



# THE BALANCE OF NATURE

## PREDATORS



Chewonki's **Balance of Nature** presentation explores the adaptations and features of predators and looks at why predators are often feared and persecuted by people throughout the world. Using a slide show and various activities, we will examine the important function predators play in the natural world. We will discuss these animals' crucial role in the food chain and identify predator-prey relationships in different habitats. Students will closely observe a few of Maine's predators, including a mounted coyote, as well as several live non-releasable predatory animals from around the world.

This program is designed for grades 3 and up and can compliment classes in biology, environmental issues or Maine studies, or be successfully integrated into any curriculum area, such as language arts, math, social studies or art.

### Equipment and Room Requirements

- Classroom or multi-purpose room space is fine.
- Students should sit at desks or in seats to easily view slides and displays.
- Presentations can be done at a single location or in individual classrooms if 15 minutes is allowed between presentations.
- The maximum group size is 30.
- Teachers must be present in the room during the program.
- Please have students wear name tags provided in packet.

Note: Permits are required for most of the specimens (living and stuffed) that are used in Chewonki Traveling Natural History Programs and students are reminded of the legal limitations of private collections. All of our living animals are non-releasable because of injuries or were captive raised before arriving at Chewonki. No animals have been harmed or taken specifically for use in Chewonki programs.

# Class Outline

Predators play an important role in nature, yet they are commonly misunderstood. This program takes a closer look at predators from around the world and examines a variety of predator-prey relationships. We will explore the negative attitudes people impose upon predators and the reasons for their persecution throughout history. This program is designed to ease people's fears of these fragile creatures and to dispel the myths about them.

Each presentation takes at least one hour and is designed for groups of most ages (3<sup>rd</sup> grade-adult). No specific preparation is required for this presentation. Adjustments are made for each grade and ability level.

**A. Introduction:**

- What is a predator?
- Predator perspectives.
- Predator roles.

**B. Activity:**

- Food chain/web demonstration.

**C. Slide Presentation:**

- An introduction to the many types of predators.
- Predator habitats and habits.
- The importance of predators in the natural world.
- The persecution of predators.

**D. View a mounted Maine coyote:**

- Discussion of the coyote controversy in Maine.

**E. Live Predators:**

- Viewing of several live, non-releasable predators.
- Discussion of their and their adaptations for hunting.





# THE BALANCE OF NATURE

## Predators

The **Balance of Nature** presentation explores the adaptations and features of predators while also looking at why predators are often feared and persecuted by people throughout the world. Using an interactive slide show and taxidermy specimens, we will discuss the crucial role of predators in the natural world. The presentation of three live animals will highlight the variety of adaptations that exist within predator-prey relationships.

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_



## PRESS RELEASE

Date:  
Contact:

### Chewonki Presents “Predators: The Balance of Nature”

**What:** A one-hour program for those interested in predators.

**When:**

**Time:**

**Where:**

**Cost:**

**Presenter:**

Scary, disgusting, wicked, vicious: predators have a rough reputation in our society. Chewonki’s program, “Predators: The Balance of Nature,” explores the many commonly held myths about predators and works to dispel them. Highlighting the remarkable adaptations that help predators find and consume their prey, the presentation will engage participants with a vivid slideshow, hands-on activities and lively discussion.

Chewonki’s presenter will use to the lens of food webs and natural cycles to explore problems faced by predators in our world, including examples of their decline throughout history due to habitat loss and human interference. A discussion of current events will emphasize the importance of predators in maintaining the world’s ecological balance.

A mounted coyote will help unite the dynamic issues connecting us to the predators in our landscape, and the concepts will really spring to life when the audience views several live non-releasable animals and observes some of their fascinating predatory adaptations. Striking, essential, advanced, magnificent: the image of predators reexamined.

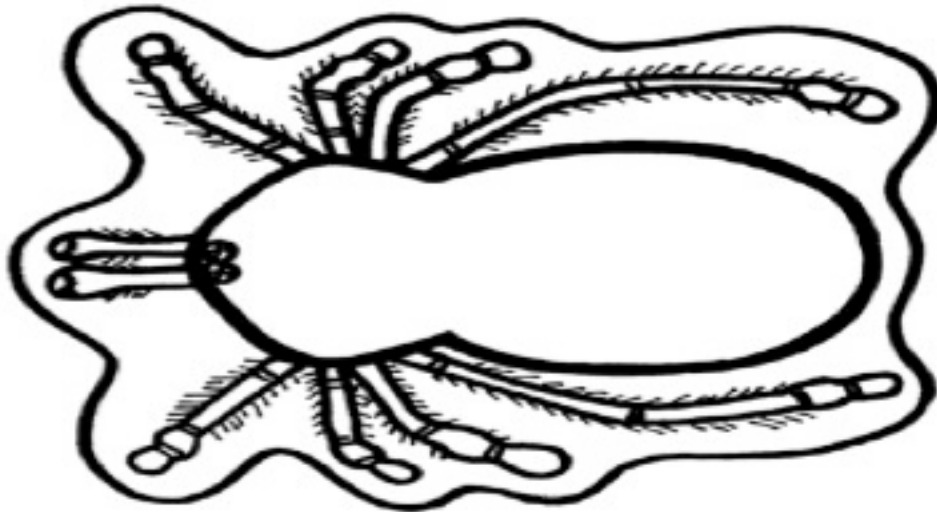
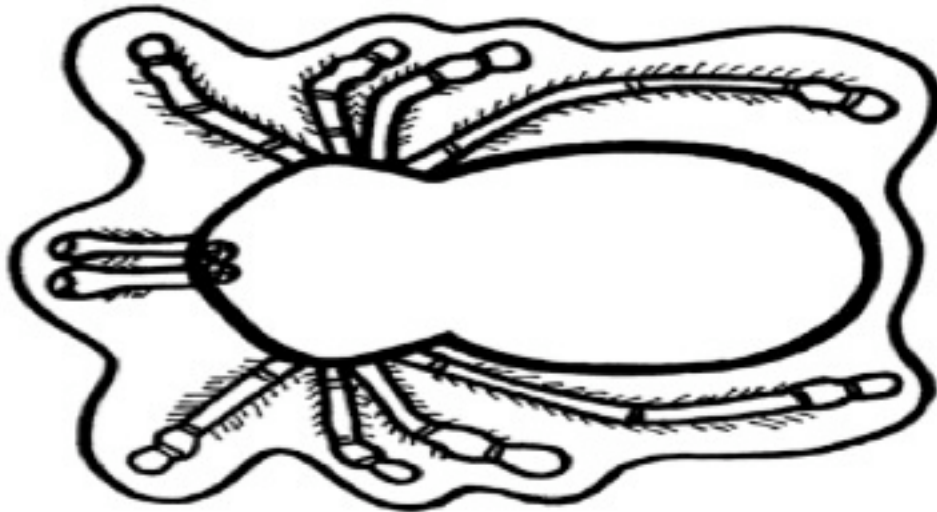
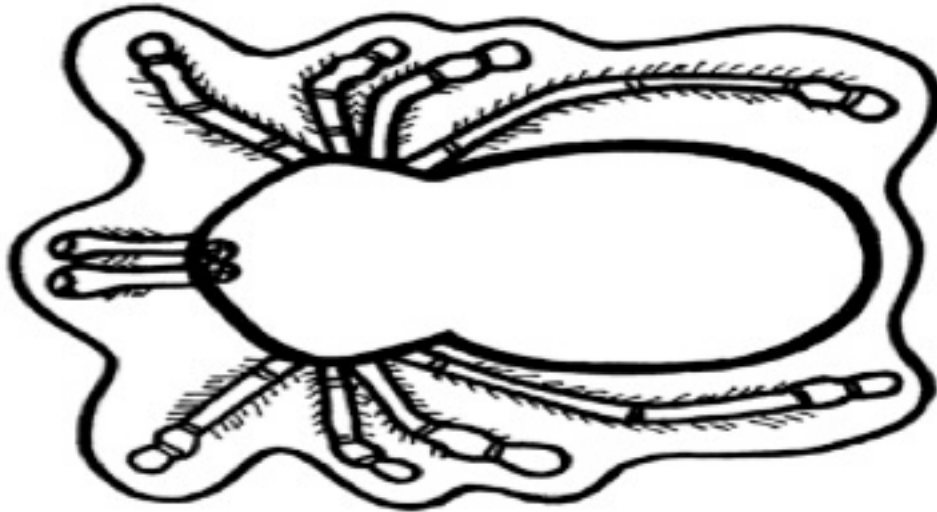
# Vocabulary

<b>Adaptation</b>	A behavior, physical feature, or other characteristic that helps an animal survive and make the most of its habitat. For example, ducks have webbed feet that help them swim.
<b>Binocular Vision</b>	The act or power of focusing both eyes on a single image, thus gaining good depth perception. Birds use binocular vision when they focus straight ahead.
<b>Bounty</b>	A fee paid for killing animals. Maine does not pay a bounty on coyotes. The State does sometimes contract with trappers to remove problem animals. The Maine Coyote Control Association, a private organization, pays a bounty for coyotes.
<b>Camouflage</b>	Protective coloring or shape that helps hide an animal from its predators or prey. For example, a lion's tan fur helps it blend in with tall grasses in the savannah.
<b>Canines</b>	Side teeth used for piercing and grasping.
<b>Carnivore</b>	An animal that eats meat. Wolves, polar bears and weasels are examples of carnivores.
<b>Community</b>	A group of interacting animals and plants living in the same area. Both predator and prey animals are components of natural communities.
<b>Consumer</b>	An animal in the food chain that eats other animals and/or plant material.
<b>Decomposer</b>	An organism that breaks down plant and animal material. For example, mushrooms and other fungi are decomposers.
<b>Ecosystem</b>	A major interacting system that involves both living organisms and their physical environment.
<b>Endangered Species</b>	A living organism that is in immediate danger of becoming extinct.
<b>Food Chain</b>	A group of animals and plants in a community through which energy, in the form of food, flows.
<b>Habitat</b>	An animal's home. For example, the habitat of a meadowlark is a meadow.
<b>Herbivore</b>	An animal that eats plants. Deer and rabbits are examples of herbivores.
<b>Monocular Vision</b>	The act or power of focusing each eye independently of the other. Birds with greater monocular vision have a wider field of vision than those birds with greater binocular vision. All birds have both binocular and monocular vision, depending on where they focus their eyes.

<b>Poach</b>	To hunt or kill an animal or collect a plant illegally.
<b>Producer</b>	A plant in the food chain that is consumed by other organisms.
<b>Predator</b>	An animal that hunts other animals for food.
<b>Prey</b>	An animal that is hunted by another animal for food.
<b>Raptor</b>	A predatory bird, typically one with sharp and strong talons and a pointed, curved bill (i.e. eagles, hawks and owls).
<b>Talon</b>	The sharply pointed and curved claws of a raptor.
<b>Territory</b>	The space a bird defends from other birds (usually of the same species) for mating or feeding.
<b>Warm-Blooded</b>	Being able to maintain a constant body temperature independent of the outside temperature. All birds are warm-blooded.

# Tarantula Name Tags

Photocopy this page and cut out the tarantula nametags for your participants to wear! Nametags worn during presentation help to excite students about predators and make it easier for the presenters to involve the children by name.



# WHAT MAKES A PREDATOR A PREDATOR?

What sets a predator apart from other animals and why are they important? Animals that predate on prey gain their energy from consuming other animals. Some only eat animals and some eat plants, as well. Predators span the animal kingdom and help to maintain the natural balance of animals and their habitats. We're going to explore the different family lives and the traits of predators, as well as how they keep the natural balance of the environment intact.

## **Predators: Hunting as a Way of Life**

Predators can be found across the globe from the high mountains to the deep oceans and everywhere in between. Animals have learned how to hunt and eat in many different climates and ecosystems. Species have spent thousands upon thousands of years honing their skills in order to be the effective predators that they are today. Animals might actively hunt down their prey and a chase may ensue. Or, they may lie in waiting to ambush the prey as they approach. Many hours of the day can be spent hunting for animals depending on the size of the predator and the prey. All of that time spent hunting, requires immense energy so the animals must be successful in their hunt to replenish their lost calories. Animals that do not capture and consume their prey may not survive.

The likelihood of catching and consuming prey is proportional to the method by which the animals hunt. There are different methods for solitary and group hunters. Examples of solitary predators are tigers, panthers, jaguars, cheetahs, bears, short-tailed shrew, box jellyfish and river otter. The benefits of solitary hunting are that the hunter gets to eat all of the food it catches and therefore have to hunt less often. They do not put their kin at risk by bringing them into the fray. There is less of a scent when only one predator approaches a prey, so they can get closer without being noticed. However, it is not always smooth sailing for a solitary predator. Drawbacks include needing to rely on its own skill for hunting, because no other animal will supply it with food. If a skilled hunter gets injured, it will most likely die. Solitary predators reap the benefits of a hunt but feel the strain much more quickly.

Group hunters have their own set of benefits and challenges. Animals such as lions, jackals, bobcats, hyenas, orcas and chimpanzees are group hunters. When animals hunt in packs or clans they can increase the area in which they hunt and therefore increase the likelihood of their success. These pack animals get to sleep more than solo hunters because the work takes less time. The food, once caught, can be protected from other predators or scavengers by multiple animals in the pack. Animals that hunt in groups develop communication with visual and audio indicators. They must work together and create a plan to capture their prey. Because of this ability to communicate they have a group cohesion that spreads beyond the hunting elements of their lives. As with the solitary hunters there are drawbacks, as well. When animals



hunt in packs, they must share their spoils with all pack mates, so there is less food to go around. Also when animals hunt in groups, the offspring are also hunting and therefore in danger. It is harder to protect an animal lineage if all family members are involved in the hunt.

All hunters have developed adaptations to allow them to be successful. Both types of hunters are constantly finding a balance to protect themselves and their families as well as provide sufficient nutrients. Neither predator method is necessarily more effective than the other; all predators will either eat or perish.

### **Vision, Paws, and Quick Jaws**

Adaptations are behaviors and physical features that allow animals to live successfully in their environments. A large part of living successfully is acquiring food in a manner that exerts as little energy and time as possible. Both predators and prey must efficiently provide food for themselves and their young. The animals that do not accomplish this will die and not pass on their traits to younger generations. Only the strongest, fastest and most keen animals survive.

The characteristics of predators vary from species to species but all must be able to detect and capture prey. All animals are adapted to eat the food that will help them survive. If their food is fast they must be faster. Cheetahs use extreme strength and speed to wear down and overtake gazelles and other animals. Great White Sharks have the ability to warm their blood with muscle contractions to a temperature above the ocean water so that they can be superbly fast even in cold waters. Speed helps animals overtake their prey.

Another method for hunting prey is having very acute senses. Whether it is sight, smell or sound, predators can locate their prey accurately for attack. Animals that have eyes on the front of their face are generally hunters, using both eyes to focus on one point. Animals with eyes on the side are usually prey, who will be keeping an eye out for movement or shadows. Owls have the ability to see and hear very clearly to hunt in the dark. Their very large eyes capture any available light to better see their prey. Woodpeckers have acute hearing abilities to hear larvae moving on the forest floor. Some bats use highly tuned echolocation to hone in on flies and other insects. They do so by emitting a very high-pitched sound that bounces off of their surroundings and returns to them to create a sound map. The senses allow predators to locate their food effectively.

In order to hide from or confuse their prey, predators must blend in and be very still. Crocodilians have contrast shading camouflage to blend into the water from above or the sky from below. Female photuris fireflies mimic the light signals of a different firefly species to attract the unsuspecting males to then be consumed. Snapping turtles can lie in waiting for long periods at a time to conceal themselves and then ambush their prey. Having patience can be the difference between having a meal or an empty belly.

Once the prey is located the predator must attack or chase the animal depending on its abilities. The predator may use strength or other tactics to stun their food. Lions have sharp claws and teeth for rapid tearing and grabbing. Tarantulas use venom to kill and then digest their food from the inside out. Stingrays send out an electric current to stun their prey. Whatever the method, the livelihood of predators depends on their ability to not just find but capture their food as well.

All of these traits aid in the process of animals accomplishing the steps consuming their food. Predation occurs naturally because all animals must eat and some animals are adapted to eating meat i.e., other animals. Animals begin by detecting their prey then move on to attacking, capturing and finally consuming their food.

### **A Delicate Balance**

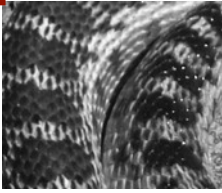
In order for predators to survive and produce young, they must find a particular habitat that can support their hunting as well as keep them and their offspring safe. If there are too many predators in one ecosystem, there will not be enough food to sustain them. If there are no predators, the prey animals will become over-abundant and deplete their food source and ability to survive. Additionally, if prey became overpopulated they would be in fierce competition with other animals for habitat and food.

The ecosystem in which animals cohabitate has a carrying capacity that only supports certain amounts of predators and prey. When animals are not in balance, due to human predation on predators or human impacts on the ecosystem, such as over-logging or increased pesticide use, then species of plants and animals are at risk of ultimately becoming extinct.

Predators have always played a key role in the balance animals in their habitat. Additionally the animals in the wild rely on the food sources found in the wild and that food can be other animals. Whether an animal eats vegetables or meat does not make it more or less valuable to the survival of animals as a whole. It is our role to protect the animals and the environment in order to learn more about our natural world.

# Predator Match-Up

Write the number of the animal under the correct box OR draw a line connecting the name and photograph.



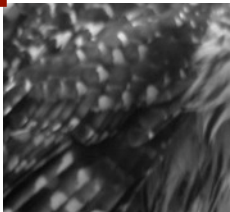
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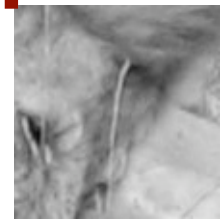
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\_\_\_\_\_



\_\_\_\_\_



\_\_\_\_\_

1. Owl

2. Bear

3. Snake

4. Whale

5. Alligator

6. Lion

7. Spider

8. Wolf

# Predators: The Balance of Nature



## Word Search

Words can be found in any direction but always in a straight line.

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

Word



Bank

ADAPTATION BOUNTY CAMOUFLAGE CANINES  
CARNIVORE COMMUNITY CONSUMER DECOMPOSER  
ECOSYSTEM ENDANGERED HABITAT HERBIVORE  
OMNIVORE POACH PREDATOR PREY PRODUCER  
RAPTOR TALON TERRITORY WEB

# Predator – Prey Tag

**Introduction:** The population of a species in an area is dependent upon the limiting factors of the ecosystem. One such factor is the population or availability of food. The relationship of predator populations and prey populations is very cyclical. This can be completed in one 80 minute class period, with some homework to complete the graph.

## Objectives:

At the end of this activity, the student will:

1. Understand that prey population will change and thus affect the predators population and visa versa.
2. Create a graph modeling the predator-prey population cycle.

## Procedure:

1. This is an active activity that requires some room to run. It can be done outside or in a gymnasium.
2. Create a habitat for the interactions to occur. (Size of a basketball court works well.)
3. Line all students up at one end of the habitat. These kids will be the prey (elk) for year 1.
4. Chose 1 or 2 students to be the predators (wolves) for year 1. They should stand in the middle of the habitat.
5. The class will need 1 data recorder (Teacher could do this.) Population of elk and wolves should be recorded at the beginning of each round. (year)
6. This activity is a version of freeze tag. The teacher blows a whistle and the elk try to run from one end to the other without being tagged (eaten) by a wolf.
7. Any elk tagged must immediately freeze so that any other wolves do not eat them.
8. Once the elk make it to the other side that concludes the year. These are the surviving elk. Any tagged (eaten) elk now become wolves. A wolf must tag (eat) a minimum of 1 elk to survive. If there is a wolf that starves (does not tag any elk) they must stand off to the side for 1 year and then return as an elk.
9. It is very important that time is taken before the start of the next round (year) to verify a correct population of wolves and elk.

Example Data Table

Year	# of Wolves	# of Elk
1.		
2.		
3.		

11. The teacher should decide how many rounds/years to go, but you definitely want the students to experience the up and down populations at least twice.
12. Upon returning to the classroom students should create a double line graph for the data collected.

## Extensions:

Assign students to reflect on the fact that an ecosystem is an open system with many more factors that affect the populations of organisms. An ecosystem will have animals migrating in/out, there will be more predators/prey species, sickness/diseases, hunting, weather/climate, etc.

## Recommended Websites

*This list of recommended websites contains information pertaining to the program you have ordered. These websites are not associated with the Chewonki Foundation and we are not responsible for the content or advertising found therein.*

**Wildlife and Habitat Facts Sheets:** [http://www.defenders.org/wildlife\\_and\\_habitat/index.php](http://www.defenders.org/wildlife_and_habitat/index.php)

Notes: Defenders of Wildlife has compiled a great number of fact sheets about predators from around the world. You can also check out their “Kids Planet” sections for your students to explore themselves.

**Wolf Education and Research Center:** <http://www.wolfcenter.org/default.asp>

Notes: WERC is based out of Idaho. The education portion of their site has useful educational resources and games. Their staff is well informed and always willing to answer questions from teachers and students.

**Predator Conservation Alliance:** [http://www.predatorconservation.org/predator\\_info/predatorinfo.html](http://www.predatorconservation.org/predator_info/predatorinfo.html)

Notes: This site provides information about different types of predators in North America. Links under each animal connect you to more information and other web sites.

**Upham Woods Outdoor Learning Center:** <http://4h.uwex.edu/uphamwoods/programs/documents/PredatorPreyLessonPlan.pdf>

Notes: This document offers a game, created by Project Wild that emphasizes the relationships between predators and prey. It can be an effective way to review the concepts discussed during our visit.

## Suggested Readings

Seidensticker, John & Susan Lumpkin 2008 Predators Simon & Schuster Children’s Publishing.

Notes: Information on adaptations with striking pictures. A good choice for 9-12 year olds.

Spada, Ada 2007 Fang, Claws & Talons: Animal Predators. United Kingdom, Lark Books

Notes: This book compares the animals that we know to the ones that we think of as wild through fact and pictures.

Parker, Steve 2001. The Natural History Museum Book of Predators Carlton Books

Notes: This book discusses how certain animals have adapted their perfect hunting skills.

Milton, Joyce 1993 Bats: Creatures of the Night Grosset & Dunlap.

Notes: Beautifully constructed paper collages illustrate this informational book for early grade-school students. The book boasts a variety of short facts that are easy and interesting to read.

Sill, Catherine 1997 About Birds: A Guide for Children Peachtree Publications

Notes: Beautifully illustrated book with interesting facts for Pre-K and early grades about birds.

Sill, Catherine 2000 About Mammals: A Guide for Children Peachtree Publishers

Notes: An introduction for young children to the things that make mammals special. Lush watercolors and limited text. Good for ages four to eight.