Young Naturalists

Teachers Guide

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"What's in a Bird Song?" Multidisciplinary Classroom Activities

Teachers guide for the Young Naturalists article "Nature's Calendar" by Tom Anderson. Published in the March–April 2007 *Minnesota Conservation Volunteer*, or visit www.dnr.state.mn.us/young_naturalists/birdsong.

Young Naturalists teachers guides are provided free of charge to classroom teachers, parents, and students. This guide contains a brief summary of the articles, suggested independent reading levels, word counts, 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 a 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

"What's in a Bird Song?" teaches readers which birds sing, what songs mean, the difference between songs and calls, how birds produce sounds, how young birds learn to sing, how to remember some common bird songs and calls, and how to learn more about identifying birds by their calls and songs.

Suggested reading levels: fourth through eighth grades

Total words: 1,535

Materials: Paper, poster board, pencils, pens, markers, and print/audio resources from your media center, including field guides and audio recordings of bird songs and calls. For Extension 7, refer to the Web site for materials needed

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

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

Minnesota Academic Standards applications: "What's in a Bird Song?" 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

Minnesota History and Social Studies

V. Geography

Grades 4–8
- D. Interconnections: The student will give examples that demonstrate how people are connected to each other and the environment.

Mathematics

Grades 4–8

IV. Data Analysis, Statistics and Probability

Science

Grade 4

IV. Life Science
- B. Diversity of Organisms

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 Matter and Energy

Arts

All Grades

B. Music
1. understand the elements of music, including melody, rhythm, harmony, and dynamics.

Grades 4 and 5

B. Music: improvise, compose, and perform rhythms and melodies on classroom instruments.

All Grades

D. Visual Arts: Create original works of art

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

Preview

Survey the article. Ask your students to examine the illustrations. If you can access audio of bird songs on tape, CD or Web sites (see Web resources below) play some songs (A duck call will work well here). Ask if students can identify the bird and, perhaps, guess what the song or call means. Use the **KWL** strategy (Ogle, 1986) to find out what your students already know (**K**) about birds and bird songs and calls, what (**W**) they would like 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). Add to your **L** list as you read and discuss the article. See www.teachnology.com/web_tools/graphic_org/kwl for a **KWL** generator that will produce individual organizers for your students.

Vocabulary preview

You may wish to preview the attached list as well as any other words based on knowledge of your students' needs. Connections to vocabulary in the article may be made during the **KWL** activity. If students are not familiar with some of the terms, include them in the **W** list. Unfamiliar terms may be added to the **W** list as the article is read. Eventually **W** words can be moved to the **L** list. You may write vocabulary from the article in green ink, while other ideas are written in black. 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 from the articles 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 each article. You may wish to read the stories 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 1, 8, 10, 11, and 13 and the challenges require analytical thinking.

Adaptations

Read aloud to special needs students. Abbreviate the study questions or highlight priority items to be completed first, for example, items 2, 3, 4, 5, 10, and 15. 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: (1) Students may correctly name the species that produced recorded songs and calls. (2) Poster presentations may illustrate a species, its song or call, and how its song or call is used to communicate. (3) Students may write about the relationship between songs/calls and other behaviors, such as courtship and mating or territorial protection. (4) Extension activities may also be used to evaluate student knowledge and understanding.

Extension activities

1. Ask students to develop a log for recording information about birds visiting a bird feeder. Have them record the species (and gender, if possible) and number of birds present at two- to five-minute intervals, songs and calls, and any other information they can think of during a 15- to 20-minute observation period each morning and late afternoon. The more they observe, especially during changes of seasons, the more they will learn about bird behaviors and songs. If students do not have access to feeders at home, perhaps you could set one up at school.
2. Arrange for a guest speaker from your local Audubon chapter or from the DNR Nongame Wildlife program. Connect questions from the KWL to your guest's expertise.
3. Participate in the annual Audubon Christmas Bird Count. See www.audubon.org/bird/cbc/getinvolved.html.
4. If your school is near a natural area, such as a park or school forest, give your students opportunities to observe and record birds during the school day.
5. Global warming is affecting bird migration and range of habitat. Students may select a species, such as the ruby-throated hummingbird, and explore the implications of changing climate. Students will get a good start at this site: www.hummingbirds.net/rubythroated.html.
6. This article, with its references to language, provides connections to language arts, social studies, and modern languages. Birds, like people, migrate from one region to another, and learn to communicate by interacting with each other. Regional differences (dialects) exist within a species. The following site provides an excellent map and links to

introductory information on regional dialects in the United States: www.uwm.edu/Course/350-192/region.html.

7. Students may imitate bird songs with classroom or improvised instruments, or compose their own songbird melodies. See students.ed.uiuc.edu/langellr/activity1.html.
8. Birds have inspired poets for thousands of years. Student may write haiku or other odes to birds. See www.gardendigest.com/poetry/haiku4.htm.

Web resources

Audio recordings of bird songs and calls:

www.math.sunysb.edu/~tony/birds
www.math.sunysb.edu/~tony/birds/links.html
www.animalbehaviorarchive.org/loginPublic.do
www.naturesound.com/birds/birds.html

Information on bird behavior:

birding.about.com/od/behavior/Bird_Behavior_Information.htm
www.birdwatchersdigest.com/site/backyard_birds/faqs/behavior.aspx
www.backyardnature.net/birdbkyd.htm
www.mdc.mo.gov/nathis/birds/emobirds/behavior.htm

Information on Minnesota birds:

en.wikipedia.org/wiki/List_of_Minnesota_birds
www.minnesotabirds.com
www.dnr.state.mn.us/birds

Young Naturalists articles and teachers guides are found at www.dnr.state.mn.us/young_naturalists.

Young Naturalists articles on birds:

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

Related articles published in *Minnesota Conservation Volunteer:*

Eastern Meadowlark *(Sturnella magna)*, July–August 1999
www.dnr.state.mn.us/volunteer/julaug99/profile.html

Loggerhead Shrike *(Lanius ludovicianus)*, March–April 2000
www.dnr.state.mn.us/volunteer/marapr00/loggerhead.html

Where the Birds Are, March–April 2001
www.dnr.state.mn.us/volunteer/marapr01/birdingtrl.html

Double-Crested Cormorants *(Phalacrocorax auritus)*, May–June 2001
www.dnr.state.mn.us/volunteer/mayjun01/cormorant.html

103 Bird Years and Counting, November–December 2002
www.dnr.state.mn.us/volunteer/novdec02/birdyears.html

Snow Bunting *(Plectrophenax nivalis)*, November–December 2003
www.dnr.state.mn.us/volunteer/novdec03/mpsnowbunting.html
Flights of Fall, September–October 2004
www.dnr.state.mn.us/volunteer/septoct04/flights.html
Call for Counters, January–February 2005
www.dnr.state.mn.us/volunteer/janfeb05/fncounters.html
Great Gray Owl *(Strix nebulosa)*, January–February 2006
www.dnr.state.mn.us/volunteer/janfeb06/mp.html
White-Throated Sparrow, March–April 2006
www.dnr.state.mn.us/volunteer/marapr06/mp.html
Catch a Wave of Warblers, September–October 2006
www.dnr.state.mn.us/volunteer/sepoct06/warblers.html

References

1. Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring.* Lawrence, Kan.: Edge Enterprises, 2000.
2. 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

"What's in a Bird Song?" by Tom Anderson
Minnesota Conservation Volunteer, March–April 2007
www.dnr.state.mn.us/young_naturalists/birdsong

Name _____ Period _____ Date _____

1. Why might people listen to recordings of birds' songs? _____

_____

_____

2. What month might it be when you hear the first cardinal of spring? _____

_____

3. If you hear a robin's song, is the singer most likely to be a male or female? _____
Why? _____

_____

4. Besides singing, how do male birds attract females? _____

_____

5. Explain how a bird's song differs from a bird's call. _____

_____

_____

6. How did the chickadee get its name? _____ .

_____

7. If you hear *chick-a-dee-dee-dee-dee,* what might you conclude? _____ .

_____

8. Compare an iPod to a songbird. _____

_____

_____

9. How is it possible for a cardinal to sing two pitches at once? _____

_____

_____

10. What do young birds and infant humans have in common? _____

_____

_____

11. How are birds that live in different places like people who live in different places? _____

_____

12. Why do mnemonics help us tell bird songs and calls apart? _____

_____

13. If you wanted to study bird songs, why might you visit Cornell University? _____

_____

14. For ornithologists and others who study birds, why is knowledge of birds' songs and calls so important? _____

_____

Challenge: Why do some birds sing more than one song? Why do some birds copy other birds' songs? Why do birds sing more in spring than fall?. _____

_____

_____

Study Questions Answer Key

"What's in a Bird Song?" by Tom Anderson
Minnesota Conservation Volunteer, March–April 2007
www.dnr.state.mn.us/young_naturalists/birdsong

1. Why might people listen to recordings of birds' songs? **Answers may vary. Bird songs are relaxing. Perhaps people listen to songs in order to help them identify different species.**
2. What month might it be when you hear the first cardinal of spring? **April.**
3. If you hear a robin's song, is the singer most likely to be a male or female? **Male. Why? Male birds use their songs and calls to attract mates and to establish their territory.**
4. Besides singing, how do male birds attract females? **With brightly colored plumage.**
5. Explain how a bird's song differs from a bird's call. **Calls are simpler and shorter than songs.**
6. How did the chickadee get its name? **The chickadee is named after its *chick-a-dee* call.**
7. If you hear *chick-a-dee-dee-dee-dee* what might you conclude? **There is a dangerous predator, such as a sharp-shinned hawk, nearby.**
8. Compare an iPod to a songbird. **Just like an iPod, some birds can produce many songs.**
9. How is it possible for a cardinal to sing two pitches at once? **Birds have a special voice box with separate tympanic membranes for each bronchial tube. As air leaves each tube it strikes the membrane and produces a separate sound; thus, two songs at once.**
10. What do young birds and infant humans have in common? **They both learn to sing from adults.**
11. How are birds that live in different places like people who live in different places? **Like people from different parts of the country who speak with different accents, members of a bird species from different parts of the country have different accents.**
12. Why do mnemonics help us tell bird songs and calls apart? **Word phrases that describe songs can help us remember songs and tell them apart.**
13. If you wanted to study bird songs, why might you visit Cornell University? **Cornell has the largest collection of recorded bird sounds in the world.**
14. For ornithologists and others who study birds, why is knowledge of birds' songs and calls so important? **Knowing bird sounds helps them identify and count birds they cannot see.**

Challenge: Why do some birds sing more than one song? **Answers will vary, but might include: Songs communicate specific messages at different times of the day or season.** Why do some birds copy other birds' songs? **Again, answers will vary. Encourage students to explore some of the Web sites listed above before they answer.** Why do birds sing more in spring than fall? **They are attracting mates in the spring.**

Minnesota Comprehensive Assessments Practice Items

"What's in a Bird Song?" by Tom Anderson
Minnesota Conservation Volunteer, March–April 2007
www.dnr.state.mn.us/young_naturalists/birdsong

Name _____Period _____Date_____

1. _____ is the easiest way to learn bird songs.
   A. Listening to recordings
   B. Studying markings that show pace and pitch
   C. Spending time outdoors watching and listening to birds
   D. Studying field guides

2. Birds use song to communicate with
   A. predators.
   B. other members of the singer's species.
   C. ornithologists.
   D. wildlife biologists.

3. You hear *kronk, kronk, kronk,* but you cannot see what is making the sound. It might be a
   A. raven.
   B. common crow.
   C. catbird.
   D. red-tailed hawk.

4. If you observed a male red-winged blackbird in early spring, what might you discover?
   A. How he calls to his mate.
   B. How large his territory is.
   C. How he responds to intruders.
   D. All of the above.

Minnesota Comprehensive Assessments Practice Items Answer Key

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1. **C. Spending time outdoors watching and listening** to birds is the easiest way to learn bird songs.
2. Birds use song to communicate with **B. other members of the singer's species.**
3. You hear *kronk, kronk, kronk,* but you cannot see what is making the sound. It might be a **A. raven.**
4. If you observed a male red-winged blackbird in early spring, what might you discover? **D. All of the above.**

Vocabulary

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cadence	beats that follow a set rhythm
chirr	harsh, trilled sound
chorus	group of singers
dialect	regional variety of a language
flex	to bend
melodious	having varied and interesting tones
migration	movement from one region to another
plumage	bird feathers
predator	animal that kills and eats other animals
repertoire	range of songs a bird knows
translate	convert from one language to another

Vocabulary Study Cards

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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.

A **chorus** is a	A **group of singers** is called a
What does **melodious** mean?	**Interesting and varied sounds** are
A **migration** is	**Movement from one region to another** is called

To
translate
means to

To
change from one language to another
is to

A bird's
plumage
is its

A bird's
feathers
are its

A
chirr
is a

A
harsh, trilled call
is a

A
predator
is an

An
animal that kills and eats other animals
is a

To
flex
is to

To
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is to

A bird's
repertoire
of songs and calls is the

The
range of sounds a bird can produce
is its

A
dialect
is the

The
difference in a language from region to another
is a

A
cadence
is a

A
regular beat or rhythm
is a