



Classification 7-8

This unit introduces students to bird classification and adaptation, focusing on how bird shapes (silhouettes) and specific traits reflect their ecological roles and evolutionary adaptations. Students will learn to use silhouettes and features to classify birds into major groups (e.g., raptors, passerines, waterbirds) and explore the unique roles each group plays in maintaining ecosystem health.

Curriculum Relevancy

- **Grade 7** - Evolution by natural selection provides an explanation for the diversity and survival of living things.
- **Grade 8** - The theory of evolution explains the diversity of living things.
- **Learning Competencies:** Analyze and interpret data from observations, understand ecological interdependence, apply knowledge of evolutionary adaptations.

This lesson addresses competencies in scientific inquiry, critical thinking, and understanding evolutionary biology and biodiversity.

Objectives

By the end of this unit, students should be able to:

1. Identify and classify birds into major groups based on silhouettes and physical traits.
2. Describe evolutionary adaptations of each bird group and how these traits support survival.

3. Analyze the ecological roles of different bird groups and their importance in ecosystem stability.
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Unit Content

Introduction to Bird Silhouettes and Classification

We are going to explore the idea of **silhouettes**. Now, when I say 'silhouette,' I'm talking about the dark outline or shape of an object that we can see against a bright background. Think of when you see a shadow—it doesn't show details like colors or patterns, but you can still recognize what it is just by its shape.

For example, if you saw the outline of a bird flying by the sun, you wouldn't see all its colors or markings. But its shape alone might tell you a lot about what type of bird it is. So, a silhouette is like a quick snapshot of an animal's shape that helps us understand its identity.

Scientists use bird silhouettes to help classify and study birds. They observe certain shapes, like long wings or specific beak shapes, to understand a bird's behaviors and how it survives in its environment.

Slide 2

A silhouette helps us recognize things, even when we can't see all the colors and details.

Slide 3

Silhouette Examples: Owl, Hummingbird, Duck, Crow, Heron, Woodpecker, Sparrow, Gull

Classifying Silhouettes into Groups

Slide 4

Raptors: *This group includes Eagles & Hawks - they have sharp claws called talons to catch their prey, and their eyes are like binoculars, helping them spot tiny*

creatures from high up in the sky.

Characteristics: Sharp, powerful bill to tear prey; large claws; soar high.

Slide 5

Passerines (Song Birds): *Passerines include more than half of all bird species. They are often called perching birds. They generally have three toes pointing forward and one back.*

Slide 6

Owls: *Owls have big, round eyes that work like night vision goggles, helping them see in the dark. They're super quiet fliers thanks to their fluffy feathers, and they have strong toenails that they use when they hunt for mice and other small animals.*

Characteristics: Night hunters, large eyes, fantastic hearing, and powerful talons.

Slide 7

Extra: Wings have special hairs to silence their flight.

Slide 8

Hummingbirds: *Hummingbirds are like the speedsters of the bird world. They can hover in the air with their super-fast wings. They beat so quickly that they make a humming sound. They have super long beaks to sip nectar from flowers, and they're like tiny jewels zipping around.*

Characteristics: Small, fast wings, specialized beak for feeding on nectar.

Slide 9

Swordbill Hummingbirds live in South America and have bills designed specifically to feed on these flowers.

Slide 10

Woodpeckers: Woodpeckers are the drummers of the bird world. They have strong beaks that can drum on trees to find insects hiding inside. They're also like little construction workers because they carve holes in trees to build their homes..

Characteristics: Forest dwellers, powerful beak, long tongue.

Extra: Their long tongue wraps around their brain to cushion against impact.

Slide 11

Why don't woodpeckers get a head ache when they hit the tree trunk with their beak?

Their long tongue wraps around their brain inside their skull to act as a cushion when drumming or drilling.

Slide 12

Ducks: Elegant swimmers with webbed feet, flat beaks, and waterproof feathers.

Characteristics: Live on water, webbed feet, waterproof feathers.

Slide 13

Wading Birds: Wading birds are commonly found in wetland habitats around the world. They are known for their tall, slender appearance, long legs, and patient hunting techniques. These birds can be spotted in a variety of environments, from swamps and marshes to riverbanks and coastal areas.

Characteristics: Live near shallow water, long legs and neck, sharp beaks.

Slide 14

Gulls: Often seen near coastlines, lakes, and even urban areas. They're known for their distinctive appearance, with long wings, webbed feet, and sharp beaks. Gulls are opportunistic feeders, capable of adapting to various environments, from ocean shores to city streets.

Characteristics: Long wings, webbed feet, sharp beaks; found in large flocks.

Ecological Roles of Bird Groups (Slides 13-15)

- Explain the ecological roles played by different bird groups in various ecosystems (bird jobs)

Slide 15

Scavengers: *Some birds, like crows and vultures, are the cleanup crew. They eat things that are already dead, making sure nothing goes to waste.*

Slide 16

Gardeners: *Birds that eat seeds are like gardeners. They spread seeds around which helps the plant multiply.*

Pest Control: *Birds like owls and hawks are the pest controllers. They hunt for animals like mice, rats and insects.*

Slide 17

Pollinators: *Some birds, like hummingbirds, are like nature's gardeners. As they sip nectar from flowers, pollen sticks to their bills and they spread it to other plants which helps them reproduce.*

Construction Workers: *Woodpeckers are like carpenters. They carve holes in trees to find insects, and in doing so, they help other animals find homes in the tree's cozy hollows.*

Slide 18

Seed Spreader: Some birds, like Stellar's Jays, are like nature's gardeners. They eat berries whole and disperse the seeds from those berries through their droppings as they move throughout their habitat.

Water Guardian: Water Guardians keep our oceans and water ways full of necessary nutrients. Their droppings act like manure for the water, helping small creatures and plants to grow and thrive.

Slide 19

Mobile Links: Some birds, like Bald Eagles and Gulls, catch much of their food in the water and bring their catch back to land to eat. They are moving nutrients from aquatic environments to terrestrial environments or from one local environment to another.

Slide 20

Scientific Classification

Birds are classified into groups to help scientists understand their traits and relationships. Here's how it works:

Kingdom: Animalia

Includes all animals. Birds are animals because they:

- Eat other organisms for food.
- Can move voluntarily.
- Have specialized sense organs.

Slide 21

Phylum: Chordata

Birds belong to this group because they share traits like:

- A flexible rod (notochord) during development.
- A nerve cord along their back.

Class: Aves

Birds are in the class *Aves* because they:

- Have feathers.
- Use beaks instead of teeth.
- Lay eggs.
- Are warm-blooded.

Slide 22

Order:

Groups birds by similar characteristics.

- *Passeriformes*: Perching birds like sparrows and finches.
- *Strigiformes*: Owls.
- *Falconiformes*: Hawks and falcons.

Family:

Divides orders into closely related birds.

- *Corvidae*: Crows and jays.
- *Trochilidae*: Hummingbirds.

Slide 23

Genus

Groups species that are very closely related. Examples:

- *Corvus*: Crows and ravens.
- *Falco*: Falcons.
- *Aquila*: Eagles.

Species

The most specific level. Identifies unique birds that can breed together. Examples:

- *Corvus corax*: Common Raven.
- *Falco peregrinus*: Peregrine Falcon.
- *Aquila chrysaetos*: Golden Eagle.

All these bird groups have important jobs in nature. They're like the superheroes of our ecosystems, making sure everything stays balanced and healthy. Without them, our world would be a very different place!

- **Discussion:** Discuss a bird group, identify key adaptations, and present how these help it survive.
- **Discussion:** Why is biodiversity important for ecosystem health?

Wrap-Up and Journal Entry

- **Reflection:** In Bird Journals, students summarize the groups, adaptations, and roles of each bird group.
 - Include a sketch or list of silhouettes with group labels.
 - Note one adaptation per group and its purpose.
 - Briefly explain the ecological role of each group.
- **Question for Reflection:**
"How do the adaptations of each bird group help maintain balance in ecosystems?"

Activity

Bird Groups Memory Game

Craft: Bird Silhouette Habitat Creation

Students receive a bird silhouette print out (or have them draw it), identify its group, and create (draw, paint, use mixed media) a habitat around it that showcases the bird's adaptations and ecological role.

The silhouettes provided are:

- Raptor
- Heron
- Owl
- Duck

- Gull
- Passerine
- Woodpecker

Word Search/Crossword

Attached word search may be done in class or provided as a handout.

Quiz

The attached quiz may be done individually or as a class.

Reflection Questions:

How do bird silhouettes help us identify different bird groups, even from a distance?