YOUNG NATURALISTS

TEACHERS GUIDE

TO "THE SHY BEAR"

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, Nov.–Dec. 2015, www.mndnr.gov/mcvmagazine

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Minnesota Conservation Volunteer magazine tells stories that connect readers to wild things and wild places. Subjects include earth science, wildlife biology, botany, forestry, ecology, natural and cultural history, state parks, and outdoor life.

Education has been a priority for this magazine since its beginning in 1940. "One word—Education—sums up our objective," wrote the editors in the first issue. Thanks to the *MCV* Charbonneau Education Fund, every public library and school in Minnesota receives a subscription. Please tell other educators about this resource.

Every issue now features a Young Naturalists story and an online Teachers Guide. As an educator, you may download Young Naturalists stories and reproduce or modify the Teachers Guide. The student portion of the guide includes vocabulary cards, study questions, and other materials.

Readers' contributions keep *Minnesota Conservation Volunteer* alive. It is the only state conservation magazine to claim the distinction of being financially supported by contributions from its readers.

Find every issue online. Each story and issue is available in a searchable PDF format. Visit www.mndnr.gov/mcvmagazine and click on *past issues*.

Thank you for bringing Young Naturalists into your classroom!

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MINNESOTA CONSERVATION VOLUNTEER

"The Shy Bear"

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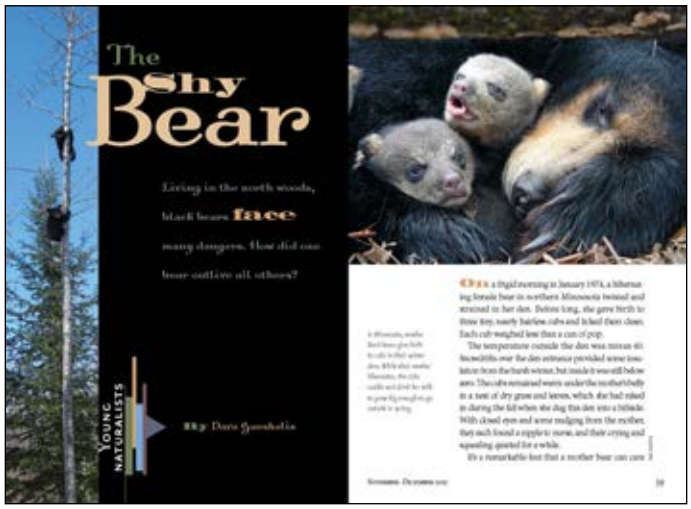

Summary. "The Shy Bear" tells the story of bear 56, who lived longer than any other wild bear known to science. Young readers will not only learn about her life, but also discover how wildlife biologists interacted with bear 56 over her long life. Other topics include bear habitat, home ranges, reproductive cycles, diet, hibernation, and hunting by humans. Note: This article contains an unusual number of challenging words, not all of which are included in the vocabulary list/flashcards. Preview words you wish to cover before your students read the article. This article offers opportunities to address several math standards.

Suggested reading levels. Third through high school grades

Materials. KWL organizer, paper, poster board, colored pencils, crayons, pens, markers, inch rulers, calculators, clinometer materials (protractors, tape, string, metal washers, drinking straws, and tape measure), print and online resources your media specialist may provide

Preparation time. One to two hours, not including time for extension activities

Estimated instruction time. One or two 50-minute class periods (not including extensions)

Minnesota academic standards applications. "The Shy Bear" may be applied to the following Minnesota Department of Education standards:

Language Arts Reading Benchmarks Informational Text Grades 3–8

Key Ideas and Details, Craft and Structure, Integration of Knowledge and Ideas, Range of Reading and Level of Text Complexity

Writing Benchmarks Grades 3–8 Text Types and Purposes, Writing Process, Research to Build and Present Knowledge, Range of Writing

Reading Benchmarks: Literacy in Science and Technical Subjects Grades 6–8 Key Ideas and Details, Craft and Structure, Integration of Knowledge and Ideas, Range of Reading and Level of Text Complexity

Writing Benchmarks: Literacy in History/Social Studies, Science, and Technical Subjects Grades 6–8 Text Types and Purposes, Writing Process: Production and Distribution of Writing, Research to Build and Present Knowledge, Range of Writing

Mathematics
Grades 3, 4, 5, and 6
3.1.2.1; 3.1.2.2; 3.1.2.5; 3.4.1.1; 4.1.1.5; 4.4.1.1; 5.1.1.3; 5.1.1.4; 5.4.1.1; 6.1.1.3; 6.1.3.3; 6.3.3.1

Science Grades 3, 4, 5, 6, 7, and 8
Life Science
3.1.3.2.1; 3.4.1.1.1; 5.4.1.1.1; 7.4.2.1.2; 8.1.3.3.2
Physical Science
4.2.1.1.1;
Nature of Science and Engineering
5.1.3.4.1; 6.1.3.4.1; 7.1.3.4.2

Arts Grades K–12
1. Artistic Foundations: Visual Arts
2. Artistic Process: Create or Make: Visual Arts
3. Artistic Process: Perform or Present: Visual Arts
4. Artistic Process: Respond or Critique: Visual Arts

Current, complete Minnesota Academic Standards are at www.education.state.mn.us. Teachers who find other connections to standards are encouraged to contact *Minnesota Conservation Volunteer.*

Preview. See www.watchknowlearn.org/Video.aspx?VideoID=19771 for a BBC video that you may use to introduce this topic. Extensive black bear teacher resources are available at http://blackbearinfo.com/teachers/ that offer several preview activities. (2) You may follow with a **KWL** (Ogle, 1986) activity. To find out what your students already know (**K**) about black bears, divide the class into small groups to brainstorm their ideas. Give each student a copy of the organizer (see www.teach-nology.com/web_tools/graphic_org/kwl.) and encourage each to make notes during the group discussion. Repeat step one by asking what students would like to learn, or what questions they have, about the topic (**W**). Record their questions on poster board

for reference. As you read and discuss the article you will begin to compile the (**L**) lists, or what they learn while reading the article and related materials, and participating in extension activities. KWL gives you the opportunity to introduce interdisciplinary connections you will make during extension activities. If you use the article in science, math, or art class, you may wish to focus your prereading activity on academic standards that apply for that class. (3) See www.teachervision.fen.com/tv/printables/TCR/0743932080_007.pdf for a brainstorming web download.

Vocabulary preview. See the copy-ready vocabulary list included in this guide. You may wish to modify the list based on your knowledge of your students' needs or the subject you are teaching. Pretesting vocabulary individually, in small groups, or with your entire class can be an effective vocabulary preview strategy. You may then post-test at the conclusion of this activity (see Assessment section below).

You may wish to use the study cards found at the end of this guide. Cut along the horizontal lines; fold in the middle, and tape or staple. Study cards (see *Strategic Tutoring*, Hock, Deshler, and Schumaker 2000) can be applied to any subject area. On one side of the card, in large letters, write a key word or phrase 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 to the question. Finally, in smaller letters, frame the answer in a question or statement. Blanks are provided to allow you or your students to add new words or phrases.

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 questions 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). The study questions may be also used as a quiz. Note: Items with an asterisk require varying degrees of critical 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. 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 part of the study guide, combined with vocabulary, as a quiz. Other assessment ideas include: (1) Ask students to describe what they learned about black bears. See the "learned" list from your KWL activity. (2) Students may write multiple-choice, true-false, or short-answer questions. Select the best items for a class quiz. (3) How many big ideas about bears are in this article? In small groups or as individuals, students may create posters that combine visual art, writing, and oral presentations. Posters may focus on one species, related

species, or other big ideas from the story. Posters and presentations are an excellent strategy for allowing students to demonstrate what they have learned.

Extension activities. Extensions are intended for individual students, small groups, or your entire class. Young Naturalists articles provide teachers many opportunities to make connections to related topics, to allow students to follow particular interests, or to focus on specific academic standards.

1. "The Shy Bear" is the second Young Naturalists article about bear 56. The first, "Black Bear Yearbook," was published in 1993 (See Related Articles). Ask your students to compare and contrast the two articles. "About Those Bears" and "Counting Critters," (YN article with teachers guide) are other great companion pieces for "The Shy Bear." You may encourage students to include content from related articles in evaluation and/or other extension activities.
2. Your students will discover many other articles about black bears in the *Minnesota Conservation Volunteer* archives. Teaching your students how to access archived stories will open a world of learning opportunities.
3. How do people and bears live together peacefully? See the "Living with Wildlife" Web page for advice on bears and other critters that visit yards and gardens.
4. Phenology is the study of rhythmic biological events as they relate to climate. Check out "The Phenology Show" on KAXE radio (www.kaxe.org/programs/phenology.aspx). Contact the station to find out how your classroom may join the phenology network.
5. Take a field trip to your school forest, a state park, or scientific and natural area. Contact a naturalist at your state park to plan a program for your class.
6. Introduce or expand your students' knowledge of taxonomy, the scientific classification of organisms. See Web resources for activities.
7. Where is the Chippewa National Forest? How many acres does it occupy? What is its history? See Web resources.

Web resources

DNR

www.dnr.state.mn.us/mammals/blackbear.html
www.dnr.state.mn.us/bear/index.html
www.dnr.state.mn.us/livingwith_wildlife/index.html
http://files.dnr.state.mn.us/recreation/hunting/bear/2014_bearharvest.pdf

Black Bears

http://animaldiversity.org/accounts/Ursus_americanus/
www.nhptv.org/natureworks/blackbear.htm
http://animals.nationalgeographic.com/animals/mammals/black-bear/

Black Bear Videos
www.watchknowlearn.org/Video.aspx?VideoID=19771

Black Bear Curriculum Resources
http://blackbearinfo.com/teachers/

Chippewa National Forest
www.fs.usda.gov/chippewa
http://treatiesmatter.org/exhibit/wp-content/uploads/2014/05/The-Chippewa-National-Forest.pdf

Taxonomy
www.biology4kids.com/files/studies_taxonomy.html
www.kidsdiscover.com/teacherresources/taxonomy-sorting-world/
www.pbs.org/safarchive/5_cool/galapagos/g42_tax.html

Time Line resources
www.readwritethink.org/files/resources/interactives/timeline_2/
https://timeline.knightlab.com/
www.simile-widgets.org/timeline/

Minnesota DNR Teacher Resources
www.mndnr.gov/education/teachers/index.html
www.mndnr.gov/dnrkids/index.html

*Note: All websites were active at the time of this guide's publication. However, some may no longer be active when this guide is accessed.

Related articles
In addition to the related articles listed below, every *Minnesota Conservation Volunteer* article published since 1940 is now online in searchable PDF. See www.mndnr.gov/mcvmagazine. Young Naturalists articles and teachers guides are found at www.dnr.state.mn.us/mcvmagazine/young-naturalists.html.

January–February 1993
"Black Bear Yearbook" (YN article)
https://webapps8.dnr.state.mn.us/volunteer_index/past_issues/article_pdf?id=222

January–February 1999
"Black Bears"
https://webapps8.dnr.state.mn.us/volunteer_index/past_issues/article_pdf?id=223

May–June 2001
"My First Bear"
https://webapps8.dnr.state.mn.us/volunteer_index/past_issues/article_pdf?id=911

November–December 2003
"Wired Life" (YN article with teachers guide)
http://files.dnr.state.mn.us/mcvmagazine/young_naturalists/young-naturalists-article/telemetry/wiredlife.pdf

July–August 2004
"About Those Bears"
https://webapps8.dnr.state.mn.us/volunteer_index/past_issues/article_pdf?id=1935

March–April 2005
"The Parenting Game" (YN article with teachers guide)
http://files.dnr.state.mn.us/mcvmagazine/young_naturalists/young-naturalists-article/parenting/baby_animals.pdf

January–February 2007
"Nature's Calendar" (YN article with teachers guide)
http://files.dnr.state.mn.us/mcvmagazine/young_naturalists/young-naturalists-article/phenology/phenology.pdf

January–February 2008
"Counting Critters" (YN article with teachers guide)
http://files.dnr.state.mn.us/mcvmagazine/young_naturalists/young-naturalists-article/painting_ducks/painting_ducks.pdf

November–December 2012
"Who is *Alces alces*?" (YN article with teachers guide)
http://files.dnr.state.mn.us/mcvmagazine/young_naturalists/young-naturalists-article/taxonomy/taxonomy.pdf

References

Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring*. Lawrence, Kan.: Edge Enterprises, 2000.

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.

Study questions answer key

1. What protected the bears' den from the extreme cold temperature outside? **Snow that had drifted over the den entrance gave some insulation from the cold**.
*2. Why is it an advantage for bear cubs' survival to be born during winter? **The den is a safe place to begin life, drink their mother's milk, and grow big enough to survive**

outside in the spring.

*3. If a newborn cub weighs about as much as a can of pop (390 grams), how much weight do cubs gain before they leave the den? **Answers may vary. You may wish to convert from metric to standard units, from standard to metric, or do both. A full can of pop weighs about 390 grams (0.39 kilograms) or 14 ounces. If a cub weighs about 10 pounds (160 ounces, 4.5 kilograms, 4,500 grams), then it has gained 9 pounds (144 ounces, 4.1 kilograms, 4,100 grams) during its first three months of life. That's like a human baby that weighs 6 pounds at birth gaining 54 pounds by 3 months of age!**

4. How old was bear 56 when she came to the attention of DNR biologists? **She was born in 1974, so she was 7 years old in 1981.**

5. Why did biologists extract one of her teeth? **Biologists wanted to count growth rings in a cross section of one of her teeth to calculate her age.**

*6. What percent of male bears survive their cub year in Chippewa National Forest? Explain how you got your answer. **If 87 percent of female bears survive their cub year, and male cubs are twice as likely to die an early death, then about 74 percent of male cubs make it through their cub year (100–87=13; 13x2=26; 100–26=74).**

7. Why do northern Minnesota bears hibernate? **Hibernation is an adaptation to an environment that is very cold and provides little to eat.**

*8. Polar bears, grizzly bears, and black bears are all carnivores. How do their diets differ? **Polar bears and grizzly bears kill and eat other mammals. Black bears rarely kill mammals. Most of a black bear's protein comes from eating insects.**

9. What technology did biologists use to study bear 56's movements? **Biologists used radio collars** to study bear 56.

10. What do black bears eat in early spring? **Food is scarce in spring. Black bears eat green shoots and roots.**

11. During the years she was observed, how many litters of cubs did bear 56 have? **She had 11 litters.**

*12. What was unique about bear 56's 25th year? **It was the first time she only had one cub.**

*13. Describe changes in bear 56's physical condition and behavior as she neared age 30. **Her hearing and vision began to fade, and she had trouble walking. Her teeth were worn, cracked, or missing.**

14. How did bear 56 die? **She appeared to have died from natural causes.**

*15. Since 1974, how many black bears has the DNR tracked with radio collars? **360** What percent died a natural death? **4.2 percent**

16. Why did bear 56 live so long? **Answers may vary. She stayed away from humans, especially hunters and roads. She was lucky. Her colorful ear tags let hunters know she was a special bear.**

*Challenge: Create a time line of bear 56's life. You may choose the format, and you may work by yourself or with a small group. **Give your students wide latitude in creating a time line of bear 56s' life. See several online time line generators in Web Resources. Students may wish to use pictures, text, or a combination.**

Minnesota comprehensive assessments answer key.

1. When did bear 56 die? **C. 2013**
2. Why didn't a hunter kill bear 56? **D. A and C**
3. What was the difference in bear 56's body weight between 1981 and 2006? **C. 112 pounds**
4. Bear 56's home range was the Chippewa National Forest. **A. true**
5. Explain the title of this story.

Answers may vary. She stayed away from humans.

Vocabulary answer key.

biologist scientist who studies organisms

canine teeth long, pointed teeth at the front of the jaw, sometimes called *fangs*

carnivore an animal that eats other animals

currant an acidic berry in the gooseberry family

habitat the environment in which an organism lives

hibernation seasonal slowdown of body function that occurs when food is scarce and weather is cold

home range area within with an individual animal lives

larva wormlike immature insect that hatches from an egg

migration movement from one area to another

predator animal that kills and eats other animals

pupa an insect's developmental stage between larva and adult; usually enclosed in a cocoon

range geographic area within which a species is found

species a group of animals or plants that are similar and can produce young animals or plants that can also reproduce