

BIRDS AT WOODLAND PARK ZOO PRE-VISIT INFORMATION FOR TEACHERS

If you are planning a zoo field trip and wish to have your students focus on birds during their visit, this pre-visit sheet can help them get the most out of their time at the zoo. We have put together an overview of key concepts related to birds, a list of basic vocabulary words, and a checklist of bird species at Woodland Park Zoo.

Knowledge and understanding of these main ideas will enhance your students' zoo visit.

OVERVIEW:

There are over 10,000 species of birds currently identified worldwide, inhabiting a number of different biomes and exhibiting a range of adaptations. Woodland Park Zoo exhibits a wide variety of bird species (see attached checklist) in several different areas of the zoo. A bird field trip to the zoo could focus on the characteristics of birds (see "Concepts" below), comparing/contrasting different birds or learning about biomes and observing the physical characteristics of birds in different biomes.

CONCEPTS:

Birds share the following physical characteristics:

- Feathers
- Endothermic (warm-blooded)
- Eggs with shell and yolk
- Lack teeth, but have bony beaks
- Lightweight skeleton, bones with air spaces
- Good vision

Adaptations for flight:

- Low body weight
- Streamlined form
- Efficient metabolism
- Specialized respiration and circulation



Birds, like all plants and animals, have five basic needs to survive—food, water, shelter, air and space. They inhabit every continent on the planet and range in size from the bee hummingbird at 0.05 ounces (1.6 grams) to the North African ostrich at 275 pounds (125 kilograms). Birds are also extremely varied in what they eat and are often divided into the following categories:

- Insectivores—birds that mainly eat insects or spiders
- Granivores-birds that mainly eat seeds

- Nectarivores—birds that mainly eat nectar from flowers
- Piscivores—birds that mainly eat fish
- Frugivores—birds that mainly eat fruit
- Carnivores—birds that mainly catch and eat other animals
- Scavengers—birds that mainly eat dead animals

Flight has enabled many species of birds to migrate long distances. By migrating, birds can take advantage of abundant food sources at different latitudes at different times of year and can also avoid adverse weather conditions. Birds play important roles in the biomes they inhabit. Some birds, such as woodpeckers, eat large numbers of insects, helping to control insect populations. Fruit-eating birds, such as hornbills in tropical Asian forests, help to disperse the seeds of the plants they eat by passing intact seeds throughout their habitats.

VOCABULARY:

Adaptation: Any change in the structure or functioning of an organism that is favored by natural selection and makes the organism better suited to its environment.

Camouflage: The natural coloring or patterning of an animal that allows it to blend in with its surroundings.

Consumers: Animals that eat plants and/or other animals. Primary consumers eat only plants. Secondary and tertiary consumers eat other animals.

Decomposers: Species ranging from vultures and beetles to bacteria and fungi which break down dead plant and animal material into organic substances which can then be used by producers.



Diversity: Wide variety. Species diversity refers to the abundance of different species within an ecosystem.

Ecosystem: A natural unit consisting of all plants, animals, and microorganisms (biotic factors) in an area functioning together with all of the nonliving physical (abiotic) factors of the environment.

Energy: the capacity to do work (includes heat energy).

Food chain: The eating relationships among organism within an ecosystem where food energy is transferred from one organism to another as each consumes a lower member and in turn is preyed upon by a higher member.



Food web: The complex eating relationships among species within an ecosystem. In a diagram of a food web organisms are connected to the organisms they consume by arrows representing the direction of energy transfer.

Forest: A large, continuous stand of trees.

Habitat: The area that supplies an animal or plant with all its basic needs for survival, including food, water, air, shelter and space.

Nutrients: A food or chemicals that an organism needs to live and grow, or a substance used in an organism's metabolism that must be taken in from its environment.

Organism: A living thing such as an animal, plant, fungus, or microorganism. In at least some form, all organisms are capable of reacting to stimuli, reproduction, growth and maintenance as a stable whole.

Predator: An animal that obtains food by killing and eating other animals.

Prey: An animal that is killed and eaten by other animals.

Producers: Plants, and some microorganisms, which use the sun's energy to produce food in the form of sugars and starches that are used to sustain the needs of other organisms.

Scavenger: an animal that feeds on flesh of dead and decaying animals

Skeleton: The bony, internal structure that provides support and protection for a vertebrate organism's body and internal organs.

Warm-blooded (endothermic): Refers to an organism that can control its internal body temperature, maintaining a relatively constant body temperate regardless of the external environmental conditions.

PRE- AND POST- ASSESSMENT:



The following food chain activity will provide you with an understanding of your students' current knowledge of plant and animal interdependence. In order to encourage their creativity and expression, remind your students that this exercise is not a test, but is a way of seeing what they already know and what they haven't yet learned. After your students have participated in their zoo field trip focusing on birds, repeat the activity and compare student work from before and after.

FOOD CHAIN DIAGRAM

Materials: paper, pencils

Discuss with your students the idea that food chains are one way to show interdependence, or how plants and animals are linked in nature. Using the chalkboard or overhead projector, have your class construct a simple food chain that might occur in a habitat that you are studying. The arrows indicate the direction that energy is being passed up the food chain. For example:

Sun \rightarrow blackberry bush \rightarrow blackberry \rightarrow robin \rightarrow hawk

A blackberry bush gets energy from the sun, which it uses to grow and produce fruit. A robin eats some of the berries. Eventually, a hawk might eat the robin.

Sun \rightarrow phytoplankton \rightarrow zooplankton \rightarrow small fish \rightarrow medium fish \rightarrow salmon \rightarrow bald eagle

In the ocean phytoplankton get energy from the sun, it is then eaten by zooplankton (such as krill), zooplankton is a food source for many marine animals including barnacles, mussels, clams, and like this example small fish, small fish then are eaten by larger fish like silver perch, who can then be eaten by salmon, salmon are often eaten by a bald eagle.

After illustrating one or two more examples, have your students draw their own food chain including at least one bird. After returning from the zoo return to the concept of a food chain, possible incorporate birds that you saw at the zoo and how they fit into a food chain. If the students seem to understand the concept well you could even try constructing a food web (combining and linking/cross linking many food chains) so that the students can see other connections between animals and their food in nature.

CHECKLIST OF BIRDS AT WOODLAND PARK ZOO

Note: This list is current as of April 2016. The zoo's collection is subject to change.

African Savanna Aviary		Australasia
	Blue-bellied roller	Blue-faced honeyeater
	Golden-breasted starling	🗇 Emu
	Hottentot teal	Laughing kookaburra
	Lady Ross' turaco	Masked lapwing
	Maccoa duck	
	Spowy-crowned robin-chat	Willawong Station
	Speckled mousebird	Bourke's parakeet
	Specked modsebild	□ Budgerigar
	Weavera	Cockatiel
	White feed whictling duck	Eastern rosella
	White backed willsting duck	Princess of Wales parrot
	white-headed bullato weaver	
African Savanna		Trail of Adaptations
	Egyptian goose	🗖 Kea
	Helmeted guinea fowl	
	Ostrich	Banyan Wilds Aviary
		Azure-winged mapie
		Chinese hwamei
		Common shama thrush
		Malay great argus
		Nicobar pigeon
	nservation Aviary	Tropical Rain Forest - Indoors
	Black-throated laughing thrush	
	Blue-billed curassow	
	Blue-billed magpie	Blue-gray tanager
	Cabot's tragopan	Blue-crowned motmot
	Edward's pheasant	Croaking ground dove
	Gray-winged trumpeter	Crested oropendola
	Green woodhoopoe	Golden-bellied grosbeak
	Knobbed hornbill	Paradise tanager
	Lesser Bornean crested fireback	Peruvian pigeon
	Malay great argus	Red-capped cardinal
	Nicobar pigeon	Red-crested cardinal
	Northern helmeted curassow	Red-crested finch
	Palawan peacock pheasant	Rufous-collared sparrow
	Plush-crested jay	Silver-beaked tanager
	Tawny frogmouth	Spangled cotinga
	Temminck's tragopan	Sunbittern
	Victoria crowned pigeon	Troupial
	Violaceous turaco	Toco toucan
	Vulturine guineafowl	Turquoise tanager
	White-crested laughing thrush	White-tailed trogon
	Wrinkled hornbill	Yellow-rumped cacique
		Tropical Rain Forest - Outdoors
		Blue-winged goose
		White-face whistling duck

Nextherm Trail			
	rtnern i fall		
	Black-billed magple	Li Humbolat penguin	
	Great grey owl		
	Snowy owl	Family Farm	
	Stellar's sea eagle	Domestic chickens	
		Free-ranging birds	
То	mperate Forest		
	Chilean flamingos	Pantor Contor	
		(not all listed birds are an diaplay, but may be brought out	
	Chiloe wigeon	(not all listed birds are on display, but may be brought out	
	Crested screamer	by stall of volunteers of used in the Raptor Program)	
	Coscoroba swan		
	Puna teal	□ Barn owl	
	White-faced whistling duck	Domestic chicken	
	White-naned crane	Ferruginous hawk	
		□ Harris [°] hawk	
	Bar-headed goose		
Те	mperate Wetlands	□ Saw-whet owl	
	American green-winged teal	Spectacled owl	
	Baikal teal	Turkey vulture	
	Baer's pochard	Western screech owl	
	Black-crowned night heron	Western red-tailed hawk	
	Bufflebead		
	Cinnamon teal		
	Hooded merganser		
	Emporer googo		
	Fulvous whistling duck		
	Green heron		
	Marbled teal		
	North American Wood duck		
	Northern shoveler		
	Pacific (common) eider		
	Red-breasted goose		
	Red-crowned crane		
	Smew		
	Tundra swan		
	White-headed duck		
Wild birds seen on zoo grounds			
Ма	ny wild birds make Woodland Park Zoo their hom	e. Others use the zoo as a nesting site, a stopover during	
migration, or as an over-wintering site. What wild birds did you see today?			
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Questions about this information or your zoo visit? Please call 206-548-2424 or visit our website at <u>www.zoo.org</u>