

Teachers Guide

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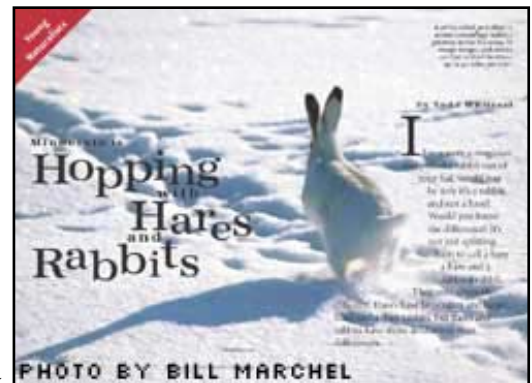
Area Schools,

Bemidji, Minnesota

“Minnesota Is Hopping With Hares and Rabbits” Multidisciplinary Classroom Activities

Teaching materials for the Young Naturalists article “Minnesota Is Hopping With Hares and Rabbits,” by Todd Whitesel. Published in the January–February 2003 *Volunteer* and available at www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html.

Young Naturalists teachers guides are provided free of charge to classroom 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, and a copy-ready vocabulary sheet and 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.mdnr.gov/education/teachers/activities/ynstudyguides/survey.html.



Summary

“Minnesota Is Hopping With Hares and Rabbits” presents two kinds of mammals that share numerous common traits. Both have special teeth for eating plants. Both eat their own droppings. Both are important food for other animals. The snowshoe hare and white-tailed jackrabbit, both hares, change colors and foods with the seasons. The eastern cottontail, a rabbit, retains its coloration through all seasons, although its diet changes.

Suggested reading levels:

Intermediate through middle school

Total words:

1,716

Materials:

paper, pencil, marker board or large sheet of paper, markers, index cards (optional)

Preparation time:

About one hour

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Estimated instructional time:

Two to three 50-minute class periods for study guide and one or two extension activities. Extension activities may be assigned as homework.

Minnesota Academic Standards applications:

“Minnesota Is Hopping With Hares and Rabbits” may be applied to the following Minnesota Department of Education 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

Mathematics

- Grades 4–7
- Number and Operation
- Geometry and Measurement

Science

Grade 4

IV. Life Science

- B. Diversity of Organisms
- Grade 5

IV. Life Science

- Flow of Matter and Energy
- Grades 7

IV. Life Science

- B. Diversity of Organisms
- C. Interdependence of Life
- F. Flow of Matter and Energy

Arts

Artistic Expression

- D. 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

Initiate a class discussion about lagomorphs (hares and rabbits) in literature and popular culture. Examples are the Tortoise and the Hare, Watership Down, Peter Rabbit, and the Easter Bunny. You may also wish to discuss experiences with domestic rabbits as pets or at the county or state fair. Ask, “What do you remember about the ears (constant movement), eyes (located on the side of head), nose and whiskers (constant movement), and eating (jaw motion and foods)?”

Write the vocabulary words on the board or sheet of paper, or write the words and definitions on a set of index cards for small groups to match word with definition. Preview with the class or allow small groups of students to brainstorm the meaning of vocabulary words. Use the KWL method (Ogle, 1986) to find out what students already Know about hares and rabbits. Ask students to volunteer ideas while you write them (or have a student write them) on the board or sheet of paper. Next ask What they would like to learn about hares and rabbits. Write all questions next to what is known. After they read the article and complete any follow-up activities, make a final list of everything they Learned.

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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. 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).

Connections to vocabulary in the article may also be made during KWL. If students are not familiar with some of the terms, include them in the **W** list. Other terms may be added to the **W** list as students read the article. 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. Notes: Some of the words in the vocabulary list definitions may require further explanation. Also, preview the study questions for unfamiliar terms.

You may wish to use the study cards found at the end of this guide. Cut along the horizontal line, 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 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 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 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). The study questions may be also used as a quiz.

Adaptations

Read aloud to special needs students. Abbreviate study guide or highlight priority items to be completed first. For example, highlight questions 1 and 2 or 3 and 4. Special needs students may try these first and, if time allows, try the others. Peer helpers, teaching assistants, or adult volunteers may lend a hand with the study guide. Study guide and enrichment/extension activities may also be done in small groups.

Assessment

You may use all or part of the study guide, combined with vocabulary, as a quiz. Other assessment ideas include: (1) Students may write an essay comparing and contrasting the three species described in the article. (2) Students may write one or more multiple-choice, true-false or short-answer questions from the story. Select the best questions for a student-generated quiz. (3) Poster presentations may describe how adaptations such as coat coloration, fur pads on feet, or babies born with fur, help lagomorphs survive.

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Extension activities

1. Have students sketch hares, rabbits, and their predators singly or in a Minnesota scene, including seasonal change, diet, habitat, and/or paw prints.
2. Research the “boom and bust” phenomenon with other animals, such as, deer or partridge.
3. Have students design math problems with information from the text. For example, if a square mile of land has 10,000 snowshoe hares, on average how many square yards of land is available for each hare? How many football fields could a white-tailed jackrabbit’s home range cover?
4. Read *The Private Life of a Rabbit* (Lockley, 1975), a remarkable study of rabbits that was inspired by a devastating plague that nearly wiped out wild rabbits in Europe (See www.rabbitworldview.com/privatelifeofarabbit.php).
5. Domestic rabbits are popular pets. Invite your local 4-H representative or perhaps a student in your class to bring a rabbit to class. See the Web sites below for photos and information about domestic rabbits.

Web resources

Lagomorphs

www.dnr.state.mn.us/mammals/rabbits_hares/index.html

www.enchantedlearning.com/subjects/mammals/lagomorphs

www.enfo.ie/leaflets/Hares%20and%20Rabbits.htm

Hares

www.dnr.state.mn.us/snapshots/mammals/snowshoehare.html

www.dnr.state.mn.us/snapshots/mammals/whitetailedjackrabbit.html

42explore.com/rabbits.htm

www.enchantedlearning.com/subjects/mammals/lagomorphs/Hare.shtml

Rabbits

www.dnr.state.mn.us/snapshots/mammals/easterncottontail.html

www.buzzle.com/articles/facts-about-rabbits.html

Coniferous Swamps

www.npwrc.usgs.gov/resource/1998/mnplant/swamp.htm

Boom and Bust Cycle: lynx.uio.no/lynx/nancy/news/aljn989a.htm

www.scar.utoronto.ca/~cnstress/boonstra2001_what.pdf

Domestic Rabbits

www.la-sPCA.org/education/rabbits/rabbits.htm

lsb.syr.edu/projects/cyberzoo/domesticrabbit.html

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Related articles Many related *Minnesota Conservation Volunteer* articles are available online at www.mndnr.gov/volunteer/articles/index.html, including:

May–June 2003

“The Slinky, Stinky Weasel Family” (with teachers guide)

www.dnr.state.mn.us/young_naturalists/weasels/index.html

September–October 2001

“Prickle Pigs”

www.dnr.state.mn.us/young_naturalists/porcupines/index.html

January–February 2001

“Scampering Mammals”

www.dnr.state.mn.us/young_naturalists/scamperingmammals/index.html

July–August 1995

“Eager Beavers”

www.dnr.state.mn.us/young_naturalists/beavers/index.html

March–April 1995

“Wild Dogs”

www.dnr.state.mn.us/young_naturalists/wilddogs/index.html

November–December 1994

“Shadow Tails”

www.dnr.state.mn.us/young_naturalists/squirrels/index.html

January–February 1994

“Wildcats!”

www.dnr.state.mn.us/young_naturalists/wildcats/index.html

References Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring*. Lawrence, Kan.: Edge Enterprises, 2000.
Lockley, R.M. *The Private Life of a Rabbit*. New York, N.Y: Avon, 1975.
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

“Minnesota Is Hopping With Hares and Rabbits,” by Todd Whitesel. Published in the January–February 2003 *Volunteer* and available at www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html

Name _____ Period _____ Date _____

1. What are two differences between hares and rabbits? a. _____
_____ b. _____

2. _____ Minnesota has ____ native species of lagomorphs, called the _____,
_____, and _____.

3. Hares and rabbits belong to an order of mammals called _____.

4. _____ Hares and rabbits are herbivores. What do they eat? _____

5. What are the three special traits of a hare’s and rabbit’s mouth?

- a. _____
- b. _____
- c. _____

6. Define reingestion. _____

7. List eight predators that eat hares and rabbits. _____

8. The snowshoe hare’s camouflaged coat helps it hide from predators. Describe the hare’s camouflage. _____

9. How does the growth of plants contribute to the “boom and bust” cycle? _____

10. Where does a jackrabbit rest during the day? _____

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11. What two strategies does a jackrabbit rely on to avoid predators?

a. _____

b. _____

12. The eastern cottontail remains active all night. True or false?

13. For what is the eastern cottontail named? _____

14. Hares and rabbits can swim. True or false?

Challenge: If you were a snowshoe hare, what would you enjoy eating and where would you live?

Study Questions Answer Key

“Minnesota Is Hopping With Hares and Rabbits,” by Todd Whitesel. Published in the January–February 2003 *Volunteer* and available at www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html

1. What are two differences between hares and rabbits? **Answers will vary. Possibilities include: hares have longer ears and longer hind legs; location of habitat; hare babies are born with fur and open eyes, while rabbits are born hairless with closed eyes.**
2. Minnesota has 3 native species of lagomorphs, called the **eastern cottontail, snowshoe hare, and whitetailed jackrabbit.**
3. Hares and rabbits belong to an order of mammals called **lagomorphs.**
4. Hares and rabbits are herbivores. What do they eat? **plants**
5. What are the three special traits of a hare’s and rabbit’s mouth? **a. strong front incisors, b. extra pair of peglike teeth, c. side to side chewing motion**
6. Define reingestion. **Eating own droppings**
7. List eight predators that eat hares and rabbits. **Bobcats, coyotes, foxes, lynx, owls, hawks, weasels, and humans**
8. The snowshoe hare’s camouflaged coat helps it hide from predators. Describe the hare’s camouflage. **In winter their fur changes from gray-brown to white to blend with snow.**
9. How does the growth of plants contribute to the “boom and bust” cycle? **During a boom hares eat up the plants. With less food the hare population declines, which allows the plants to thrive.**
10. Where does a jackrabbit rest during the day? **In a shallow depression in the ground called a form.**
11. What two strategies does a jackrabbit rely on to avoid predators? **a. speed and b. excellent hearing**
12. The eastern cottontail remains active all night. **True** or false?
13. For what is the eastern cottontail named? **Its tail has a white, fluffy underside.**
14. Hares and rabbits can swim. **True** or false?

Challenge: If you were a snowshoe hare, what would you enjoy eating and where would you live? **In summer I would eat grasses, berries, wildflowers, clover, and other fresh greens. In winter I would eat bark, twigs, and evergreen needles. I would live in woods, thickets, and coniferous swamps.**

Minnesota Comprehensive Assessments Practice Items

“Minnesota Is Hopping With Hares and Rabbits,” by Todd Whitesel. Published in the January–February 2003 *Volunteer* and available at www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html

Name _____ Period _____ Date _____

1. How does reingestion help hares and rabbits survive?
 - A. It allows more time for eating.
 - B. It allows them to spend less time exposed to predators.
 - C. It is nutritious.
 - D. It confuses predators.

2. Why does a snowshoe hare take a dust bath?
 - A. To camouflage itself.
 - B. To help remove parasites from its fur.
 - C. To get exercise.
 - D. Snowshoe hares do not take dust baths.

3. Like hares, cottontails change fur color. True or false?
True / False

4. A leveret needs only _____ weeks to be able to eat with adult hares.
 - A. two
 - B. three
 - C. four
 - D. one

5. Describe the cottontail’s eyes. _____

Minnesota Comprehensive Assessments Answer Key

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1. How does reingestion help hares and rabbits survive? **B. It allows them to spend less time exposed to predators.**
2. Why does a snowshoe hare take a dust bath? **B. To help remove parasites from its fur.**
3. Like hares, cottontails change fur color. True or false? True / **False**
4. A leveret needs only **A. two weeks to be able to eat with adult hares.**
5. Describe the cottontail’s eyes. **They are set high on its head. Each eye moves more than 180 degrees, which gives the cottontail a 360-degree field of vision.**

Vocabulary

“Minnesota Is Hopping With Hares and Rabbits,” by Todd Whitesel. Published in the January–February 2003 Volunteer and available at www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html

abundant present in great quantities

boom and bust cycle periodic change of animal or plant populations from high to low and back again

camouflage to conceal or disguise by blending in

coniferous swamps wet, spongy land with cone-bearing trees

coprophagy a trait in which animals eat their own droppings to get the nutrients; also known as reingestion

form a depression or shallow hole in the ground

herbivore herbivore plant eater; different than omnivore or carnivore

incisors long, flat, sharp-edged front teeth that cut and tear food

lagomorphs an order of mammals that includes hares and rabbits

predator an animal that eats other animals

solitary living or being alone

trait a special quality or characteristic, such as fur or eye color

Vocabulary Study Cards

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

When something is
abundant it is

FOLD HERE

When something is **present**
in great quantity it is

What is a **boom and**
bust cycle?

FOLD HERE

The **periodic change of**
animal or plant populations
from high to low and back
again is a

To **camouflage**
is to

FOLD HERE

To **conceal or disguise by**
blending in is to

Vocabulary Study Cards

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

What are
coniferous swamps?

FOLD HERE

**Wet, spongy areas with
cone-bearing trees
are known as**

What is **coprophagy?**

FOLD HERE

**A trait (also called
reingestion) in which
animals eat their own
droppings to get the
nutrients is called**

A hare’s **form** is

FOLD HERE

**A depression or shallow hole
in the ground where a hare
sleeps is a**

Vocabulary Study Cards

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

An **herbivore** is a

FOLD HERE

An **animal that eats only plants** is called an

An animal’s **incisors** are

FOLD HERE

Long, flat, sharp-edged front teeth that cut and tear food are called

What are **Lagomorphs**?

FOLD HERE

What is the name for **the order of mammals that includes hares and rabbits**?

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Vocabulary Study Cards

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

A **predator** is an

FOLD HERE

An **animal that eats other animals** is a

To be **solitary** means to

FOLD HERE

To **live or be alone** is to be

A **trait** of an animal is

FOLD HERE

A **special quality or characteristic, such as fur or eye color** is a

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Vocabulary Study Cards

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

FOLD HERE

FOLD HERE

FOLD HERE