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


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.

<table>
<thead>
<tr>
<th>Suggested reading levels:</th>
<th>Intermediate through middle school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total words:</td>
<td>1,716</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper, pencil, marker board or large sheet of paper, markers, index cards (optional)</td>
</tr>
<tr>
<td>Preparation time:</td>
<td>About one hour</td>
</tr>
</tbody>
</table>
Two to three 50-minute class periods for study guide and one or two extension activities. Extension activities may be assigned as homework.

“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

Grade 5
   B. Diversity of Organisms

**Arts**

Artistic Expression
   D. Visual Arts

**Science**

Grade 4
   IV. Life Science
   Flow of Matter and Energy
   Grades 7

Grade 5
   B. Diversity of Organisms
   C. Interdependence of Life
   F. Flow of Matter and Energy

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.
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 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.

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.

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.
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](http://www.dnr.state.mn.us/mammals/rabbits_hares/index.html)
- [www.enchantedlearning.com/subjects/mammals/lagomorphs](http://www.enchantedlearning.com/subjects/mammals/lagomorphs)
- [www.enfo.ie/leaflets/Hares%20and%20Rabbits.htm](http://www.enfo.ie/leaflets/Hares%20and%20Rabbits.htm)

**Hares**
- [www.dnr.state.mn.us/snapshots/mammals/snowshoehare.html](http://www.dnr.state.mn.us/snapshots/mammals/snowshoehare.html)
- [www.dnr.state.mn.us/snapshots/mammals/whitetailedjackrabbit.html](http://www.dnr.state.mn.us/snapshots/mammals/whitetailedjackrabbit.html)
- [42explore.com/rabbits.htm](http://42explore.com/rabbits.htm)
- [www.enchantedlearning.com/subjects/mammals/lagomorphs/Hare.shtml](http://www.enchantedlearning.com/subjects/mammals/lagomorphs/Hare.shtml)

**Rabbits**
- [www.dnr.state.mn.us/snapshots/mammals/easterncottontail.html](http://www.dnr.state.mn.us/snapshots/mammals/easterncottontail.html)
- [www.buzzle.com/articles/facts-about-rabbits.html](http://www.buzzle.com/articles/facts-about-rabbits.html)

**Coniferous Swamps**

**Boom and Bust Cycle:** [lynx.uio.no/lynx/nancy/news/aljn989a.htm](http://lynx.uio.no/lynx/nancy/news/aljn989a.htm)

**Domestic Rabbits**
- [www.la-spca.org/education/rabbits/rabbits.htm](http://www.la-spca.org/education/rabbits/rabbits.htm)
- [lsb.syr.edu/projects/cyberzoo/domesticrabbit.html](http://lsb.syr.edu/projects/cyberzoo/domesticrabbit.html)
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

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? _____________________________________________

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 Conservation Volunteer
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.**
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 wet, spongy land with cone-bearing trees

swamps

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

**“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](http://www.dnr.state.mn.us/young_naturalists/hares_rabbits/index.html)

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.

<table>
<thead>
<tr>
<th>When something is <strong>abundant</strong> it is</th>
<th>When something is <strong>present</strong> in great quantity it is</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is a <strong>boom and bust cycle</strong>?</td>
<td>The periodic change of animal or plant populations from high to low and back again is a</td>
</tr>
<tr>
<td>To <strong>camouflage</strong> is to</td>
<td>To conceal or disguise by <strong>blending in</strong> is to</td>
</tr>
</tbody>
</table>
**Vocabulary Study Cards**

“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

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.

<table>
<thead>
<tr>
<th>What are coniferous swamps?</th>
<th>Wet, spongy areas with cone-bearing trees are known as</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is coprophagy?</td>
<td>A trait (also called reingestion) in which animals eat their own droppings to get the nutrients is called</td>
</tr>
<tr>
<td>A hare’s form is</td>
<td>A depression or shallow hole in the ground where a hare sleeps is a</td>
</tr>
</tbody>
</table>

**MINNESOTA CONSERVATION VOLUNTEER**
**Vocabulary Study Cards**

“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

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

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

An animal’s **incisors** are

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

What are **Lagomorphs**?

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

---

**Minnesota Conservation Volunteer**
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.

**Vocabulary Study Cards**

“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

A **predator** is an

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

To be **solitary** means to

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

A **trait** of an animal is

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

“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

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.