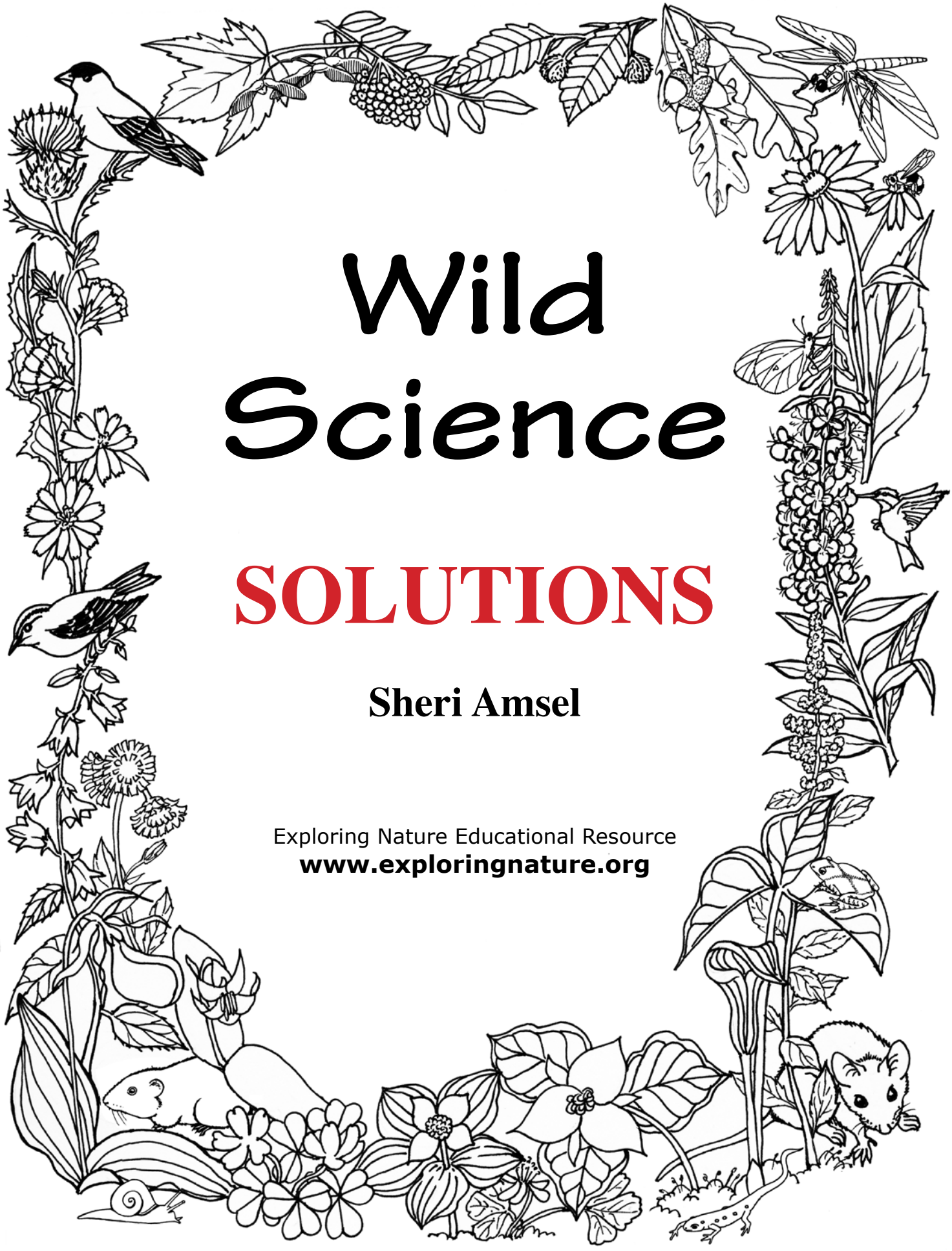


Wild Science

SOLUTIONS

Sheri Amsel

Exploring Nature Educational Resource
www.exploringnature.org

Reaction Quiz

Amphibians – ***Class Amphibia***

Amphibians are in a group – or *Class* – of animals that are vertebrates, which means they have a **backbone**. They include **frogs**, toads, **salamanders**, and newts. Amphibians lay their eggs in the water in lakes and ponds after the ice melts. The babies will hatch out and begin to grow and develop. At this stage they take in oxygen through **gills**. As they grow, their bodies change to suit life on land, though most amphibians are never far from a wetland environment. They develop legs and **lungs**. Even amphibians that spend much of their adult lives on land, like the **toad**, will return to the water to mate and lay eggs. Amphibian eggs are soft and jelly-like and very fragile. They cannot survive outside of their wet environment.

Amphibians are **cold**-blooded and will spend the winter months sleeping in a hibernation state called **topor**. When the days grow short, they will bury themselves in the mud at the bottom of their pond or lake. All winter, they will sleep and take in the **oxygen** they need from the water through their skin. Some land dwelling amphibians, like spring peepers, tree frogs and wood frogs spend the winter under the dead leaves on the forest floor. The **snow** cover helps keep them warmer. These animals may also go through chemical changes to keep their bodies from freezing, where their **blood** converts chemically to resemble anti-freeze!

Because amphibians spend so much of their time in wet habitats they are very sensitive to environmental threats like **acid** rain and water pollution. Even small changes in the **pH** (acidity) of their lakes and ponds can affect how many eggs will hatch and survive. In some of their habitats, amphibian populations have dropped dramatically.

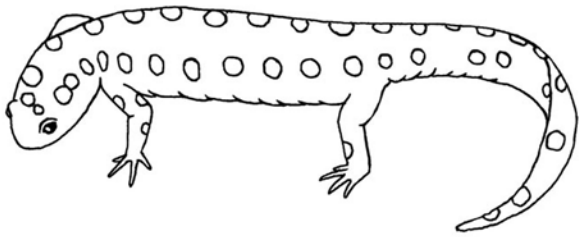
Vocabulary Choices:

acid	oxygen
backbone	pH
blood	salamanders
cold	snow
frogs	toad
gills	torpor
lungs	

Unscramble the Names of These Common Amphibians

T O A D

D O T A

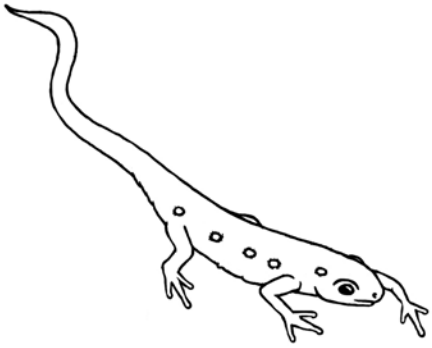


S A L A M A N D E R

M A N R E A L S A D

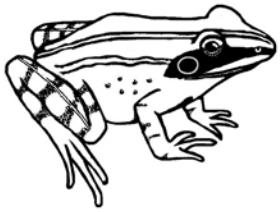
B U L L F R O G

B L O G R U L F



N E W T

W E N T

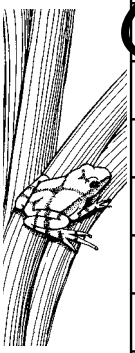


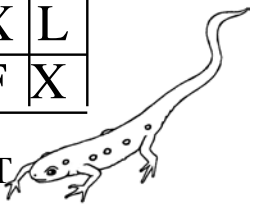
R O O F D O W G

R E P P E E

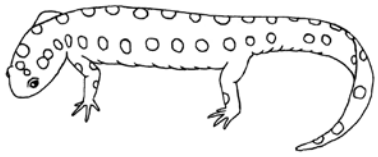
Find and Circle the Amphibians


R	N	D	A	T	X	N	W	Y	R	J	G	S	T	H	P	N	E	W	T
M	E	O	A	X	V	A	C	N	W	N	O	P	L	I	Z	U	D	A	X
B	I	D	X	C	T	T	Y	Q	U	Y	R	B	C	P	I	B	P	P	V
I	U	T	N	E	T	P	T	M	B	O	F	K	G	Y	D	J	F	C	P
D	N	L	R	A	K	N	R	E	P	E	E	P	G	N	I	R	P	S	G
V	U	D	L	M	M	L	A	T	N	R	E	T	C	W	Y	Z	W	X	O
A	O	S	H	F	P	A	L	C	E	D	R	B	A	O	P	C	O	Q	R
G	N	X	K	Z	R	T	L	L	I	Y	T	U	K	O	P	L	F	B	F
I	P	I	F	Y	B	O	F	A	W	R	D	R	B	D	U	J	G	E	D
C	C	R	T	K	S	R	G	C	S	G	E	E	L	F	P	F	R	Q	R
Z	E	E	T	A	O	A	X	S	O	D	Y	M	R	R	D	A	A	V	A
A	B	K	M	G	S	X	L	R	V	C	E	T	A	O	U	H	Y	H	P
Z	P	P	J	B	P	N	F	A	T	E	D	T	S	G	M	S	T	C	O
C	E	P	S	V	T	N	E	Z	M	H	E	X	T	D	E	C	R	M	E
P	N	G	B	C	E	L	F	Y	K	A	R	D	U	O	T	Q	E	L	L
W	B	Q	G	E	D	S	P	Q	O	V	N	H	Q	F	P	N	E	L	L
U	P	R	R	A	M	U	I	H	P	M	A	D	E	G	Y	S	F	R	G
T	I	G	E	R	S	A	L	A	M	A	N	D	E	R	O	D	R	U	W
S	P	A	D	E	F	O	O	T	B	X	E	V	B	R	W	P	O	X	L
B	F	M	T	C	F	I	T	S	X	R	B	T	Q	R	O	Y	G	F	X





√AMERICAN TOAD
√AMPHIUMA
√BULLFROG
√DUSKY SALAMANDER
√ENSATINA
√GRAY TREE FROG
√GREEN FROG
√LEOPARD FROG
√MUDPUPPY
√NEWT
√PICKEREL FROG
√RED EFT
√RED EYED TREE FROG
√SPADE FOOT
√SPOTTED SALAMANDER
√SPRING PEEPER
√TIGER SALAMANDER
√WATER DOG
√WOOD FROG


Practice Habitat Survey - Wetland

Look over the wetland illustration on the next page and list all the species you can find. Break them down by group, if you can (e.g. amphibians, reptiles, fish, birds, insects, mammals, plants, etc.) or just list them.

Age: 3-8th grade

Age: 3-5th grade list

List of living things:

frogs

fish

dragonflies

raccoon

beaver

turtles

lily pads

waterbugs

frog eggs

Non-living things:

sticks

logs

rocks

water

Age: 6-8th grade list

List of things broken down by group (Class):

Amphibians - bullfrog,
frog (green?),
spring peeper,
frog eggs

Insects - damselfly,
dragonflies,
backswimmers

Reptiles - painted turtle

Mammals - beaver,
raccoon

Fish - fish

Plants - cattails,
pond lilies

Abiotic things:

rocks, sand, water, air

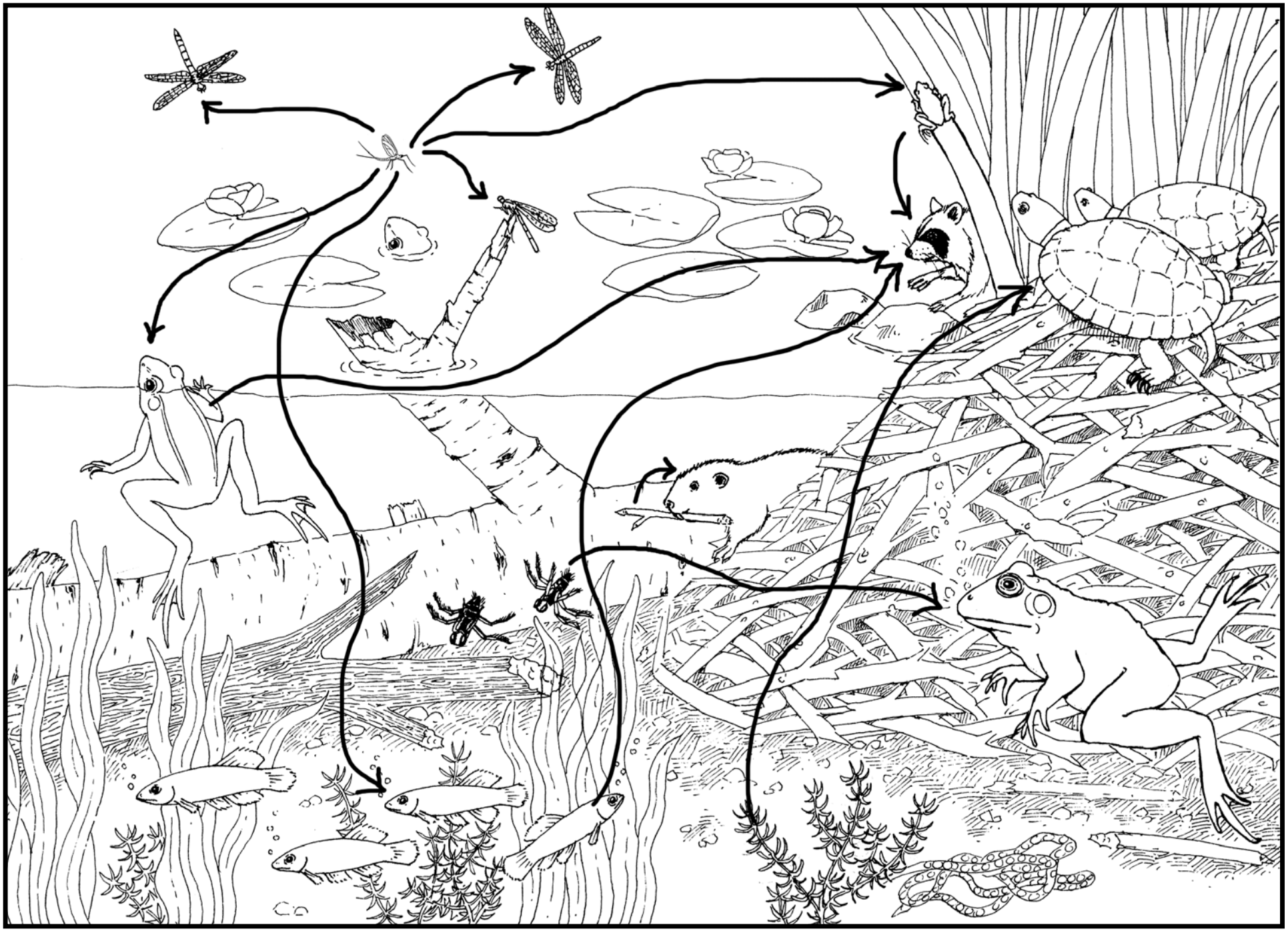
sticks and logs (organic matter, but non-living)

Follow Up:

1. Can you see any animal signs (things made by an animal)? beaver lodge

2. From the species in this picture, can you see what might form a food web (animals eating plants or other animals)? Make the drawing into a foodweb by drawing arrows to the animals from their food source (plant or animal).

Practice Species Survey and Wetland Coloring Page

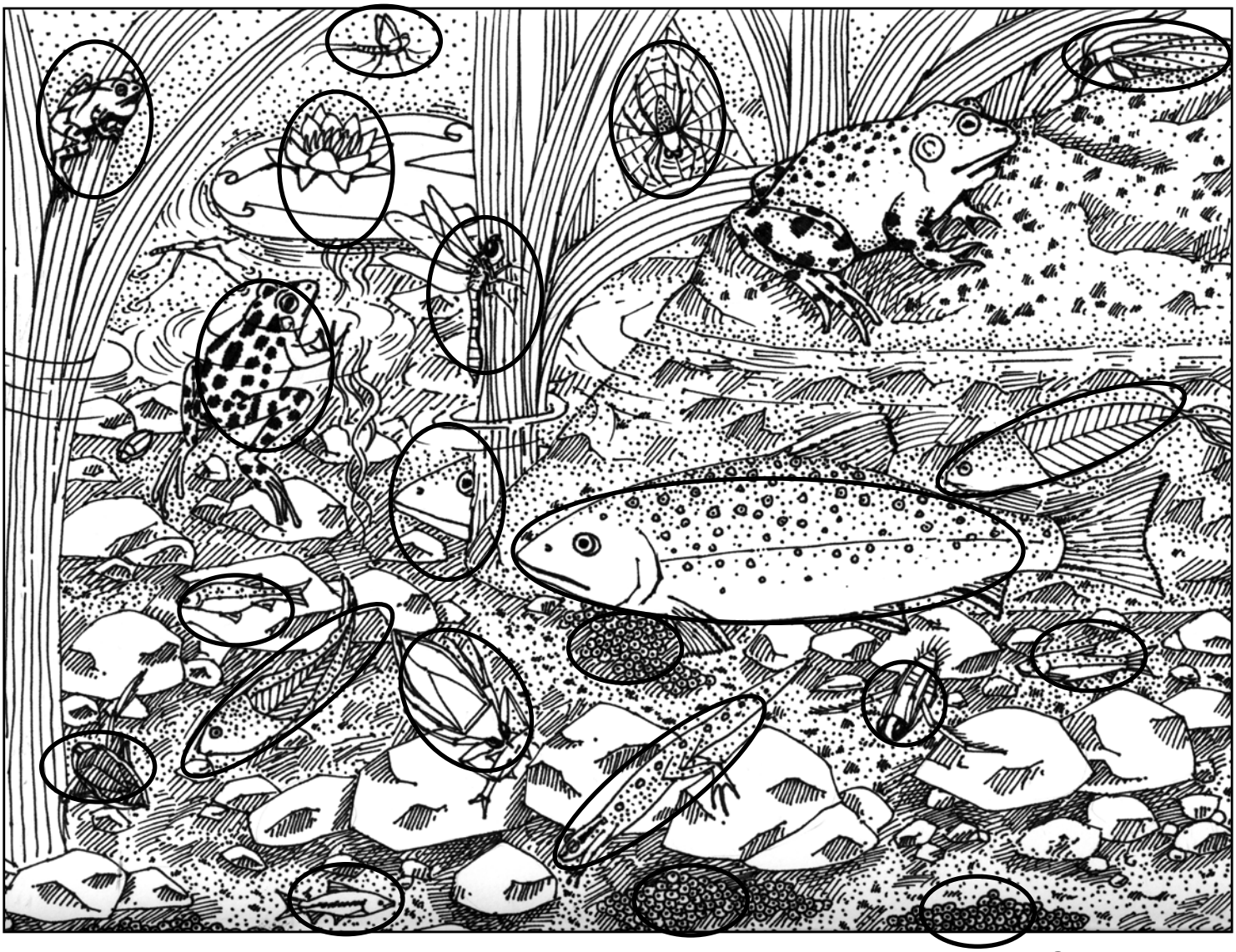


Hidden Habitat - Wetland Search

Wetlands provide important habitat for amphibians, reptiles, fish, birds, insects and other animals. Search this wetland to find the hidden wildlife there. Circle or color what you can find from the list below and then match the animals to their foods. Not all the things on the right are edible, but many animals (on the left) share the same foods (on the right).

leopard frog
bullfrog
dobsonfly
dragonfly
giant waterbug
salamander
spider
2 trout
spring peeper
backswimmer
water strider

lily pad
cattails
mayfly
4 minnows
3 egg batches
2 tadpoles
water boatman



Reaction Quiz

Birds – *Class Aves*

Birds are in a group – or *Class* – of animals called ***Aves***. They are vertebrates, which means they have a _backbone_. Like mammals, they are _warm_ blooded and most take care of their young, feeding them until they are old enough to find their own food. They do not have live young, like mammals, but lay _eggs_. Most birds build some kind of _nest_ in which their eggs are laid and young raised. They have _feathers_ instead of hair or fur and are the only animal group that has them. They have beaks or bills instead of _teeth_, two feet and two wings instead of front limbs. They have good eyesight and can see colors. Most birds can fly. They have _hollow_ bones to make their skeleton lighter and large chest muscles for flight. Birds can survive cold temperatures because they have an underlying layer of down feathers that act as thermal insulation, like wearing a down jacket. Male birds are often (but not always) much more brightly colored than females. This is called *sexual dimorphism*. Females are often dull colored as _camoflage_ to blend while nesting. Some birds eat meat, like rodents, fish, other birds or carrion (dead animals). Some eat seeds or plants. Many birds travel to a cooler climates for reproducing and summer feeding, then return to a warmer climate for the winter. Moving from place to place like this is called _migration_. Birds sing to attract a _mate_ or mark a territory. Not all birds can fly. Flightless birds include the _ostrich_, emu, rhea, cassowary, kiwi, penguins, and others. Flightless birds nest on the ground. They have developed other ways of defending themselves from predators. Some are fast _runners_. Some are fast swimmers. Some can kick. Some live on Islands where there are no predators, so they don't need to fly. Birds are well _adapted_ for their habitats.

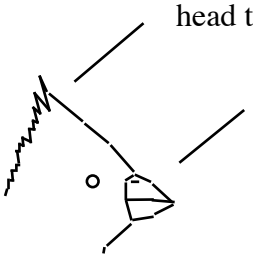
Vocabulary Choices:

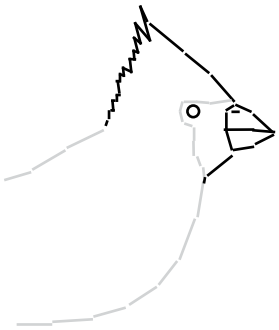
adapted	migration
backbone	nest
camouflage	ostrich
eggs	runners
feathers	teeth
hollow	warm
mate	

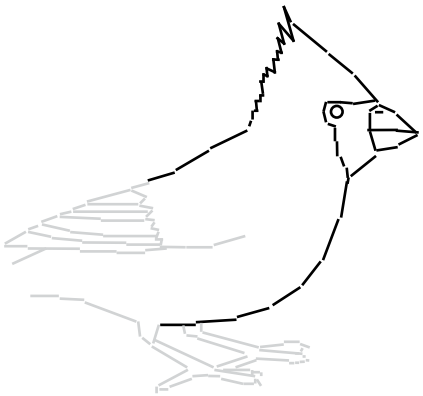
To find more information, pictures and diagrams of specific birds, go to:
www.exploringnature.org/db/main_index.php > Birds

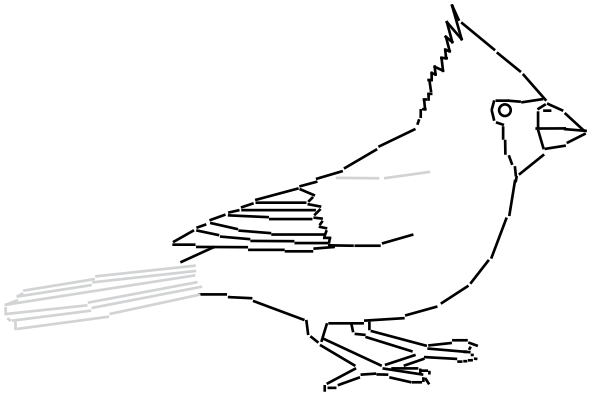
Draw and Name the Parts of a Bird

Knowing these will help with bird identification, as students use field guides to identify birds.

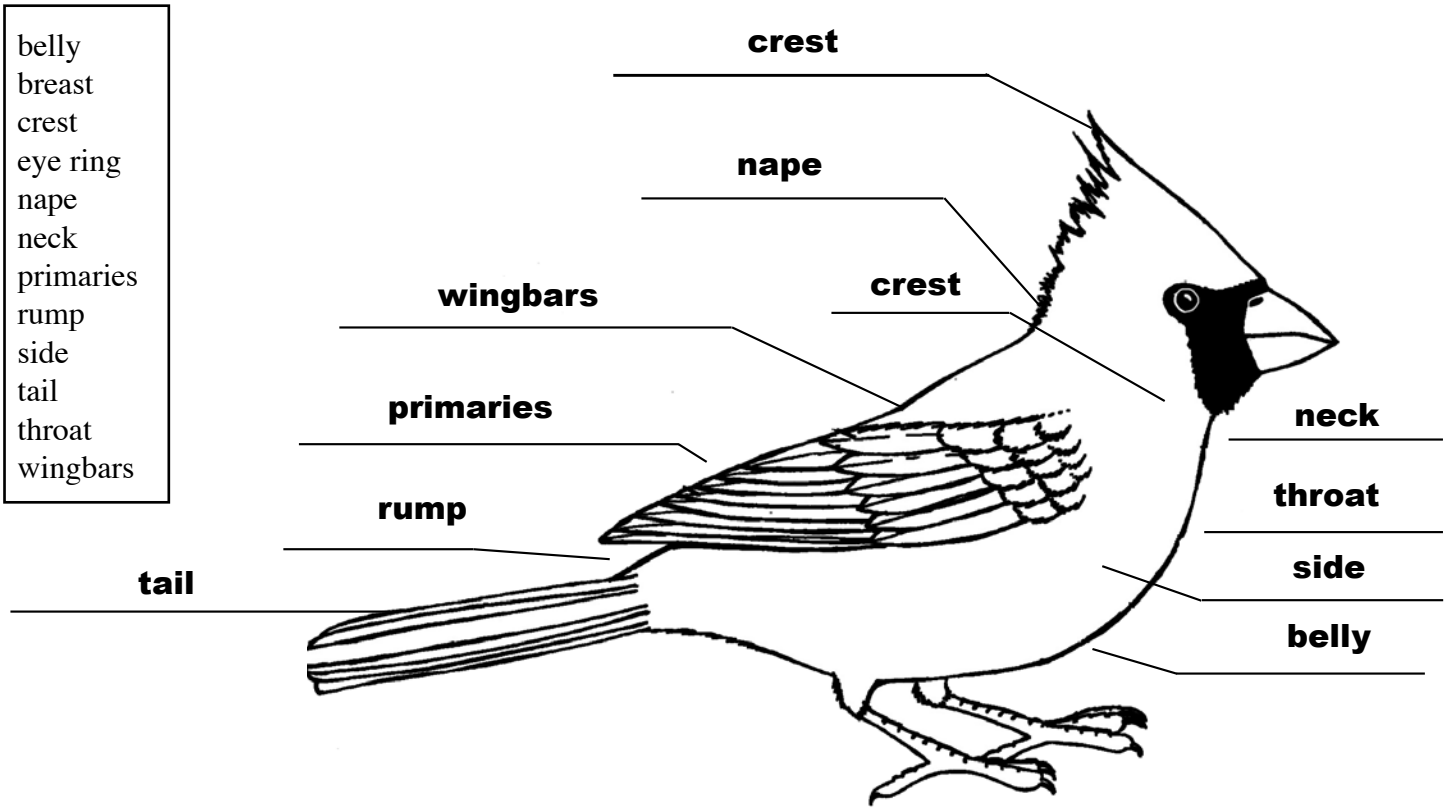




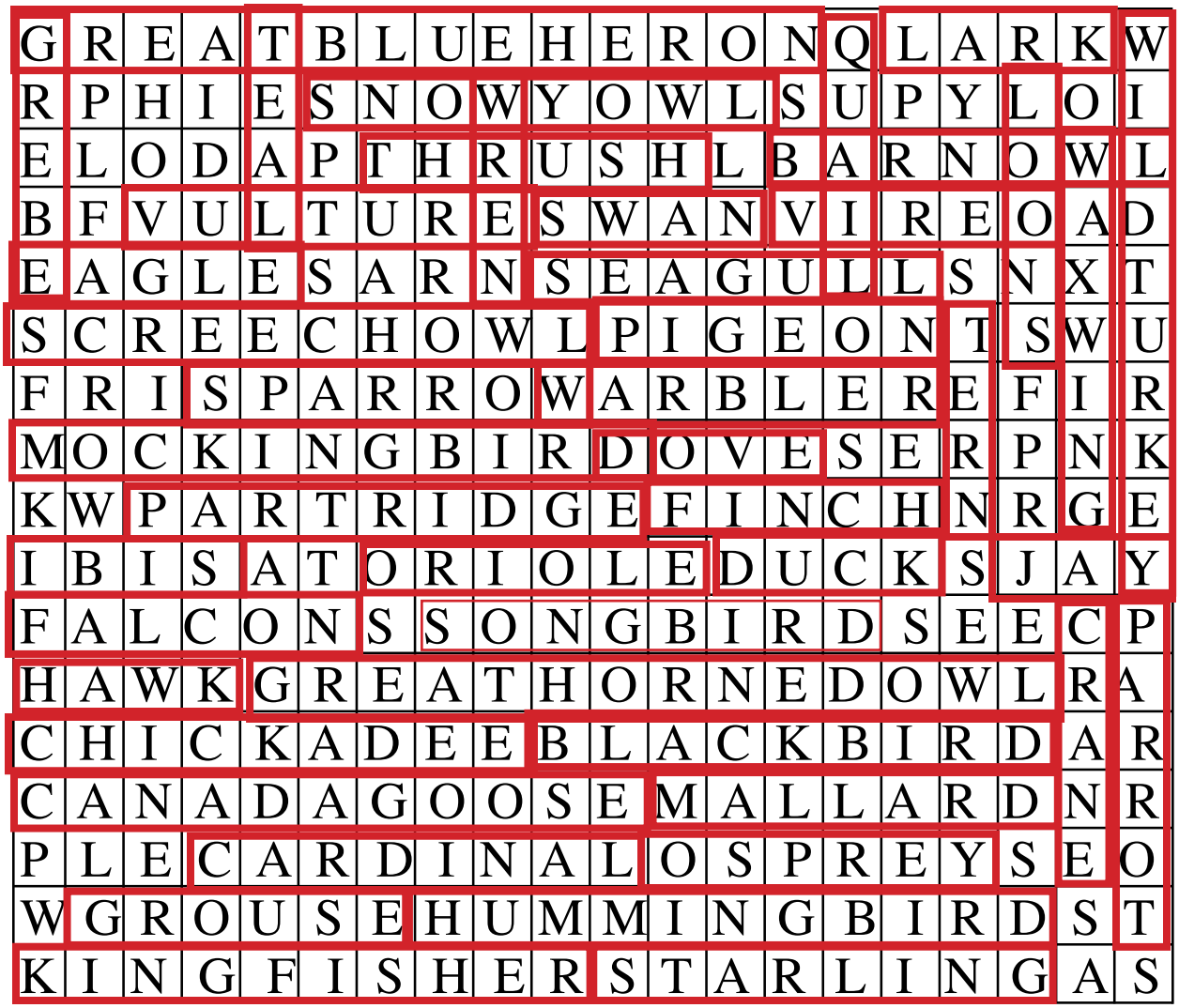




belly
breast
crest
eye ring
nape
neck
primaries
rump
side
tail
throat
wingbars



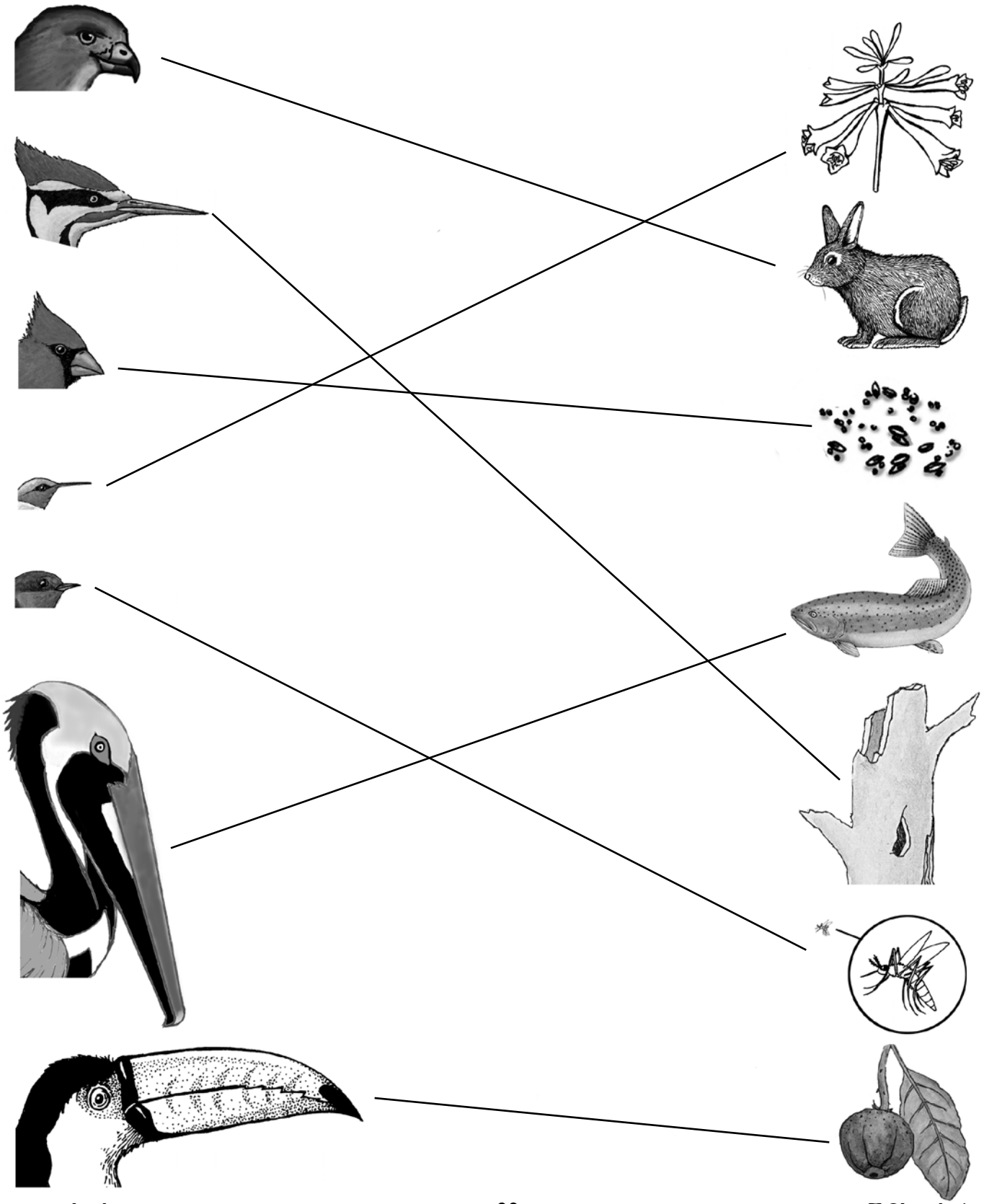
Find and Circle the Birds



√BARN OWL
√BLACKBIRD
√CANADA GOOSE
√CARDINAL
√CHICKADEE
√CRANE
√EAGLE
√DOVE
√FALCON
√FINCH
√GREAT BLUE HERON
√GREAT HORNED OWL
√GREBE
√GROUSE
√HAWK
√HUMMINGBIRD
√IBIS
√JAY
√KINGFISHER
√LARK
√MALLARD
√MOCKINGBIRD
√LOONS
√ORIOLE
√OSPREY
√PARROT
√PARTRIDGE
√PIGEON
√QUAIL
√SCREECH OWL
√SEAGULL
√SNOWY OWL
√SPARROW
√STARLING
√SWAN
√TEAL
√TERN
√THRUSH
√VIREO
√VULTURES
√WARBLER
√WAXWING
√WILD TURKEY
√WREN

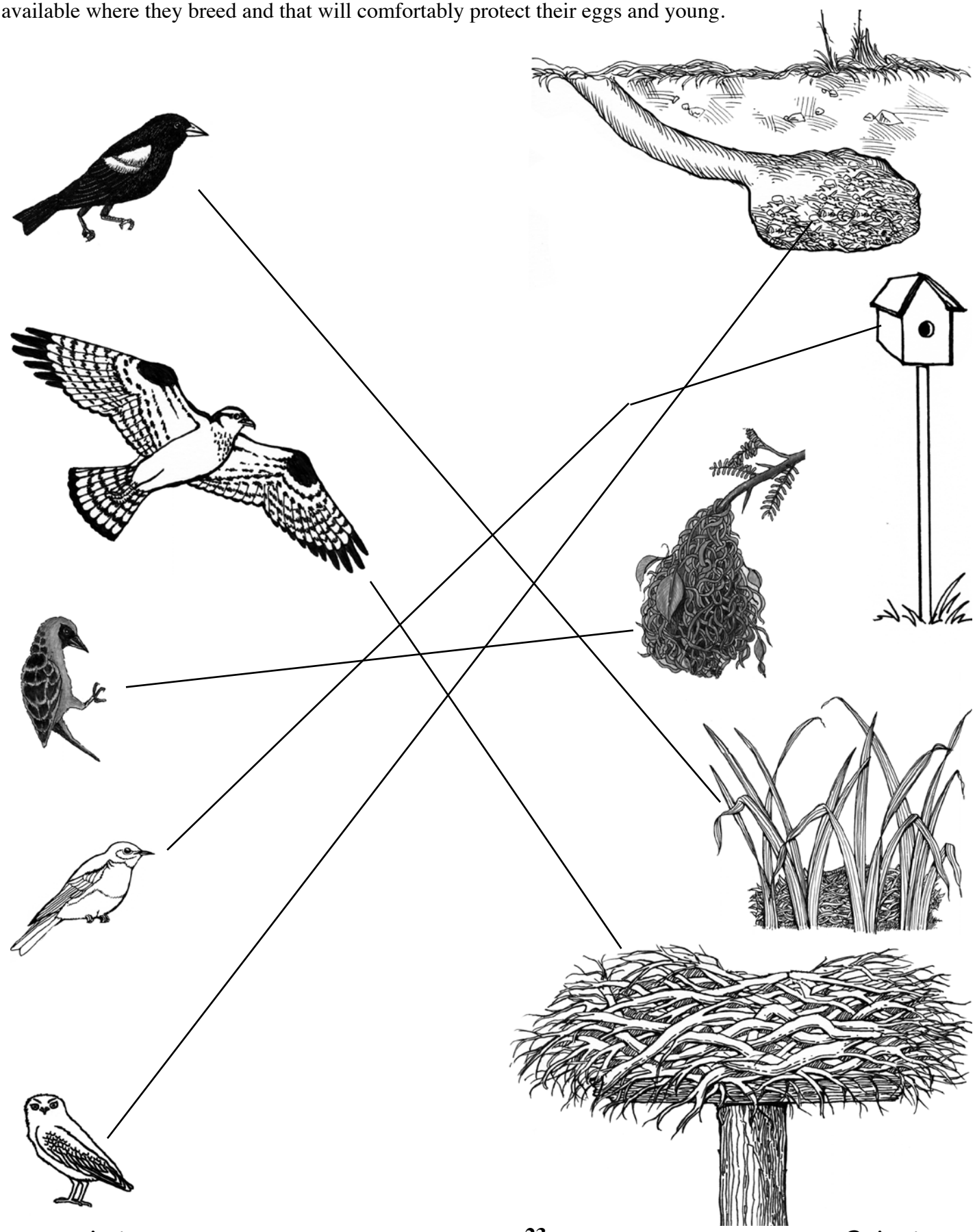
Match the Birds to the Foods They Eat

Birds eat all kinds of foods from seeds, fruit, and insects to meat. They are physically adapted to the foods they eat. This means that their beak is the right size, shape and strength for their diet. It's structure matches its function. Match the birds' beaks to the right food for which it's structure is adapted.

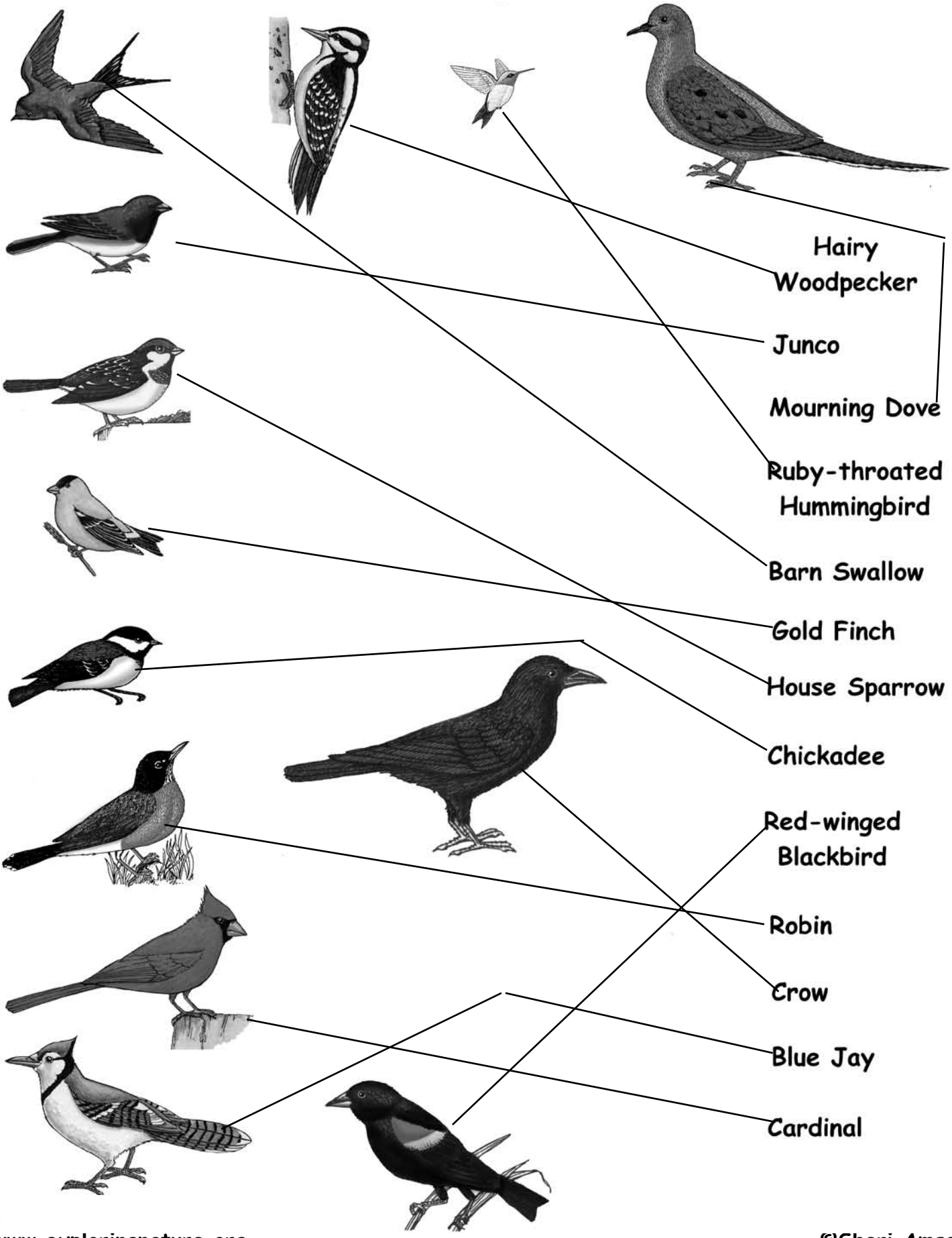


Match the Birds To Their Nests

Birds build nests that suit their habitat and reproductive needs. This means they use the materials that are available where they breed and that will comfortably protect their eggs and young.



Match these Common Songbirds to their Names



Reaction Quiz Page

Insects – ***Class Insecta***

Insects are in a group – or *Class* – of animals called ***Insecta***. They are invertebrates, which means they do not have a _____**backbone**_____. Instead they have a hard outer shell, called an _**exoskeleton**_____. The insect Class has more than 30 *Orders* of insects, including beetles, bees, butterflies, dragonflies, grasshoppers and many more. All insects have certain traits in common. They have three body parts – a head, thorax and _____**abdomen**_____ They have a pair of antennae, two pairs of wings and three pairs of _____**legs**_____. They often have large, compound _____**eyes**_____.

Insects grow up in one of two ways. Some undergo *incomplete metamorphosis*. This means that when they hatch, they look like miniature adults, called *nymphs*. As they grow, they shed their hard outer layer – their exoskeleton. Each new size is called an _____**instar**_____. Insects like grasshoppers grow this way.

Most insects, however, go through a *complete metamorphosis*. This is when the new hatchlings, called _____**larvae**_____, look completely different from the adults. The larvae feed until they reach a certain size and then form a protective cocoon or _____**chrysalis**_____. Inside they pupate and their body breaks down and changes into their adult form. Insects like moths and _____**butterflies**_____ grow this way.

Though many insects are pests, carry diseases, and eat trees and agricultural crops, they also play important roles we cannot live without. For instance, insects are the main pollinators of plants. Without them we would have no apples, oranges and other fruits. They also are important decomposers of waste. Imagine a world where our waste did not decompose over time. And insects also produce things like honey, wax and silk.

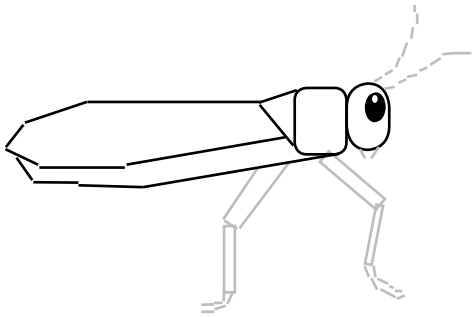
To find more information, pictures and diagrams of specific insects, go to:
www.exploringnature.org/db/main_index.php > Insects

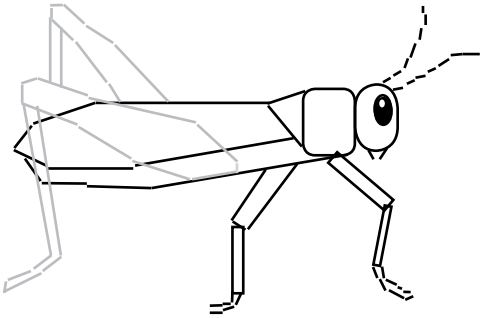
Vocabulary Choices:

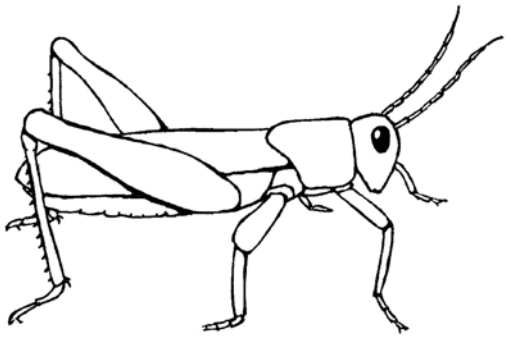
abdomen	instar
backbone	larva
butterflies	legs
exoskeleton	
eyes	

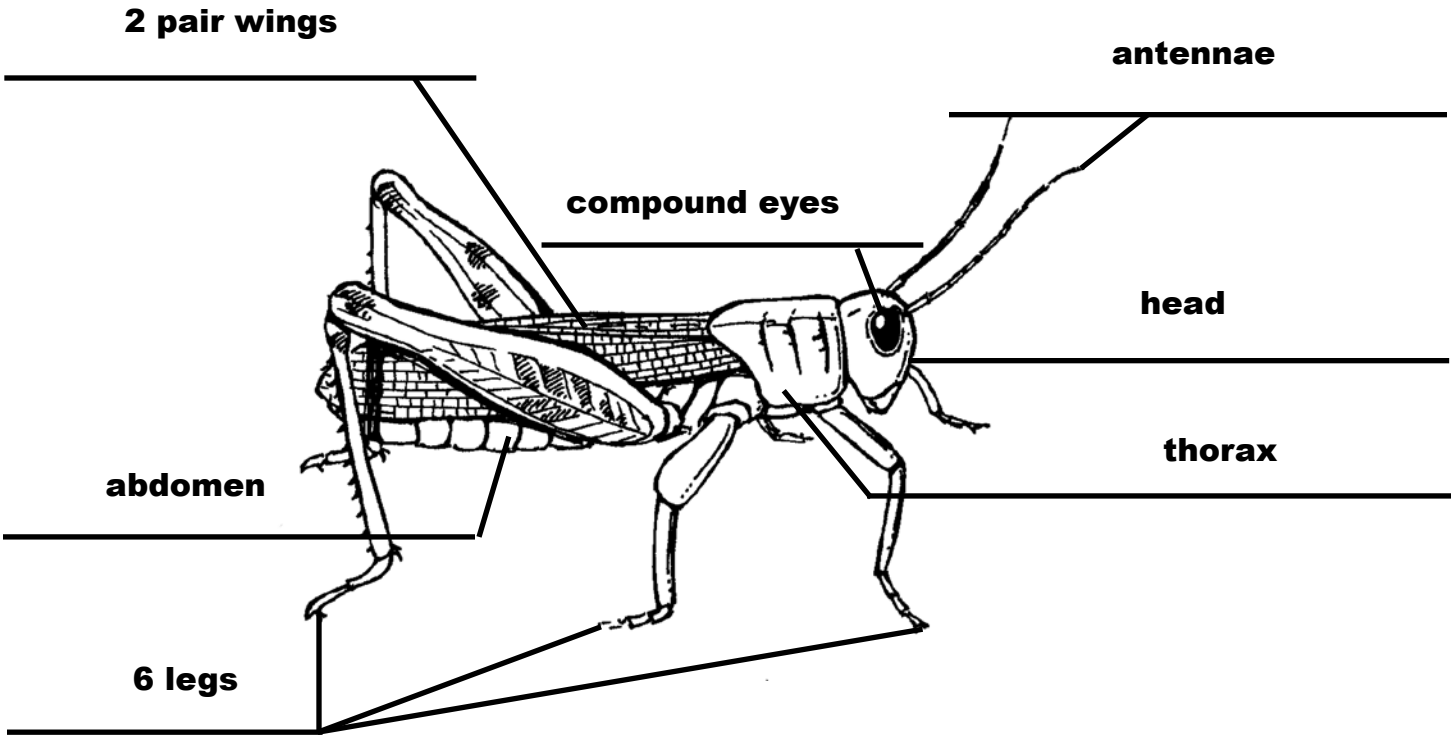
Wild Close Up - Draw a Grasshopper

Draw a grasshopper and label its typical insect body parts.



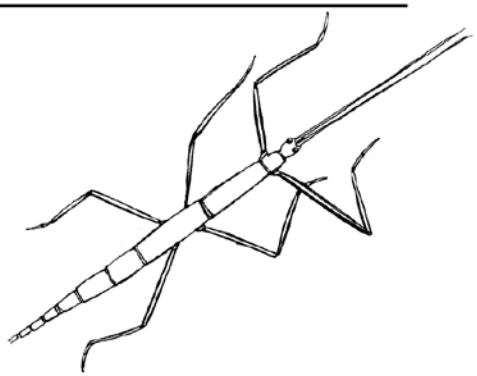




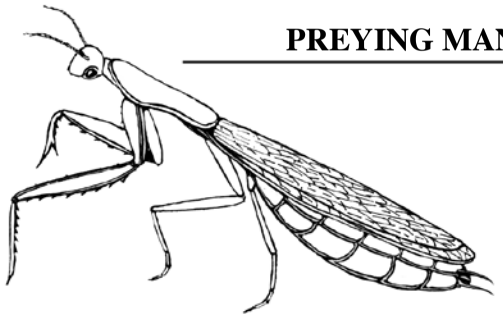


Name the Common North American Insects

WALKINGSTICK

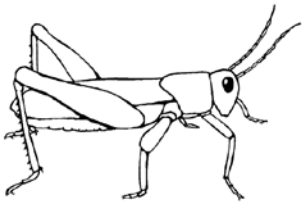


PREYING MANTIS



MOTHS/BUTTERFLIES

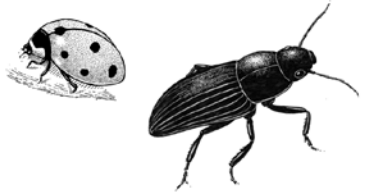
GRASSHOPPER

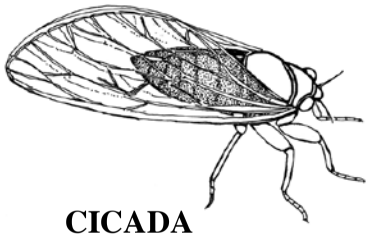


BEES AND WASPS

MAYFLY

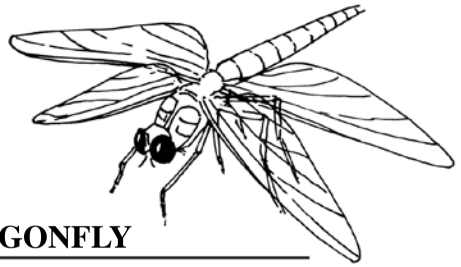
BEETLES





CICADA

FLY

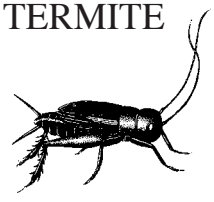


DRAGONFLY

Wild Words – Find and Circle the Insect Names

W	T	R	Y	M	J	Y	U	Y	D	K	F	E	C	E	S	A	O	P	Y
M	B	E	E	D	L	J	L	K	N	L	K	L	W	F	P	W	S	R	E
L	Q	J	N	F	I	F	K	B	Y	O	V	T	Z	J	I	A	C	Q	I
M	P	G	Y	R	R	C	Z	H	D	Z	F	E	G	G	T	L	A	T	E
O	T	A	A	E	O	A	H	P	S	U	S	E	M	R	T	K	T	I	N
M	M	Z	T	K	U	H	S	C	Z	U	X	B	D	E	L	I	E	N	I
X	O	T	D	R	A	G	O	N	F	L	Y	B	H	P	E	N	R	H	D
U	U	S	M	O	T	H	C	B	C	A	T	N	A	P	B	G	P	G	B
B	W	J	Q	V	Y	R	P	E	I	D	C	Y	D	O	U	S	I	P	Y
Z	D	A	W	U	I	M	Z	E	N	Y	B	I	N	H	G	T	L	G	Y
T	Y	C	S	C	I	A	Z	G	O	B	T	U	E	S	I	I	L	K	L
X	R	L	K	P	B	T	Y	V	G	U	C	T	S	S	S	C	A	R	T
B	Q	E	I	W	L	G	O	O	B	G	M	N	Q	A	T	K	R	U	Y
G	T	Y	L	F	E	R	I	F	N	T	O	H	L	R	A	B	R	I	L
Z	S	J	Y	P	B	E	H	O	J	Y	A	L	S	G	A	C	D	J	I
M	A	N	T	I	D	B	T	Y	V	G	U	C	I	C	A	D	A	I	O
O	X	K	A	T	Y	D	I	D	O	T	D	R	A	K	O	P	F	L	Y
B	H	P	D	A	M	S	E	L	F	L	Y	P	D	E	C	C	W	R	Q
P	Y	E	L	L	O	W	J	A	C	K	E	T	Q	A	T	Y	E	W	I
F	Q	Q	N	R	T	E	R	M	I	T	E	W	S	D	C	X	Z	A	E

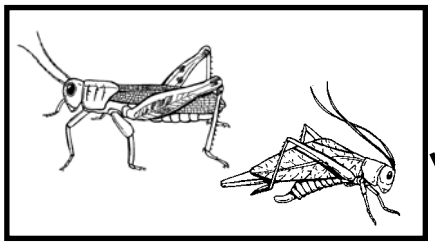
ANT
BEE
BEETLE
BUTTERFLY
CATERPILLAR
CICADA
CRICKET
DAMSELFLY
DRAGONFLY
FIREFLY
FLY
GRASSHOPPER
HORNET
KATYDID
LADYBUG
MANTID
MAYFLY
MOSQUITO
MOTH
SPITTLEBUG
TERMITE
YELLOW JACKET
WALKINGSTICK
WASP

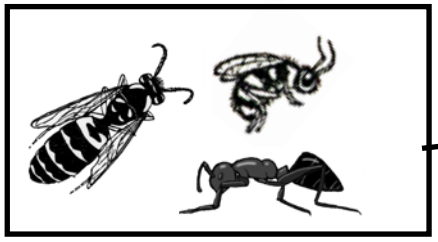


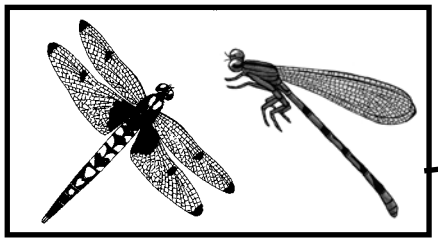
Insect Classification Matching

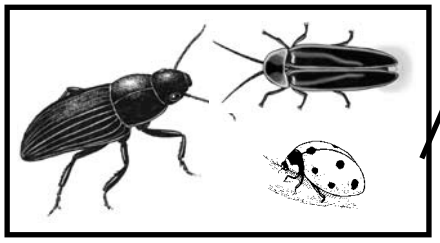
Match the Insects to their Order

Kingdom – Animal
Phylum – Arthropoda
Class – Insecta
Orders:









Coleoptera
Beetles

Diptera
True Flies

Lepidoptera
Butterflies
and Moths

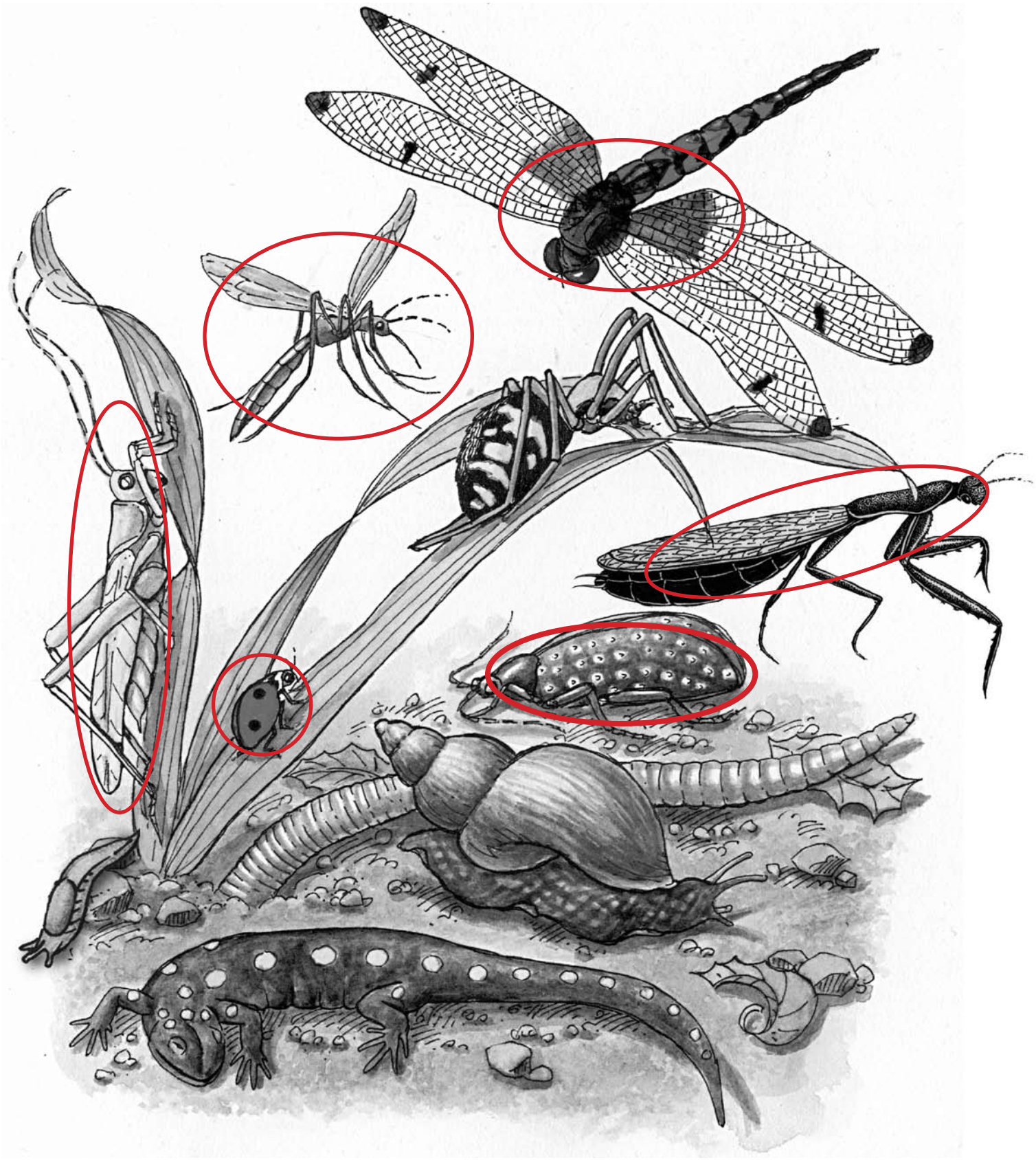
Hymenoptera
Bees, Wasps
and Ants

Odonata
Dragonflies and
Damselflies

Orthoptera
Grasshoppers
and Katydids

Is it an Insect?

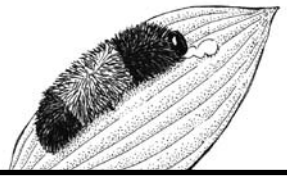
Using the information you have learned about insects, circle the creatures below that are true insects.



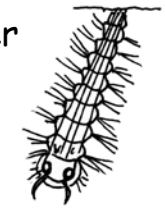
What Will I Be When I Grow Up? Insect Development Matching

Match the insect larva to its adult form. After learning about insects in the Read and React Activity, can you guess which of the insects below have complete metamorphosis and which have in complete metamorphosis?

Wooly Bear Caterpillar



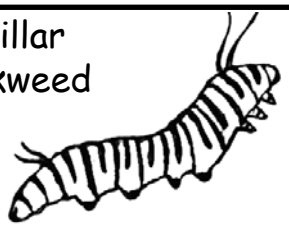
Underwater Larva



Instar

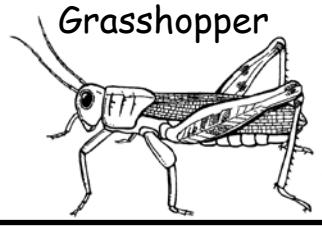
Larva in the Soil

Caterpillar on Milkweed



Maggot

Grasshopper

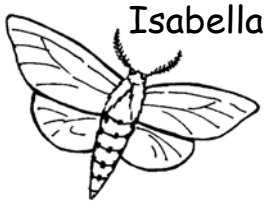


Monarch Butterfly

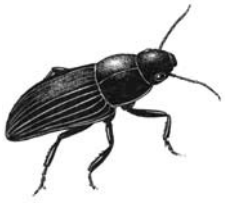
Fly

Mosquito

Isabella Moth



Ground Beetle



Reaction Quiz Page

Mammals – ***Class Mammalia***

The Mammal *Class* includes everything from mice to elephants, bats to whales and, of course, man. They are vertebrates, which means they have a _____**backbone**_____. The wide variety or *diversity* of mammals is what has allowed them to live in any habitat from desert to arctic. Some are active during the day (_____**diurnal**_____), some at night (_____**nocturnal**_____) and some at dawn and dusk (crepuscular). They live alone (_____**solitary**_____) or in great herds (gregarious). They mate for life (_____**monogomous**_____) or form harems (_____**polygomous**_____). They eat meat (_____**carnivore**_____), plants (_____**herbivore**_____) or both (_____**omnivore**_____). Mammals come in all shapes and sizes from the pygmy shrew at $^{1}/_{10}$ ounce to the blue whale at more than 300,000 pounds. There are 29 *Orders* of mammals and though they are diverse, there are a few physical traits that unite them. They are covered with body _____**hair**_____ (except marine mammals – like dolphins and whales). Hair keeps them warm in cold climates and protects them from sunburn and scratches. They have 3 middle ear bones called the malleus, incus, and stapes that improves their hearing. Females have mammary glands that make _____**milk**_____ to feed their young. They protect their young from predators and teach them how to survive. They fill every niche on Earth.

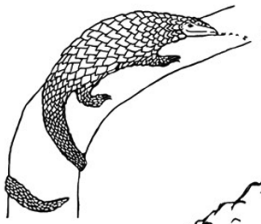
To find more information, pictures and diagrams of specific mammals, go to:
www.exploringnature.org/db/main_index.php > Mammals

Vocabulary Choices:

backbone	monogomous
carnivores	nocturnal
diurnal	omnivores
fur	polygomous
herbivores	solitary
milk	

Name the Animals in the Class Mammalia

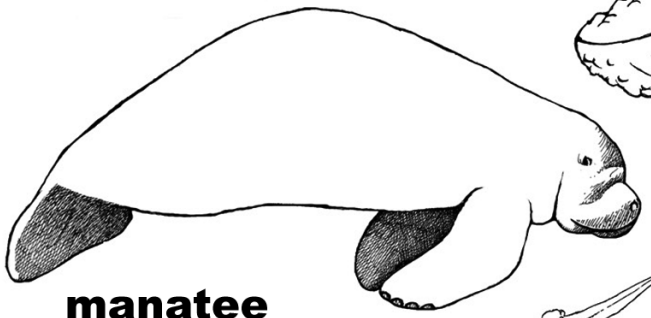
zebra



pangolins

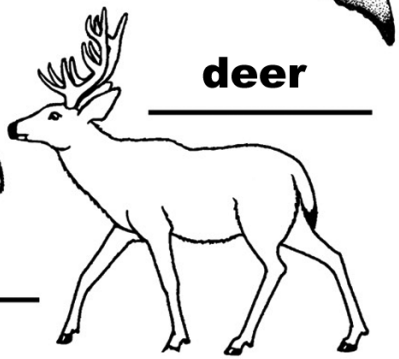
bats

rabbit

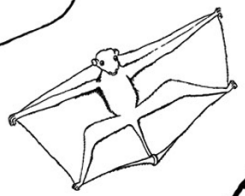


manatee

wolf



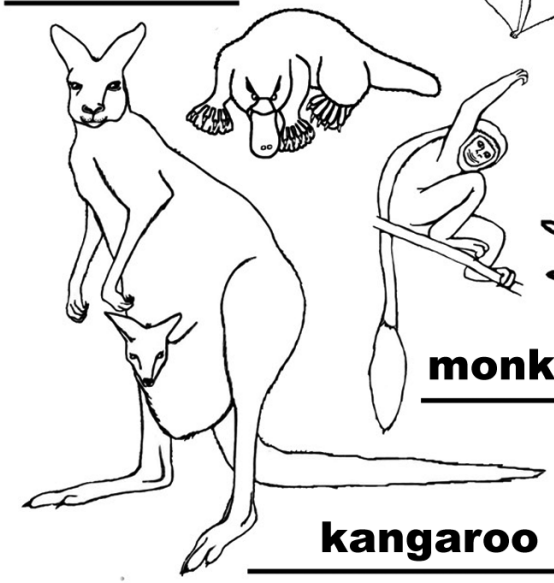
deer



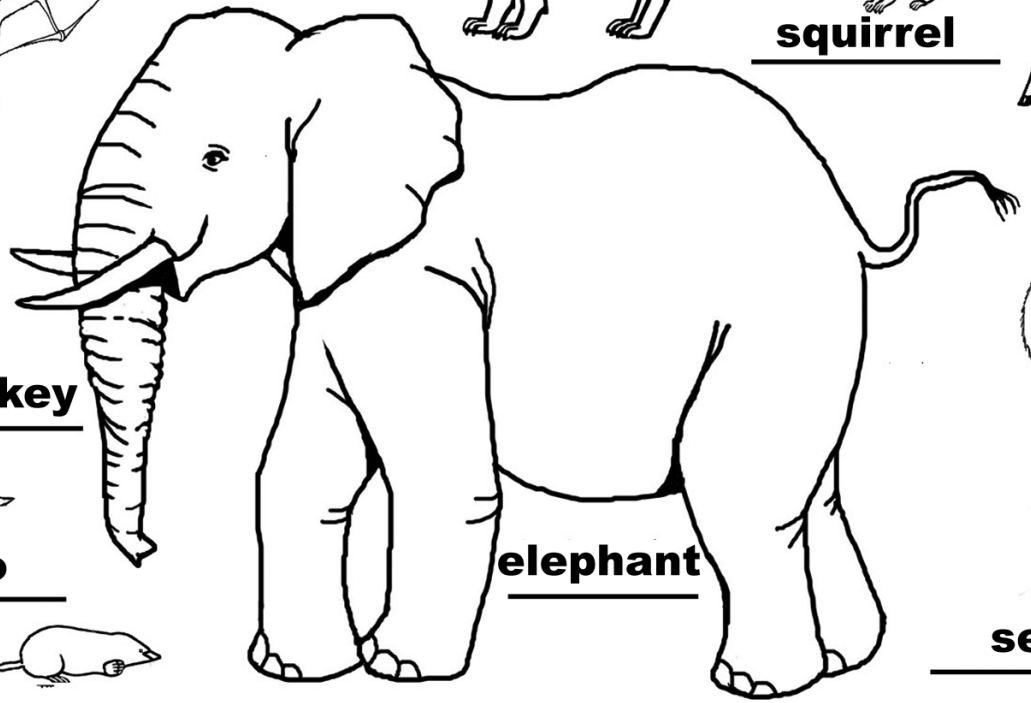
colugo

squirrel

playtpus



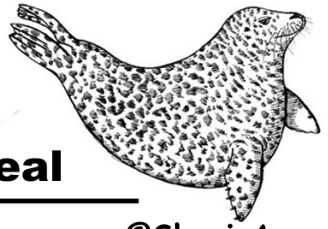
monkey



anteater

kangaroo

elephant



seal

mole

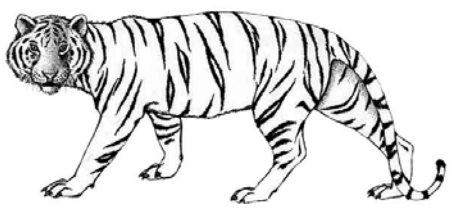
All About Mammals

ACROSS

3. This member of the cat family has tufted ears, a short tail and eats mostly snowshoe hares.
4. This group of pouched animals include kangaroos, wallabies, koalas and wombats.
5. This group of animals has the only mammals that can fly (not including gliders).
7. This gnawing animal is often thought to be a rodent, but is really in a group with pika and hares called the lagomorphs.
9. This animal is the only marine mammal that eats only plants and has been called the cow of the sea.
10. This largest member of the cat family is found in the rainforests of Asia, India and in Siberia.
15. When an animal mates for life it is said to be _____.
17. A mammal with gnawing incisors, like a mouse or beaver is called a _____.
19. When an animal lives alone, except to breed, it is said to be _____.
20. This is the largest member of the deer family with giant palmate antlers.
21. A warm blooded animal that is born live and fed milk by its mother is a _____.
22. This animal is small and often mistaken for a mouse, but is actually a fierce carnivore that eats mice!

DOWN

1. A mammal group with canines for tearing, that includes wolves, tigers, weasels and bears are the _____.
2. Alone in its group, this mammal is the largest land animal on Earth.
6. This animal group includes monkeys, apes, lemurs and people.
8. This is the only member of the deer family where both males and females both have antlers.
11. This group of animals has both toothed carnivores and filtering krill eaters.
12. When an animal is active at night, it is said to be _____.
13. When a male animal mates with a harem of females it is said to be _____.
14. An animal that has a backbone is a _____.
16. This bear is a carnivore, but has an omnivorous diet (two words).
18. When an animal is active during the day, it is said to be _____.



Find and Circle the Mammals

BAT
√BEAVER
√BOBCAT
√CHIPMUNK
√COYOTE
√COTTONTAIL RABBIT
√DEER
√GRAY SQUIRREL
√MINK
√MOOSE
√MOUNTAIN LION
√MOUSE
√OTTER
√RED FOX
√RACCOON
√SNOWSHOE HARE
√OPOSSUM
√WEASEL
√WOLF

H	C	H	I	P	M	U	N	K	B	H	Q	L	B	W	O	L	F	Z	T
O	O	S	P	R	E	Y	C	O	Y	O	T	E	S	R	S	B	H	E	D
B	E	A	V	E	R	T	D	L	S	K	W	O	L	V	E	S	W	B	L
M	I	N	K	V	C	R	E	D	P	I	N	E	V	B	J	K	L	R	A
C	O	T	T	O	N	T	A	I	L	R	A	B	B	I	T	L	E	A	N
R	B	G	H	O	R	N	E	T	N	E	S	T	R	A	S	D	E	E	R
G	R	A	Y	S	Q	U	I	R	R	E	L	G	D	E	R	T	O	W	L
A	A	F	R	G	H	H	K	E	R	T	Y	O	I	O	T	T	E	R	A
N	C	F	R	G	M	O	U	N	T	A	I	N	L	I	O	N	O	L	B
S	C	B	G	C	W	W	D	F	R	T	Y	D	K	L	M	M	P	L	Y
E	O	A	H	I	E	K	A	D	E	E	E	E	B	K	O	M	O	O	S
R	O	T	K	N	A	V	C	X	D	B	O	B	C	A	T	T	S	W	T
M	N	N	H	T	S	D	S	C	F	E	R	R	B	V	G	F	S	T	B
V	V	P	C	G	E	J	I	K	O	P	M	O	U	S	E	T	U	A	D
T	V	H	H	U	L	N	O	I	X	N	U	D	R	M	J	K	M	I	Z
V	G	F	S	N	O	W	S	H	O	E	H	A	R	E	I	O	S	L	Y
M	O	O	S	E	V	C	O	Y	O	T	E	T	R	A	C	K	S	T	I



Now Match the Mammals to Their Order

Insectivora (Insect-eaters)

Monotremata (Egg-laying Mammals)

Dermoptera (Colugos)

Carnivora (Meat-eaters)

Primates (Apes & Monkeys)

Marsupialia (Pouched Animals)

Sirenia (Dugongs & Manatees)

Rodentia (Gnawing Mammals)

Chiroptera (Bats)

Pholidata (Pangolin)

Lagomorpha (Pikas, Hares, and Rabbits)

Artiodactyla (Even-toed Hoof)

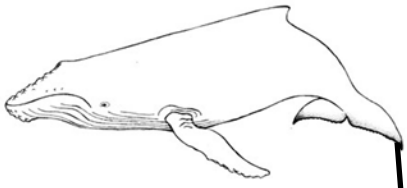
Edentata (Toothless Mammals)

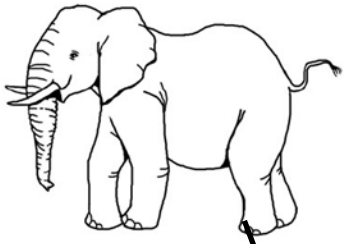
Pinnipedia (Seals & Sea Lions)

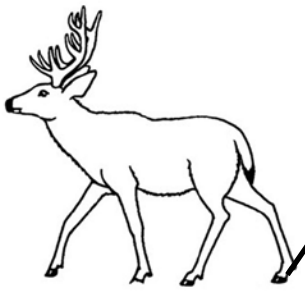
Cetacea (Whales & Porpoises)

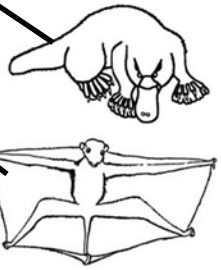
Proboscidea (Elephants)

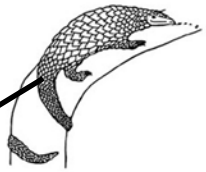
Perissodactyla (Odd-toed Hoofed Animals)

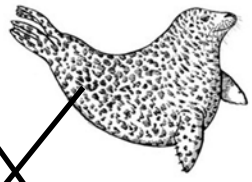








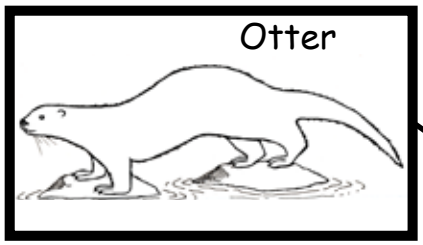


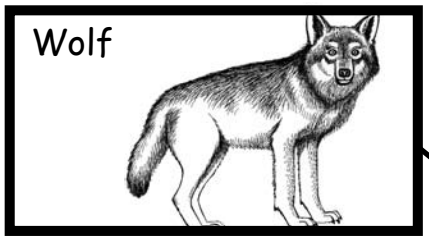


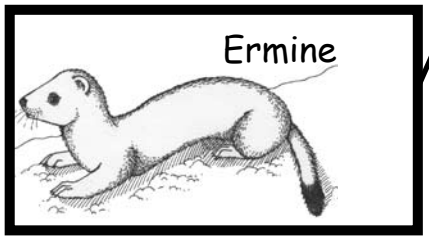
To Which Family Do I Belong? Classification Matching

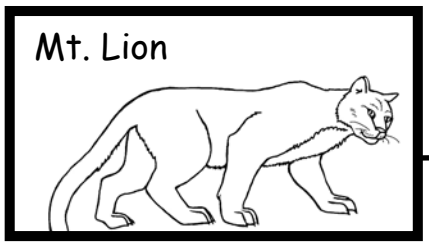
The Order Carnivore has many distinct Families of animals.

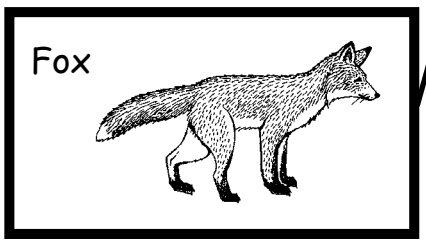
Draw a line from each Carnivore to its correct Family.

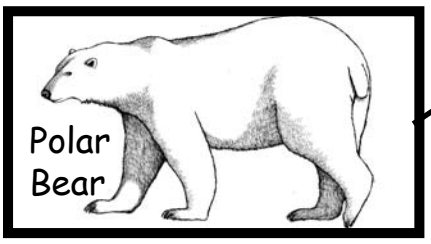










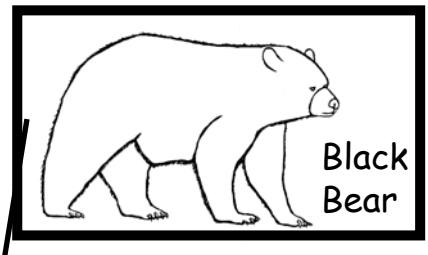


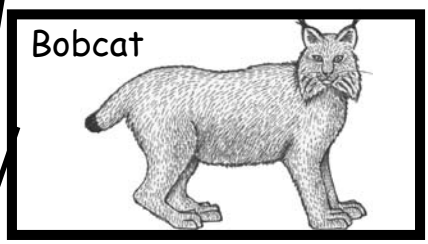
Weasel Family (Mustelidae)

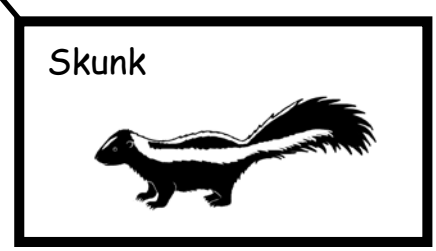
Dog Family (Canidae)

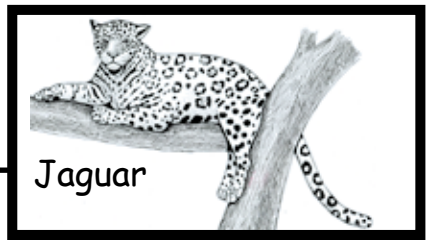
Cat Family (Felidae)

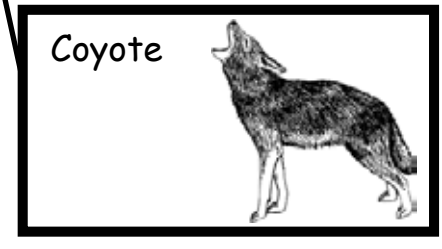
Bear Family (Ursidae)











Reaction Quiz Page

Natural Selection and the Peppered Moth

Natural selection is one of the ideas suggested by Charles Darwin to explain _____**evolution**_____. All living things "***inherit"*** traits from their parents. In humans, a ***trait*** can be hair color or height. In birds it can be feather colors, beak shape or the strength of its song. In insects it can be body color or wing shape.

If one (or many) of these _____**traits**_____, which they inherit from their parents, helps them survive longer, so that they can have more offspring of their own, with those same traits – they are selected for survival. This means that over many generations, there will be more and more individuals like them in their _____**population**_____.

Here is a simple of example. In the early 1900s, _____**coal**_____-burning was common in London and the air was thick with pollution. Coal smoke blackened the trees until their bark was dark brown. The peppered moth was a speckled brown moth that blended into the dark tree bark perfectly. Then in 1956, London passed a clean _____**air**_____ act and coal was banned in the city. Smokestacks were made _____**talller**_____ to get pollutants further out into the atmosphere. Within ten years, the trees, once brown from coal smoke, began to take on their natural light-colored bark. As the trees got lighter, the brown peppered moths stood out against the bark and were easy targets for hungry _____**birds**_____. Lighter moths, however, blended in and survived to lay _____**eggs**_____. Over many generations, which for insects can be just a couple of years, all the peppered moths were lighter in color.

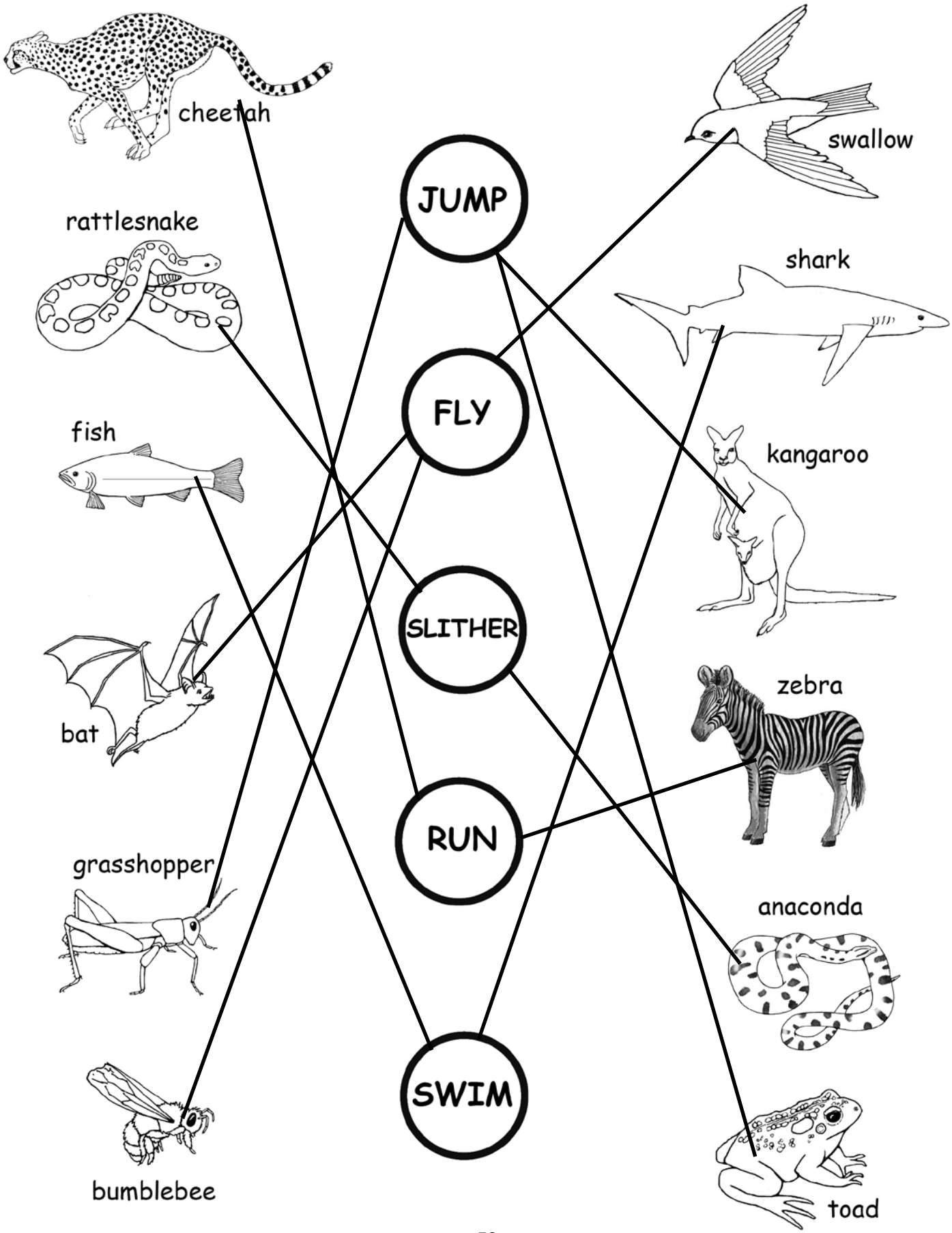
This is how **natural** _____**selection**_____ works, though in mammals and other vertebrates it takes much longer for traits to spread throughout a populations. This physical change is also called _____**adaptation**_____ and helps us to understand structure and function.

Vocabulary Choices:

adaptation	evolution
air	population
birds	selection
coal	taller
eggs	traits

Locomotion

Match the animals to how they move.



Wild Ideas – The Structure and Function of Survival

Now that you have thought about how animals move, can you match some other "adaptive traits" that might help these animals collect food, catch prey, escape predators or otherwise survive in their habitats? Write the letters of the adaptive traits next to the animals that have them.

cheetah **L, M, O, R, U**

rattlesnake **A, B, C, E, G, I, S**

fish **B, C**

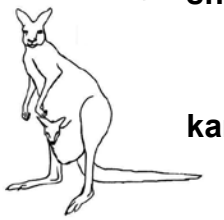
bat **D, G, H, L, Q**

grasshopper **B, Q, R**

bee **G, K, Q, U**

swallow **F, L, Q, R, T**

shark **B, C, M, R, U**



kangaroo **B, H, J, L, O, Q, R**

zebra **B, J, L, Q, R**

anaconda **B, C, E, H, N, S**

toad **B, C, P**

A. ability to coil, spring and bite

B. camouflage to hide in plain sight

C. has many young (but little parental care)

D. echolocation for "seeing" in the dark

E. heat sensor (for sensing prey)

F. hollow bones to reduce weight

G. makes loud sound to warn off intruders

H. nocturnal

I. poisonous bite

J. powerful kick

K. painful sting

L. protects young

M. sharp teeth for tearing flesh

N. strong muscles for squeezing prey

O. long tail for balancing body when jumping

P. toxin on skin that tastes bad

Q. travels or lives in a group for safety

R. very fast speed

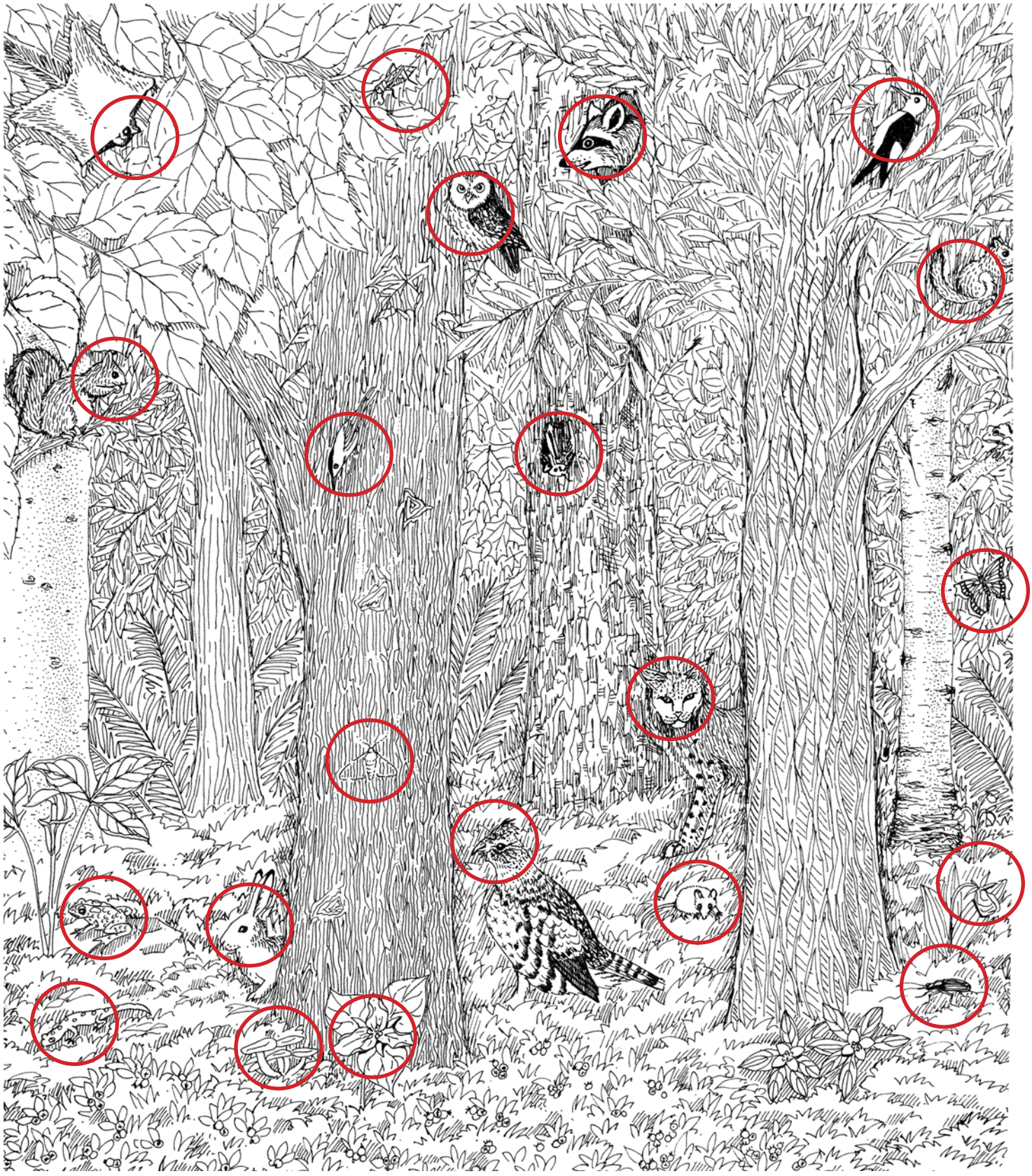
S. unhinged jaw for swallowing large prey

T. protects nest

U. powerful sense of smell

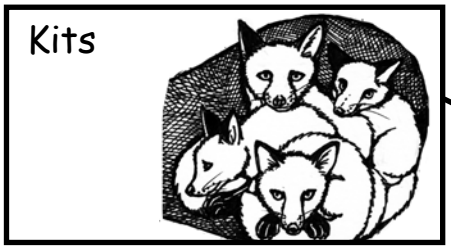
Circle the Forest Animals and Plants

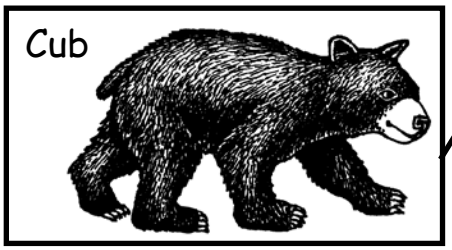
Deciduous forest habitats are home to many of our common mammals, birds and insects. Find the mouse, beetle, bobcat, butterfly, ladyslipper, treefrog, red, gray and flying squirrels, woodpecker, bat, raccoon, saw-whet owl, mushrooms, trillium, toad, katydid, atlas moth, nuthatch, snowshoe hare, and spotted salamander.

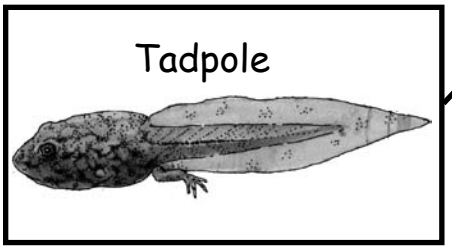


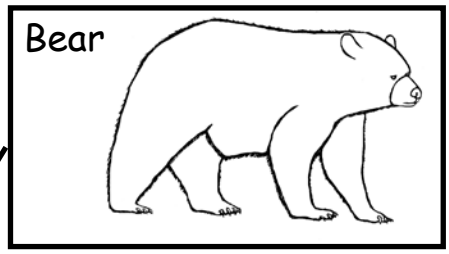
What Will I Be When I Grow Up?

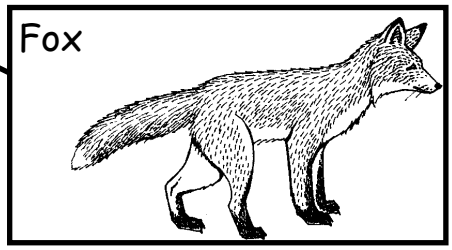
Match the baby animal to its adult form.

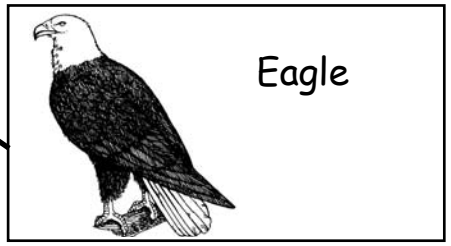


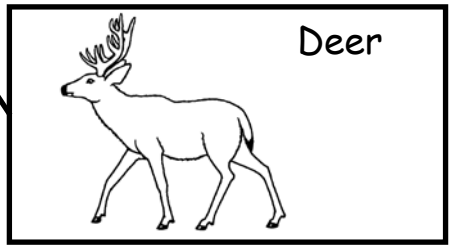








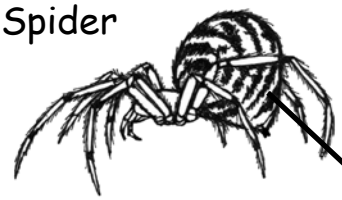




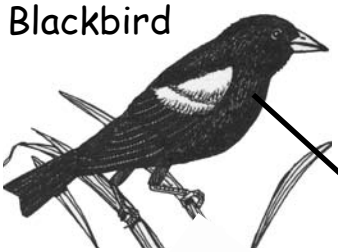
Where Do I Live?

Match the animal to its home.

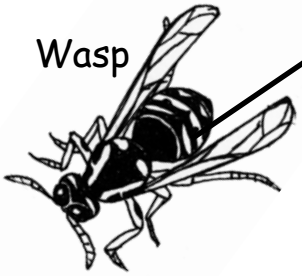
Spider

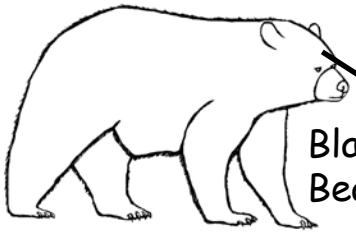


Blackbird

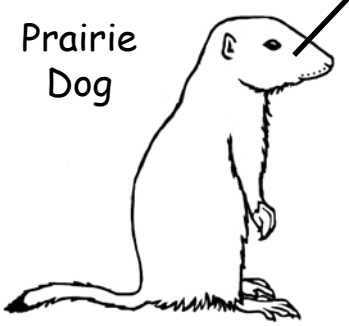


Wasp

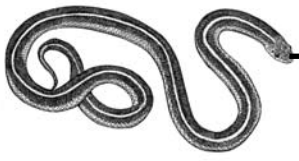


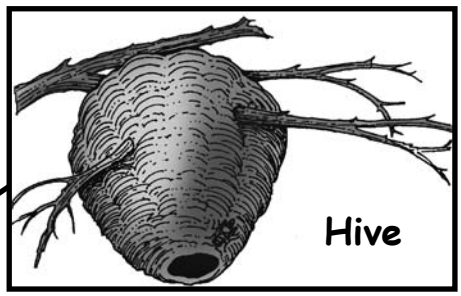


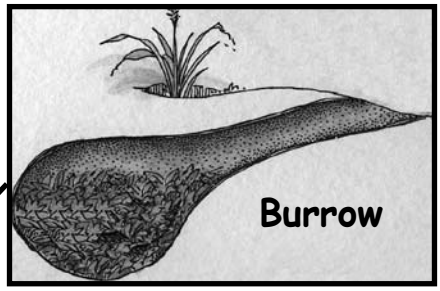
Prairie
Dog

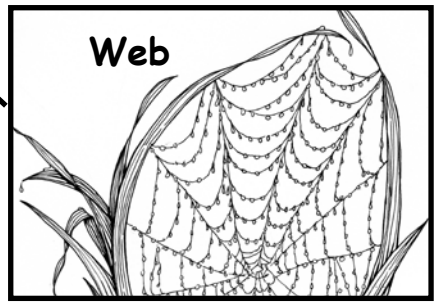


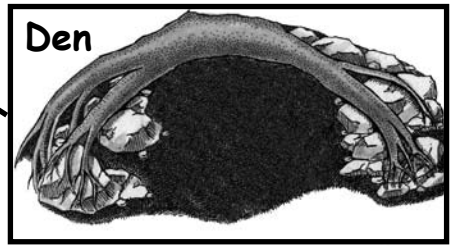
Garter Snake

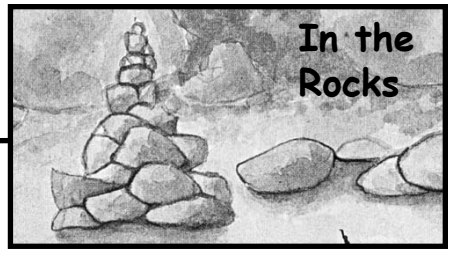












Read the Essay and Take the Reaction Quiz

Reaction Quiz Page

The Importance of Plants

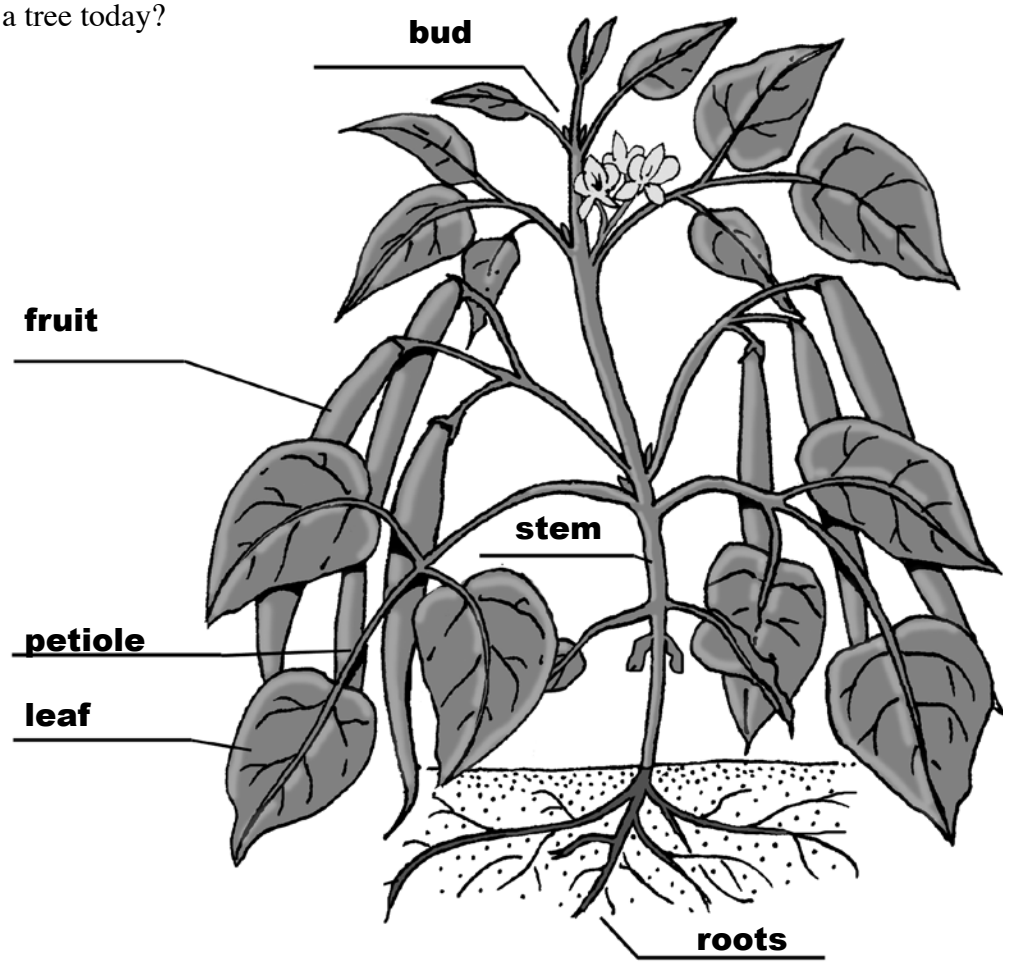
Green plants may be be the most important living things on Earth. This is because they make their own energy using sunlight in a process called _____**photosynthesis**_____. They store the extra sugars in their stems, roots, seeds or fruit. Animals then eat them and the energy is passed on. Even _____**carnivores**_____ which eat only animals are still getting the enegy from plants as it passes to them through their herbivore prey. In this way plants feed all the animals on Earth.

Another important job that plants do is to release _____**oxygen**_____ during the process of photosynthesis. From the Earth's vast forests to the _____**phytoplankton**_____ coating the oceans, all green plants take in _____**carbon**_____ dioxide and give off oxygen as they make energy. This allows all the other organisms on Earth (including us) to breathe.

Plants also root in the soil which helps to keep the planet's topsoil in place and prevent _____**erosion**_____. There is no doubt about it without plants life on Earth as we know it would not exist. Have you thanked a tree today?

Vocabulary Choices:

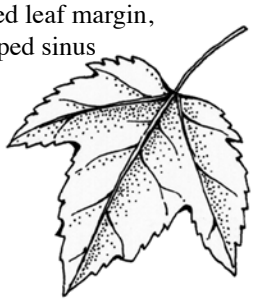
bud
carnivores
carbon
carnivores
erosion
fruit
leaf
oxygen
petiole
photosynthesis
phytoplankton
root
stem



Name the Tree by its Leaf Shape

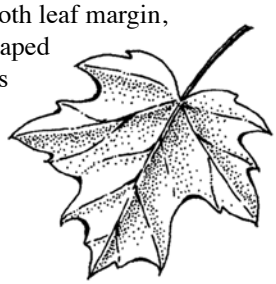
RED MAPLE

toothed leaf margin,
v-shaped sinus



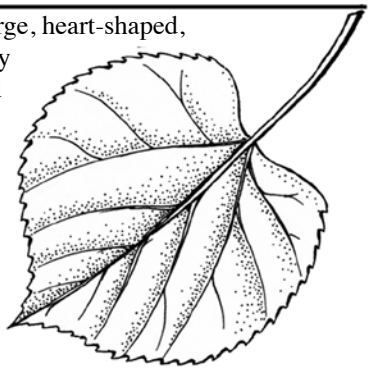
SUGAR MAPLE

smooth leaf margin,
u-shaped
sinus



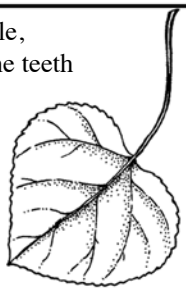
BASSWOOD

very large, heart-shaped,
coarsely
toothed



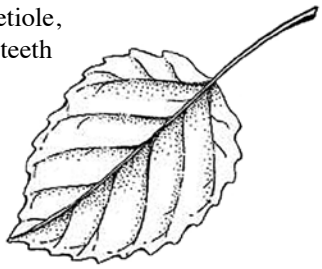
QUAKING ASPEN

flat petiole,
small, fine teeth



BIGTOOTH ASPEN

flat petiole,
large teeth

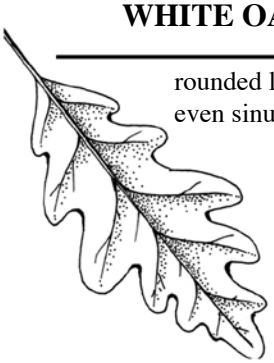


PAPER BIRCH

single toothed,
rounded leaf
base

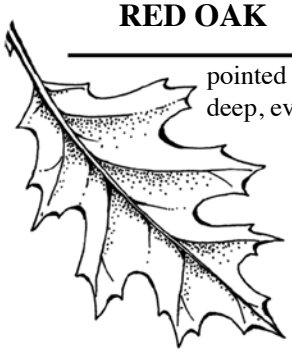
WHITE OAK

rounded lobed, deep,
even sinuses



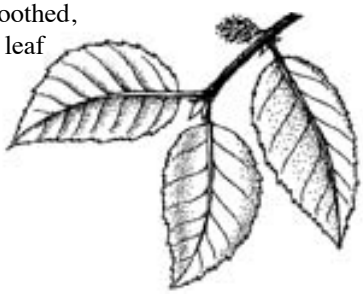
RED OAK

pointed lobed,
deep, even sinuses



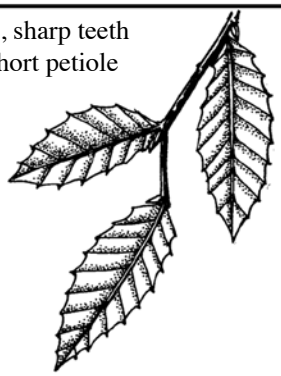
YELLOW BIRCH

double toothed,
rounded leaf
base



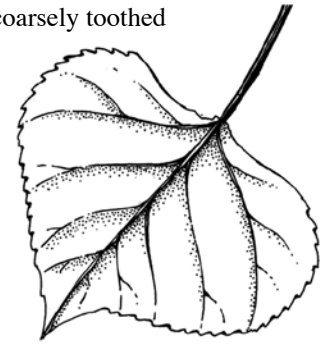
BEECH

coarse, sharp teeth
very short petiole



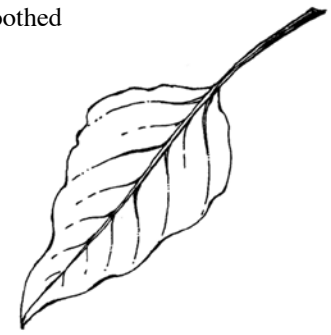
COTTONWOOD

flat petiole, triangular-shaped,
coarsely toothed



BALSAM POPLAR

smaller heart-shaped,
finely toothed

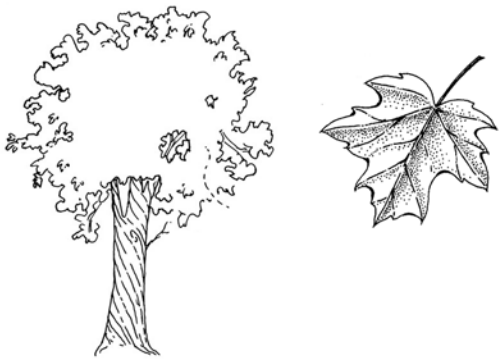


balsam poplar	bigtooth aspen	red oak	sugar maple
basswood (linden)	cottonwood	quaking aspen	white oak
beech	paper birch	red maple	yellow birch

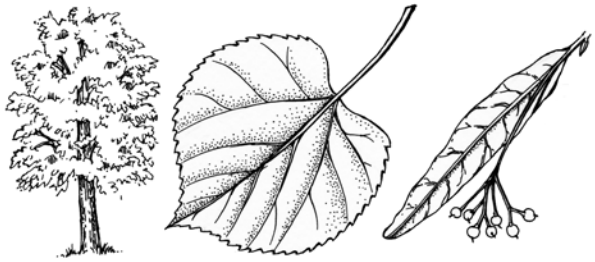
Name These Common Deciduous Tree

RED MAPLE

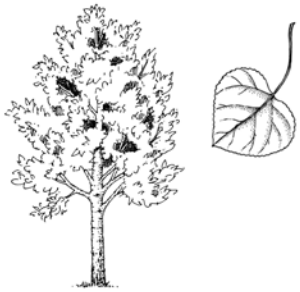
SUGAR MAPLE



BASSWOOD

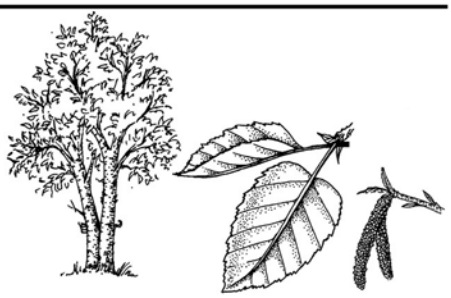


QUAKING ASPEN



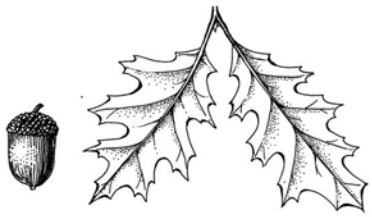
BIGTOOTH ASPEN

PAPER BIRCH



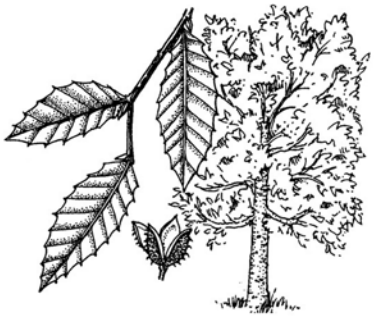
WHITE OAK

RED OAK

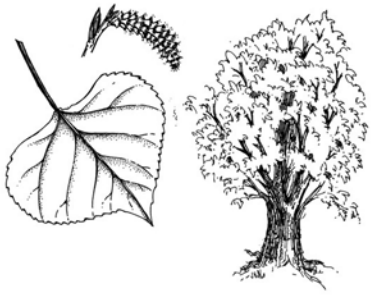


YELLOW BIRCH

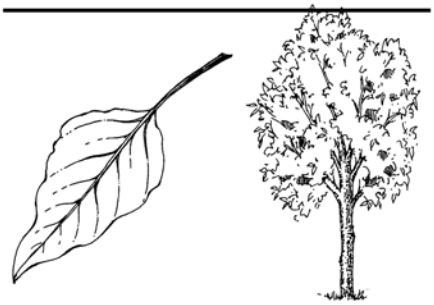
BEECH



COTTONWOOD



BALSAM POPLAR



Find the Trees

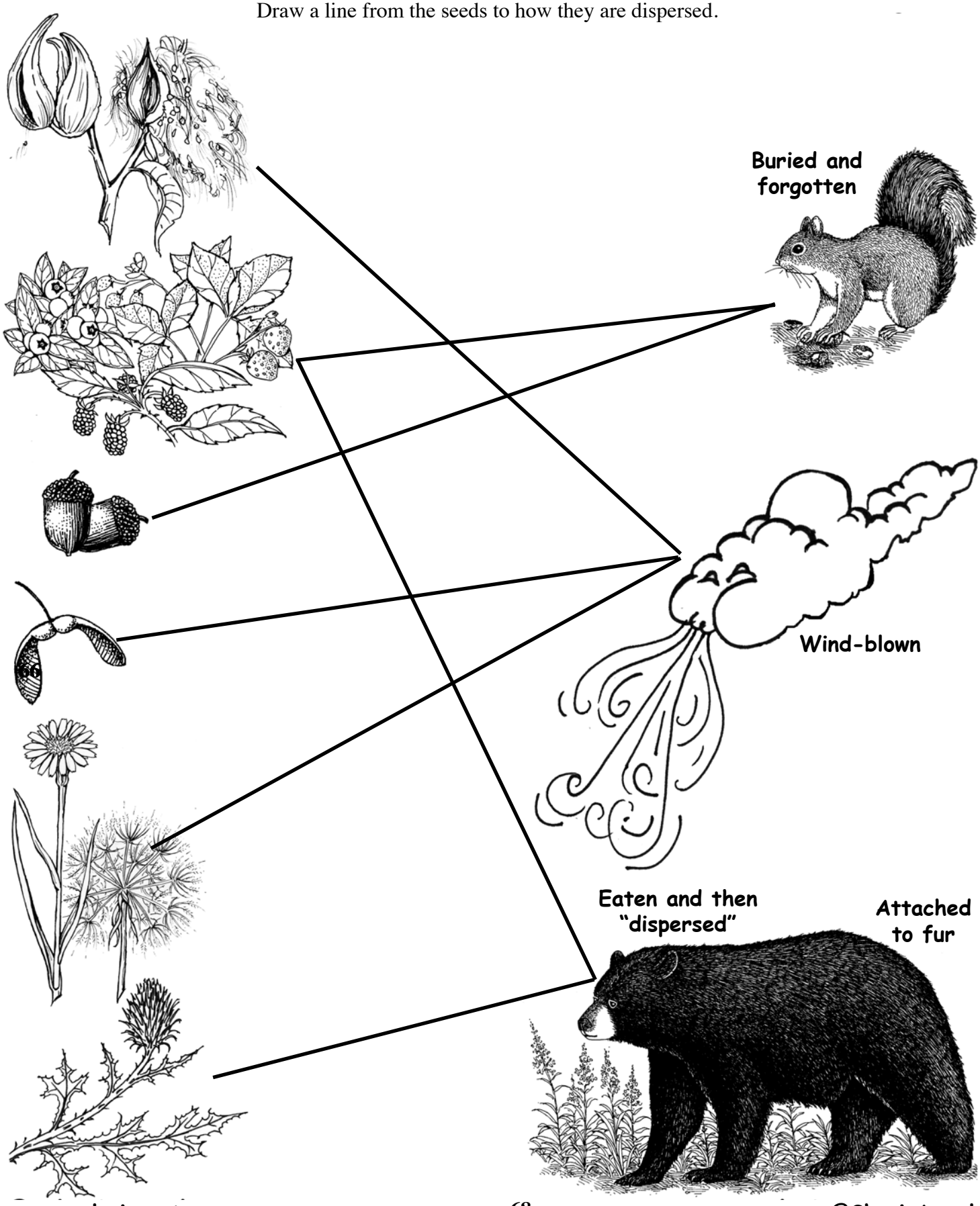
N	T	Q	I	R	O	N	W	O	O	D	F	W	T	K	E	S	E	M	X
N	O	B	U	T	T	E	R	N	U	T	B	H	Z	A	L	T	A	A	R
H	E	R	K	A	O	E	T	I	H	W	E	I	S	O	E	R	S	E	E
O	C	D	T	T	K	Q	B	I	I	M	H	T	D	D	Z	I	T	B	D
B	Y	R	N	H	Z	I	Q	E	L	T	E	E	O	E	N	P	E	N	S
M	L	R	I	I	E	V	N	O	E	R	L	S	O	R	I	E	R	R	P
P	V	A	O	B	L	R	C	G	N	C	M	P	W	N	R	D	N	O	R
R	I	U	C	K	W	K	N	W	A	I	H	R	S	R	I	M	C	H	U
E	K	N	M	K	C	O	H	W	F	S	Q	U	S	E	F	A	O	P	C
D	A	K	C	Y	S	I	L	E	H	C	P	C	A	H	M	P	T	O	E
M	O	Z	G	H	T	P	H	L	L	I	W	E	B	T	A	L	T	H	R
A	D	D	V	E	E	J	R	K	E	P	T	Z	N	R	S	E	O	T	O
P	E	U	P	A	K	R	H	U	R	Y	A	E	Z	O	L	O	N	A	M
L	R	I	S	U	J	A	R	Y	C	A	S	M	C	N	A	D	W	M	A
E	N	I	P	D	E	R	F	Y	W	E	B	S	R	E	B	F	O	A	C
E	M	O	U	N	T	A	I	N	A	S	H	G	F	A	D	P	O	R	Y
R	A	D	E	C	D	E	R	N	R	E	T	S	A	E	G	A	D	A	S
B	I	G	T	O	O	T	H	A	S	P	E	N	M	H	F	U	R	C	N
R	A	L	P	O	P	M	A	S	L	A	B	Z	P	F	S	N	S	K	E
H	C	R	I	B	R	E	P	A	P	H	S	A	E	T	I	H	W	Q	K

√BALSAM FIR
√BALSAM POPLAR
√BASSWOOD
√BEECH
√BIG TOOTH ASPEN
√BLACK SPRUCE
√BUTTERNUT
√EASTERN COTTONWOOD
√EASTERN RED CEDAR
EASTERN WHITE PINE
√ELM
√HEMLOCK
√HOPHORNBEAM
√IRONWOOD
√LINDEN
√MOUNTAIN ASH
√NORTHERN RED OAK
√NORTHERN WHITE CEDAR
√PAPER BIRCH
√PIN CHERRY
√QUAKING ASPEN
√RED MAPLE
√RED OAK
√RED PINE
√RED SPRUCE
√SHAGBARK HICKORY
√STRIPED MAPLE
√SUGAR MAPLE
√SYCAMORE
√TAMARACK
WHITE ASH
√WHITE OAK
√WHITE SPRUCE

Seed Dispersal Matching

Plants have adapted some pretty amazing ways to get their seeds spread out into the world.

Draw a line from the seeds to how they are dispersed.



Reaction Quiz Page

Food Webs

Energy flows through an ecosystem as one organism eats another. This is a *food* _____chain_____. An example of this is a hawk eating a mouse eating a caterpillar eating a leaf. Every organism in a food chain is said to be on one feeding level or _____trophic_____ *level*. The first trophic level is all plants. Plants make their own food via _____photosynthesis_____ using water, sunlight and carbon dioxide. They are at the bottom of the food chain and feed everything above them. That is why there are more plants than any other living thing. They are the _____producers_____.

Animals that eat plants are called _____herbivores_____. They are *primary* _____consumers_____. These include deer, rabbits, mice and voles. Primary consumers are the _____second_____ *trophic level*. There are fewer herbivores than plants because each needs a lot of plant matter to live, grow and reproduce.

Animals that eat the primary consumers are the *secondary consumers*. Secondary consumers, like weasels, snakes and shrews, make up the *third trophic level*. There are fewer secondary consumers than there are primary consumers because again each needs to eat a lot of the primary consumers to live, grow and reproduce.

Carnivores, like foxes, coyotes, eagles, and owls, eat primary and secondary consumers and are *tertiary consumers*. They are the _____fourth_____ *trophic level*. Again, there are fewer tertiary consumers than secondary consumers because each tertiary consumers eats a lot of secondary consumers to live, grow and reproduce.

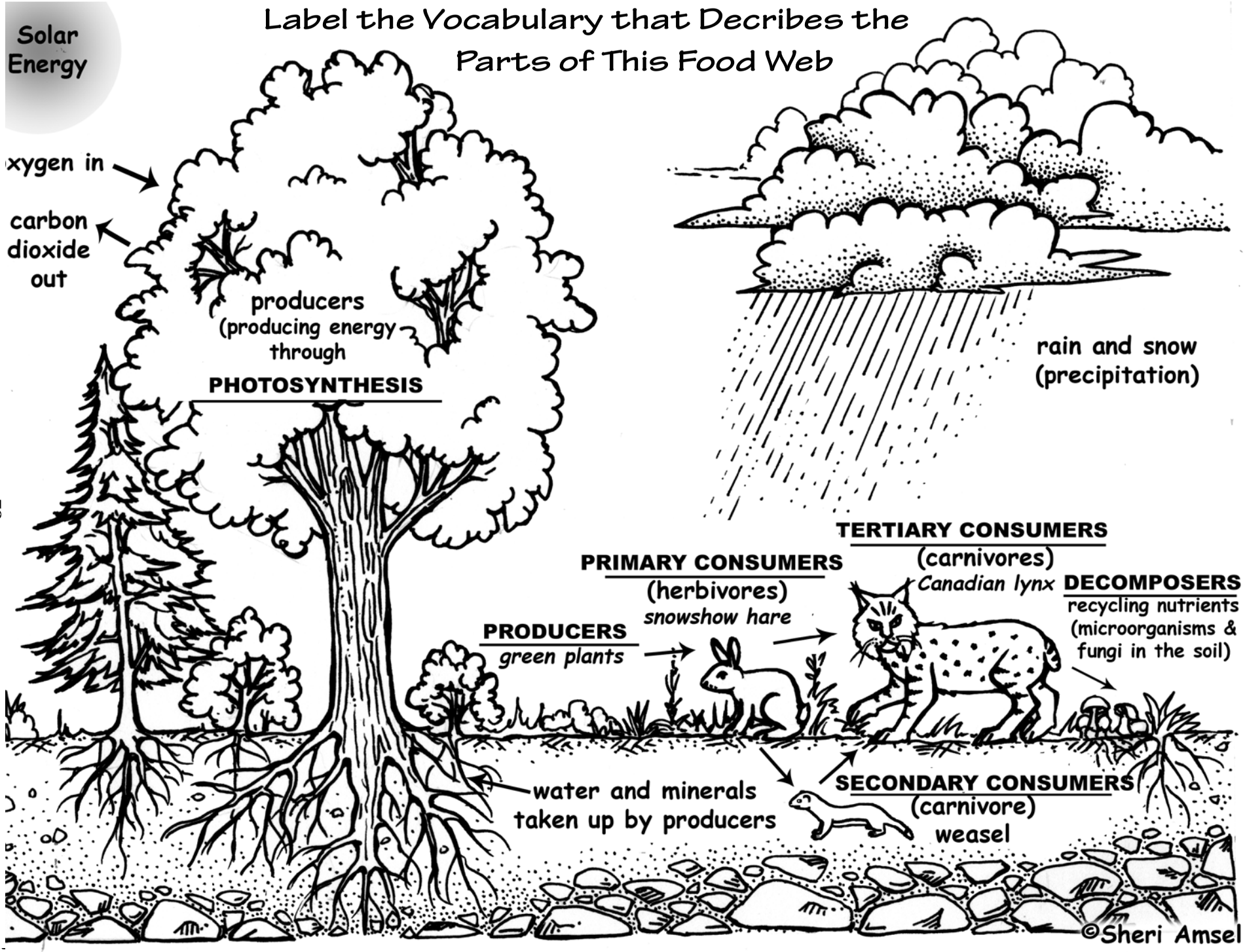
_____Decomposers_____ (mushrooms, fungi, bacteria) consume dead matter at all trophic levels.

Because there are fewer animals as you move up the food chain, it is really a food pyramid with the big carnivores needing to eat the most and so having the smallest numbers in the animal kingdom. Because animals eat a wide range of things, the food chain has many overlapping parts, so is really a *food* _____web_____.

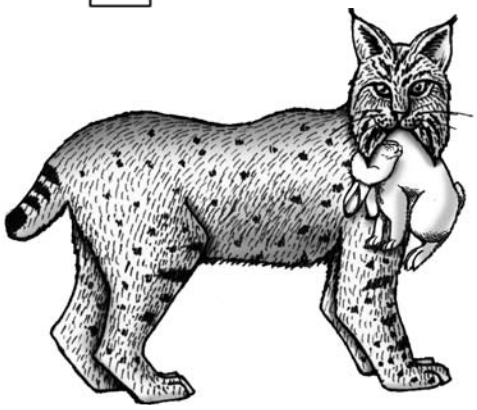
Vocabulary Choices:

chain	herbivores	trophic
consumers	photosynthesis	second
decomposers	producers	web
fourth		

Label the Vocabulary that Decribes the Parts of This Food Web



Food Web Crossword Puzzle



ACROSS

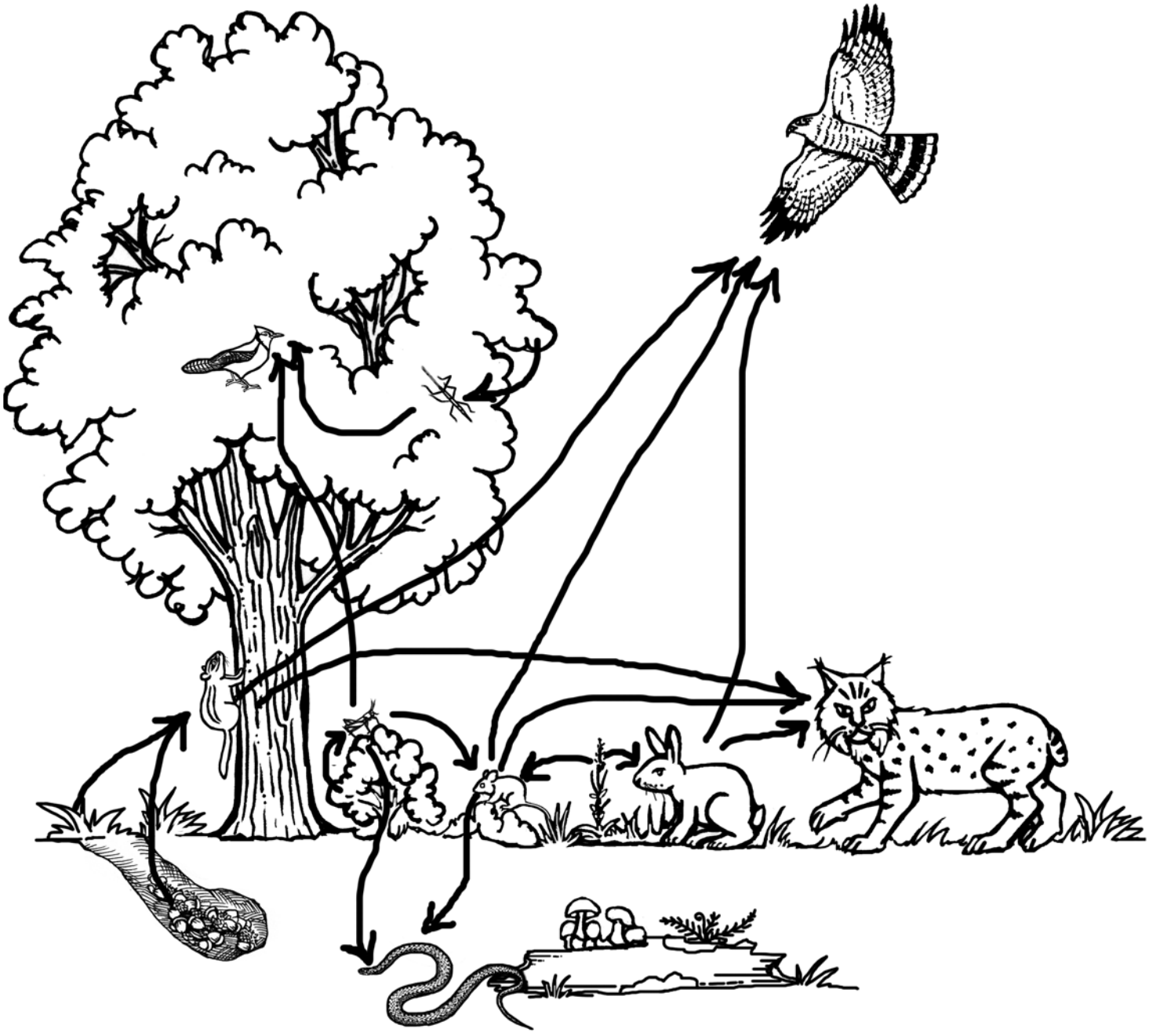
1. A decomposer is a fungus or bacteria that breaks animals or plants that are _____.
3. A predator than hunts at night on silent wings.
5. A map of who east whom in an ecosystem is called a food _____.
6. A smaller carnivore in the ocean with flippers and whiskers.
8. An example of a decomposer that is a fungus.
11. A producer on which herbivores graze.
12. Photosynthesis - plants make their own food using _____, water and carbon dioxide.
13. A consumer is an _____ that eats what is in its ecosystem.
15. A large hooved, herbivore.
19. The tallest herbivore on Earth.
20. An animal that chases down and eats another animal.
21. An animal that is chased and eaten by another animal.

DOWN

2. The biggest herbivore on Earth.
4. A carnivore in the dog family.
6. An animal that eats whatever it can find.
7. A tiny herbivore with a long tail in the rodent group.
9. A carnivore is an animal that eats only _____.
10. An omnivore in the bear family (2 words).
12. The smallest carnivore on Earth.
14. An insectivorous plant is a plant that eats _____.
16. A producer that makes its own food through photosynthesis.
17. A striped carnivore in the cat family.
18. A carnivore in the bear family (2 words).
20. A herbivore is an animal that eats only _____.

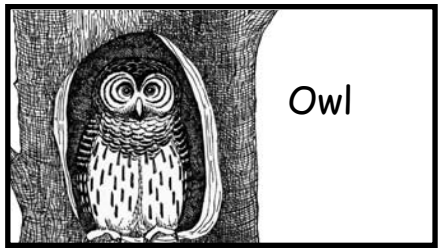
Building a Food Web

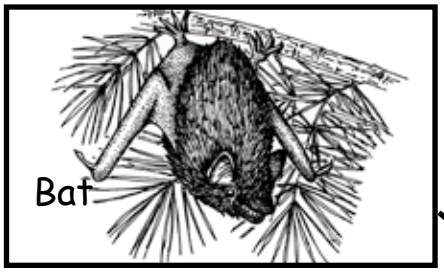
Draw an arrow from each plant or animal to the living thing that eats (consumes) it. Your food web should include the acorns, blue jay, chipmunk, grass, grasshopper, hawk, lynx, mouse, mushrooms, rabbit, shrubs, snake, tree, and walkingstick insect. Then label (name) each part of the food web and the trophic level it represents.

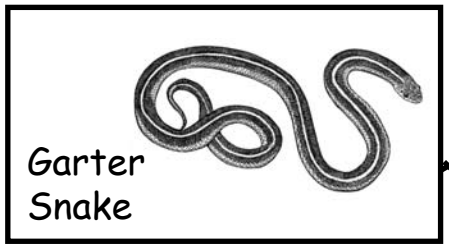


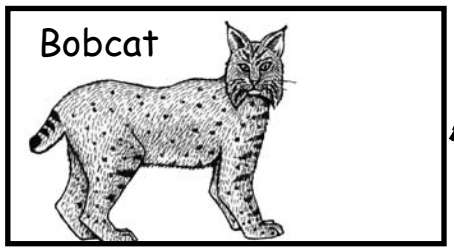
What Do I Eat? Predator Prey Matching

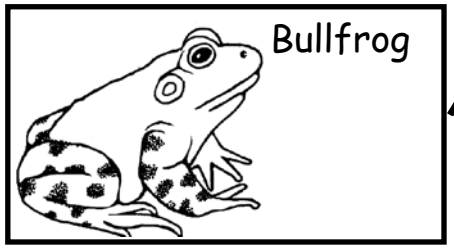
Match the animal to its food.

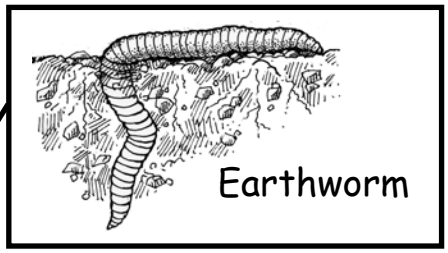


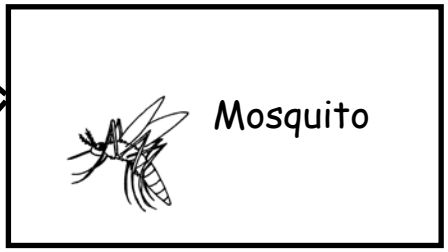


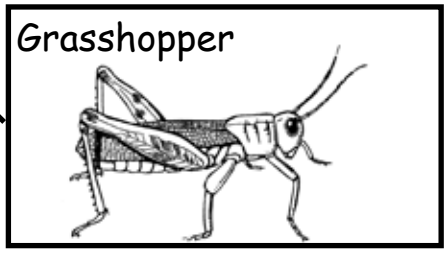


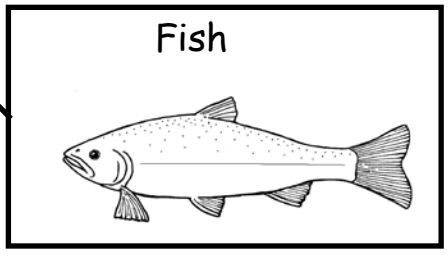






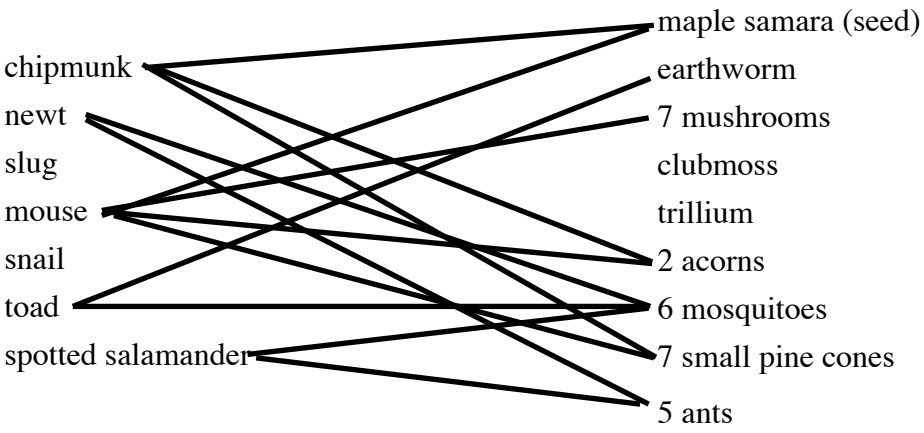


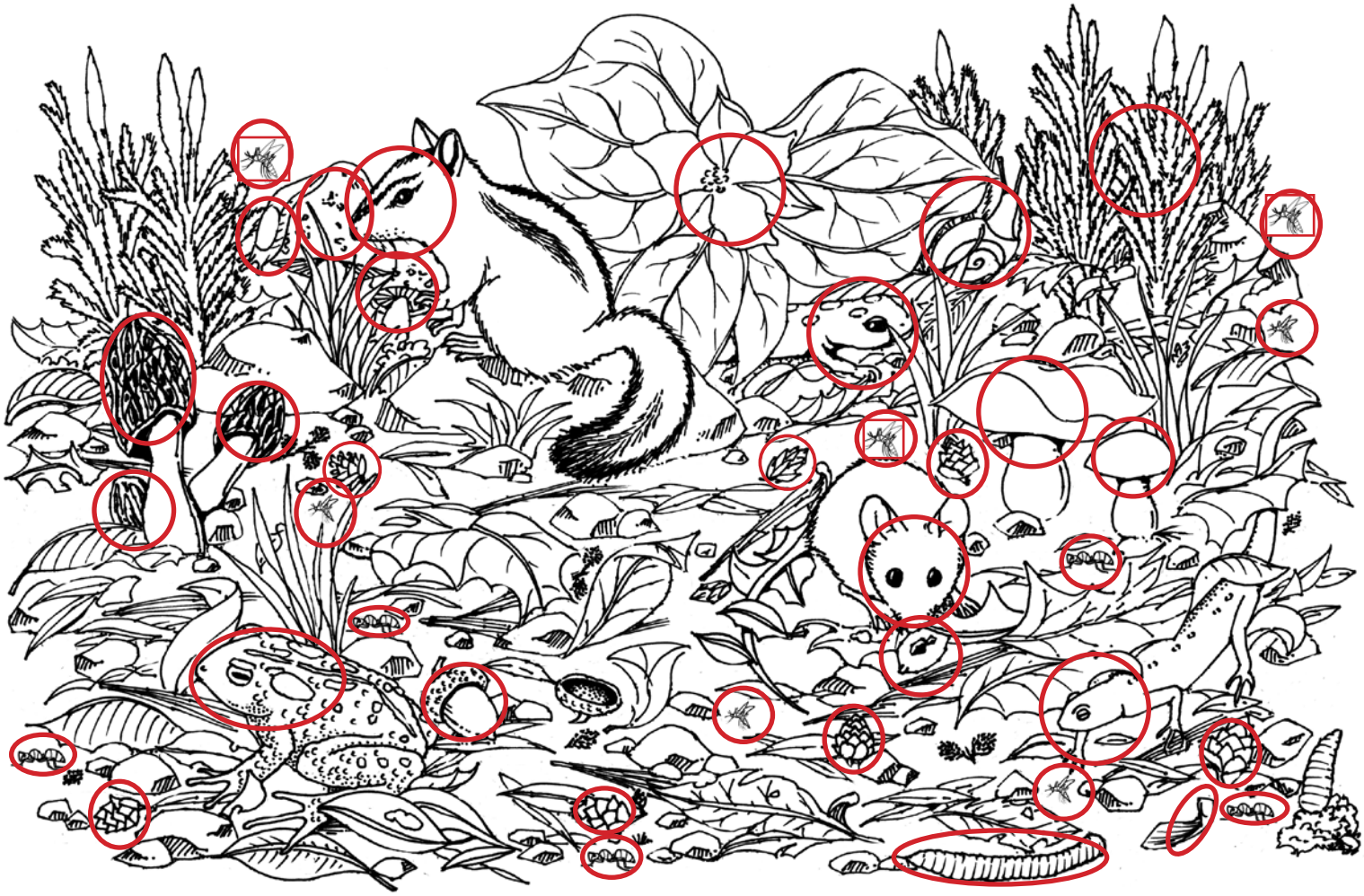




Hidden Habitat - Forest Floor Search

Is the forest floor is a habitat of its own? It's just dead leaves and dirt right? Actually the forest floor is a rich habitat where small mammals, amphibians, reptiles, insects, plants, mosses, fungi, gastropods (snails and slugs) and many other living things make their homes. Circle or color what you can find from the list below and then match the animals to their foods. (Not all the things on the right are edible, but many animals on the left share the same foods).





Reaction Quiz Page

Ecology

Ecology is the study of living things and their relationship to their environment. Each living thing is called an *organism* – from an ant to a blue whale. Organisms that are alike – with the same physical appearance, behavior, and genetic make up are considered to be the same ___**species**___. No one knows how many there are on Earth. There could be as many as 15 million. We have only identified and named about 1.5 million so far. Most of the species we have identified are ___**insects**___.

Many organisms of one species together are called a ___**population**___. Not all the individuals in a population are exactly the same though. In a herd of caribou or a flock of birds there are some that look or act a little differently from one another. This is called ___**genetic**___ *diversity*. Think how differently you look from your sister or brother or the kid down the street. You are all the same species, but can look very differently from one other.

Where a population of species lives is called its ___**habitat**___. This can be just a ditch full of water or a vast forest. Where a species lives throughout the world is called its ___**range**___. Some species, like the brown rat, are found all over the world, while others, like the kiwi, may only be found on one island.

Many different populations of species living in one area and interacting, like a herd of deer grazing on a meadow of grass, is called a ___**community**___.

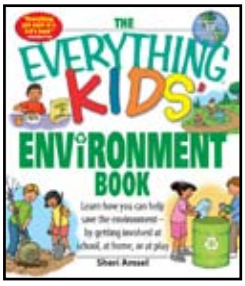
Add all the non-living (___**abiotic**___) things around like rocks, water, sun and air, is called an ___**ecosystem**___. This, like a habitat, can be as small as a ditch or as big as a forest. However, a habitat is really where an organism lives, while an ecosystem is what it does.

All the ecosystems on Earth make up the ___**biosphere**___.

Vocabulary Choices:

abiotic	genetic	population
biosphere	habitat	range
community	insects	species
ecosystem		

Other Books by Sheri Amsel



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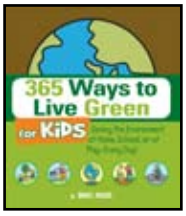

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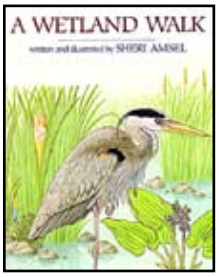

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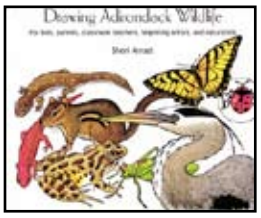

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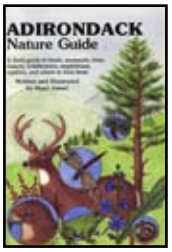

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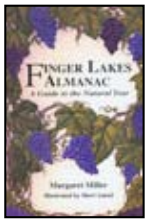

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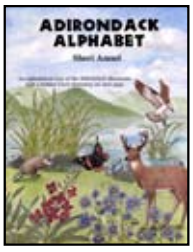

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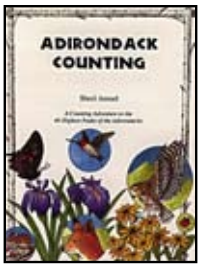

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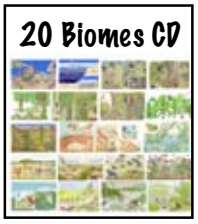

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