

UNIT I

Lesson 5 Unit I Review & Assessment

OBJECTIVES

Students will...

1. Explain the distinctive parts of a bird.
2. Play Bird Brains Bingo to demonstrate understanding of adaptations and survival needs.
3. Complete remaining journal assessment pages.

DURATION

45 minutes

Additional class time will be needed for final assessment pages in the Student Journal section of the Avian Explorer Handbook, pages 7–9

MATERIALS

1. Avian Explorer Handbooks
2. Pencils
3. Prizes for Bird Brains Bingo (optional)
4. Student copies of Fall Crossword Puzzle and Fall Code Words (See Appendix)

AVIAN EXPLORER HANDBOOK

PAGES TO BE USED IN THIS LESSON

1. Student Journal Pages
 - Page 6, Bird Brains Bingo
 - Page 7, What Makes a Bird a Bird?
 - Page 8, Good Neighbors
 - Page 9, Adaptation Matching

APPENDIX

Bird Brains Bingo Clues
Vocabulary Word Games

VOCABULARY WORDS & PHRASES USED IN THIS LESSON

A glossary of vocabulary relevant to the entire AVES Project is included in the Student Reference Guide section of the Avian Explorer Handbook. The list below shows the words that appear in this lesson. Any words defined in this lesson are shown in **bold**, both below and in the lesson text.

adaptation	ecology	population
aviary	environment	prey
behavior	habitat	scavenger
bird	migration	survival
characteristic/trait	ornithologist	

Instructional Sequence

ENGAGE WE'RE FLYING NOW!

1. Inform the class that it is now time to put their ornithology skills to the test. Soon they will be playing a bingo game using examples of bird adaptations that they themselves will provide, but first it's time for a little review.
2. Invite the students to think back to all of the adaptations they have seen and learned about here in the classroom and during their Aviary visit.

EXPLORE UNIT I REVIEW: THE BIG IDEAS

1. Ask the students to suggest what they believe to be the most important things they have learned during our studies about birds.
2. Guide the class through a discussion that reviews these major topics:
 - What makes a bird a bird? Explore characteristics possessed by all birds.
 - Relationships between birds and their environment—a “jobs that birds do” review.
 - Adaptations, both physical and behavioral.

EXPLAIN SAME PARTS DIFFERENT SPECIES

Important elements of the “Big Ideas” above might include:

1. What makes a bird a bird? Some characteristics possessed by all birds include feathers, wings, adapted feet, adapted bills, hollow bones and hard-shelled eggs.
2. What jobs do birds do? Some examples of important cultural and ecological relationships with birds are:
 - Many birds help control insect populations.
 - Some birds help control rodent populations, especially birds of prey—raptors.
 - Some birds are nature’s groundskeepers, consuming dead things, especially scavengers like vultures and members of the Corvid family, including crows, ravens and magpies.
 - Some birds are plant pollinators, especially hummingbirds.
 - Some birds are seed distributors, particularly members of the Corvid family, including the Clark’s nutcracker and other jays.
 - Many birds enhance our environment and culture by providing beauty and song to our lives.
3. Some of the many physical adaptations are feathers for camouflage, long beaks to acquire certain foods, broad wings for soaring, long legs for wading, talons for grasping, etc.
4. Some of the many behavioral adaptations of birds are migration, nest building, display for defense or to attract a mate, singing and other vocalizations, drilling into trees, caching seeds, swimming, soaring, diving, flocking, etc.


ELABORATE**BIRD BRAINS BINGO**

1. Distribute the students' Avian Explorer Handbooks, and instruct them to turn to the Bird Brains Bingo grid on page 6 of the Student Journal section.
2. Explain the procedure for playing the game.
 - a. Each student will work independently to think of up to twelve different bird adaptations, writing a brief description of each in the blank boxes on the grid. An example is shown on the grid.
 - b. Provide some additional guidelines to the students. For example:
 - Describe physical adaptations with a simple adjective and a noun. Human examples would be hair or a grasping thumb and fingers.
 - Describe behavioral adaptations with either a verb or a verb and a noun. Human examples would be walking upright or making tools.
 - Think about birds living in different habitats, birds they visited at the Aviary and birds they have seen in pictures.
 - c. After the grids have been filled in, the teacher will read a series of statements having to do with adaptations from the Bird Brains Bingo Clues sheet (See Appendix). Each time a statement directly links to an adaptation written in one of the boxes on a student's Bird Brains Bingo grid, the student gets to place a check mark in that box.

Using one of the human examples above, the matching statement might be "humans need to collect and carry food" or "we need a way to build things."
 - d. Provide a third example, this time using the bird adaptation already provided on the bingo grid.
 - e. The game proceeds as with conventional bingo, except that as soon as a student has a group of checked boxes running across, down or diagonally, they should announce, "I'm adapted!"
 - f. The teacher will review each of the bingo statements and student answers to confirm that a Bird Brains Bingo has been made.
2. Respond to questions and begin the game.

EVALUATE

1. There are three remaining assessment pages in the Student Journal section of the Avian Explorer Handbook for the students to complete within the next few days.
 - On page 7, What Makes a Bird a Bird?, students are asked to identify important characteristic traits shared by all birds as well as those that are specific to a wetland bird.
 - On page 8, Good Neighbors, the students are asked to describe up to five ecological connections between birds and other life.
 - Adaptation Matching on page 9 the students are asked to match a habitat with two adaptations necessary to survive in that environment.

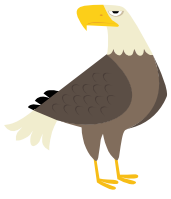
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2. Included in the Appendix there are also vocabulary word games, in which the students complete crossword and code puzzles.

When this lesson has been completed please go to the AVES link on the Tracy Aviary website (www.tracyaviary.org) to complete the appropriate teacher feedback report from Unit I.

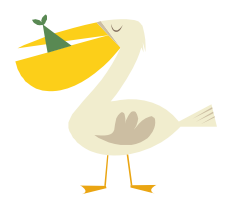
Appendix

Bird Brains Bingo Clues

Vocabulary Word Games



Bird Brains Bingo Clues



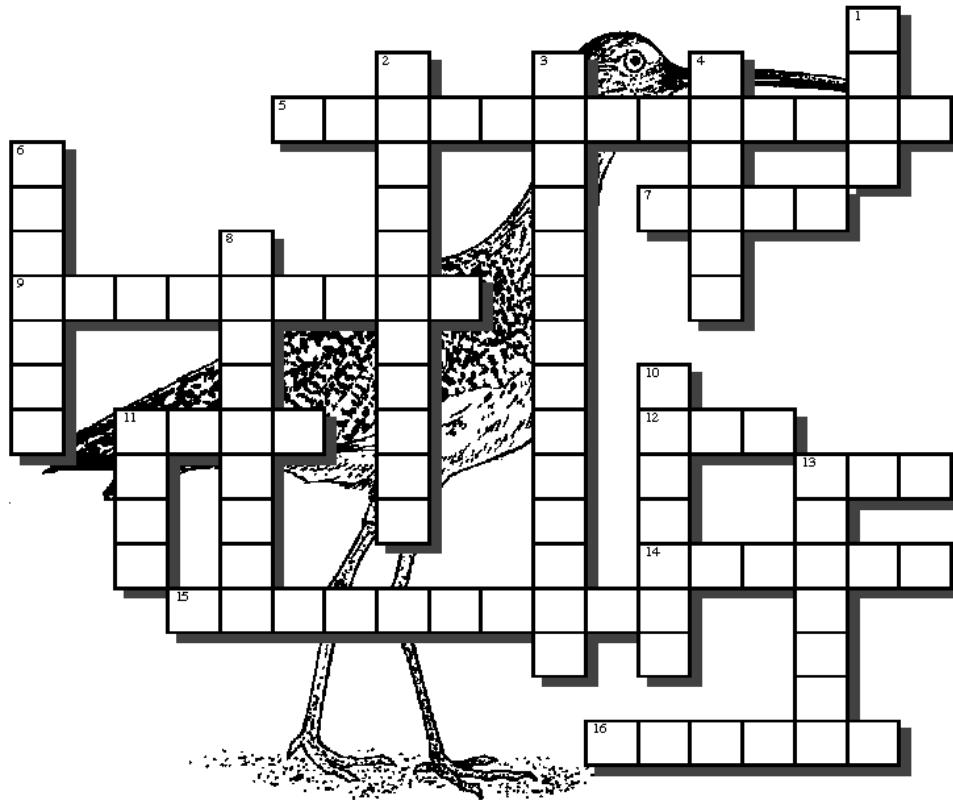
Below is a chart listing possible clues for adaptations students have written in their Bingo grids. Use the ✓ column to track the clues you read to facilitate review of winning students' adaptations. Give the first clue and corresponding adaptation as an example for the class.

✓	Clues	Bingo Adaptations
✓	Birds do this to communicate, to identify their territory, attract a mate or warn of a predator.	Bird calls/singing
	Birds do this as the seasons change in order to find food somewhere else where it is warmer.	Migrate
	These allow many birds to swim quickly in water.	Webbed feet
	Birds have this to protect their eyes.	Eyelashes or Nictitating Membrane
	These specialized structural supports inside a bird's body help them be light enough for flight.	Hollow bones
	Raptors use these for snatching their prey.	Talons
	Birds are the only animals that have these things that help them fly and keep them warm and waterproof.	Feathers
	If you are a predator bird, these face straight ahead. If you are trying to watch out for a predator, it helps if these are on the sides of your head.	Eyes
	Owls and other birds use this sense to locate prey and other birds when they are far apart.	Hearing
	This part of each bird is shaped for different food it eats. Some are for cracking open seeds, tearing flesh or poking in the mud.	Beak: strong, sharp or long
	This helps to hide birds and eggs from predators.	Camouflage
	Part of a bird that helps it steer, stop or provide support when it's running or flying.	Tail
	Birds do this to make a safe cozy space for their eggs.	Build nests
	Some birds do this to stay safe and comfortable underground or inside a hole.	Use burrow or cavity for shelter

	Owls' feathers on their face are arranged to make this special shape that funnels sound into their ears.	Facial disc
	Owls have these on the edges of their wings to help them fly without scaring off prey.	Fringed feathers for silent flight
	Birds have these designed for how they move and get their food. They can be webbed, strong or have claws.	Feet: swimming, climbing and holding food, or perching
	Some birds have these to help them when they wade in water searching for food.	Long legs, beak and/or neck
	Birds rely on this to help keep them dry in a rainstorm or while swimming in the water.	Oil gland or waterproof feathers
	Some birds don't need to fly much or at all. Instead they have adapted to do this.	Walk or run fast, kick and swim
	To help find food during different seasons or in different habitats, some birds do this.	Eat a variety of foods
	Raptors, scavengers and sea birds fly this way to save energy.	Soar or glide
	Scavengers can have this special feature to help them keep clean while eating their messy meals.	Bare-skinned head
	This behavior is practiced by many social birds to help stay safe.	Flock together
	All birds have these special "arms" that help them fly.	Wings
	Most birds use this behavior to find food, migrate, escape predators and find a place to nest.	Flight
	Birds would be too heavy to fly if they gave birth to live young like mammals. Instead, their babies develop outside their bodies in these.	Eggs

AVES Fall Crossword Puzzle

Instructions: Use the clues at the bottom to find the 18 words that fill the boxes below.



Across Clues

5. A person who studies birds. (13)
7. On a bird, these tell us a lot about where it lives and how it moves on the ground. (4)
9. Something designed or built by a person to solve a problem. (9)
11. Warm blooded, feathered animal that builds nests and lays eggs and usually has hollow bones to allow it to fly. (4)
12. The object inside of which a young bird develops. (3)
13. What many birds do to escape danger or move from one place to another. (3)

14. A place where birds are kept and cared for. (6)
15. The way a living thing looks or acts that helps it survive where it lives. (10)
16. A region that receives very little rain or snow and where only specially adapted plants and animals can live. (6)

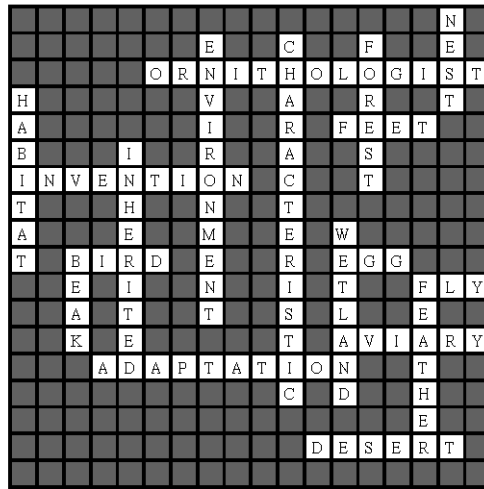
Down Clues

1. Where young birds are hatched and raised. (4)
2. All of the living and nonliving things that surround and affect an organism. (11)
3. A feature or trait that helps to identify something. (14)
4. Habitat covered with trees, shrubs and other plants. (6)

6. The kind of environment where a living thing finds what it needs to survive. (7)
8. Traits or characteristics received from parents. (9)
10. A habitat that contains water at least part of the year and where special soils and specially adapted plants and animals are found. (7)
11. The hard mouthpart of a bird that gives us a clue for what it eats. (4)
13. This grows on a bird to keep it warm, give it color and usually helps it fly. (7)

AVES Fall Crossword Puzzle

Puzzle Solution



ACROSS:

5. ORNITHOLOGIST 7. FEET 9. INVENTION
 11. BIRD 12. EGG 13. FLY 14. AVIARY
 15. ADAPTATION 16. DESERT

DOWN:

1. NEST 2. ENVIRONMENT
 3. CHARACTERISTIC 4. FOREST
 6. HABITAT 8. INHERITED 10. WETLAND
 11. BEAK 13. FEATHER

Code Words

Use the clues to help solve the Code Words and then crack the code to find the solution word.

Code Words

1. $\frac{\quad}{5}$ $\frac{\quad}{23}$ $\frac{\quad}{5}$ $\frac{\quad}{20}$ $\frac{\quad}{14}$ $\frac{\quad}{5}$ $\frac{\quad}{14}$ $\frac{\quad}{13}$ $\frac{\quad}{8}$ $\frac{\quad}{6}$
2. $\frac{\quad}{5}$ $\frac{\quad}{18}$ $\frac{\quad}{13}$ $\frac{\quad}{5}$ $\frac{\quad}{6}$
3. $\frac{\quad}{9}$ $\frac{\quad}{5}$ $\frac{\quad}{15}$ $\frac{\quad}{13}$ $\frac{\quad}{14}$ $\frac{\quad}{5}$ $\frac{\quad}{14}$
4. $\frac{\quad}{23}$ $\frac{\quad}{2}$ $\frac{\quad}{21}$ $\frac{\quad}{2}$ $\frac{\quad}{4}$ $\frac{\quad}{14}$
5. $\frac{\quad}{12}$ $\frac{\quad}{16}$ $\frac{\quad}{11}$

Code Word Clues

1. The way a living thing looks or acts that helps it survive.
2. Anything having to do with birds.
3. Where living things find what they need to survive.
4. A habitat where plants and animals are adapted to dry conditions.
5. Something very few animals except birds can do.

Secret Code Clue

A place where birds are kept and cared for.

Solution:

5	18	13	5	4	11

Code Words

Puzzle Solution

Code Words

1. $\frac{A}{5} \frac{D}{23} \frac{A}{5} \frac{P}{20} \frac{T}{14} \frac{A}{5} \frac{T}{14} \frac{I}{13} \frac{O}{8} \frac{N}{6}$
2. $\frac{A}{5} \frac{V}{18} \frac{I}{13} \frac{A}{5} \frac{N}{6}$
3. $\frac{H}{9} \frac{A}{5} \frac{B}{15} \frac{I}{13} \frac{T}{14} \frac{A}{5} \frac{T}{14}$
4. $\frac{D}{23} \frac{E}{2} \frac{S}{21} \frac{E}{2} \frac{R}{4} \frac{T}{14}$
5. $\frac{F}{12} \frac{L}{16} \frac{Y}{11}$

Secret Code Clue

A place where birds are kept and cared for.

Solution:

A	V	I	A	R	Y
5	18	13	5	4	11

Code Table

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
5	15	25	23	2	12	17	9	13	1	22	16	10	6	8	20	26	4	21	14	7	18	19	3	11	24