

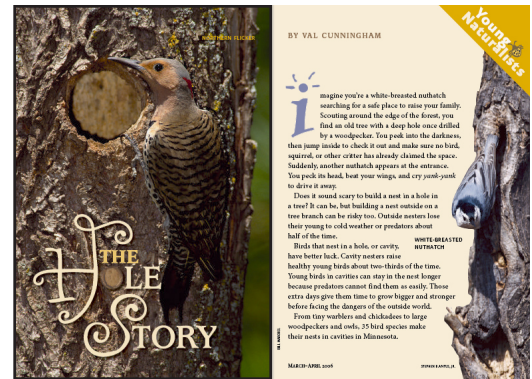
Teachers Guide

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“The Hole Story” Multidisciplinary Classroom Activities

Teachers guide for the Young Naturalists article “The Hole Story,” by Val Cunningham. Published in the March–April 2006 *Minnesota Conservation Volunteer*, or visit www.dnr.state.mn.us/young_naturalists/cavity_nesters.

Young Naturalists teachers guides are provided free of charge to teachers, parents, and students. This guide contains a brief summary of the article, suggested independent reading levels, word count, materials list, estimates of preparation and instructional time, academic standards applications, preview strategies and study questions overview, adaptations for special needs students, assessment options, extension activities, Web resources (including related Conservation Volunteer articles), copy-ready study questions with answer key, a copy-ready vocabulary sheet, and (new for this article) vocabulary study cards. There is also a practice quiz (with answer key) in Minnesota Comprehensive Assessments format. Materials may be reproduced and/or modified to suit user needs. Users are encouraged to provide feedback through an online survey at www.dnr.state.mn.us/education/teachers/activities/ynstudyguides/survey.html.



Summary “The Hole Story” introduces the reader to cavity-nesting birds of Minnesota. Students will learn about primary and secondary nesters, including where and how they make their nests, raise their young, and protect themselves and their young from predators. The story concludes with a plea to save critical habitat for cavity nesters as well as resources that enable students to build nest boxes for their back yards.

Suggested reading levels:

mid-elementary through eighth grade

Total words: 1,206

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Materials: Paper, poster board, pencils, pens, markers, and print resources from your media center, birds of Minnesota field guide

Preparation time: One to two hours, not including extension activities

Estimated instructional time: Two to three 50-minute class periods (not including extensions)

Minnesota Academic Standards applications: “The Hole Story” may be applied to the following Minnesota Department of Education Academic Standards:

Language Arts

I. Reading and Literature

- A. Word Recognition, Analysis and Fluency
- B. Vocabulary Expansion
- C. Comprehension

II. Writing

- A. Types of Writing
- B. Elements of Composition
- C. Spelling
- D. Research
- E. Handwriting and Word Processing

III. Speaking, Listening and Viewing

- A. Speaking and Listening
- B. Media Literacy

Science: Grade 3

IV. Life Science

- B. Diversity of Organisms
- C. Interdependence of Life

Grade 5

IV. Life Science

- E. Biological Populations Change Over Time

Grade 7

IV. Life Science

- B. Diversity of Organisms
- C. Interdependence of Life
- E. Biological Populations Change Over Time
- F. Flow of Energy and Matter

Social Studies: Grades 4–8

V. Geography

- D. Interconnections: patterns of settlement and land use

Arts

Artistic Expression: Visual Arts

Complete Academic Standards are available at www.education.state.mn.us. Teachers who find other connections to academic standards are encouraged to contact *Minnesota Conservation Volunteer*.

Preview Begin your preview with a survey of the article. Ask your students to examine the photos and illustrations. Use the **KWL** strategy (Ogle, 1986) to find out what your students already know (**K**) about cavity nesters; what

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they want (**W**) to learn, and eventually, what they learned (**L**) while reading the article and related materials, and through participating in extension activities. Display your **K** and **W** ideas on poster board or paper (see Vocabulary preview, below). Add to your **L** list as you read and discuss the article. See www.teach-nology.com/web_tools/graphic_org/kwl for a **KWL** generator that will produce individual organizers for your students.

Vocabulary preview

You may wish to review the attached list as well as any other words based on knowledge of your students’ needs. Many connections to vocabulary in the article may be made during the **KWL** activity. Ask students to highlight the italicized words. These are key concepts and should be discussed before reading. Perhaps some of these terms are included in your **K** list. If students are not familiar with some of the terms, include them in the **W** list. Eventually they can be moved to the **L** list. You may write vocabulary from the article in green ink, while other ideas are written in black. In this issue we are introducing ready-to-use vocabulary study cards (Hock, Deshler, and Schumaker, 2000). Cut along the horizontal lines, fold in the middle and tape or staple. Blanks are provided to allow you or your students to add new words or phrases. On one side of the card, in large letters, write a key word or phrase from the article that students are expected to know. In smaller letters frame the word or phrase in a question or statement. On the other side of the card, in large letters, write the answer or match to the question or statement. Finally, in smaller letters, frame the answer in a question or statement.

Study questions overview

Study questions parallel the story (the answer to the first question appears first in the article, followed by the second, and so on). Preview the entire guide with your class before you read the article. You may wish to read the story aloud and complete the study questions in class, in small groups, or as an independent activity. The questions may be assigned as homework, depending on the reading ability of your students. Inclusion teachers may provide more direct support to special needs students (see Adaptations section, below). The study questions may be also used as a quiz. Note: Items 3, 8, 9, 13 and the challenge require analytical thinking.

Adaptations

Read aloud to special needs students. Abbreviate the study questions or highlight priority items to be completed first. If time allows, remaining items may be attempted. For example, items 1, 4, 6, 9, and 14 will give students some basic knowledge of cavity nesters. Peer helpers, paraprofessionals, or adult volunteers may lend a hand with the study questions. With close teacher supervision, cooperative groups can also offer effective support to special needs students, especially for extension activities.

Assessment

You may use all or some of the study questions, combined with vocabulary, as a quiz. Other assessment ideas: (1) Students may write an essay

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comparing and contrasting primary and secondary nesters. (2) Students may draw a species and its nest cavity from the story, or a cavity-nesting species not mentioned in the story (see extension activities). (3) Poster presentations may illustrate the relationship of critical habitat (dead and dying trees) to the long-term survival of cavity nesters. (4) On a field trip (see extension activities) students may identify likely habitat for cavity nesters and look for signs of nest building.

Extension activities

1. One of the most interesting stories in the birding world is the recent discovery of the ivory-billed woodpecker in Arkansas (see Web resources, below). Similar in size and appearance to our pileated woodpecker, the ivory-billed woodpecker would make an intriguing research topic for individuals or small groups. Is there enough evidence to conclude with certainty that the ivory-billed woodpecker is not, as has been long assumed, extinct?
2. A field trip to a nearby school forest, state park, or nature area will give students the opportunity to observe cavity nesters in their natural habitat (see www.dnr.state.mn.us/state_parks for information on state parks).
3. Build nest boxes with help from *Woodworking For Wildlife: Homes for Birds and Mammals* (Henderson, 1992) or www.birds.cornell.edu/birdhouse/resources/construct.
4. Tune in to www.birds.cornell.edu/birdhouse/nestboxcam to see live images of cavity-nesting birds.

Web resources

Cavity-nesting birds of North America

www.na.fs.fed.us/spfo/pubs/wildlife/nesting_birds

Birds of Minnesota

www.dnr.state.mn.us/snapshots/birds

Woodpeckers

birding.about.com/od/birdswoodpeckers

www.birds.cornell.edu/wp_about/biology.html

www.nhptv.org/natureworks/pileatedwoodpecker.htm

Ivory-billed Woodpecker

www.birds.cornell.edu/ivory

Related *Minnesota Conservation Volunteer* articles (see www.dnr.state.mn.us/volunteer/articles) include:

January–February 2006

“Storm of Owls”

“Nest Box Theater”

“Great Gray Owl,” a Minnesota Profile

September–October 2005

“Ivory-Billed Connection”

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March–April 2004 (Young Naturalists article with teachers guide)

“Special Delivery”

January–February 2004 (Young Naturalists article with teachers guide)

“The Nature of Feathers”

March–April 2003 (Young Naturalists article with teachers guide)

“Let’s Go Birding”

July–August 2002

“Birds in Hand”

March–April 2001

“Where the Birds Are”

March–April 2001 (Young Naturalists article)

“Whoooo’s Watching”

March–April 1999

“Birds and Forests”

References

1. Henderson, C. *Woodworking For Wildlife: Homes for Birds and Mammals*. St. Paul, Minn.: Minnesota Department of Natural Resources, 1992.
2. Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring*. Lawrence, Kan.: Edge Enterprises, 2000.
3. Ogle, D.S. K-W-L Group Instructional Strategy. In A.S. Palincsar, D.S. Ogle, B.F. Jones, and E.G. Carr (Eds.), *Teaching Reading as Thinking: Teleconference Resource Guide*, pp.11–17. Alexandria, Va.: Association for Supervision and Curriculum Development, 1986.

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Study Questions

“The Hole Story,” by Val Cunningham

Minnesota Conservation Volunteer, March–April 2006

www.dnr.state.mn.us/young_naturalists/cavity_nesters

Name _____ Period _____ Date _____

1. List at least two advantages of a cavity nest over an outside nest. _____

2. How many kinds of cavity-nesting birds are native to Minnesota? Name at least three. _____

3. Explain the relationship between cavity nests and incubation. _____

4. How are primary nesters different from secondary nesters? Give an example of each. _____

5. Secondary nesters are also known as _____.

6. Describe in detail how downy woodpeckers make a nest. _____

7. How long do downies incubate their eggs? _____

8. What type of tree do chickadees look for to build their nests? Why? _____

9. Why is the size of the cavity-nest entrance so important? _____

10. Who is responsible for feeding newly hatched chickadees? _____

11. Where do eastern screech-owls live? _____

12. Why are screech-owls secondary nesters? _____

13. Name two species of birds that might use a nest box. Why? _____

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14. Name two ways you can provide habitat for cavity nesters. _____

Challenge: The American kestrel is also known as the _____ . Why is this a misleading name? _____

Study Questions Answer Key

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www.dnr.state.mn.us/young_naturalists/cavity_nesters

1. List at least two advantages of a cavity nest over an outside nest. **Answers may vary, but should include: shelter from bad weather, protection from predators, and the young can stay in the nest longer.**
2. How many kinds of cavity-nesting birds are native to Minnesota? Name at least three. **35. Answers may vary, but should include: owls, woodpeckers, chickadees, warblers in general or specific species of each.**
3. Explain the relationship between cavity nests and incubation. **During incubation the adult birds keep the eggs warm. Incubation is aided by a sheltered space such as a cavity nest.**
4. How are primary nesters different from secondary nesters? Give an example of each. **Primary nesters make new nests, while secondary nesters use existing cavities. An example of a primary nester is the flicker. Screech-owls are secondary nesters. Answers may vary.**
5. Secondary nesters are also known as **nonexcavators**.
6. Describe in detail how downy woodpeckers make a nest. **Critical details should include: when—May; where—a tree at the edge of yard or forest; often in a hidden spot on the tree, such as under a branch or a in stub; how—they drill the entrance about the size of a silver dollar and make the interior about as deep as the *Conservation Volunteer* magazine is tall (8 inches), disposing of the chips and sawdust so predators will not notice a nest has been built.**
7. How long do downies incubate their eggs? **About 12 days.**
8. What type of tree do chickadees look for to build their nests? Why? **A well-rotted one, because they have very small beaks and a live tree would be too hard to excavate.**
9. Why is the size of the cavity nest entrance so important? **A small opening makes it difficult for predators to enter.**
10. Who is responsible for feeding newly hatched chickadees? **Both parents.**
11. Where do eastern screech-owls live? **All over Minnesota, except the far northeast.**
12. Why are screech-owls secondary nesters? **Their curved beaks can't excavate cavities.**
13. Name two species of birds that might use a nest box. Why? **Screech-owls and kestrels because they are secondary nesters. Chickadees and downies because suitable trees are not available. Answers may vary.**
14. Name two ways you can provide habitat for cavity nesters. **Do not cut down dead and dying trees. Put up nest boxes.**

Challenge: The American kestrel is also known as the **sparrow hawk**. Why is this a misleading name? **The American kestrel is a falcon, not a hawk.**

Minnesota Comprehensive Assessments Practice Items

“The Hole Story,” by Val Cunningham

Minnesota Conservation Volunteer, March–April 2006

www.dnr.state.mn.us/young_naturalists/cavity_nesters

Name _____ Period _____ Date _____

1. Of the 35 species of Minnesota cavity-nesting birds, _____ are primary nesters.
 - A. 27
 - B. none
 - C. 11
 - D. 13
2. How were flickers involved in a launch of the Discovery space shuttle?
 - A. A flicker was taken on a space shuttle flight.
 - B. Space shuttles disturb flicker nesting patterns.
 - C. Flickers drilled holes in the space shuttle’s insulation, delaying the launch.
 - D. Nothing.
3. Black-capped chickadees do not _____.
 - A. migrate.
 - B. nest in trees.
 - C. share in feeding their young.
 - D. lay eggs.
4. American kestrels do not _____.
 - A. feed their young.
 - B. build their own nests.
 - C. eat rodents.
 - D. migrate.
5. Cavity-nesting birds are threatened by _____.
 - A. lightning.
 - B. nonnative birds.
 - C. habitat loss.
 - D. B and C.

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Minnesota Comprehensive Assessments Practice Items Answer Key

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www.dnr.state.mn.us/young_naturalists/cavity_nesters

1. Of the 35 species of Minnesota cavity-nesting birds, **D. 13** are primary nesters.
2. How were flickers involved in a launch of the Discovery space shuttle? **C. flickers drilled holes in the space shuttle’s insulation, delaying the launch.**
3. Black-capped chickadees do not **A. migrate.**
4. American kestrels do not **B. build their own nests.**
5. Cavity-nesting birds are threatened by **D. B. nonnative birds and C. habitat loss.**

Vocabulary

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www.dnr.state.mn.us/young_naturalists/cavity_nesters

excavate dig

falcon a fast-flying bird of prey with long, pointed wings

glossy shiny

high-protein food that has a lot of protein, which is necessary for building muscles, blood, and bones

hovering flying in place

incubation keeping eggs warm until they hatch

larvae insects in the stage of life after hatching from eggs but before metamorphosis

migrate move to a new location to live

nest box bird house

nonnative a plant or animal brought in from somewhere else, not naturally occurring

plant down fine threads on the seeds of some plants, such as milkweed

predators animals that kill and eat other animals

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- primary nester** a bird that digs out its own nest (also known as an excavator)
- rodents** mammals such as mice, squirrels, beavers, and rabbits
- secondary nester** a bird that uses a nest excavated by a primary nester, a natural cavity, or a nest box (also known as a nonexcavator)
- species** a group of animals that are similar and are able to breed
- suburban** residential area near a large city
- voles** small mouselike rodents with a pointed snout and short tail

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Vocabulary Study Cards

“The Hole Story,” by Val Cunningham

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www.dnr.state.mn.us/young_naturalists/cavity_nesters

Cut along the horizontal lines, fold in the middle and tape or staple. Blanks are provided to allow you or your students to add new words or phrases.

What are **predators**?

Animals that kill and eat other animals are called

What does **species** mean?

Similar animals that can breed with one another are of the same

What is **incubation**?

Do you know what **keeping the eggs warm until they hatch** is called?

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What is an **excavator**?

What is a **primary nester** also known as?

What is a **nonexcavator**?

What is a **secondary nester** also known as?

What does **glossy** mean?

Another word for **polished** is

What is **larvae**?

What are **insects in the stage of life that comes after hatching from eggs** called?

What is **plant down**?

The **soft hairs on the seeds of some plants** are called

What is a **nest box**?

What is an artificial **bird house** called?

The word **suburban** means

When you live in a **residential area close to a large city**, you live in a _____ area.

To **migrate** means

When you **move to a new location** to live, you

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What is a **falcon**?

What is a **bird of prey with pointed wings**?

What is a **rodent**?

What is a **member of the order of mammals that includes mice, squirrels, and beavers**

A **high-protein** food means it has

When a food has **lots of protein, which is necessary for building muscles and bones,** it is a _____ - _____ food.

When a bird is **hovering**, it is

A word that means **flying in place** is

What are **voles**?

Small mouselike rodents with pointed snouts and short tails
are called

What does **nonnative** mean?

When a **plant or animal is brought from somewhere else**, it is considered

What does **excavate** mean?

To dig means to

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