

# TEACHERS GUIDE

## TO “SPLENDID FLIERS”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, Sept.–Oct. 2015, [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!

## “SPLENDID FLIERS”

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**SUMMARY.** “Splendid Fliers” is all about birds that migrate to and from Minnesota with the seasons. Young readers will learn how species such as loons, bluebirds, and martins travel north from their winter homes to raise their young during Minnesota summers. Topics include where migrating birds go in winter, routes they take to their winter homes, and physical and behavioral adaptations they have made to increase their chances of survival.

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

**MATERIALS.** KWL organizer, index cards, paper, poster board, colored pencils, crayons, pens, markers, online text and videos about migrating birds, migration map, and other print and online resources your media specialist may provide.

**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.** “How Big Is That Tree?” 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 IN SCIENCE AND TECHNICAL SUBJECTS GRADES 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 GRADES 6–8** Text Types and Purposes, Writing Process: Production and Distribution of Writing, Research to Build and Present Knowledge, Range of Writing

## **MATHEMATICS**

### **GRADES 3, 4, 5, 6, 7, AND 8**

3.1.1.5; 3.1.2.1; 3.1.2.2; 3.1.2.4; 3.1.2.5; 3.4.1.1; 4.1.1.5; 4.4.1.1; 5.1.1.3; 5.1.1.4; 5.4.1.1; 6.1.1.3; 6.1.3.3; 7.4.2.1; 8.4.1.1; 8.4.1.2; 8.4.1.3

## **SCIENCE GRADES 3 AND 5**

Life Science

3.4.1.1.1; 5.4.1.1.1; 5.4.4.1.1;

## **SOCIAL STUDIES GRADES 3, 4, 5, 6, 7 AND 8**

3.3.1.1.1; 3.3.1.1.2; 4.3.1.1.1; 4.3.1.2.1; 4.3.4.9.1; 5.3.1.1.1; 6.3.1.1.1; 7.3.1.1.1; 8.3.1.1.1; 8.3.1.2.1

## **ARTS GRADES K–12**

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

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.** (1) See online text and videos about migrating birds that you may use to introduce this topic. *National Geographic* publishes an inexpensive bird migration map. (2) You may follow with a **KWL** (Ogle, 1986) activity. To find out what your students already know (**K**) about Minnesota bird migration, divide the class into small groups to brainstorm their ideas. Give each student a copy of the organizer and encourage each to make notes during the group discussion. Repeat step one by asking what students would like to learn, or what questions they have, about the topic (**W**). Record their questions on poster board for reference. As you read and

discuss the article you will begin to compile the (L) lists, or what they learn while reading the article and related materials, and participating in extension activities. KWL gives you the opportunity to introduce interdisciplinary connections you will make during extension activities. If you use the article in science, math, or art class, you may wish to focus your pre-reading activity on academic standards that apply for that class. (3) See [TeacherVision.com](http://TeacherVision.com) for a brainstorming web download.

**VOCABULARY PREVIEW.** 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 or the subject you are teaching. 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). Italicized words are not generally included on the list or in the study cards.

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 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 questions 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. Note: Items with an asterisk require varying degrees of critical thinking.

**ADAPTATIONS.** Read aloud to special needs students. Abbreviate the study questions or highlight priority items to be completed first. 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 include: (1) Ask students to describe what they learned about bird migration. See the **Learned** list from your **KWL** activity. (2) Students may write multiple-choice, true-false, or short-answer questions. Select the best items for a class quiz. (3) How many species of birds are referenced in this article? In small groups or as individuals, students may create post-

ers that combine visual art, writing, and oral presentations. Posters may focus on one species, related species, or other big ideas from the story. Posters and presentations are an excellent strategy for allowing students to demonstrate what they have learned.

**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. “Let’s Go Birding” and “Hoot, Tremolo, Yodel, and Wail,” are two of many YN articles with teachers guides (See Related articles.) that are great companion pieces for “Splendid Fliers.” You may encourage students to include content from related articles in evaluation and/or other extension activities.
2. *Minnesota Conservation Volunteer* has devoted hundreds of articles to the birds of Minnesota. Teaching your students how to access archived stories will open a world of learning opportunities.
3. Many migrating birds are under pressure from loss of habitat in their winter locales. See Web resources to learn more about habitat preservation efforts and how your students can get involved.
4. Phenology is the study of rhythmic biological events as they relate to climate. Check out “[The Phenology Show](#)” on KAXE radio. Contact the station to find out how your classroom may join the phenology network.
5. Take a field trip to your school forest, a state park, or a scientific and natural area. Contact a naturalist at your state park to plan a program for your class. Start a bird list for your class and update it frequently. Students may include observations from their birdfeeders at home.
6. Try the online “[Bird Migration Game](#)” and then check out “[Bird Sleuth](#)”.

## WEB RESOURCES

### DNR

<http://www.dnr.state.mn.us/birds/index.html>

<http://www.dnr.state.mn.us/rsg/index.html>

<http://www.dnr.state.mn.us/eco/nongame/index.html>

<http://www.dnr.state.mn.us/webcams/index.html>

### BIRDING IN MINNESOTA

<http://www.hawkridge.org/>

<http://www.mprnews.org/story/2014/10/20/daily-circuit-birding-fall-migration>

### MIGRATING BIRD CONSERVATION

<http://serc.carleton.edu/sp/mnstep/activities/26455.html>

<http://www.nature.org/ourinitiatives/urgentissues/migratorybirds/index.htm>  
<http://www.fws.gov/birds/management/bird-conservation-partnership-and-initiatives.php>  
<http://www.ccbirds.org/what-we-do/research/bird-migration/>  
<http://www.zoosociety.org/Conservation/BWB-ASF/Library/BirdMigrationFacts.php>  
<http://www.fs.fed.us/outdoors/naturewatch/implementation/Wildlife/Migratory-Bird-Day-Educators.pdf>

### **MIGRATION MAPS**

<http://www.kidsdiscover.com/spotlight/animal-migrations-for-kids/>  
<http://www.rspb.org.uk/discoverandenjoynature/families/children/play/migrationmap.aspx>  
<https://www.learner.org/jnorth/>

### **MINNESOTA DNR TEACHER RESOURCES**

[www.mndnr.gov/education/teachers/index.html](http://www.mndnr.gov/education/teachers/index.html)  
[www.mndnr.gov/dnrkids/index.html](http://www.mndnr.gov/dnrkids/index.html)

\*Note: All websites were active at the time of this guide's publication. However, some may no longer be active when this guide is accessed.

### **RELATED ARTICLES.**

In addition to the related articles listed below, every *Minnesota Conservation Volunteer* article published since 1940 is now online in searchable PDF. Find links to Young Naturalists articles and teachers guides.

#### **January-February 2004**

“The Nature of Feathers” (YN article with teachers guide)

#### **March-April 2005**

“The Parenting Game” (YN article with teachers guide)

#### **March-April 2006**

“The Hole Story” (YN article with teachers guide)

#### **January-February 2007**

“Nature's Calendar” (YN article with teachers guide)

#### **July-August 2007**

“Hoot, Tremolo, Yodel, and Wail” (YN article with teachers guide)

#### **March-April 2007**

“What's in a Bird Song?” (YN article with teachers guide)

### **September-October 2007**

“Who’s That Navigator?” (YN article with teachers guide)

### **September-October 2009**

“Have Fun Painting Ducks” (YN article with teachers guide)

### **July-August 2010**

“Why Is a Bluebird Blue?” (YN article with teachers guide)

### **March-April 2011**

“Northern Saw-Whet Owl 10-583” (YN article with teachers guide)

### **November-December 2011**

“Two Eastern Screech Owls” (YN article with teachers guide)

### **March-April 2012**

“How Do Birds Fly?” (YN article with teachers guide)

### **March-April 2013**

“Big, Bold, and Blue” (YN article with teachers guide)

### **July-August 2014**

“Raptors in the Neighborhood” (YN article with teachers guide)

### **September-October 2014**

“Niches for Everyone” (YN article with teachers guide)

### **January-February 2015**

“Nature on the Move” (YN article with teachers guide)

### **REFERENCES.**

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

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 ANSWER KEY.**

Teachers guide for the Young Naturalists article “Splendid Fliers.” Published in the Sept.–Oct. 2015 *Minnesota Conservation Volunteer*, or visit [www.mndnr.gov/mcvmagazine](http://www.mndnr.gov/mcvmagazine).

1. How long do eastern bluebird nestlings stay in the nest? **Nestlings leave the nest after**

**three weeks.**

2. Why did the young bluebird join the flock of migrating songbirds? **Instinct prompts young birds to join large flocks of migrating birds.**

3. What was his winter destination? **Eastern bluebirds winter in southern Missouri.**

\*4. Minnesota birds fly south in winter mainly to find warmer weather. True **False (Birds migrate to find reliable sources of food.)**

5. Fish-eating migrants include **loons** and **pelicans**. They are looking for places with open water.

6. What makes Minnesota such a good place for migrating birds to spend the summer? **There are several advantages for nesting birds in Minnesota. There is plenty of space for nests; long daylight hours allow more time for finding food; and they can find lots of food to eat.**

7. List several changes in its environment that tell a bird it will soon be time to migrate: **Birds know it is time to migrate when temperatures cool and food becomes harder to find. Daylight hours become shorter. Changes in the bird's body make it restless.**

8. How does a bird's body change before it migrates? **Some birds, such as loons, change color before they migrate. Migrating birds eat a lot of high-energy foods to put on weight for their journeys.**

9. Purple martins travel a long way to their winter home. Where do they go? **Purple martins fly all the way to Brazil for the winter.**

10. Some species of migrating birds fly at night. Why? **By flying at night some birds avoid their predators. Temperatures are cooler at night, so birds use less energy.**

11. Describe weather conditions that might cause migrating birds to change their travel plans. **Cloudy or foggy skies make it hard to see. Clear skies make navigation easier. Strong winds or storms may cause birds to find shelter until the weather improves.**

\*12. What is the range of altitude (in feet) that migrating birds fly? **Smaller birds fly at about 2,000 feet, while ducks and geese may travel as high as 10,500 feet, a range of 8,500 feet.**

13. It takes Baltimore orioles from **two** to **three** weeks to reach their winter homes in the **Caribbean, Central American** or **Mexico**.

\*14. What does the map on pages 40-41 tell you about Minnesota's migrating birds? **Responses may vary. Encourage description of specific details. The map shows where birds depart and where they arrive for the winter.**

15. Explain how birds know which direction to fly when they migrate. **While not well understood, scientists think some birds use magnetic fields (like a compass) or detect faint odors to tell where they are and where they are going. Birds also use landmarks, like rivers to find their way. Young birds may rely on instinct to guide them.**

16. Of every 10 migrating waterfowl, how many will use the Mississippi as a navigational aid? **If 40 percent of waterfowl follow the river, then four of every 10 waterfowl are in that group.**

\*Challenge: If an eastern bluebird flies at an average speed of 25 mph, how long will its journey from St. Paul, Minnesota to Branson, Missouri take? **Your students will need**

**other resources to answer this question. According to MapQuest, it's about 650 miles from St. Paul to Branson. At 25 mph, flying 8-10 hours per day, and assuming good traveling conditions, it will take about 26 hours, or three travel days.**

### **MINNESOTA COMPREHENSIVE ASSESSMENTS ANSWER KEY.**

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1. Why should bird feeders be located near trees and bushes? **D. A and C**
2. House cats kill an estimated **D. one billion** birds each year.
3. Chickadees are year-round residents of Minnesota. **A. true**
4. Red-winged black bird males and females migrate together. **B. false**
5. A bird's body fat may increase by as much as **B. 35%** before it migrates.

### **VOCABULARY ANSWER KEY.**

Teachers guide for the Young Naturalists article "How Big Is That Tree?." Published in the July–August 2015 *Minnesota Conservation Volunteer*, or visit [www.mndnr.gov/mcvmagazine](http://www.mndnr.gov/mcvmagazine).

**calorie** a measurement of the amount of energy in food

**Gulf Coast** refers to the Gulf of Mexico

**habitat** natural environment where an animal or plant lives

**instinct** behavior that animals do not learn, but are born with

**magnetic field** energy created by electric currents in Earth's core

**predictable** expected, especially on the basis of previous events

**predator** animal that kills and eats other animals

**seasonal migrant** an animal that moves from one area to another when seasons change

**solo** something done alone