

TEACHERS GUIDE

TO “SONGS OF SPRING”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, March–April 2020, www.mndnr.gov/mcvmagazine.

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 Naturalists 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. The magazine is entirely financially supported by its readers.

Find every issue online. Each story and issue is available in a searchable PDF format. Visit www.mndnr.gov/mcvmagazine and click on *past issues*.

Thank you for bringing Young Naturalists into your classroom!

“SONGS OF SPRING”

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SUMMARY. Red-winged blackbirds are among the first migratory songbirds to return to Minnesota each spring, and their Ooo-kuh-REEE! call can be heard far and wide as males set up their territories. This feature introduces young naturalists to the life history and unique traits of this ubiquitous animal.

SUGGESTED READING LEVELS. Third through middle school grades

MATERIALS. KWL organizer; optional resources include dictionaries, art supplies, Internet access and other print and online resources your media specialist may provide.

PREPARATION TIME. 15–30 minutes, not including time for extension activities

ESTIMATED INSTRUCTION TIME. 30–60 minutes, not including extension activities

MINNESOTA ACADEMIC STANDARDS APPLICATIONS. “Songs of Spring” activities described below may be used to support some or all of the following Minnesota Department of Education standards for students in grades 3–8:

SCIENCE (*CODING IS BASED ON JUNE COMMISSIONER APPROVED DRAFT OF MN ACADEMIC STANDARDS IN SCIENCE)

Strand 2 Looking at Data and Empirical Evidence to Understand Phenomena or Solve Problems (Benchmarks: 3E.2.2.1.1, 5E.2.2.1.2, 7L.2.1.1.1)

Strand 3 Developing Possible Explanations of Phenomena or Designing Solutions to Engi-

neering Problems (Benchmarks: 3L.3.2.1.1, 6E.3.2.1.3, 7L.3.2.1.1)

Strand 4 Communicating Reasons, Arguments and Ideas to Others (Benchmarks: 3L.4.1.1.1, 3L.4.2.1.1, 5L.4.1.2.1, 7L.4.1.1.2, 7L.4.1.2.1, 7L.4.1.2.2)

MATH

Data Analysis (Benchmarks 4.4.1.1., 5.2.1.1, 5.4.1.2)

Number Operations (Benchmark 6.1.2.2)

Algebra (Benchmarks 7.2.2.2, 9.2.1.4)

Geometry & Measurement (Benchmark 7.3.2.3)

SOCIAL STUDIES

Economics (Benchmarks 4.2.1.1.1, 5.2.1.1.1, 7.2.1.1.1, 8.2.1.1.1)

Geography (Benchmark 4.3.4.9.1)

ARTS

Artistic Process: Create or Make (Benchmarks 0.2.1.5.1, 4.2.1.5.1, 6.2.1.5.1)

ENGLISH LANGUAGE ARTS

Reading Benchmarks: Informational Text

Key Ideas and Details (Benchmarks 3.2.1.1, 3.2.3.3, 4.2.1.1, 4.2.3.3, 5.2.1.1, 5.2.3.3, 6.5.1.1, 7.5.1.1, 8.5.1.1)

Craft and Structure (Benchmarks 3.2.4.4, 3.2.6.6, 4.2.4.4, 5.2.4.4, 6.5.4.4, 6.5.6.6, 7.5.4.4, 7.5.6.6, 8.5.4.4, 8.5.6.6)

Integration of Knowledge and Ideas (Benchmarks 3.2.7.7, 3.2.8.8, 3.2.9.9, 4.2.7.7, 4.2.8.8, 4.2.9.9, 5.2.7.7, 5.2.8.8., 5.2.9.9, 6.5.7.7, 6.5.8.8, 7.5.8.8, 8.5.8.8)

Writing Benchmarks

Text Types and Purposes (Benchmarks 3.6.1.1, 4.6.1.1, 5.6.1.1, 6.7.1.1, 7.7.1.1, 8.7.1.1)

Research to Build and Present Knowledge (Benchmarks 3.6.7.7, 4.6.7.7, 5.6.7.7, 6.7.7.7, 7.7.7.7, 8.7.7.7)

Speaking, Viewing, Listening and Media Literacy Benchmarks

Comprehension and Collaboration (Benchmarks 3.8.1.1, 4.8.1.1, 5.8.1.1, 6.9.1.1, 7.9.1.1, 8.9.1.1)

Language Benchmarks

Vocabulary Acquisition and Use (Benchmarks 3.10.4.4, 4.10.4.4, 5.10.4.4, 6.11.4.4, 6.11.6.6, 7.11.4.4, 7.11.6.6, 8.11.4.4, 8.11.6.6)

Reading Benchmarks: Literacy in Science and Technical Subjects

Key Ideas and Details (Benchmarks 6.13.1.1, 6.13.2.2)

Writing Benchmarks: Literacy in Science and Technical Subjects

Research to Build and Present Knowledge (Benchmark 6.14.7.7)

For current, complete Minnesota Academic Standards, see www.education.state.mn.us. Teachers who find other connections to standards may contact *Minnesota Conservation Volunteer*.

PREVIEW. Start by playing a recording of a red-winged blackbird's call. Ask students if they have ever heard that sound before. What does it make them think of? Tell them that for many people it is the sound of spring, because it is the sound of one of the first songbirds to return to Minnesota as the snow melts. Show students a picture of a red-wing, then divide them into small groups to do a [KWL activity](#). Within the groups, have students describe what they already know (K) about adaptations that help animals thrive in winter and what they wonder (W) about them. Give each student a copy of the organizer (see www.teach-nology.com/web_tools/graphic_org/kwl) and encourage each to make notes during the group discussion. As you read and discuss the article you can compile a list of what they learn (L) while reading the article and related materials and participating in extension activities.

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 you 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! As your students encounter these vocabulary words in the story, you may want to encourage them to infer meaning using context clues, such as other words in the sentence or the story's illustrations. Students also could be encouraged to compare their inferences as to what the words mean with their earlier guesses and with the definitions from the vocabulary list.

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, in large letters, is a key vocabulary word with smaller letters framing the word in a question or statement. On the other half is the answer to the question or the rest of the statement. 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 if you'd like.

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 red-winged blackbirds. 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 items for a class quiz. (3) Have students create posters, podcasts, or videos 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. Phenology is the study of periodic changes in nature over the course of the seasons. The Minnesota Department of Natural Resources [Signs of Spring: Phenology](#) web page has a list of the dates the first red-winged blackbirds were heard each spring at a site in Maplewood, Minnesota, over the past 20 years. Invite students to graph the dates. Discuss the variation. What might be responsible for the variation? Are there any trends or patterns? On the same chart, graph the date the first frost left the ground at the site. Do the two lines follow the same pattern? If so, what hypothesis might you form about red-wing migration dates, and how could you test it? If not, what hypothesis might you form about other things might the variation be due to, and how could you test it? Talk about the difference between causation and correlation and the importance of distinguishing between the two of them.

2. Red is a prominent color not only on red-winged blackbirds' wings, but in nature as a whole. Sometimes red attracts. Sometimes it serves as a warning signal. Research the adaptive value of red for various organisms. Then go on a hike or to a zoo and see how many different wearers and "uses" of red you can identify.

3. The red-winged blackbird has a distinctive song. So do many other birds – so distinct that people learn to identify the presence of birds not by seeing them, but by hearing them. Give your students a chance to develop their auditory skills and auditory memory by introducing them to, and challenging them to memorize, as many local bird songs and calls as they can. If appropriate for your students, you can use online quizzes or Cornell's [Bird Song Hero](#) game to make it fun!

4. Since time immemorial people around the world have observed and been awed by the ability of some birds — including red-winged blackbirds — to fly together in massive, coordinated flocks. Today, it is an area of interest for scientists who study a phenomenon known as self-organizing behavior. Watch a video of flocking red-wings, then take off yourselves on a flight of fancy exploring what scientists know (and don't know) about flocking and, more generally, about self-organizing systems. What other self-organizing systems can you think of? How might knowledge of self-organizing systems benefit humans?

5. How do we learn where birds that summer in Minnesota go in the winter, and whether they return to the same spot each spring? Invite a bird bander to your classroom or take a field trip to watch one in action at a nature center to learn the answer. This could also launch an exploration into daylight patterns across the seasons and their connec-

tion to migration. What other animals besides birds have migratory patterns that are influenced by daylight patterns?

6. Have students guess how many natural materials it would take to make a nest that is five inches wide and three inches deep. In the 1930s, a naturalist picked apart and counted the materials used in one red-winged blackbird nest. It turns out the nest had been made by weaving together 34 strips of willow bark and 142 cattail leaves! Use this to prompt math practice with concepts such as volume (calculating the approximate volume of a blackbird nest), or ratios and scale (making a scale model, figuring out the dimensions of the model and determining approximately how many strips of bark and cattail leaves).

7. This Young Naturalists story ends with a reminder that blackbirds are an important part of a healthy ecosystem. Even though their flocks in winter may frustrate farmers, during other seasons they help by eating insects that could cause a lot of damage to crops. Have students read about the impact of blackbirds on farms from other sources, such as this one from an [agricultural journal](#). Encourage students to think about and identify the points of view of the authors, distinguishing their own points of view from the authors' views. Ask them to assess the reasoning in the text by evaluating the claims and evidence. Based on what they learned from the story and from further research, what ideas do they have for farmers negatively impacted by blackbirds? Have students design, write about, and evaluate different solutions that incorporate ecosystem, economic, and social considerations and demonstrate reasoned decision-making (Problem, Alternative, Criteria, Evaluation, Decision). Data relating to impacts on agricultural land (positive as well as negative) could also be used toward practicing skills such as recognizing patterns in data, understanding the meaning in those patterns, and looking at relationships across variables (blackbird ecosystem impact, human ecosystem impact, resource availability, seasonal variability of resource availability, etc.).

WEB RESOURCES

RED-WINGED BLACKBIRDS

[Red-winged Blackbird Sounds](#)

[Flocking Red-winged Blackbirds](#)

GENERAL TEACHER AND STUDENT RESOURCES

[Minnesota DNR Teachers' Resources](#)

[DNR Kids Page](#)

RELATED MCV ARTICLES

[A Thing Called Birding](#)

[What's in a Bird Song?](#)

[Splendid Fliers \(Young Naturalists article with Teachers Guide\)](#)

[Nature's Calendar](#)

STUDY QUESTIONS ANSWER KEY

1. Name six kinds of American blackbirds. **Orioles, bobolinks, meadowlarks, brown-headed cowbirds, grackles, red-winged blackbirds.**

2. Name four traits that American blackbirds share. **Answers may vary, but might include: strong feet; strong legs; cone-shaped bills; pointed bills; males have black feathers mixed with yellow, orange, or red.**

3. True or false: Female red-winged blackbirds have epaulets. **True.**

4. Which of these is an advantage of dividing habitats into territories:

a. It helps make sure there is a good food supply.

b. It lets the male easily notice threats.

c. It reduces the spread of disease.

d. a. and b.

e. All of the above.

5. How big is a red-wing's territory?

a. The size of a football field

b. The size of 30 football fields

c. It depends on the location

d. They don't have territories.

6. What is a song spread?

a. The amount of territory a male red-wing defends

b. The act of spreading wings and displaying epaulets

c. The distance a male red-wing's song carries

d. The length of time a male red-wing's song lasts

7. Match the number to the trait it goes with:

number of red-wing territories an acre of wetland can support **30**

number of eggs in a single nest **3-4**

number of days it takes an egg to hatch **12**

number of miles red-wings might fly in winter to find food **50**

number of days after hatching that a chick is ready to fly **14**

8. How do male red-winged blackbirds develop their song? **They learn it by listening to other birds and practicing.**

9. What do red-wings feed their young? **Insects and spiders**

10. What animals eat red-winged blackbird nestlings? **Minks, hawks, crows, and other**

predators.

11. Why do red-wings hide when they are molting?

- a. **They can't protect themselves from harm by flying away**
- b. To protect their young from predators
- c. Because they are embarrassed that they don't have feathers
- d. To stay warm

12. What do red-wings eat? **Insects and seeds.**

CHALLENGE: If a male redwing sings 300 times per hour, on average how many seconds pass in between the beginning of two songs? **$300/60 \text{ minutes} = 5 \text{ times per minute. } 60/5 = 12 \text{ seconds average between the start of songs.}$**

MINNESOTA COMPREHENSIVE ASSESSMENTS ANSWER KEY.

1. How does the spring migration of female red-wings differ from that of male red-wings?

- a. Females seem to return to the same place every year.
- b. Females may arrive while there is still snow on the ground.
- c. **Females arrive in Minnesota later than males.**
- d. Females follow flyways.

2. How does singing and displaying his epaulets help a male redwing survive and reproduce? **These activities help him defend his territory and so help make sure his family has enough food to eat and is protected from enemies.**

3. Name three ways red-winged blackbirds use their song. **Answers may vary, but include to attract a mate, to court, to defend their territory, to defend their nest zone, to let their young know they are arriving with food, to attract the parent to chicks**

4. Put these events in the life of a red-wing chick in order:

The chick hatches

The chick's eyes open

The chick starts hopping around and stretching its wings

The chick is ready to fly

The chick learns to find its own food

5. How does flocking help red-winged blackbirds survive? **It protects them from predators by providing many eyes to watch for harm and making it possible to create confusing chaos if they are startled or mob a predator if they are attacked.**

VOCABULARY LIST

blaze – mark

colony – a group of animals that live together

epaulet – decoration worn on the shoulder

habitat – the setting in which an animal lives

mob – to form a crowd around something

patrol – to move about watching an area for danger

roost – a place to rest

territory – the area an animal lives in and defends