord from the local hardware store; holes in screens or building foundations should be covered or repaired, and pet food should not be left outdoors at night. It is not necessary to relocate an opossum that you see in your yard. The opossum is not dangerous to you or your pets, if left alone.

## **Wolves**

**Description:** Wolves are the largest wild members of the dog family. They typically weigh between 75 and 120 lbs., with a thick grey to black coat. Standing between 27" and 31" high, they walk at about 4 mph, and can reach speeds of up to 35 mph during a chase. Their typical gait is an 8 – 10 mph trot which they can maintain for hours. Wolves have been known to cover 60 miles in one night. This helps them to patrol their territories, which can range from 6 to 600 square miles. They are found in a wide variety of climates, from the frigid arctic tundra to scorching deserts, to the steamy Gulf Coast swamps.

**Status:** endangered

**Niche:** predator – acts as control on populations of large herbivores

### **Mythbusters:**

- Wolves often attack people and livestock – False. Wolves hunt mostly deer, but also beavers, rabbits, and other small animals. Wolves usually prefer to avoid humans, but have been known to occasionally take livestock. This usually occurs in areas that have been depleted of prey animals, driven out by the grazing livestock. Many attacks on livestock attributed to wolves are actually committed by their smaller, leaner cousins, the coyote. Unlike wolves, coyotes have no qualms about living close to humans, and have been known to inhabit even urban settings. As for grandma, unless she's related to Little Red Riding Hood, she has little to fear. There is no documented account of a healthy wolf ever attacking a human being.
- Wolves are solitary animals (loners) – False. Wolves are social animals, living in a pack of 6 to 10 animals. Each member of the pack contributes to the overall well-being of the group. Wolves

hunt together in order to bring down large prey, such as moose and elk. There is a well-defined social structure and status within the pack. The alpha male and female are at the top of the social order. They have the most freedom to move and act as they please. The rest of the wolves usually follow. The omega is at the bottom of the social order. This wolf is the babysitter, and is often very young or very old. Occasionally, you may find a 'lone wolf.' This is usually an omega that has been driven out of the pack. If it is lucky, it may find a mate and form a new pack. If not, it will eke out an existence until it is injured, sickens or dies.

- Male wolves serve their mates breakfast in bed – True. In the wolf pack, the dominant (or alpha) male and female are usually the only ones to breed. When the pups are born, the pack brings food to the nursing mother to help ensure the safety and well-being of the pups. As they grow, the pack will continue to bring them food, taking turns watching them while others hunt.
- Wolves howl at the moon – False. Howling is a form of communication. Wolves use howls to locate, rally, and coordinate pack members and movement. It can also be a way of declaring territory or challenge. Wolves also communicate through scent and body language, which includes posture, facial expression, ear and tail set.

## **Spiders**

**Description:** There are about 40,000 species of spiders. Most spin webs with silk produced by glands on their abdomens, called spinnerettes. Spiders are able to produce 7 different kinds of silk, each used for different purposes, and not all of them sticky! Mating is often risky business. The smaller male cautiously approaches the female, announcing his intentions by plucking strands of her web. If she is receptive, he will approach her and mate. Even so, many males still end up as a honeymoon snack for the female. Most spiders have short life spans, usually no more than a year or two. The exception is the tarantula, which has been known to live as long as 30 years.

**Status:** common \* Exceptions: 8 spiders are on the Endangered Species list, including the Kauai Wolf spider and 5 species of Texas cave spiders.

**Niche:** predators – acts as control on population of insects and small mammals

### **Mythbusters:**

- Spiders are insects – False. Spiders are arachnids. They have 8 legs and 2 body segments, the cephalothorax and the abdomen. Insects have 6 legs and 3 body segments (head, thorax, and abdomen). Both are arthropods (invertebrate animals with jointed legs).
- All spider bites are dangerous – False. It is true that all spiders have venom, but only a few are dangerous to people. Here in Pennsylvania, the only two dangerous spiders are the black widow and the brown recluse. Encounters with these two are very rare. Most spider bites have no effect or cause a painful, itchy welt much like a mosquito bite. Spiders do not stalk humans – most bites are in self defense, occurring most often when someone unwittingly leans against them or rolls over on them in their sleep. The belief that the bite of a spider is deadly actually gave rise to the tarantella – a traditional Italian dance in which the participants energetically whirl and twirl as a way to counteract the “deadly” venom.
- Most spiders have the same number of eyes as legs – True. Most spiders have 8 eyes in varying configurations around the front and sides of the cephalothorax. Some spiders have only 6 eyes. This gives spiders surprisingly good eyesight. Jumping spiders, in particular, have exceptional depth perception, allowing them to pounce on prey accurately up to 30 times their body length away.
- All spiders spin webs to trap food – False. Most spiders spin webs, but not all. Of those that do, not all of them use their webs to trap food. The orb weaver spiders use strands of sticky silk to trap insects. Other spiders, like tarantulas, use their webs as a shelter, and one even uses it as a diving bell! Instead of ensnaring prey, these spiders will leap on or ambush prey.

## **Snakes**

**Description:** Snakes are long, legless, limber reptiles. They can be found throughout the world except for Antarctica, Iceland, Ireland, Greenland and New Zealand. They can be found in many habitats including in the water, forests, deserts and prairies. Snakes consume a variety of items including termites, rodents, birds, frogs, small deer and other reptiles. Snakes eat their prey whole and are able to consume prey three times larger than the diameter of their head. They can do this because of their expandable lower jaw and flexible bones in their skull. To keep prey from escaping, snakes have rear-facing teeth that hold their prey in their mouths. Like other reptiles, they are ectothermic (sometimes called cold-blooded), meaning that they do not generate their own body heat, but, rather, rely on the ambient temperature of their surroundings to maintain their body temperature. Because of this, they require much less energy than warm-blooded (endothermic) animals and do not need to hunt everyday. Anacondas and pythons can survive for up to a year without food after feeding. Snakes hunt mostly at night.

**Status:** many are common \*Exceptions: there are 5 PA snakes on the endangered species list – eastern indigo snake, Lake Erie water snake, massasauga rattlesnake, rough green snake, and Kirtland's snake. Almost all are due to habitat loss.

**Niche:** predator – act as control on populations of insects and small to medium sized vertebrates

### **Mythbusters:**

- Snakes are slimy – False. Snakes are reptiles. They have dry, scaly skin. The scales sometimes have an iridescent sheen which may make them shiny, especially if the snake has just shed its skin. As the snake grows, the outermost layer of skin becomes cloudy and separates from the layer growing below. The snake rubs against the ground or a rock or branch, creating a tear in the skin, then slithers out of the old skin, turning it inside out as it peels it off.
- All snakes are venomous – False. There are about 2,700 species of snakes, and of these 375 are venomous. Venomous snakes have fangs which they use to grab and envenomate prey. These fangs are hollow, and act like a hypodermic needle to inject the animal with the venom produced by special glands in the snake's head. The venom is usually a neurotoxin. Most snakes are harmless constrictors.
- Snakes have no backbones – False. Snakes are vertebrates. They are, in fact, mostly backbone, having between 100 and 400 vertebrae. They not only have a backbone, but ribs, a skull, a jawbone, and even hip bones!
- Snakes use their tongues to help them smell – True. While they have nostrils, snakes' sense of smell is not centered in their nose (it's just for breathing). It is in their mouth. Snakes flick out their tongue to catch scent molecules. They bring it into their mouth and press it against the Jacobson's organ located in the roof of the mouth. This specialized organ is very sensitive, and able to detect scent of prey far better than we can. The forked tongue of the snake allows it to also determine directionality of the scent, allowing them to easily track down and capture their prey.

## **Skunks**

**Description:** Skunks have a reputation for being anti-social. They are primarily solitary, nocturnal animals, though occasionally they will form communal dens in colder areas. They are about the size of a housecat (15 – 27 in. long, 1 – 10 lbs.), but with much shorter legs. Strong front claws make them great diggers, allowing them to make the burrows in which they spend most daylight hours. Skunks are [omnivorous](#), eating both plant and animal material, but mostly [meat](#). They dig for [insects](#) and their [larvae](#) and [earthworms](#), and readily feast on [rodents](#), [lizards](#), [salamanders](#), [frogs](#), [snakes](#), [birds](#) and [eggs](#). If no prey can be found, skunks will eat wild [fruits](#) and large seeds. In settled areas, skunks also seek human garbage.

**Status:** common

**Niche:** omnivores – act as a control on populations of insects and small animals, prey for larger carnivores, such as great horned owl

## **Mythbusters:**

- All skunks are black and white striped – False. Although the most common fur color is black and white, some skunks are brown or gray, and a few are cream-colored. All skunks are striped, however, even from birth. They may have a single thick stripe across back and tail, two thinner stripes, or a series of white spots and broken stripes (in the case of the spotted skunk). Some also have stripes on their legs.
- Skunk's stripes give them good camouflage – False. The skunk's black and white markings make them stand out from their surroundings. This warning coloration alerts other animals to their presence so that they will leave them alone.
- Skunks spray without warning – False. Skunks only have enough spray for 5 or 6 uses, and need about 10 days to replenish their supply. Whenever possible, they will warn off intruders by twitching their tails, stomping their feet and chattering. If all else fails, they will do a handstand and spray.
- Taking a bath will not get rid of skunk spray – True. Soap and water is not enough. Chemicals in the spray called thiols are not water soluble. To remove them (and the smell they make), tomato juice, vinegar, or lemon juice are often used. The best remover, however, is made with hydrogen peroxide, baking soda, and liquid soap. Visit <http://dan.drydog.com/patsyann/skunk.html> for the recipe and directions for its use.

## **Frogs**

**Description:** Frogs are amphibians. They undergo amazing physical changes, starting life as a completely aquatic creature to a primarily terrestrial adult. This metamorphosis begins with a clump of jelly-like eggs laid in the water. They soon hatch into tadpoles, whose gills, tail and locomotion make them strongly resemble fish. The tadpoles begin to develop legs, first back then front, and lungs. As it continues to mature, the legs grow stronger and longer, the lungs become more and more developed, and the tail is reabsorbed into the body. Finally, it emerges from the water as an air-breathing adult. The very nature of its metamorphosis and subsequent aquatic lifestyle, makes them especially susceptible to environmental pollutants. Any problems tend to show up first in their population. Frogs (and other amphibians) act as indicator species for the health of the wetlands in which they live.

**Status:** declining – amphibian populations are declining worldwide, primarily due to pollution and habitat destruction. PA endangered amphibians: New Jersey chorus frog, coastal plain leopard frog, eastern mud salamander, eastern spadefoot toad; the green salamander is threatened

**Niche:** predators – acts as control on population of insects and small mammals. They are also prey for snakes, birds, fish, raccoons, etc.

## **Mythbusters:**

- Frogs don't have teeth – False. Most frogs do in fact have teeth of a sort. They have a ridge of very small cone teeth around the upper edge of the jaw. These are called maxillary teeth. Frogs often also have what are called vomerine teeth on the roof of their mouth. The pig frog is one example. It has a single tooth in the roof of its mouth that it uses to pierce the shells of crayfish. They don't have anything that could be called teeth on their lower jaw, so they usually swallow their food whole. The so-called "teeth" are mainly used to hold the prey and keep it in place till they can get a good grip on it and squash their eyeballs down to swallow their meal. Toads, however, do NOT have any teeth.
- Frogs can breathe through their skin – True. Frogs have very special skin! Frog skin secretes mucus that helps keep it moist, but even with slimy skin, frogs still need to stay near water. Frogs get necessary extra oxygen (in addition to what they get from their lungs) from the water by absorbing it through their skin. Because frogs get oxygen through their skin when it's moist, they need to take care of their skin or they might suffocate. They also drink and breathe through their skin. Frogs don't usually swallow water like we do. Instead they absorb most of the moisture they need through their skin. Toads on the other hand have tougher skin that doesn't dry out as fast,

so they can live farther from water than most frogs. In addition to jumping in water, frogs and toads can get moisture from dew, or they can burrow underground into moist soil.

- Frogs can give you warts – False. Warts are caused by a virus in the skin – not frogs. The idea probably came from their fellow amphibians, the toads, which are often covered in wart-like bumps. These bumps (which can also be found on some frogs) help with camouflage. Frogs also do not turn into princes, handsome or otherwise. All you get from kissing them are slimy lips.
- All frogs are green – False. As a warning to predators of their extreme toxicity, Poison Dart Frogs are spectacularly colored. Their skin is used as a poison for blowgun darts and arrows by some tribes of the rainforest of Colombia. Some of these frogs contain poison that can kill human beings by entering through cuts, the mouth, or even unbroken skin. The yellow Golden Poison Dart frog, for example, has enough poison in it to kill 10 humans, and is considered to be the deadliest creature in the world. The poison comes from eating insects (ants in particular) which have, in turn, eaten certain plants containing the toxins. Depending on their diet, captive frogs may not be poisonous like their wild counterparts. The poison is like curare, affects the heart, and may cause hallucinations. It is hoped that medical research on these species may lead to pain killers massively more powerful than morphine without being addictive and toxic to human.

## Owls

**Description:** Owls have the best night vision of any animal on the planet. Their enormous eyes make this possible. If the ratio of the size of our eyes to our skull was the same as an owl's, our eyes would be the size of softballs. Extremely large retinas make their night vision 50 to 100 better than ours. Also, the retinas are packed with rods (light-gathering cells). An owl can't distinguish colors well, but it possesses binocular vision, giving it good depth perception. An owl grips and kills prey with its talons. If the prey is small enough, the owl swallows it whole; otherwise it holds the kill with its talons, tears it apart with its hooked beak, and swallows the pieces. The owl's stomach absorbs nutritious portions and forms the indigestible parts (hair, feathers, bones, claws, insect chitin) into round pellets (or castings) which are regurgitated about seven hours later. Generally, the larger the owl, the larger its pellets. Pellets can be broken apart and the hard bony parts separated from the fur and feathers. Close examination of the hard items gives insight into the owl's diet.

**Status:** common Exceptions: US endangered owls include: Anjouan scops owl, giant scops owl, Mexican spotted owl, northern spotted owl, Seychelle's owl, Morden's owlet, Madagascar red owl

**Niche:** predator – act as control on populations of insects and small to medium sized vertebrates

### **Mythbusters:**

- Owls can turn their heads all the way around – False. Owls can twist their necks an amazing 270 degrees – almost all the way around, but not quite. Their eyes are fixed in their skull, so to look to the side, an owl moves its head.
- Owls can fly without making a sound – True. The leading parts of a night hunter's wings--which cut the air when the bird flies--have soft, serrated edges. These soft leading edges, lightweight wings and a large wing surface area let an owl fly and glide in total silence. As its flight is noiseless, an owl easily hears other sounds while hunting. It descends to its target in a silent, mothlike glide.
- All owls say "Who! Who!" – False. While many owls do hoot, they make a large variety of sounds. The short-eared is a fairly silent owl, but occasionally makes a sneezy bark. Barn owls make a long, drawn-out whistle, loud hisses and snores. Screech owls make a sound like a squeaky screen door. Saw-whet owls make a sound like the rasping made when sharpening a saw. These calls are made to establish territory and to attract a mate.
- Owls can smell food a football field away – False. Like most birds, owls have a very poor sense of smell. This can be seen by the great horned owl's choice of skunk as prey. This behavior has helped naturalists locate nest sites. Females will often catch skunks and bring them back to the nest. They spread the spray from the anal glands over their nest and owlets to deter predators. Owls do, however, have outstanding hearing. They are able to hear sounds well below the threshold of human hearing; even in complete darkness a barn owl can catch prey by using its

hearing alone. Studies have shown that they are able to hear and track a mouse at a distance of 100 yards. Owl head structure plays into this. The flat, disc shaped face acts like a satellite dish to collect and funnel sound to the owl's ears, located under the feathers on either side of the head (usually one is a bit higher up than the other). The conspicuous "ears" or "horns" of great horned, long-eared and screech owls are really tufts of feathers that have little effect on their hearing.

## **Cockroach**

**Description:** Cockroaches are true survivors. These insects reproduce at amazing rates – in some species, female can produce egg cases holding up to 100 eggs. She only needs to be fertilized once to allow her to lay eggs for the rest of her life, producing over a million eggs in her 1 ½ year lifetime. They are resistant to heat, cold (to below freezing), and radiation (6 to 15 times greater than we can survive). They can live by eating the glue on the back of a stamp, and can survive devastating injury. They can flatten their bodies to the thickness of a dime, allowing them to fit into extremely tight areas. They are extremely adaptive, able to live in all areas except the polar regions and elevations above 6,500 feet.

**Status:** abundant, considered pest species in many areas. \*Exception: Lord Howe Island Woodeating Cockroach – it is endangered.

**Niche:** decomposers

### **Mythbusters:**

- All cockroaches are pests – False. There are over 3000 species of cockroaches and only 10 species are on the World Health Organization list of human pests. Most cockroaches make important contributions to their native ecosystems. They are a source of food for many birds, small mammals, amphibians and lizards, as well as decomposers that break down organic materials.
- Cockroaches are covered in germs – False. Cockroaches keep themselves very clean, as most insects do, so the sensory bristles on their bodies and legs are ready to detect any hint of water, food, a mate or an enemy. However, any diseases in the area can live in the cockroach's gut. They are omnivorous, so would just as likely eat a dead mouse or spoiled food as nibble on your house plant. They often defecate near or on the food they eat, so they are likely to pass the organisms in their gut to the food they are eating and the surfaces they walk and defecate on.
- A cockroach can live without a head – False. They can, however, survive this damage for nearly a month. This is because 1) they breathe through spiracles on their abdomens, not a mouth or nose like we do, 2) they don't have blood pressure, so they won't bleed to death, and 3) they don't need to eat, since one meal can last them nearly a month, if necessary.
- There is an endangered cockroach – True. One Australian cockroach has been listed as an endangered species. The Lord Howe Island Woodeating Cockroach is a wingless burrowing species which may have been wiped out following the introduction of rats to the island.

## **Suggested Student Reading**

Animals of the Night by Merry Banks

Annie and The Wild Animals by Jan Brett

The Bat In The Boot by Annie Cannon

Bat Loves the Night by Nicola Davies

The Call of the Wolves by Jim Murphy

Beetle Bedlam by Vlasta vanKampen

The Day Jimmy's Boa Ate the Wash by Trinka Hakes Noble

A Frog in the Bog by Karma Wilson

Grandmother Spider Brings the Sun by Geri Keams

I Love the Night by Dar Hosta

Jimmy's Boa and The Big Splash Birthday Bash, by Trinka Hakes Noble

North Country Night by Daniel San Souci

Outside My Window, by Bernice Rappaport

Owl Babies by Martin Waddell

The Owl Who Became the Moon by Jonathan London

The Snake Who Was Afraid of People by Barry Louis Polisar

The Salamander Room by Anne Mazer

Sassafras by Audrey Penn

Screech Owl at Midnight Hollow by C. Drew Lamm

Stellaluna by Janell Cannon

The Tarantula In My Purse and 172 Other Wild Pets by Jean Craighead George

The Very Busy Spider by Eric Carle

The Very Quiet Cricket by Eric Carle

Voices of The Wild by Jonathan London

Whoo-oo Is It? by Megan McDonald

The Wide Mouthed Frog by Keith Faulkner

## **Teacher Resources and Reference**

Animal Fact/Animal Fable by Seymour Simon

Bats and Other Animals of The Night by Joyce Milton

The Bat House Builders Handbook by Merlin D. Tuttle and Donna L. Hensley The

Complete Birdhouse Book by Donald and Lillian Stokes

Educator's Activity Book: About Bats by Bat Conservation International

Eyes on Nature: Snakes by Jane P. Resnick Also in the series: Lizards, Reptiles, Spiders, Wolves and Coyotes

EYEWITNESS Insects Also in the series: Amphibian, Bird, Eagles & Birds of Prey, Insect, Pond and River, Reptiles

EYEWITNESS JUNIOR Amazing Bats Also in the series: Beetles, Crocodiles and Other Reptiles, Frogs & Toads, Lizards, Poisonous Animals, Snakes, Spiders, Wolves, Dogs & Foxes

Frogs by Susan Canizares

How Do Bats See in the Dark? Questions and Answers About Night Creatures by Melvin and Gilda Berger

The Insect Almanac by Monica Russo

Making Birdhouses and Feeders by Charles R. Self

The Night Book by Pamela Hickman

Night Creatures by Susanne Santoro Whyne

Owls for Kids by Neal Niemuth Also in the "Wildlife For Kids" series: Bats, Wolves

Owls on Silent Wings by Ann C. Cooper

Pennsylvania Amphibians & Reptiles by Larry L. Shaffer

Pythons and Boas, by Lionel Bender

Snakes by Seymour Simon

The Unhuggables by National Wildlife Federation

Wildlife Habitats for Small Spaces in City, Suburbs, Countryside by Emily Stetson

What's Inside? Insects by DK Publishing

Wolves by Seymour Simon

## Video Resources

Amazing Animals: Creepy Crawly Animals by DK Publishing

Amazing Animals: Mini Beasts by DK Publishing

Amazing Animals: Nighttime Animals by DK Publishing

Amazing Animals: Slimy Animals by DK Publishing

Building Homes for Bats by Bat Conservation International

Winter Wolf by Miramar Legend Series

Really Wild Animals: Amazing North America by National Geographic

Really Wild Animals: Secret Weapons and Great Escapes by National Geographic

## Internet Resources

[www.pgc.state.pa.us](http://www.pgc.state.pa.us): Pennsylvania Game Commission: good resource about our native birds and mammals! Free materials, including Wildlife Notes.

[http://sites.state.pa.us/PA\\_Exec/Fish\\_Boat/mpag1.htm](http://sites.state.pa.us/PA_Exec/Fish_Boat/mpag1.htm): Pennsylvania Fish and Boat Commission: great resource about native fish, reptiles and amphibians! Lots of free publications, download great info sheets on tons of animals. Activities in and out of the classroom! Very user friendly.

[www.bio.umass.edu/biology/kunkel/cockroach\\_faq.html](http://www.bio.umass.edu/biology/kunkel/cockroach_faq.html): University of Massachusetts: great answers to FAQ's about cockroaches!

[www.cccoe.k12.ca.us/bats/](http://www.cccoe.k12.ca.us/bats/): Contra Costa County Office of Education: Great bat info; kid-friendly site.

[www.batcon.org](http://www.batcon.org): Bat Conservation International: great bat info, conservation projects; resources available to educators, kids activities, too!

[www.batworld.org](http://www.batworld.org): Bat World: Great info on bats, free **plans for bat boxes**, tips on their placement, activities for kids.

<http://www.nationalgeographic.com/animals/index.html> : National Geographic: Information, fact sheets, sound and video clips of animals from around the world

<http://cgee.hamline.edu/frogs/>: Center for Global Environmental Education: interesting amphibian facts, activities for teachers and students, frogs as indicator species. Site contains photos of malformed frogs which may be upsetting to some students.

<http://www.sedl.org/scimath/pasopartners/spiders/welcome.html>: Southwest Educational Development Laboratory: lesson plans, activities, information about spiders

<http://www.washington.edu/burkemuseum/spidermyth/>: Burke Museum: Great information about spiders – myth and fact!

<http://www.spiderzrule.com/>: Spiders Rule: Amazing variety of spider-related activities, information, pictures and more!

<http://www.owlpages.com/>: Owl Pages: Everything you ever wanted to know about owls and then some! Includes **plans for owl nesting boxes**.

<http://www.angelfire.com/bc/shadowcountry/wolfchrono.html>: Shadow Wolf Country: historical overview of wolves in writing, history and legislation. Links to other wolf info.

[www.wolfcountry.net](http://www.wolfcountry.net): Wolf Country: Great information, wolfsong recordings, and much, much more!

## Vocabulary

**adaptation:** a physical feature or behavior that improves an animal's chances for survival

**conservation:** the wise use, care and protection of natural resources including plants and animals

**crepuscular:** refers to an animal that is most active at dawn and dusk

**decomposer:** an organism that breaks down organic matter into nutrients that then return to the soil. Examples: earthworms, cockroaches, maggots, fungus

**diurnal:** refers to an animal that is active mainly during the day

**ecosystem:** refers to a description of all the components of a specified area, including the living organisms and the nonliving factors such as air, soil, and water and the interactions that exist between all these components.

**habitat:** the place an animal lives. It provides the animal with shelter, food, water, and air/space.

**larva(e):** the second stage in an insect or amphibian life cycle, during which the organism is usually active and growing. Examples: caterpillar, tadpole

**metamorphosis:** refers to a life cycle that includes a radical change in body form, as seen in insects and amphibians. Stages usually include: egg, larva, pupa, adult.

**misunderstood:** an animal whose true nature is not known, or has been distorted by false information and preconceptions.

**myth:** a story told about a plant or animal that may be based in fact

**niche:** an organism's specific role in its environment

**nocturnal:** refers to an animal that is active mainly at night

**predator:** an animal that survives by killing and eating other animals

**prey:** an animal that is hunted by another animal

**pupa:** the third stage in insect metamorphosis, during which the organism is usually dormant and inactive. Amphibians do not have a true pupal stage. Example: butterfly chrysalis or cocoon

**scavenger:** an animal that eats whatever food is available, including carrion

# UGH! At First Sight

## Content Area: Language Arts

**Goal:** Raise student awareness of their own perceptions about misunderstood animals

### Objectives

- TSW identify their own perceptions of misunderstood animals
- TSW distinguish between perceptions based on fact and those based on myth
- TSW select a misunderstood animal for further research

### Materials

- 10-15 pictures of animals, both “cute” and “scary” or “gross” suggestions: cute – rabbit, kitten, puppy; scary or gross – bat, owl, wolf, toad, snake, skunk, insect, spider
- Chalkboard
- “I Heard That” page
- Realistic rubber snake, insect, spider, etc.

Procedures:

#### **Anticipatory Set:**

Show the pictures of the animals. Ask older students to give a word that describes what they think the animal is like. Record student responses on the chalkboard. Have younger students sort them into “Cute” or “Scary or Gross”

#### *Development of Lesson:*

1. Have the students compare their reactions. Which are strongly negative? Which are strongly positive? We all have ideas about what animals are like based on what we have heard and experienced.
2. Bring out the rubber animal. Point out spontaneous reactions and ask students what they think about that animal.
3. Discuss what the students have heard, read, or experienced that caused their reaction. Provide the students with factual information about the animal, including the role the animal plays in the environment. For example, tarantulas are believed to be deadly. The tarantella is a dance arising from the belief that the poison had to be sweated out of the person bitten. In fact, a tarantula’s bite is only mildly poisonous – about the same as a bee sting. They are usually found in tropical areas where they have the very important job of controlling the population of insects and small rodents. They will never mistake you for food – they have excellent eyesight.
4. Divide older students into small groups of 3 or 4 students. Have each group (or each student) select a misunderstood animal that can be found locally for further research, and discuss what they have heard or think about the animal(s) selected. You may wish to do this as a class with younger students. They should record their responses on an “I Heard That” sheet.

#### **Summary:**

After hearing the facts, ask the students to re-evaluate their perceptions. Did they change? What made the difference?

#### Extensions

- Looks can be deceiving. Artists fool your perceptions all the time by using optical illusions. Investigate these or create your own.
- Read fairy tales. Pick out images of animals that could lead to misunderstandings. Select one to rewrite, making the animal more realistic. How do the stories change?

# I Heard That \_\_\_\_\_

<b>Eat . . .</b>	<b>Act like . . .</b>	<b>Look like . . .</b>
<b>Move like . . .</b>	<b>Live . . .</b>	<b>Sound like . . .</b>
<b>And . . .</b>		

# Is That a Fact?

## Content Area: Science

**Goal:** Identifying misconceptions held about misunderstood animals

### **Objectives:**

- TSW define fact
- TSW define fiction
- TSW differentiate between fact and fiction
- TSW compare their preconceptions about misunderstood animals to the facts

### **Materials:**

- “Is That a Fact?” Game Cards and Answer Sheet
- Background information
- Copy of “The Three Little Pigs”

### **Procedures:**

*Before You Start:* Copy and cut the game cards apart. You may wish to laminate them for more durability.

#### *Anticipatory Set:*

Read the story of “The Three Little Pigs.” Is this a true story? How can you tell? It is a made up story. When things are made up, we call it **fiction**. When things are true, we call it **fact**.

#### *Development of Lesson:*

1. Ask the students to describe a pig and/or wolf based on what they have heard. Are all of those things true? There are many things that we might think are true because we have heard them repeated again and again, but that does not make them facts.
2. Divide older students into cooperative groups. Younger students may do this activity as a class.
3. Show the “Is That a Fact?” cards to the students. Explain that each card has 4 statements about an animal. Only one of them is true. Their job is to figure out which one it is.
4. Give each group a game card. Have them read the card, or read them aloud, one at a time, to younger students. Allow them time to discuss which statements they think are fact and which are fiction.
5. Share the correct answers and the real facts from the background information.

#### *Summary:*

Was there anything that you thought was fact that was fiction? Was there anything that you thought was fiction that was fact? What was the biggest surprise?

### **Extensions:**

- Play “Psst!” (from Games) to reinforce the way that stories can change when they are passed along.
- Read “The True Story of the Three Little Pigs” by Louis Sachar. How did the story change when told by the wolf? How would you describe a pig and/or wolf based on *this* story?

# Is That a Fact?

## Teacher Page

### Bats

- *Bats are blind* – Fiction.
- *Bats are rats with wings* – Fiction.
- *Bats drink human blood* – Fact.
- *Bats fly into people's hair* – Fiction.

### Opossums

- *Opossums play dead* – Fact.
- *Opossums usually have rabies* – Fiction.
- *Opossums are giant rats* – Fiction.
- *Opossums are nothing but pesky vermin* – Fiction.

### Wolves

- *Wolves often attack people and livestock* – Fiction.
- *Wolves are solitary animals (loners)* – Fiction.
- *Male wolves serve their mates breakfast in bed* – Fact.
- *Wolves howl at the moon* – Fiction.

### Spiders

- *Spiders are insects* – Fiction.
- *All spider bites are dangerous* – Fiction.
- *Most spiders have the same number of eyes as legs* – Fact.
- *All spiders spin webs to trap food* – Fiction.

### Snakes

- *Snakes are slimy* – Fiction.
- *All snakes are venomous* – Fiction.
- *Snakes have no backbones* – Fiction.
- *Snakes use their tongues to help them smell* – Fact.

### Skunks

- *All skunks are black and white striped* – Fiction.
- *Skunk's stripes give them good camouflage* – Fiction.
- *Skunks spray without warning* – Fiction.
- *Taking a bath will not get rid of skunk spray* – Fact.

### Frogs

- *Frogs don't have teeth* – Fiction.
- *Frogs can breathe through their skin* – Fact.
- *Frogs can give you warts* – Fiction.
- *All frogs are green* – Fiction.

### Owls

- *Owls can turn their heads all the way around* – Fiction.
- *Owls can fly without making a sound* – Fact.
- *All owls say "Who! Who!"* – Fiction.
- *Owls can smell food a football field away* – Fiction.

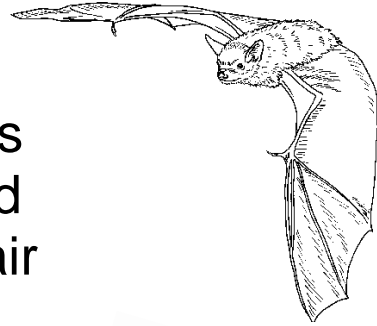
### Cockroach

- *All cockroaches are pests* – Fiction.
- *Cockroaches are covered in germs* – Fiction.
- *A cockroach can live without a head* – Fiction.
- *There is an endangered cockroach* – Fact.

**Is That a Fact?**  
**Game Cards**

**Bats**

Bats are blind.  
Bats are rats with wings  
Bats drink human blood  
Bats fly into people's hair



**Opossums**

Opossums play dead  
Opossums usually have rabies  
Opossums are giant rats  
Opossums are nothing but pesky vermin



**Wolves**

Wolves often attack people and livestock  
Wolves are solitary animals (loners)  
Male wolves serve their mates breakfast in bed  
Wolves howl at the moon



**Spiders**

Spiders are insects  
All spider bites are dangerous  
Most spiders have the same number of eyes as legs  
All spiders spin webs to trap food



## Snakes

Snakes are slimy  
All snakes are venomous  
Snakes have no backbones  
Snakes use their tongues to help them smell



## Skunks

All skunks are black and white striped  
Skunk's stripes give them good camouflage  
Skunks spray without warning  
Taking a bath will not get rid of skunk spray



## Frogs

Frogs don't have teeth  
Frogs can breathe through their skin  
Frogs can give you warts  
All frogs are green



## Owls

Owls can turn their heads all the way around  
Owls can fly without making a sound  
All owls say "Who! Who!"  
Owls can smell food a football field away



## Cockroach

All cockroaches are pests  
Cockroaches are covered in germs  
A cockroach can live without a head  
There is an endangered cockroach



# As a Matter of Fact

## Content Area: Language Arts, Science

**Goal:** Recognizing the value of misunderstood animals

### **Objectives:**

- TSW define niche
- TSW research and record information about their chosen misunderstood animal
- TSW compare the facts about their animal with their preconceptions
- TSW explain their animal's niche

### **Materials:**

- Creature information sheets and/or research materials
- Completed "I Heard That" sheets (from "Is That a Fact?")
- "As a Matter of Fact" sheets
- Highlighters or yellow markers

### **Procedures:**

#### *Anticipatory Set:*

Complete the "Is That a Fact?" lesson. How were they able to identify myths about the animals? By knowing the facts. How can you learn the facts? Study the animals!

#### *Development of Lesson:*

1. Have the students brainstorm reasons to do research or study animals. Are these animals important to us?
2. Explain that every living thing – plants and animals – has a niche, or role, in the ecosystem. For example, some, like most songbirds, are seed dispersers, dropping seeds as they fly. Others, like fungi, are decomposers that help things break down and return to the soil. Misunderstood animals have their niche, too.
3. Divide the students into the cooperative research groups. This may be done independently (older students) or as a whole group activity (younger students). Distribute the research materials and "As a Matter of Fact" sheets. Have them find the facts.
4. Compare the students' "I Heard That" page with the information they have just recorded on their "As a Matter of Fact" page. Highlight the items that were not true. Put a star next to the biggest surprise. If they still are unsure of whether a perception is fact or fiction, look again in the research materials.

#### *Summary:*

Have the students select "5 Fabulous Facts" to share with the class. They may wish to present it in the format "I heard that \_\_\_\_\_, but as a matter of fact, \_\_\_\_\_". For example, "I heard that wolves eat grandmothers, but as a matter of fact, wolves avoid people." Be sure to also share the animal's niche.

### **Extensions:**

- Take advantage of this opportunity to familiarize the students with the other research tools available to them. Ask the librarian to show them how to use the Reader's Guide (older students), or the card/computer catalog, and to explain the shelving system to younger students.
- Go online and visit sites relating to the students' animals. Show them how to make the most of search engines and site links to find what they are looking for.
- Have a good laugh while you review animal facts and parts of speech by completing "Ani-Madlibs"

# As A Matter of Fact, \_\_\_\_\_

<b>Eat . . .</b>	<b>Act like . . .</b>	<b>Look like . . .</b>
<b>Move like . . .</b>	<b>Live . . .</b>	<b>Sound like . . .</b>
<b>Job is . . .</b>	<b>And . . .</b>	

## Ani-Mad Libs

### Content Area: Language Arts, Science

Have some fun while practicing parts of speech! Pick one of the Ani-Mad Libs to complete. Don't reveal the topic until you're ready to read. Write the numbers and parts of speech needed on the board. Have the students give answers, the sillier the better! When all the blanks are filled in, read the passage aloud. Once the giggles have subsided, see if your students can fill in the blanks with the facts. Encourage your students to create their own Ani-Mad Libs and share them with their classmates.

### Wolves

Wolves are the largest wild member of the \_\_ (1) \_\_ family. They live in a \_\_ (2) \_\_ group called a \_\_ (3) \_\_. The pack works together to \_\_ (4) \_\_, raise \_\_ (5) \_\_, and \_\_ (6) \_\_ their \_\_ (7) \_\_. Fairy tales like "Little Red \_\_ (8) \_\_ Hood" often show wolves as \_\_ (9) \_\_ or \_\_ (10) \_\_, but wolves actually prefer to \_\_ (11) \_\_ humans when they can. Today, wolves are found in only a \_\_ (12) \_\_ part of their original \_\_ (13) \_\_, and no longer \_\_ (14) \_\_ in \_\_ (15) \_\_.

1. noun
2. adjective
3. noun
4. verb
5. plural noun

6. verb
7. noun
8. adjective
9. adjective
10. adjective

11. verb
12. adjective
13. noun
14. verb
15. place

Wolves are the largest wild member of the dog family. They live in a family group called a pack. The pack works together to hunt, raise young, and protect their territory. Fairy tales like "Little Red Riding Hood" often show wolves as mean or evil, but wolves actually prefer to avoid humans when they can. Today, wolves are found in only a small part of their original habitat, and no longer live in Pennsylvania.

### Frogs

There are many \_\_ (1) \_\_ kinds of frogs, but all must live near \_\_ (2) \_\_. Frogs can \_\_ (3) \_\_ and \_\_ (4) \_\_ with their \_\_ (5) \_\_ skin, because it lets \_\_ (6) \_\_ and \_\_ (7) \_\_ pass into their bodies. They have a \_\_ (8) \_\_ coat to keep their skin from \_\_ (9) \_\_ out. Frogs do not give you \_\_ (10) \_\_, and do not turn into a \_\_ (11) \_\_ \_\_ (12) \_\_. If you \_\_ (13) \_\_ a frog, all you get is \_\_ (14) \_\_ \_\_ (15) \_\_.

1. adjective
2. noun
3. verb
4. verb
5. adjective

6. noun
7. noun
8. adjective
9. verb ending in ing
10. noun

11. adjective
12. noun
13. verb
14. adjective
15. noun

There are many different kinds of frogs, but all must live near water. Frogs can breathe and drink with their special skin, because it lets oxygen and water pass into their bodies. They have a slime coat to keep their skin from drying out. Frogs do not give you warts, and do not turn into a handsome prince. If you kiss a frog, all you get is slimy lips.

## Spiders

With \_\_\_(1)\_\_\_ \_\_\_(2)\_\_\_ and \_\_\_(3)\_\_\_, spiders may look \_\_\_(4)\_\_\_, but they are extremely \_\_\_(5)\_\_\_ . Spiders catch and eat \_\_\_(6)\_\_\_ and other \_\_\_(7)\_\_\_ . Some spin \_\_\_(8)\_\_\_ \_\_\_(9)\_\_\_ . Some \_\_\_(10)\_\_\_ on their \_\_\_(11)\_\_\_ . Many people are \_\_\_(12)\_\_\_ of spiders because they think their \_\_\_(13)\_\_\_ is \_\_\_(14)\_\_\_, but most are completely \_\_\_(15)\_\_\_ .

- |                |                |               |
|----------------|----------------|---------------|
| 1. adjective   | 6. noun        | 11. noun      |
| 2. plural noun | 7. plural noun | 12. adjective |
| 3. plural noun | 8. adjective   | 13. noun      |
| 4. adjective   | 9. plural noun | 14. adjective |
| 5. adjective   | 10. verb       | 15. adjective |

With eight eyes and legs, spiders may look scary, but they are extremely helpful. Spiders catch and eat insects and other pests. Some spin sticky webs. Some jump on their prey. Many people are afraid of spiders because they think their bite is deadly, but most are completely harmless.

## Snakes

Snakes have no \_\_\_(1)\_\_\_ \_\_\_(1)\_\_\_ . They use the \_\_\_(2)\_\_\_ on their \_\_\_(3)\_\_\_ to \_\_\_(4)\_\_\_ along the ground. They hunt for \_\_\_(5)\_\_\_ animals, using their \_\_\_(6)\_\_\_ to help them \_\_\_(7)\_\_\_ . Most snakes are \_\_\_(8)\_\_\_ that \_\_\_(9)\_\_\_ their prey. Some use \_\_\_(10)\_\_\_ . Many \_\_\_(11)\_\_\_ think snakes are \_\_\_(12)\_\_\_, but snakes are covered with \_\_\_(13)\_\_\_, \_\_\_(14)\_\_\_ \_\_\_(15)\_\_\_ .

- |                |                |               |
|----------------|----------------|---------------|
| 1. noun        | 6. noun        | 11. noun      |
| 2. plural noun | 7. verb        | 12. adjective |
| 3. noun        | 8. noun        | 13. adjective |
| 4. verb        | 9. plural noun | 14. adjective |
| 5. adjective   | 10. verb       | 15. noun      |

Snakes have no legs. They use the muscles on their body to slither along the ground. They hunt for small animals, using their tongue to help them smell. Most snakes are constrictors that squeeze their prey. Some use venom. Many people think snakes are slimy, but snakes are covered with dry, scaly skin.

# There's No Place Like Home

## Content Area: Science, Language Arts, Art

**Goal:** Recognition of the basic needs for life

### **Objectives:**

- TSW identify the four basic habitat requirements
- TSW identify specific habitat needs for their misunderstood animals
- TSW create a habitat element to fill the needs of their misunderstood animal

### **Materials:**

- Research materials from "As a Matter of Fact"
- Variety of natural items (sticks, rocks, leaves, etc.), found items (boxes, jars, cans, etc.), and craft supplies
- "There's No Place Like Home" page

### **Procedures:**

*Before You Start:* Determine what materials you may need by keeping your students' animals in mind. Wildlife Habitats by Emily Stetson may be helpful.

*Anticipatory Set:*

Complete "Home Sweet Home," using the variations.

*Development of Lesson:*

1. Discuss what happened in the game. What would happen if those elements were missing from your animal's environment?
2. Review the 4 habitat components – food, water, shelter, and space in a suitable arrangement (the right amount in the right places).
3. Distribute the "There's No Place Like Home" page and research materials. Have the students find the specific requirements for their misunderstood animal.
4. Using the information gathered and the materials available, have the students create a habitat component for their misunderstood animal.

*Summary:*

Share the students' creations. Explain what need they are filling.

### **Extensions:**

- Use the plans in "Creature Comforts" to build homes for toads and spiders.
- Write a story about an animal and what happens when one of its habitat components disappeared. How was its life different? How did it solve the problem?
- Pennsylvania has some of the most talented animal architects living within its borders. Investigate how they make use of natural materials and built-in tools to make their homes. Do "Paper Wasp Nest" to try your hand at it!

# There's No Place Like Home

Tell what your animal needs and where they find it.

\_\_\_\_\_ need:

Food:	Shelter:
Water:	Space (where and how much):

# Home Sweet Home

## Content Area: Active/Creative Play, Science

**Goal:** Recognizing the basic needs for life

**Objectives:**

- TSW define habitat
- TSW identify four habitat components
- TSW actively illustrate the need for these components
- TSW actively illustrate the consequences of the absence of these components

**Materials:**

- Habitat component cards, 1 set/student
- Large, open space, such as a playground or gymnasium

**Procedures:**

*Before You Start:* Make the game cards: copy the symbols for shelter, food, and water from the picture bank. Mount them on 5"x7" heavy paper or index cards. Color-code them: yellow = shelter, red = food, blue = water. You may wish to laminate them for durability.

*Anticipatory Set:*

What are some things you need to stay alive? Answers should include food, water, space (the right amount in the right places), and shelter (clothing may be considered a form of shelter). Where do you get these things? From your habitat. A habitat is where you live. Every living thing needs to have these same 4 things in their habitat.

*Development of Lesson:*

1. Pass out the component cards. Have the students become familiar with the cards.
2. Have the students count off by 4's. 1 – 3's will be the habitat. 4's will be the animals living in the environment.
3. Have the two groups stand on lines about 10 – 20 yards apart with their backs to each other.
4. Animals will select a card to represent the habitat component they are looking for – red for food, blue for water, or yellow for shelter. The environment selects a card to represent the habitat component they will provide. For the game purposes, it is assumed that there is enough space, represented by the playing field.
5. When the selection is complete, players hold their habitat component, facing out, at chest level.
6. At a given signal, the two groups turn toward each other. The animals must try to find a match for their card. **NO SWITCHING COMPONENT CARDS!!**
7. If the animals were successful, they live and reproduce, so they take the environment person with them to their line. That person is now an animal.
8. If the animals were unsuccessful, they do not survive, so they become part of the environment. They join the other team.
9. Variations: After several rounds of play, remove the yellow (shelter) cards from the environment when the animals' backs are turned. What happens when something is missing? Remove the blue (water) card from the environment. What happens if something else is missing, too?

*Summary:*

Play the game several times. Discuss what happened.

**Extensions:**

- Complete "There's No Place Like Home" to find out what their misunderstood animal needs.
- Cut pictures of food, shelter, water, and space from magazines. Use them to create a habitat component collage!

# Creature Comforts

## Content Area: Math, Art, Science

**Goal:** Recognizing and meeting the needs of animals.

### Objectives:

- TSW identify shelter as a habitat requirement
- TSW describe specific shelter needs for toads and spiders
- TSW read a flow chart for making an animal shelter.
- TSW create a shelter for toads and/or spiders

### Materials:

- Creature Comforts Flow Chart
- Sample toad/spider house
- Broken clay flower pot (1/student)
- Medium grit sandpaper
- Acrylic paints
- Paint brushes

### Procedures:

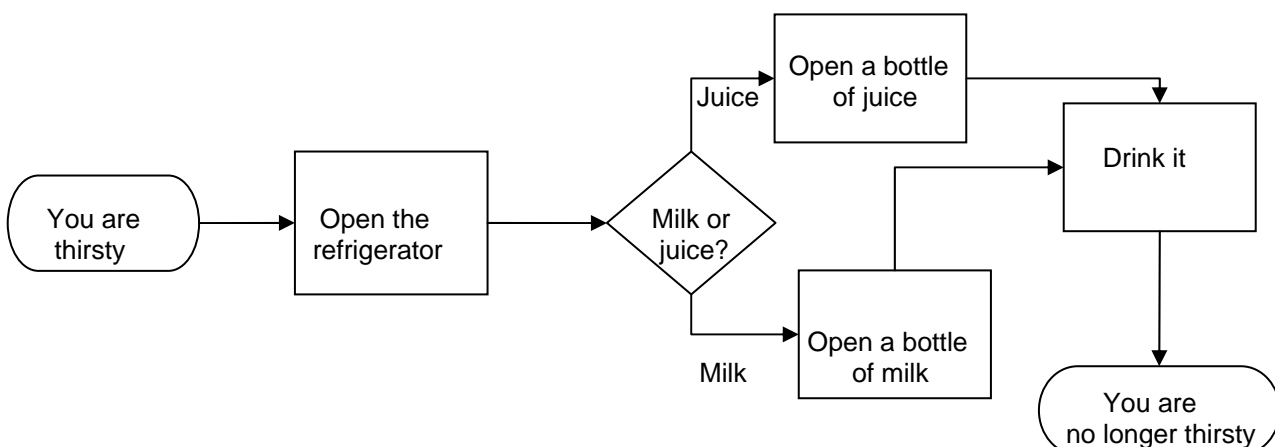
*Before You Start:* Make a sample of the toad or spider home for the students to see. If you choose to set the materials out as stations (see step 7), pre cut shapes and write out directions for each step in the flow chart.

*Anticipatory Set:*

Review the four basic habitat requirements: shelter, food, water, space (the right amount in the right place). Have the students brainstorm ways that they could provide these things. Today, they will be creating shelter for toads or spiders.

*Development of Lesson:*

1. What kind of shelters do toads or spiders need? Large or small? (small) Covered or open? (covered) Brightly lit or dim? (dim) Dry or moist? (moist) The shelter will be small, covered, dim and able to maintain moisture.
2. Show the sample house. Point out how it meets these criteria.
3. To make this, the students will follow a flow chart. If flow charts are new to them, explain that a flow chart is a special way of writing directions. Each shape holds one step of the directions. Follow the arrows to find what to do next.
4. Go over the basic shapes and what they represent: rounded box = start and finish; box = action to be taken; diamond = decisions
5. Draw a sample flow chart on the board to illustrate:



6. Give the students a copy of the Creature Comforts Flow Chart. They may work in cooperative groups, if you wish.
7. Have the necessary materials available in the room. For the youngest students, you may wish to lay the materials out in stations. Cut the flow chart shapes and arrows from construction paper. Write the steps on them and use them to create the flow chart.
8. Students follow the flow chart to create the toad/spider home.

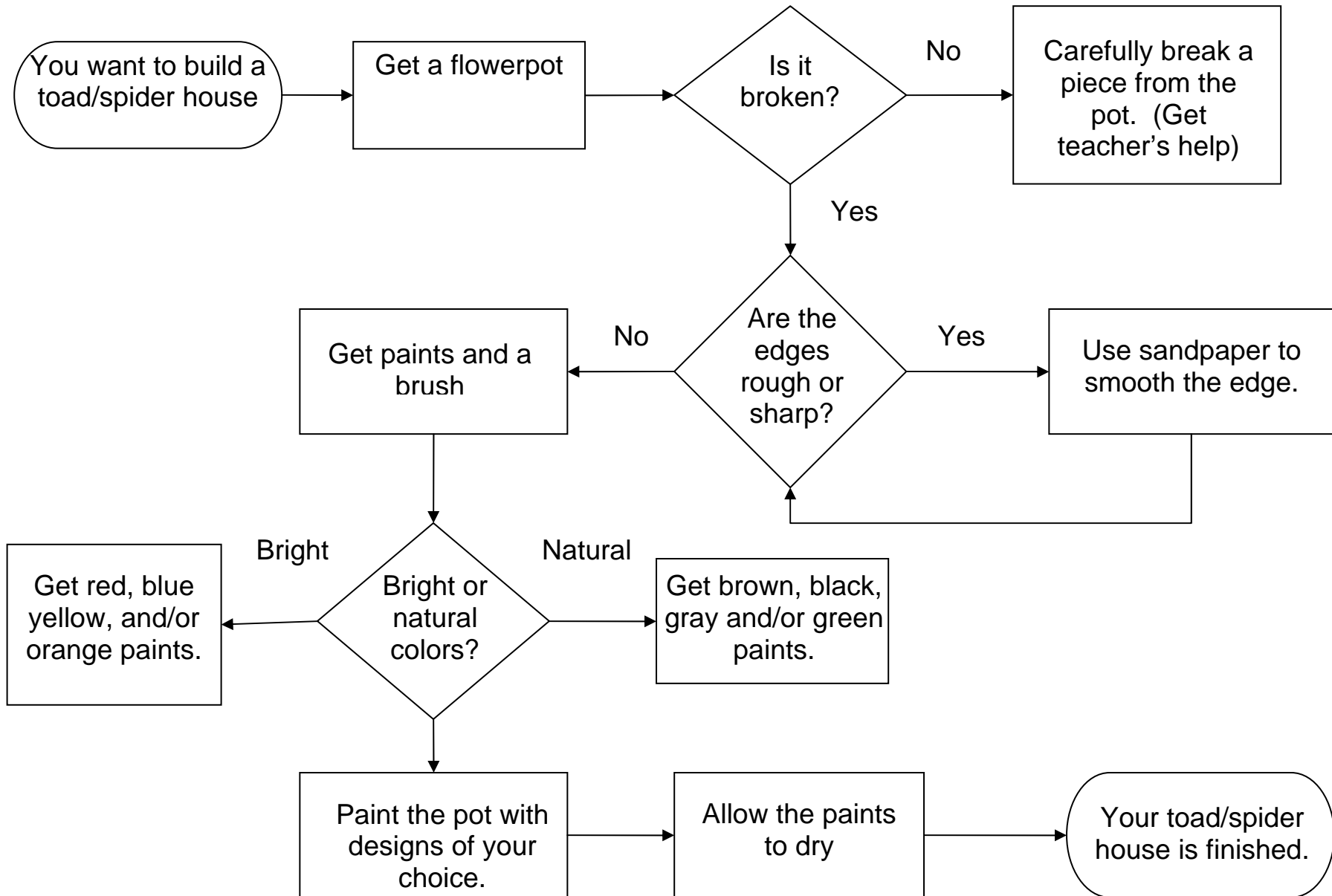
*Summary:*

How was it different following the flow chart than written or verbal instructions? Which was easier for them? Which do they prefer? Why? When might a flow chart be easier to follow?

**Extensions:**

- Use the knowledge you have gained to create flowcharts for other activities you do!
- Download plans for bat or owl boxes (see "Internet Resources"). Determine the materials needed (if not given). Estimate the cost of materials. Use tape measures and rulers to mark the cuts to be made. Build the boxes and place them on school grounds.
- Design the ultimate habitat for your animal! Include all the luxuries they could ever dream of!

## Creature Comfort Flow Chart



# Paper Wasp Nest

## Content Area: Art, Science

**Goal:** Gaining appreciation for misunderstood animals

### **Objectives:**

- TSW identify student perceptions of paper wasps
- TSW define paper wasps' niche
- TSW build a paper wasps' nest
- TSW reevaluate student perceptions of paper wasps

### **Materials:**

- Pictures of paper wasps and nests
- Real paper wasp nest (abandoned!), if available
- Medium to small balloons
- Small branches or sticks, in proportion to the balloon size
- Masking tape
- Newspaper (lots!)
- Flour and water
- Dishpans or buckets (1/table group)
- Paint smocks (old shirts buttoned up the back work well, too!)

### **Procedures:**

#### *Background Information:*

Paper wasps and hornets are social insects, living in colonies that include workers, queens and males. The colonies are not large, having at most a few dozen wasps. These colonies arise and die every year, with only a fertilized queen overwintering in a protected area. In the spring, the queen chooses a nest site. She builds a nest out of plant and wood fibers, which she mixes with her saliva and chews into a papier-mâché-like material. She uses this to make cells to hold her eggs. When the eggs hatch, the queen feeds the larvae, and covers them with silk when they form pupae. When they emerge, they are workers that continue enlarging the nest and caring for the larvae.

Although many people fear them because of their painful sting, paper wasps and hornets are extremely helpful. They prey on large numbers of corn earworms, armyworms, tobacco hornworms, etc. and hornets on house flies, blow flies, harmful caterpillars, etc., which are caught and partially chewed before feeding them to their young. Adults eat mostly nectar or the juices of ripe fruits.

*Before You Start:* Tear the newspaper into narrow strips. Mix equal parts of flour and water in the dishpans to make your slurry. It should be about the consistency of tomato soup. Adjust amounts, if necessary. If you're brave, have the kids help with this – they love it!

#### *Anticipatory Set:*

Show a picture of a paper wasp. How many of you have ever seen a paper wasp? Note student reactions. How do they feel about these animals? Why do they feel that way? Paper wasps are actually amazing animals! Share some of the facts about the paper wasps with the students. Be sure to emphasize the helpful role they play in controlling garden pests.

#### *Development of Lesson:*

1. Show the picture of the paper wasp nest. If you have access to a real one, that would be ideal! Be sure that it is uninhabited. Point out the way the nest is constructed. Paper wasps make their nests with their own special papier-mâché. Today, they get to be paper wasps! They are going to build their own nests.
2. Divide the class into table groups – paper wasps are social, after all! Cover the tables, and put on smocks, because this is going to be messy.

3. Give each student an inflated balloon and a stick. The balloon will become the wasp nest. Tape the wide end of the balloon to the stick (the knot should be at the bottom). Use several strips – it needs to be secure enough that it will not fall off during construction.
4. Give each table a dishpan of flour slurry and a pile of newspaper strips. Dip the strips in the slurry, and carefully pull between two fingers to remove the excess.
5. Wrap the strips around the balloons. Be sure to go over the area where it is connected to the stick especially well. It is ok to cover the stick for the entire width of the balloon – paper wasp nests are often built around sticks this way (it secures them well to the branch). Put on several layers. Leave a small opening at the bottom of the balloon around the knot.
6. Allow the nests to dry. The drying process may take several days, depending on the thickness of the papier-mâché.
7. When they are dry, Carefully pop the balloon. No painting is necessary – they are about the color of real paper wasp nests. You may paint them in shades of gray and tan, if you wish.
8. Display the nests in your room.

*Summary:*

What was it like building the wasp nest? Was it easy? What was challenging? Imagine building it by chewing up the paper! Discuss the students' feelings about paper wasps. Are they the same? What changed their mind?

**Extensions:**

- Try making paper wasp egg cells with paper tubes and papier-mâché. You may glue or tape the tubes together to make a form first, if you wish.
- Celebrate another amazing builder, the spider, by trying the "Spider Web Toss" (see "Games").

# Paper Wasp Pictures

## Paper Wasp



## Paper Wasp Nest



## Paper Wasp Egg Cells



## Bald Faced Hornet



## Hornet Nest



## Inside a Hornet Nest



# Seeing Is Believing

## Content Area: Science

**Goal:** Meeting the needs of misunderstood animals and other wildlife in your area.

### Objectives

- TSW describe reasons for observation
- TSW observe each other and the schoolyard
- TSW determine if the habitat needs of their selected misunderstood animals are being met in their school area
- TSW use clues to observe details in their classroom

### Materials

- Completed “There’s No Place Like Home” sheets
- Clipboards
- Pencils

### Procedures:

#### *Anticipatory Set:*

As class begins, have a colleague come in, casually talk with you for a few moments, then leave. Ask the students to identify the person. Have them answer more detailed questions such as: What were they wearing? What color were his/her shoes? Did s/he have glasses? Ask the person to return and see how accurate their recollections were. How observant were they? It is possible to look without observing.

#### *Development of Lesson:*

1. Observing is more than looking – it is careful study. Brainstorm reasons for doing observation. Observation takes practice.
2. Pair up the students in line across from one another. Tell them to really observe – look closely at each other. Notice details.
3. Have the students turn their backs to their partner and change 1-3 things about their appearance.
4. Have students identify the change(s) that occurred. Repeat this a few times to improve observation skills.
5. Distribute clipboards and completed “There’s No Place Like Home” sheets. Explain that the students will now go into the schoolyard. They see it every day, but today they are going to observe it.
6. Go into the schoolyard. Have the students look for habitat components for their misunderstood animal and check them off on their sheet as they find them.
7. Ask the students to also observe any problems for their animal (ex. Litter, no grass, no water, etc.).
8. Discuss the findings with the class.

#### *Summary:*

Do what you can to make the schoolyard more “wildlife friendly.” Get permission to put up the bat boxes, toad house, etc., that they made in “There’s No Place Like Home” or “Creature Comforts” to attract wildlife. Plant beneficial native plants. Pick up litter. Help ensure that the habitat requirements for at least some animals are there.

### Extension

- Learn to use a field guide or dichotomous key and use it to identify the plants in your schoolyard. Find the ones that are beneficial. Are there any that are harmful?
- Reinforce observation skills by playing “I Spy” (see “Games”).

# **Extra! Extra! Read All About It!**

## **Content Area: Language Arts, Science**

**Goal:** Encourage stewardship of the misunderstood animals and other local wildlife

### **Objectives**

- TSW assimilate the information acquired about their misunderstood animal
- TSW create a presentation of the facts
- TSW share what they have learned with others

### **Materials**

- TV/VCR
- Video clip from nature documentary (see “Video Resources” for ideas)
- All fact sheets
- Presentation Materials – These will vary. A possible list includes: paper, paint, scrap paper, crayons/markers, clay, magazines, video camera, etc.

### **Procedures:**

#### *Anticipatory Set:*

Show the clip from the nature documentary. This is the end result of years of study about the subject. The students have spent the past week(s) becoming experts about their misunderstood animals.

#### *Development of Lesson:*

1. Ask students: Why should you share what you’ve learned? Discuss their answers. Be sure to emphasize the importance of knowing facts to recognize the importance of these misunderstood animals.
2. Introduce different ways of sharing their information.  
A few suggestions:
  - Do a skit showing people’s reactions to the misunderstood animal. Present the real story, too.
  - Write and illustrate a story about your misunderstood animal that can be put in the school library or shared with younger students.
  - Create a commercial or advertisement for your misunderstood animal, pointing out the benefits of having them around.
  - Make a poster describing fact and fiction of your misunderstood animal. This might take the form of a “Wanted” poster.
  - Create a diorama showing the animal and its niche.
  - Write a want ad for the job and characteristics of your misunderstood animal.
  - Write a song or poem that tells about your animal’s importance.
3. Have the groups select a way to present their expertise about their animal.
4. Allow several class periods to develop their idea, create the project, practice the play, etc.

#### *Summary:*

Present the projects. Encourage active listening by asking the class to share new perspectives they have gained on these misunderstood animals from the presentations.

### **Extensions:**

- Have a celebration for the misunderstood animals of your area! Invite other classes, parents, and other members of the community. Present and display the students’ work. Play some of the games in the “Games” section. Sing some of the songs in the “Songs” section. Have some of the snacks in the “Recipes” section. Allow the students to take responsibility for as much of the celebration as possible. Enjoy!
- Have some fun by completing the Ani-Madlibs! After sharing the silly story, see if the students can fill in the blanks with the facts!

# Songs

## Content Area: Music, Science, Language Arts

Music is a great way to sharpen grammatical skills and, at the same time, present new material or check for understanding in a new and exciting way. Kids really connect with it, so it also makes a great memory tool. Not only that, it's FUN!

### 5 Creepy Creatures

(sung to "5 Little Pumpkins")

Five creepy creatures sitting on a gate,  
The brown bat said, "Oh, my, it's getting late!"  
The screech owl said, "There are vultures in  
the air."  
The rat snake said, "But we don't care!"  
The spider said, "Let's run and run and run!"  
The gray wolf said, "I'm ready for some fun!"  
Oooo-ooooo went the wind  
And OUT (clap) went the lights  
And the five creepy creatures scurried in the  
night.

### The Owl

(sung to "The Farmer in the Dell")

The owl in the woods  
The owl in the woods  
Whoo! Whoo! I hear him call  
The owl in the woods.

The owl flies at night . . .

His eyes see in the dark . . .

His talons catch his food . . .

### 5 Green Speckled Frogs

5 green and speckled frogs  
Sat on a speckled log  
Eating some most delicious bugs  
YUM! YUM!  
One jumped into the pool  
Where it was nice and cool.  
Now there are 4 green speckled frogs  
GLUB! GLUB!

4 green and speckled frogs . . .

### Little Brown Bat

(sung to "Down By the Station")

Up in the pine trees  
Early in the morning  
Little brown bats sleeping  
Hanging by their toes  
When the sun is setting  
They begin to wake up  
Rustle, rustle, flap flap!  
Out they go

Out in the forest  
Flying in the moonlight  
Little brown bats hunting  
Eating as they go  
They can steer and find food  
With echolocation  
Squeak, squeak, chomp, chomp  
Mosquitoes!

### I'm Being Swallowed by a Boa Constrictor

I'm being swallowed by a boa constrictor,  
I'm being swallowed by a boa constrictor,  
I'm being swallowed by a boa constrictor,  
And I don't like it very much.

Oh no! (echo)  
He swallowed my toe! (echo)  
Oh gee! (echo)  
He's up to my knee! (echo)  
Oh fiddle! (echo)  
He swallowed my middle! (echo)  
Oh heck! (echo)  
He's up to my neck! (echo)  
Oh dread! (echo)  
He swallowed my . . . GULP! (echo)

\*pin felt eyes and forked tongue to a collapsible  
play tunnel and use it to "swallow" willing  
children!

## **Little Skunk**

(sung to "Do Your Ears Hang Low?")

I stuck my head in a little skunk's hole  
And the little skunk said, "Well, bless my soul!  
Take it out! (clap, clap)  
Take it out! (clap, clap)  
Remove it!" (point away with thumb)

Well, I didn't take it out (shake head "no")  
And the little skunk said,  
"If you don't take it out, you'll wish you did!  
Take it out! (stomp, stomp)  
Take it out! (stomp, stomp)  
Remove it!" (point away with thumb)

Well, I didn't take it out (shake head "no")  
And the little skunk said,  
"You had better take it out – I'm getting mad!  
Take it out! (stomp, stomp and turn around)  
Take it out! (stomp, stomp and turn around)  
Remove it!" (point away with thumb)

Well, I didn't take it out (shake head "no")  
And the little skunk said,  
"SSSSSSSSSSSSSSSSSS!" (touch your toes)  
I removed it! (nod head)

Confidentially, it stinks! (hold your nose)

## **The Spider**

(sung to "My Bonnie Lies Over the Ocean")

A spider came into my bedroom  
And guess what it started to do?  
It started a web in the corner,  
And while I was watching, it grew!

More silk, more silk,  
The spider is spinning its web – more silk!  
More silk, more silk,  
The spider is spinning its web.

It started the size of a quarter,  
And now it's the size of my shoe.  
If this thing keeps getting bigger,  
I don't know what I'm going to do.

More silk . . .

The spider web filled up the corner  
And made its way over the wall.  
The web has now crawled 'cross the ceiling,  
And has started to move down the hall!

More silk . . .

My house is now wrapped up and sticky  
From basement to rooftop – oh my!  
My house is a mess, but I'm smiling.  
I'm just happy that I'm not a fly!

More silk . . .

## **Opossums**

(sung to "The Wheels on the Bus")

Opossums come out at night,  
Out at night, out at night  
Opossums come out at night  
And sleep all day.

Opossums have prehensile tails,  
Prehensile tails, prehensile tails  
Opossums have prehensile tails  
To help them climb.

Opossums have a lot of teeth,  
A lot of teeth, a lot of teeth,  
Opossums have a lot of teeth,  
52 in all.

Opossums will eat anything  
Anything, anything  
Opossums will eat anything  
They're scavengers

Opossums are marsupials  
Marsupials, marsupials  
Opossums are marsupials  
They have a pouch.

When danger comes, they run away  
Run away, run away  
When danger comes, they run away  
Or just play dead.

# Recipes

## Content Area: Math, Science

Cooking with children is a great way to introduce many basic math concepts such as comparing volume, weight and quantity. As you make these recipes with your children, have them count the ingredients, weigh them, measure them, and compare the amounts of different ingredients. You can even graph them! Basic science concepts in chemistry (dissolving = solutions, combining/mixing = compounds) and physics (states of matter: room temperature = liquid, frozen/chilled = solid, boiling = gas) may also be demonstrated. All that, plus a yummy treat to eat!

### **Slippery Snakes**

For each color snake you will need:

- 1 ½ cup apple juice
- 3-oz. package jello (yellow, red, green, or orange)
- 1 envelope unflavored gelatin
- 5 ice cubes

Directions:

1. Heat half of the apple juice in a small pan. Add flavored jello and stir until dissolved.
2. Pour the rest of the juice in a bowl, sprinkle with the unflavored gelatin, and stir.
3. Pour cool mixture over hot and add ice cubes. Stir until most of the ice is melted.
4. Refrigerate about 20 minutes until the mixture is the texture of pudding.
5. Pour half of the mixture into a self-seal sandwich bag. Seal the bag.
6. Cover the cookie sheet with foil. Cut the corner off the sandwich bag and slowly squeeze jello into 2 inch squiggles.
7. Chill 2 hours and eat!

### **Chocolate Spiders**

- 12 oz. semi-sweet chocolate chips
- 5-1/4 oz. mini marshmallows (half a bag)
- Thin licorice whips ( black, brown or purple)

Directions:

1. Melt chocolate in either microwave or double boiler until just melted. Stir until smooth.
2. Add marshmallows. Stir to coat.
3. Place by spoonfuls on waxed paper.
4. Decorate with 8 licorice "legs". Let dry. Your spiders will set much faster if put in the freezer for just a few minutes.
5. Variations: add raisins or nuts or both – even M&M's work well. Try different kinds of spider legs too. Potato Sticks or pretzel sticks. Think of even more. Be creative and have fun.
6. Makes about 16 spiders



## Fruit Bat Bars

- 2 bananas
- 1 cup chopped dried figs
- 1 cup chopped dried apricots
- 1 cup chopped, pitted dates
- 1 cup raisins
- 2 cups granola
- 1 cup chopped toasted almonds
- 2 tablespoons almond or peanut butter
- 1 cup flaked coconut

### Directions:

1. Put all ingredients in a large mixing bowl. Mix thoroughly.
2. Put the mixture in a 13 x 9 inch baking pan. Press it in evenly with a wooden spoon.
3. Cover with plastic wrap and refrigerate overnight to allow the flavors to blend.
4. Cut into squares.
5. Makes about 24.

## Frog Egg Pudding

*Put this together the morning before and enjoy it the next day!*

- 1 cup large pearl tapioca
- 3 cup brown sugar
- 4 cup water
- 1 dash salt
- 1 ½ tsp. vanilla extract
- 1 cup chopped English walnuts  
(optional: you may wish to substitute mini chips, raisins, or chopped fruit)
- Whipped cream topping
- Crock pot

### Directions:

1. Remind the students that frogs lay their eggs in ponds. Place the crock pot in the middle of the table. This your pond. Add the water.
2. Have the frogs lay their eggs! Add the tapioca pearls and let it soak overnight (8 hrs.) *\*Note: if you do this in the morning, at the end of the day you can start the cooking process.*
3. Add brown sugar and salt and cook for 12 hours on low. Stir once in a while. The tapioca becomes clear and the texture is gelatinous at the end of the cooking period.
4. Let cool. Add vanilla, a bit more salt if needed, and the walnuts (if desired).
5. Transfer to a shallow serving bowl and spread top liberally with whipped cream topping.



# Games

## Content Area: Active/Creative Play, Science

Games are a fun and active way to improve your students' gross motor skills while reinforcing scientific concepts such as predator/prey, habitat components, locomotion, and natural history.

### Psst!

*Communication, especially clear and accurate communication, is very important. Find out what happens when the lines of communication go down!*

Materials: none

Directions:

1. Have the students sit in a circle.
2. Whisper a sentence in the ear of the person on your right. Stress the importance of paying attention, because the sentence will NOT be repeated. If communication continually comes to a screeching halt because of this rule, you may wish to allow one repeat of the message.
3. They pass on what they think they heard to the person on their right. Continue until the sentence goes all the way around the circle.
4. The last person says what they thought they heard out loud. The "starter" says the original sentence. After the giggles subside, talk about what happened.

### Moving Meals

*Frogs, like most predators, eat live prey. Therefore, they don't notice prey that is still, but are quick to catch moving insects within their reach.*

Materials: none

Directions:

1. One student is the frog. The rest of the students are insects.
2. Insects line up at one end of the play area. The frog stands at the other end, about 20 feet away, with his/her back to the insects.
3. While the frog's back is turned, the insects move toward the frog.
4. The frog calls out, "1-2-3 food for me!" then turns to face the insects.
5. Any insects seen moving are lunch! To discourage running, remind the students that insects creep along. Also, if anyone is seen running while the frog is counting, they are also caught. All insects that are caught must return to the starting line and start over.
6. Insects may escape by passing the frog.

### Mouse, Mouse, Snake! (Duck, Duck, Goose)

*This can be played using any predator prey relationship!*

Materials: none

Directions:

1. Have students sit in a circle.
2. Select one to be the first mouse (it).
3. The selected student walks around the circle, gently tapping the seated students on the head and saying "mouse" or "snake."
4. When the mouse (it) says "snake," the student tapped gets up and chases the mouse (it) around the circle. The mouse (it) tries to make it around the circle to the snake's original seat without being caught.
5. If the mouse does not make it, they have been eaten, and must sit in the center of the circle (the stomach) until another mouse has been eaten.
6. The snake becomes the next mouse (it).

### **Habitat Lap Sit**

*Falling over is extremely likely, so make sure there is plenty of space between the players and walls, chairs, etc.*

Materials: none

Directions:

1. Review the 4 components of a habitat – food, water, space (the right amount in the right place), and shelter.
2. Have the students count off by 5's. 1's are food, 2's are water, 3's are shelter, 4's are space, and 5's are animals.
3. Have the students stand in a circle, facing the back of the person beside them. Have them place their hands on the shoulders of that person.
4. Slowly and carefully, sit on the lap of the person behind them. This must be done at the same time, and may require more than one attempt.
5. Once all are seated, ask one of the 4 components to leave the circle. The circle will fall apart – literally!
6. What happened to the circle? Why did it fall apart? All the parts of the habitat are important, and they all rely on one another.

### **I Spy**

Materials: none

Directions:

1. Select a student to start. That student looks around the room and selects an object in plain view.
2. The student provides a clue to the object's identity by giving one characteristic of it: "I spy with my little eye something that is \_\_\_\_\_."
3. The other students may ask "yes" or "no" questions to determine the identity of the object.
4. Whoever guesses the object selects the next one to be identified.

### **Don't Bug Me!** (Hangman)

Materials: dry erase or chalkboard, markers or chalk

Directions:

1. One student selects a word or phrase and puts enough blanks in the correct arrangement for all the letters. S/he also writes the alphabet.
2. The other students take turns selecting letters. If the letter is present in the word or phrase, it is crossed off the alphabet and written in the proper blank.
3. If the letter is not present, it is crossed off the alphabet. The head of the bug is drawn.
4. Play continues. As more incorrect letters are guessed, more bug parts are drawn: thorax, abdomen, 6 legs (one at a time), 2 wings, and 2 antennae (one at a time).
5. An attempt to guess the word or phrase may be made anytime a correct letter is guessed.
6. Whoever guesses the word or phrase is the next leader.

### **Spider Web Toss**

Materials: old sheet (or large sheet of butcher paper), Velcro (preferably self-adhesive), ping pong balls or 1 ½" pompoms

Directions:

1. This game demonstrates how insects get caught in a spider's web. You may wish to have the students participate in the construction of the web to see how a spider makes it.
2. On the sheet, construct a web out of the hook side of velcro. The self-adhesive type is ideal for this. Start with an X, then add other spokes for the web. Starting at the center, connect the spokes in an outward spiral.
3. When the web is complete, hang it on the wall.
4. Cover ping pong balls with the fuzzy side of the velcro, or use 1 ½" pompoms.
5. Have the students stand about 6 feet back from the web and toss the pompoms at the web.
6. See how many bugs your spider can catch!

## **Bat and Moth**

*Bats use echolocation to find their food and to navigate as they fly. They make very high-pitched squeaks which bounce off objects in the area. Bats hear these echoes, which tell them what is around them. It is sophisticated enough to tell not only the object's shape, size and location, but if it is hard (like a grasshopper) or soft (like a moth).*

Materials: blindfold(s)

Directions:

1. Have the students form a large circle (about 10 – 15 feet across).
2. Select one student to be the bat, and 3-5 students to be moths. Have them stand in the center of the circle. The other students are trees in the forest.
3. Blindfold the bat. The bat must try to tag the moths to catch them. Both bat and moths may move. Trees gently stop and redirect the bat back into the circle.
4. To find them, the bat calls out "bat." The moths must respond "moth." Trees must respond "tree." This represents the bat using its echolocation.
5. When the bat catches a moth, the moth joins the circle. Continue until all the moths are caught, or until a reasonable amount of time has passed. Play several times.
6. Variation 1: Have 2 bats (note: be careful they do not collide) at the same time.
7. Variation 2: Have several students represent trees inside the circle. They remain stationary as the bats and moths fly around them. If a bat hits a tree, it is out (this includes the perimeter trees).
8. Discuss what happened.

## **Coyote and Opossum**

*"Playing possum" is more than just an expression, it's a survival tactic! When confronted with a predator, opossums play dead. They fall over, legs stiff, eyes open, and tongue lolling out. They will not move, even when prodded by the predator. They even smell dead! Since most predators prefer to eat only freshly killed prey, the predator will leave the opossum, allowing it to make its escape.*

Materials: CD/Tape player, music

Directions:

1. Select one student to be the coyote.
2. Play a recording of your student's favorite dancing music.
3. Have the rest of the students pretend to be opossums, moving to the music.
4. The person who is the coyote will turn off the music for the opossums to freeze in their dancing positions.
5. While the music is off, the coyote then tries to make the opossums move or laugh. If the opossum does, he/she will be out.
6. The last opossum left will be the next coyote.

## Crafts

### Content Area: Art, Science, Math

Crafts are a fun way to improve your students' fine motor skills, matching, and counting. They also give you the opportunity to review the different forms and functions of each part of the animal. Each of these crafts uses a pattern for at least one portion of the craft. They can be found following the instructions.

#### **Spider Hat**

##### Materials:

- 4"x 24" strips of brown, black, or gray construction paper (1/student)
- 1" x 24" strips of brown, black, or gray construction paper (8/student)
- 2½" yellow or white construction paper circles (2/student)
- 1" yellow or white construction paper circles (6/student)
- 1" yellow or white construction paper triangles (2/student)
- Glue
- Stapler

##### Directions:

1. Draw eyeballs on circles. Glue the large eyes and fangs in the center of the 4" strip.
2. Glue one set of small eyes to the outside and slightly below the large eyes. Glue the other eyes anywhere in the center section of the band.
3. Fit to student's head.
4. Accordion fold legs and staple to the inside top edge of the body, 4 on each side. They should dangle over.

#### **Owl-Oculars**

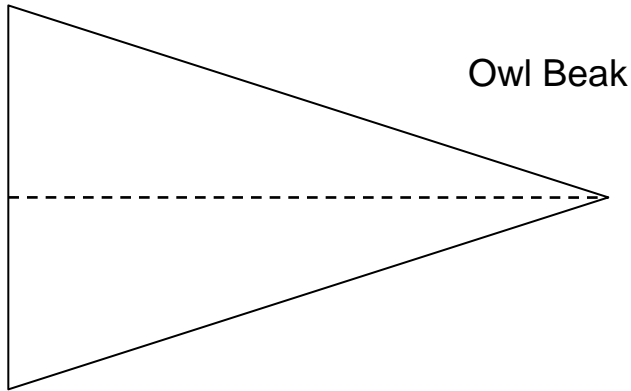
##### Materials:

- Paper towel tubes, cut into 2" sections (2/student)
- Yarn, cut in 2' pieces (1/student)
- Orange construction paper beaks (1/student)
- Brown, gray, black and/or white craft feathers
- Stapler
- Hole punch
- Glue

##### Directions:

1. Place the tubes side by side and staple them together. Use 3 staples to make them secure.
2. Punch a hole ½" in from the end on the outside of each tube. Tie one end of the yarn in each hole. These are the eyes.
3. Fold the beak lengthwise (shown by the dotted line) and glue to the underside of the eyes, fitting the fold into the crease. Use your fingers to curve the end of the beak down.
4. Glue some feathers to the top of the eyes.

5. Glue one feather upright on each side to make ear tufts.
6. Wear your owl-oculars with pride!

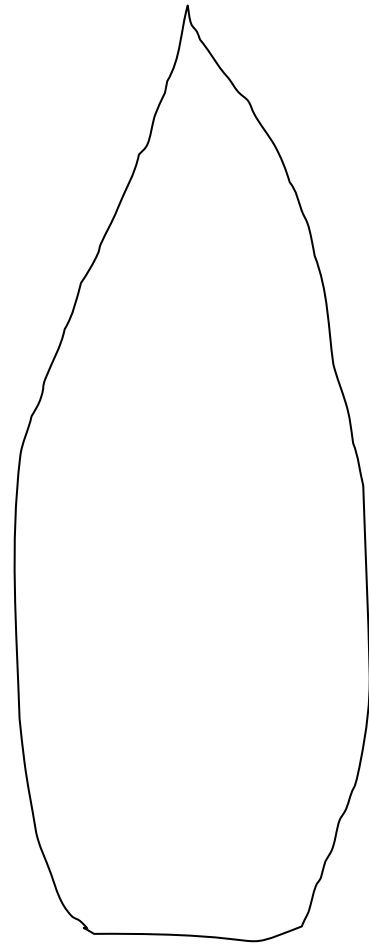


### Howling Wolf Paper Keeper

#### Materials:

- Cereal box (1/student)
- Brown construction paper tails (1/student)
- Brown construction paper
- Ruler
- Scissors
- Glue
- Crayons/markers

Wolf Tail



#### Directions:

1. Make a mark on one edge of the cereal box 3 inches up from the bottom corner. Draw a diagonal from the top corner to the mark. Repeat on the other side. Connect the marks across the narrow side.
2. Cut along the lines. Remove any flaps remaining on the top of the box.
3. Cut the construction paper to fit the box. Glue to the outside surface. \*Note: you do not need to cover the bottom of the box.
4. Draw a nose and eye at the top corner of the box. This is the wolf's head.
5. Cut triangles from scrap paper for ears. Glue them to the head.
6. Glue the tail to the short side of the box. Fringe cut the edges, if you wish.
7. Put your papers inside to keep your desk tidy!

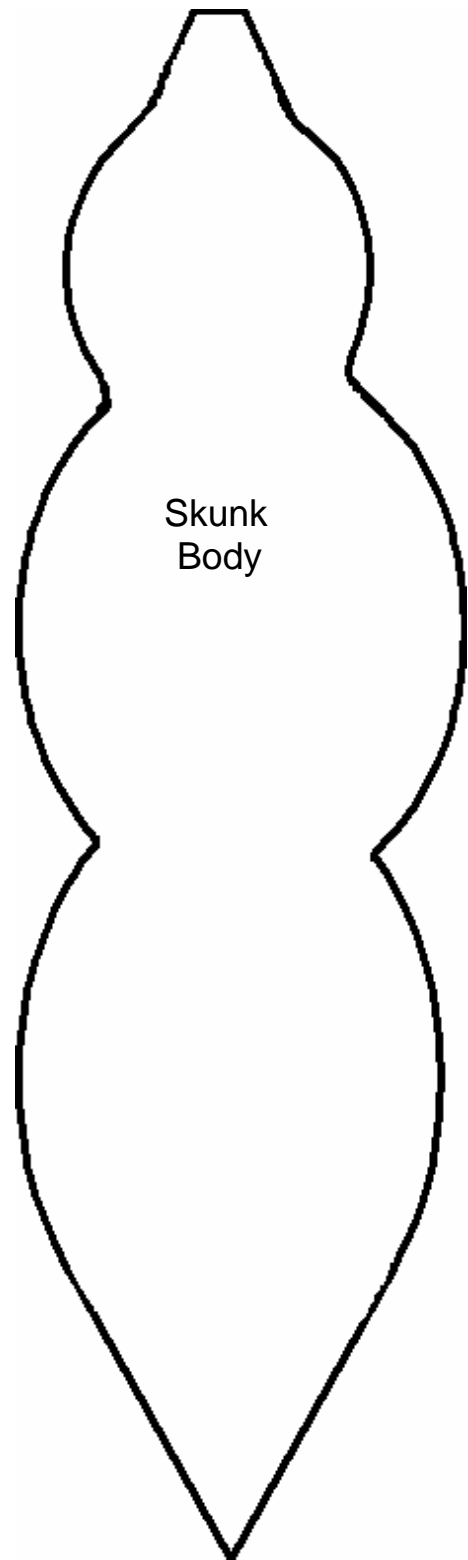
## Spraying Skunk Puppet

### Materials:

- 12"x 4" strip black construction paper
- Skunk body, cut from black construction paper
- 4 legs, cut from black construction paper
- Pink hole punches
- Small google eyes
- Glue
- 18" yarn (black or white)
- Hole punch
- Stapler
- White tempera paint or chalk

### Directions:

1. Punch a hole in the head and tail of the skunk body.
2. Glue the legs to the underside of the body.
3. Glue the body to the center of the black paper strip.
4. Fold the tail up where it meets the body. Unfold again.
5. Paint or draw with chalk two stripes on the back and tail of the skunk's body.
6. Glue eyes and a nose on the head.
7. Roll the black paper strip into a tube and secure with staples.
8. Tie a large knot in one end of the yarn. Thread it up through the hole punch in the tail, across the back, and down through the hole punch in the head.
9. Put your hand through the tube under the body. Pull the string to make your skunk spray!



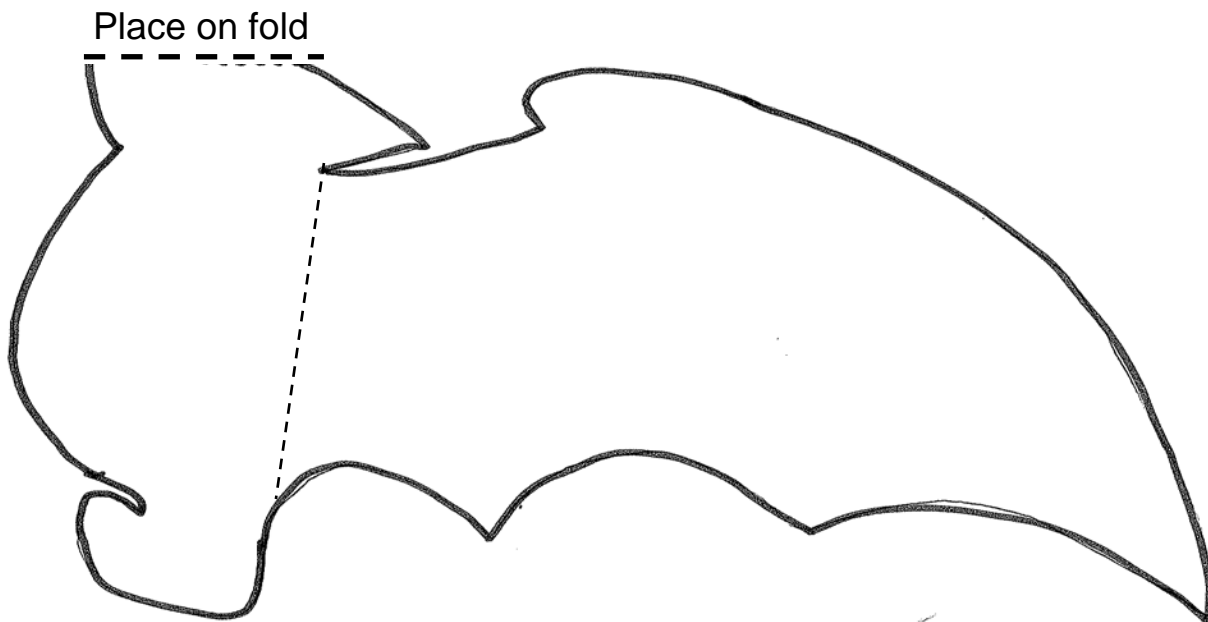
## Little Brown Bat

### Materials:

- Brown construction paper
- Bat pattern
- Glue
- Craft sticks
- Crayons/markers

### Directions:

1. Fold a piece of construction paper in half. Trace and cut the bat pattern out of brown paper, placing along the fold as shown. The pattern is life sized. (Little brown bats are about 4 inches long and have a wingspan of about 10inches.)
2. Unfold the body. Put glue on the body, but not the wing.
3. Put the craft stick against the fold. Allow 2-3" to stick out. Fold to glue shut.
4. Fold wings down (shown by dotted line).
5. Add a face and fingers with crayons or markers.
6. Bob your bat up and down to make it fly!



## Frog and Lily Pad

### Materials:

- Origami frog directions – choose the one appropriate to your students' skill level:
  - <http://www.frogsonice.com/froggy/origami/index.shtml> - easiest
  - [http://www.seagrant.wisc.edu/Frogs/origami\\_instr.html](http://www.seagrant.wisc.edu/Frogs/origami_instr.html) - medium difficulty
  - <http://web-jpn.org/kidsweb/virtual/origami2/frog.html> - most challenging
- Heavy green paper (for easy/medium frogs) or origami paper (hard)
- Green construction paper for lily pads
- 5 oz. unwaxed paper cups (1/lily pad)
- Small pompoms
- Markers and/or crayons
- Glue
- Scissors

### Directions:

1. Fold frog according to directions.
2. Cut lily pad shape from green paper.
3. Cut slits halfway down the paper cup all the way around to make petals. Cuts made close together will give you narrow petals. Widely spaced cuts give you large petals.
4. Fold the petals down and color with markers.
5. Glue a pompom in the middle of the flower.
6. Glue the flower to the lily pad.
7. Try to make your frog jump into the flower!

## Picture Bank Activities

### **Animal Bingo – Content Area: Science**

1. Give each student a copy of the blank bingo card and picture bank page.
2. Allow them to choose and cut out (coloring is optional) nine animals and glue them in the spaces. \*Note: if you have made animal cards for other games, they may use these and change the arrangement on their cards each game, if desired.
3. Call out the animals by name or give simple clues for the students to guess which animal you are describing.

### **Card Games – Content Area: Math**

Make cards by cutting out the animal pictures, mounting them individually on 3”x5” cards and laminating them for durability.

#### **A. Concentration (2 sets of cards)**

1. Divide the class into small groups.
2. Shuffle the cards and spread them out, face down, on the table.
3. The first player turns over any two cards. If they match, they keep the pair. If they do not, they turn them face down again. It is now the next player’s turn.
4. Play continues until all matches are made.
5. The player with the most matches wins.

#### **B. Go Fish (2 sets of cards)**

1. Divide the class into groups of 2 or 3 players.
2. Shuffle the cards. Deal 5 cards to each player. Any left over go into a draw pile.
3. The first player asks one of the other players, “Do you have any \_\_\_?” The player may only ask for a card that s/he has in his/her hand.
4. If the player has the card, they must give it to the first player. If they do not, they respond “Go fish!” and the player draws a card from the pile.
5. The first player puts down any matches s/he has. It is now the next player’s turn.
6. Play continues until someone runs out of cards. The first one to do so is the winner.

### **Action Art – Content Area: Art, Science, Social Studies**

Using animals from the picture banks and other conservation images, have the students create posters, buttons, bumper stickers, etc. to promote the awareness of wildlife and the importance of preserving wild spaces.

### **Habitat Scenes – Content Area: Art, Science**

Have the students draw the habitat of an animal from the picture bank, then color, cut out, and glue that animal or animals from the picture bank to include in their habitat scene. You may also wish to enlarge the pictures to life size using a wall projector. Students can color or paint the animals, and use them to decorate the classroom.

# ZOO BINGO


Picture Bank

Snake



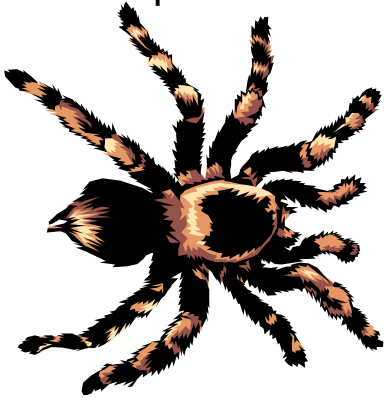
Frog



Wolf



Spider



Owl



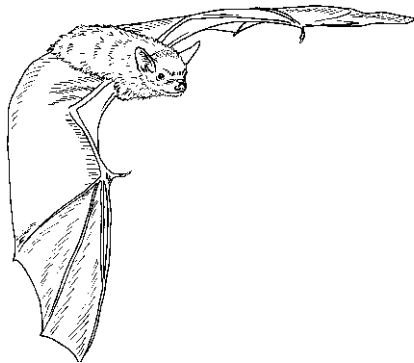
Cockroach



Skunk



Bat



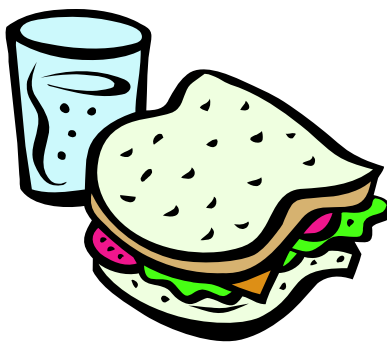
Opossum



Shelter



Food



Water

