



NESTS, JUVENILE BIRDS, AND MIGRATION 7-8

Unit Overview

This unit combines the exploration of bird nesting strategies, stages of chick development, and the incredible phenomenon of migration. Students will investigate how these behaviors evolved to enhance survival, their ecological roles, and the challenges birds face today.

Unit Outcomes

By the end of this unit, students will:

1. Analyze bird nesting behaviors and migration as evolutionary adaptations.
2. Understand the significance of habitats for nesting and migration routes.
3. Evaluate human impacts on bird populations and propose conservation solutions.

Curriculum Relevance

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 how internal and external factors influence survival and reproduction.
- Understand how ecosystems and biodiversity rely on interconnected behaviors like migration and nesting.

Objectives

Students will:

1. Identify and explain different types of nests, chick development stages, and migration patterns.
2. Investigate physical and behavioral adaptations for nesting and migration.
3. Explore the challenges birds face from habitat loss, climate change, and human-made barriers.

Unit Content

Nests and Juvenile Birds Section

Slides 2-3

Nests are more than just places to lay eggs. They are engineered to protect eggs and chicks from predators, weather, and other dangers.

Introduce the importance of nests as protective structures, emphasizing their role in survival and reproduction.

Slides 3-10

Examples: Cup nests, cavity nests, platform nests.

Discuss how each nest type represents an adaptation to the bird's environment (consider predators and weather challenges).

Slides 11-17

Stages: Egg → Hatchling → Nestling → Fledgling.

Highlight the challenges chicks face at each stage and the role of parental care. Include discussions on how environmental pressures affect chick survival rates.

Egg

Birds start as eggs, where the embryo grows inside, nourished by the yolk. Parents incubate the eggs to keep them warm and rotate them to ensure proper development. However, eggs face many dangers—predators like raccoons, snakes, or crows may eat them, and harsh weather can impact survival. If parents are disturbed or frightened away, they may abandon the nest, leaving the eggs vulnerable.

Hatchling

A hatchling is newly hatched, often blind, featherless, and completely dependent on its parents. At this stage, chicks are unable to regulate their body temperature and must be kept warm. Parents work hard to feed them every few minutes, bringing soft, protein-rich food like insects. Hatchlings are extremely vulnerable to predators, starvation, and exposure. If a parent dies or food is scarce, the chances of survival are low.

Nestling

Nestlings have grown some feathers but still cannot leave the nest. They continue to rely on their parents for food and protection. This is a crucial stage where chicks develop strength and coordination. However, competition among siblings can be fierce—stronger nestlings may get more food, while weaker ones may not survive. Nestlings are still vulnerable to predators, and if they fall from the nest too early, they often cannot make it back.

Fledgling

Fledglings have most of their feathers and are learning to fly. At this stage, they leave the nest but remain under parental care, as they are still practicing their flying and foraging skills. Many fledglings struggle with their first flights and may end up on the ground, where they are exposed to predators like cats, foxes, or hawks. Parents continue to feed and protect them while they gain independence. Survival rates at this stage depend on their ability to quickly learn and avoid danger.

Each stage presents unique challenges, and without parental care, many young birds wouldn't survive. Environmental pressures like habitat loss, food scarcity, and climate change also impact bird survival, making conservation efforts critical for many species.

Slide 18-21

Most birds are caring parents, just like human parents. They make sure their babies have food, stay warm, and are protected. But different birds have their own unique parenting styles.

Parents feed their birds while they are in the nest and even once they leave. It is hard work for the parents, especially when they have several babies at the same time.

Baby birds have very bright linings to their mouth to help their parents know where to put the food

Slide 22-23

How long do parents spend raising their young?

Different species depend on their parents for different amounts of time.

Hummingbirds are only fed for a couple of days – then they are on their own.

Their parents feed them small insects.

Eagles and Osprey may be dependent for 3 months or longer.

They are fed fish and small rodents

Small song birds (passerines) are normally dependent on their parents for food for about 2 weeks

Depending on the species, they are fed seeds, fruit or insects.

Introduce examples of nesting adaptations, such as penguins using body heat or weaver birds constructing intricate structures.

Slide 25

Different species have different longevity.

But most of our birds only live a year or 2 due to human activity

What are some of the ways that humans cause these problems?

- Hitting windows in our homes (1 billion birds each year in North America)
- Killed by cats that are allowed outside (1 million birds each day in Canada)

Pesticides – because these kill the insects that birds need to eat

- Habitat destruction destroys the places birds need to live

Migration Section

Slide 26-28

Migration is the seasonal movement of birds to find food, avoid harsh climates, and reproduce.

Birds come north in the spring because the longer days of northern summers provide greater opportunities for breeding birds to feed young

Extended daylight allows in the north are good for larger clutches of chicks

As winter arrives in Canada there is less food available.

Birds migrate in order to find more food.

Because it is warmer in the south at that time of year, there will be a more abundant food supply in the south

Slide 29

There are many different kinds of migration and some birds don't migrate at all!

- *Birds that don't migrate are called Resident birds*
- *Birds that move in the winter are called Migrants*
- *Some just go a short distance and others go a long way*
- *Some might just come down the mountains where it is warmer down below*
- *Sometimes birds will migrate ONLY in years where food is in short supply where they usually live.*

Let's look at some examples of migrants

Slide 30

Short-distance migrants - It is still a long way to fly for these birds, but not as far as for many others

Slide 31

Long Distance Migrants - Some birds go all the way to South America – and from Northern Canada that is nearly 14,400 km – and then they come back again!!

Slide 32

Altitudinal Migrants - Some species (Juncos / Sooty Grouse) make seasonal altitudinal movements up and down the mountains of the North Shore

Slide 33

*Movements of species caused by food failure is called an Irruption or Super-flight
Winter finches – Pine & Evening Grosbeak, Red & White-winged Crossbill, Pine Siskin, Redpolls*

This means we will see many of them in Vancouver in the Winter when there is an irruption

Slide 34

This lovely Snowy Owl is another example of a species that we see when there is an irruption

How do resident birds survive the winter?

Slide 35

They have higher body temperatures than us (average 40c vs humans 38c)

Their feathers keep them warm

They have special scales on their feet and legs to prevent heat loss

They can restrict blood supply to feet and legs to stop losing heat without getting frost bite

Some of them can go into 'Torpor' at night.

Slide 36

- Torpor is almost like a trance

- Birds (like hummingbirds) drop their internal temperature by almost 95% which puts them into this state.

- It means they need less energy and can withstand frigid temperatures

How do birds migrate:

Slide 37

We still don't totally understand how birds manage to find their way on these long journeys. But we believe they use several clues:

- *They tend to use certain flyways over North America by following mountain ranges.*
- *They avoid barriers like open stretches of water whenever they can*
- *They use the earth's magnetic fields*
- *Some even use smell*

Slide 38

They migrate in flocks to save energy

- *Most fly high at 500 – 2000 feet*
- *They travel at night as the air is calmer and there are less predators*

Amazing Migrations

Slide 39

Some birds do amazing migrations

They fly super long distances or crazy high

When you think how tiny they are it really is a miracle!

Slide 40

Our rufous humming bird breeds as far north as Alaska and travels all the way south to Mexico. It weighs less than a dime and its wings beat at 60 beats per SECOND in flight with a heart rate of 1220 beats per minute. (NOTE: only our Rufous Hummingbirds migrate – our Anna's Hummingbirds are residents so we can see them all year)

Slide 41

These Bar-headed Geese in Asia have been seen by airline pilots flight at 30,000 feet!!

Slide 42

The Bar-tailed Godwit flies from Alaska to New Zealand (11,000km) without stopping – in just 8 days – they sleep along they way by shutting down half their brain aa a time (from Unit 3 Body Parts)

Equivalent to human running at 70 kph for more than a week

Slide 43

Some Albatrosses fly the whole way around the earth each year!

Challenges and Hazards:

- Discuss challenges during migration, including weather and human-made obstacles.
- Emphasize the need for safe stopover sites and protected areas.

Slide 44

Birds migrate in stages – some fly hundreds or even thousands of miles without stopping but most have to rest and refuel along the way. It is a difficult journey, to say the least.

Slide 45

- Weather – storms cause many challenges for migrating bird.
- As climate change is changing our weather patterns it will get worse and cause great losses for our birds
- They are blown off course and cannot find their way to their winter grounds
- They are blown into obstacles and killed
- Their food can be destroyed

Slide 46

Windows are a huge problem for birds for 2 reasons:-

- *They see their habitat reflected in the window and think they can fly through*
- *At night, when they are migrating, they see the lights on in tall buildings and get confused*

Slide 47

This is a window – but you can see how birds are fooled into thinking it is really trees!

Slide 48

The right half of this picture is the forest and the left side is the reflection in the windows – hard to see the difference!

Slide 49

At night, when birds are migrating, they get confused by lights left on in buildings. They flutter up against the windows until they drop to the ground where they are predated by cats and other animals.

Slide 50

Habitat loss is also a huge hazard

Birds need to stop along their migration route

If the place they need to stop and refuel has been built on they cannot eat

Slide 51

Then when they get to their winter grounds, if they have also been destroyed, they have another problem because they have nowhere to eat and sleep over the winter.

Activity

Egg Drop Activity

Craft

Bird's-Eye View

Word search/crossword

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

Quiz

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

Reflection Questions

1. Why do birds build different types of nests, and how do these structures reflect their environment?
2. What challenges do migratory birds face during their journeys, and how can humans help mitigate these?
3. How do nesting and migration behaviors showcase the interconnectedness of ecosystems?