

# TEACHERS GUIDE

## TO “SQUEAKS AND WHISTLES, GRUNTS AND HUMS”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, January–February 2017, [www.mndnr.gov/mcvmagazine](http://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 Naturalist 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](http://www.mndnr.gov/mcvmagazine) and click on *past issues*.

**Thank you** for bringing Young Naturalists into your classroom!

# “SQUEAKS AND WHISTLES, GRUNTS AND HUMS”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, January–February 2017, [www.mndnr.gov/mcvmagazine](http://www.mndnr.gov/mcvmagazine)



**SUMMARY.** Animals communicate with each other by making a various sounds in a variety of ways. “Squeaks and Whistles, Grunts and Humms” introduces Young Naturalists to the sounds of nine common Minnesota creatures, explaining how each one makes sound and how it uses sound to send messages to others.

**SUGGESTED READING LEVELS.** Third through middle-school grades

**MATERIALS.** Paper, poster-making supplies), rubber bands, sticks, combs, waxed paper, balloons, other materials for making noise, print and online resources from your media specialist.

**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.** “Squeaks and Whistles, Grunts and Humms” 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 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 6–8** Text Types and Purposes, Writing Process: Production and Distribution of Writing, Research to Build and Present Knowledge, Range of Writing

## **MATHEMATICS GRADE 6**

6.3.3.1

## **SCIENCE GRADES 3, 5, AND 7**

Life Science

3.4.1.1.1; 3.4.3.2.2; 5.4.1.1.1; 7.4.2.1.1; 7.4.2.1.2; 7.4.3.1.3

## **ARTS GRADES K–12**

1. Artistic Foundations: Visual Arts; Music
2. Artistic Process: Create or Make: Visual Arts
3. Artistic Process: Perform or Present: Visual Arts; Music
4. Artistic Process: Respond or Critique: Visual Arts; Music

Current, complete Minnesota Academic Standards are at [www.education.state.mn.us](http://www.education.state.mn.us). Teachers who find other connections to standards are encouraged to contact *Minnesota Conservation Volunteer*.

**PREVIEW.** Start the lesson with a **KWL** activity. Ask students to name as many animal sounds as they can. Ask them what they know about how and why animals make sounds. Then ask what they'd like to learn about animal sounds. Write their answers in a prominent place so you can look back when the lesson is over to see if you've made progress toward your learning goals.

**VOCABULARY PREVIEW.** You can find a copy-ready vocabulary list at the end of this guide. Feel free to modify it to fit your needs. Share the words with your students and invite them to guess what they think they mean. Tell them you will be reading a story that will help them understand these words so they can use them in the future.

You might wish to use the study cards (adapted from *Strategic Tutoring*) found at the end of the **Study Questions** for this Young Naturalists feature. On one half of the card is a key vocabulary word or phrase written as a question. The other half defines the word or phrase. Cut along the horizontal line, fold in the middle, and tape or staple, then use like flash cards. We've included a few blanks so you or your students can add new words or phrases.

**STUDY QUESTIONS OVERVIEW.** Preview the study questions with your class before you read the article. Then read the story aloud. Complete the study questions in class, in small groups, or as an independent activity, or use them as a quiz.

**ADAPTATIONS.** Read aloud to special needs students. Abbreviate the study questions or focus on items appropriate for the students. Adapt or provide assistance with extension activities as circumstances allow.

**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 sound. See the “learned” list from your **KWL** activity. (2) Have students write multiple-choice, true-false, or short-answer questions based on the article. Select the best questions for a class quiz. (3) Invite students to research the sounds other familiar Minnesota creatures (loon, bear, rattlesnake, squirrel, chickadee, etc). Ask them to create a video, poster, cartoon, or podcast to share their new knowledge with others.

**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. Design and create noise-making devices that mimic the various ways animals in this story create sound. Challenge students to come up with their own inventions. If needed, suggest things like a comb kazoo, a smooth stick rubbed along notched stick, a drum made from an oatmeal box. As an extension, have students draw imaginary creatures that use the kind of noisemaker they built to communicate. Invite them to demonstrate the different kinds of sounds the imaginary animal makes and what they mean to others of the same species.
2. If you have access to a nature area or other outdoor space, go on a Sound Safari. Take paper and pencil. Have students fan out as widely as possible. Sit silently for 10 minutes listening. Write down everything you hear—animal or otherwise. Compare notes afterward. How many sounds were related to humans? How many were related to physical processes (wind, moving water, etc.)? How many were made by nonhuman animals? What was the most surprising sound? How did sounds vary from one part of the space to another?
3. In this story we learn a bit about how sounds are made. But how do listeners turn air vibrations into messages in their brains? Use your media center and the internet to learn about the sense of hearing in humans. As an extension, students can choose an animal, learn about its auditory system, and compare and contrast it with our own.
4. Use the animals in this story and the sounds they make to create a “compare and contrast” chart. Categories might include name of animal, how it makes sound, how humans use tools to make a similar sound, messages the sounds convey.
5. Have students research the time of year different animals are likely to be making different kinds of sounds in your area, then create a calendar showing how nature’s soundscape varies over time.

6. Songbirds are particularly well-known for the elaborate and varied sounds they make during their breeding seasons. Some can even sing two notes at once! Invite students to explore the “how” and “what for” of these amazing animal vocalizations.

7. Noise from human activities can make it difficult for animals to communicate with each other through sound. Invite students to research and create a presentation on what scientists are learning about the impacts of sound pollution on wildlife.

## WEB RESOURCES

### GENERAL TEACHER AND STUDENT RESOURCES

[Minnesota DNR Teachers' Resources](#)

[DNR Kids Page](#)

### GENERAL ANIMAL SOUNDS

[Learn NC: How Do Animals Create Sound to Communicate?](#)

### OWLS AND OWL SOUNDS

[Minnesota DNR Owl Fact Sheets](#)

[Two Eastern Screech Owls \(Young Naturalists story\)](#)

[Whoooo's Watching? \(Young Naturalists story\)](#)

[Audubon: Learn to Identify Five Owls by Their Calls](#)

[Cool Green Science: The Hooting Season: Enjoying Great Horned Owls](#)

[The Owl Pages: Owl Frequently Asked Questions](#)

[Journey North: Listen to Owls](#)

[International Owl Center: Great Horned Owl Vocalizations](#)

[Hooting Great Horned Owl \(video\)](#)

### COYOTE

[The Cunning Colonist \(Minnesota Conservation Volunteer\)](#)

[Coyote \(Canis latrans\) \(Minnesota Conservation Volunteer\)](#)

[Translating the Song Dog: What Coyotes Are Saying When They Howl](#)

[Northern Woodlands: Coyotes: Listening to Tricksters](#)

### AMERICAN TOAD

[Minnesota DNR: American Toad](#)

[American Toad Calling \(video\)](#)

[BioKids American Toad](#)

### FRESHWATER DRUM

[Freshwater Drum \(Minnesota DNR\)](#)

[Sheephead \(BioKIDS\)](#)

### BEAVER

[Minnesota DNR: Beaver](#)

[National Geographic: Beaver](#)

## WOLF SPIDER

LiveScience: 'Purring' Wolf Spiders Softly Serenade Mates

Schizocosa Ocreata courtship (video)

## CICADA

Buggy Sounds of Summer (Young Naturalists story)

Cicada Mania

Cicada Mania Cicada Sound Page

Songs of Insects: Dog-day Cicada

## WOODPECKER

Sialis: Drumming, Tapping and Drilling by Woodpeckers

Identifying Downy and Hairy Woodpeckers by Drumming Sounds

All About Birds: Downy Woodpecker Sounds

\*All *Minnesota Conservation Volunteer* stories are available online in searchable PDF.

## STUDY QUESTIONS ANSWER KEY

1. A great horned owl's hoot lets other owls know **where it is** and **what it's doing**.
2. A great horned owl's hoot can be heard a mile away. How many football field lengths away is that? **A football field is 100 yards long. A mile is 1,760 yards. A mile is 17.6 football fields.**
3. True or false? A great horned owl hoots through its nostrils. **True**
4. Where do American toads winter? **Underground**
5. How long can a male American toad trill? **About 30 seconds**
6. As temperature increases, the American toad's call becomes (C) **faster**.
7. Where in Minnesota do freshwater drum live? **Mississippi, St. Croix, Minnesota, and Red rivers and in some lakes.**
8. How does a swim bladder help fish survive? **The swim bladder helps fish float at a certain depth. It also helps male freshwater drum make sounds that attract mates.**
9. Name four things a beaver uses its tail for. **1) steering itself when it swims; 2) staying balanced when carrying logs and branches; 3) storing fat for energy; 4) making a sound that startles an intruder and alerts others of danger.**
10. What do the loudness and pitch of a male wolf spider's performance tell a female spider? **B. How strong he is.**
11. What time of year are you likely to hear a dog-day cicada buzz in Minnesota? **July through September.**
12. How does a dog-day cicada make its buzzing sound? **A. By vibrating its tymbals**
13. When might you hear a downy woodpecker hammering on a tree? **Any time of the year.**  
Challenge: Why do you suppose great horned owls stop hooting after they have laid their eggs? **Answers may vary. Possibilities include because they no longer need to attract a mate and to avoid letting predators know the location of their nest.**

## MINNESOTA COMPREHENSIVE ASSESSMENTS ANSWER KEY

1. When are great horned owls most likely to make territorial hoots? **At dusk and dawn in fall and early winter.**
2. According to scientists, why do coyotes howl? **B. to stay connected with other family members**
3. What role does the sac play in an American toad's call? **It holds air that is then pushed past the vocal cords to make sound.**
4. Where does a dog-day cicada spend most of its life? **B. Underground**
5. Name three things a downy woodpecker does with its bill. **1) drill holes in trees to search for insects to eat; 2) carve a hole for nesting in a hollow tree; 3) communicate with other woodpeckers.**

## VOCABULARY LIST

**encounter** discover, run into

**jackhammer** power tool used to break up rock and concrete

**membrane** thin, flexible sheet of material

**pack** group of animals

**pedipalps** leglike structures spiders have near their mouths

**pitch** how high or low a sound is

**sonic** related to sound

**symphony** variety of sounds being made at the same time

**tendon** rubber-band like body part that helps muscles move other body parts

**territorial** relating to the place an animal lives and defends from other animals

**vertebrate** animal with a backbone

**vibrate** rapidly move back and forth