“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.

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
“What’s in a Bird Song?”—Teachers Guide

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

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

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.

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

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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.teach-nology.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
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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.
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_Info.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/flight.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/map.html

**White-Throated Sparrow, March–April 2006**  
www.dnr.state.mn.us/volunteer/marapr06/map.html

**Catch a Wave of Warblers, September–October 2006**  
www.dnr.state.mn.us/volunteer/septoct06/warblers.html

**References**  
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
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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.**
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Minnesota Comprehensive Assessments Practice Items

“What's in a Bird Song?” by Tom Anderson
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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.
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
chirp      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.

<table>
<thead>
<tr>
<th>A chorus is a</th>
<th>A group of singers is called a</th>
</tr>
</thead>
<tbody>
<tr>
<td>What does melodious mean?</td>
<td>Interesting and varied sounds are</td>
</tr>
<tr>
<td>A migration is</td>
<td>Movement from one region to another is called</td>
</tr>
<tr>
<td><strong>To</strong> translate</td>
<td><strong>To</strong> change from one language to another</td>
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<td>means to</td>
<td>is to</td>
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<table>
<thead>
<tr>
<th>A bird’s plumage is its</th>
<th>A bird’s feathers are its</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>A chirr is a</th>
<th>A harsh, trilled call is a</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>A predator is an</th>
<th>An animal that kills and eats other animals is a</th>
</tr>
</thead>
<tbody>
<tr>
<td>A bird’s repertoire of songs and calls is the</td>
<td>The range of sounds a bird can produce is its</td>
</tr>
<tr>
<td>A dialect is the</td>
<td>The difference in a language from region to another is a</td>
</tr>
<tr>
<td>A cadence is a</td>
<td>A regular beat or rhythm is a</td>
</tr>
</tbody>
</table>

**To flex** is to

**To bend** is to