



WAVE on Wheels Outreach

Penguin Presentation

Grades K-2

Time requirement

1 Hour

Group size and grade

Up to 50 students maximum

Materials

1 African Penguin
Penguin Artifacts Bin
Penguin Emergency Backpack
Penguin Pedestal
WAVE Tablecloth

Goal

Through a live penguin encounter, students will be excited, engaged, and educated about the wonders of aquatic life and the importance of conservation.

Objectives

1. Students will be able to identify what type of animal a penguin is.
2. Students will be able to list 2 adaptations a penguin has for aquatic life.
3. Students will be able to identify what penguins eat.
4. Students will be able to identify what animals eat penguins.
5. Students will be able to discuss how they can help save penguins and other aquatic animals.

Theme

Penguins are unique aquatic birds that play an important role in their environment.

Kentucky Core Academic Standards – Science

Kindergarten – *Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment*

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

LS1.C: Organization for Matter and Energy Flow in Organisms.

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

ESS3.A: Natural Resources

ESS3.C: Humans Impacts on Earth Systems

First – *Structure, Function, and Information Processing*

1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

LS3.B: Variation of Traits

Second – *Interdependent Relationships in Ecosystems*

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

LS4.D: Biodiversity and Humans

Background

Penguin Adaptations as Aquatic Birds

Penguins fly differently than other birds: not in the sky, but underwater, and can swim up to 12 mph. Due to the small muscles at the base of their feathers which bind them closely to their bodies, penguins are considered to be waterproof. To reinforce their waterproof coat, the feathers are covered in a waxy substance that repels water. This substance is secreted at the base of the tail and distributed throughout the coat during preening. Flighted birds have hollow, light weight bones, that create a lighter body to increase flying ability. Penguins, on the other hand, have heavy, thick bones which are durable enough to withstand propulsion while swimming. Penguins, like other aquatic birds, also have webbed feet for better locomotion in the water.

African penguins are carnivorous birds which feed on a variety of fish, such as herring, anchovies, sardines, and occasionally smaller crustaceans and squid. They can eat about 1

pound of food per day, or about 15% of their body weight. With that in perspective, it's no surprise that an African penguin poops about every 20 minutes, or around 72 times a day.

Penguin Predators

There are many predators that feed on African penguins, on land and sea. On the shore, snakes and mongooses hunt for penguin eggs, while leopards have been observed hunting adults. Marine predators include sharks, fur seals, orca, and the number one predator of penguins, leopard seals. A common misconception is that polar bears are also penguin predators. Polar bears are only found near the arctic circle or North Pole, whereas penguins remain in the Southern Hemisphere only. Therefore, these two animals would never come in contact with one another.

Species of Penguin

Throughout the southern hemisphere there are 18 types, or species, of penguin. The largest penguin species is the emperor penguin reaching heights up 45 inches. The smallest penguin is the fairy, or little blue, penguin only reaching 13 inches in height. Of the 18 species, 7 live in warm weather environments including the African black-footed penguin. Warm weather penguins lack feathers on the lower leg, while cold weather penguins have feathers down to their feet. Warm weather penguins also have a bald patch on their head which serve as a release point for heat.

Penguin Conservation

Unfortunately, the African penguin species is endangered, which means there has been a 50-70% decline in population reduction rates. Current reasons for the reduction in recent years are over-fishing, oil pollution, and the collection of guano and eggs. Predation also serves as a factor, considering the observation of the African penguin's newest predator, the leopard seal. Hope lies in the protection of this species under the classification of the endangered status. Breeding grounds are preserved as national parks or nature reserves, and guano and egg collections have been outlawed. More is being investigated, such as conservation of fish stocks, and immediate response to oil spills for species rescue.

Vocabulary

Adaptation – The process by which an animal or plant species becomes fitted to its environment through body parts and behaviors.

Camouflage - Concealing coloration, background matching in animals, the use of biological coloration to mask location, identity, and movement, providing concealment from prey and protection from predators.

Conservation – The study of the loss of Earth's biological diversity and ways this loss can be prevented.

Diversity - The variety of life found in a place on Earth or the total variety of life on Earth.

Environment - The external conditions, resources, stimuli etc. with which an organism interacts.

Guano – Penguin feces or poop

Habitat – The place where an organism or a community of organisms lives, including all living and nonliving factors or conditions of the surrounding environment.

Observation – The act of attentive watching, perceiving, or noticing.

Predator – An animal whose diet consists of other animals.

Prey – An animal who is eaten by other animals, or predators.

Survive – The continuation of life or existence.

Extension Activities

Project WILD Activities. Please contact your state Project WILD coordinator for more information. See <http://projectwild.org/KentuckyCoordinator.htm> (for Kentucky) or <http://www.projectwild.org/ProjectWILDCoordinators.htm> (for other states).

- Beautiful Basics – Page 58 – Students will identify five basic survival needs shared by people and all other animals, including pets, and wildlife.
- And the Wolf wore shoes – Page 180 – Students will distinguish between real and imaginary animals, and give example of real and imaginary animals and their characteristics.
- Learning to Look, Looking to See – Page 278 – Students will describe differences seen in the environment as the result of casual and detailed observation, and give reason for the importance of looking closely at any environment.
- Animal Charades – Page 280 – Students will define wildlife, and distinguish between domesticated and wild animals.
Ethi-Thinking – Page 303 – Students will generate a list of activities that are harmful to wildlife and the environment, discuss reasons these activities are inappropriate, and recommend alternate activities that are not harmful.
- What’s That, Habitat – Page 56 – Students will identify their own basic needs for food, water, shelter, and space in a suitable arrangement; and generalize that wildlife and other animals have similar basic needs.

Book - Mr. Popper’s Penguins by Richard and Florence Atwater

Craft - <http://www.woojr.com/preschool-christmas-crafts-paper-plate-penguin/>

Craft - <http://www.crafty-crafted.com/category/animal-crafts/penguin-animal-crafts/>

Resources

Project Wild <http://www.projectwild.org>

Project Wet <http://www.projectwet.org>

Project Learning Tree <http://www.plt.org>

<http://www.arkive.org/african-penguin/spheniscus-demersus/>

<http://marinebio.org/species.asp?id=646>

<http://www.arkive.org/african-penguin/spheniscus-demersus/>

<http://www.mysticaquarium.org/animals-and-exhibits/species-of-the-month/652-african-penguin>

<http://a-z-animals.com/animals/african-penguin/>

http://ecos.fws.gov/tess_public/profile/speciesProfile;jsessionid=354BAD592C2D8B57025B388561F112C0?spcode=B0FM

<http://education.nationalgeographic.org/media/endangered/>