Young Naturalists

Teachers Guide

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"Why is a Bluebird Blue?" Multidisciplinary Classroom Activities

Teachers guide for the Young Naturalists article "Why is a Bluebird Blue?" by Gustave Axelson with illustrations by Julie Martinez. Published in the July–August 2010 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/bird_color.html

Young Naturalists teachers guides are provided free of charge to classroom teachers, parents, and students. This guide contains a brief summary of the article, suggested independent reading levels, word count, 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.mndnr.gov/education/teachers/activities/ynstudyguides/survey.html. If you are downloading articles from the Web site, please note that only Young Naturalists articles are available in PDF.*

Summary

"Why is a Bluebird Blue?" gives readers the opportunity to learn about the plumage of six Minnesota birds in a hands-on manner. The Baltimore oriole, eastern bluebird, belted kingfisher, bobolink, scarlet tanager and northern flicker are among the most colorful birds of Minnesota. Students will learn about these species as they color the illustrations using the colors indicated by the number key for each. Teachers may enlarge the illustrations for younger students.

Suggested reading levels:	primary through high school grades
Total words:	773
Materials:	Paper, poster board, pencils, pens, markers, as well as print and online resources your media specialist may provide

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

Estimated instructional time: One or two 50-minute class periods (not including extensions)

Minnesota Academic Standards applications: "Why is a Bluebird Blue?" may be applied to the following Minnesota Department of Education standards:

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

Science
Life Science
Grades K–3, 5
- 1.4.1. Structure and Function in Living Organisms

Grade 3
- 3.4.3. Evolution in Living Systems

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

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

Preview

Your preview will depend on how you apply the content to the standards. For example, if you are reading the article in science, you may ask students to survey the article. Examine the photographs and illustrations. Use the **KWL** strategy (Ogle, 1986) to find out what your students already know **(K)** about the six birds in the article, what they would like to learn **(W)**, and eventually what they learned **(L)** while reading the article and related materials, and through participating in extension activities. You might begin by asking small groups to brainstorm their ideas. Then combine the groups' data to make a class list. 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. Individual organizers may be useful as students read the article for answers to **W** questions. KWL also gives you the opportunity to introduce interdisciplinary connections you will make during extension activities. If you use the article in an art class you may wish to focus your prereading discussion on the phenomenon of color and how it relates to birds' feathers.

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). Pay particular attention to words in italics. Definitions are provided in the text.

You may wish to use the study cards found at the end of this guide. Cut along the horizontal line; 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 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 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 2, 4, 6, 7, 11 and the Challenge 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 match the photos on page 38 to the birds' names. (2) Students may write multiple-choice, true-false, or short-answer questions. Teachers may then select the best items for a class quiz. (3) Poster presentations may display colored illustrations from the article or freehand drawings, along with facts about each species. Posters may be presented to the class and/or displayed in the classroom. (4) Students may present further research on one of the species in the article in written, visual, spoken, or multimedia format.

Extension activities

1. Invite a DNR nongame biologist to visit your classroom to present information about the birds in this article. See www.dnr.state.mn.us/eco/nongame/index.html.
2. Take a field trip to a state park, school forest, or scientific and natural area (SNA) for a birdwatching adventure. See www.dnr.state.mn.us/snas/index.html and www.dnr.state.mn.us/nature_viewing/index.html.
3. Build, set out, and monitor bird feeders. See www.dnr.state.mn.us/birdfeeding/index.html. Students will learn how to attract each species in the article.
4. The Minnesota County Biological Survey has been monitoring our state's birds for more

Extension activities continued

than 20 years. Students can access MCBS data at www.dnr.state.mn.us/eco/mcbs/birdmaps.html.

5. Assign this article from Cornell University for advanced students to delve more deeply into the color of birds' plumage: www.birds.cornell.edu/allaboutbirds/studying/feathers/color/document_view.
6. Combine this article with "Have Fun Painting Ducks" (www.dnr.state.mn.us/young_naturalists/painting_ducks/index.html) for a more in-depth art experience.

Web resources

Minnesota DNR
www.dnr.state.mn.us/eco/nongame/index.html
www.dnr.state.mn.us/snas/index.html
www.dnr.state.mn.us/nature_viewing/index.html
www.dnr.state.mn.us/birdfeeding/index.html
www.dnr.state.mn.us/eco/mcbs/birdmaps.html

Color in birds
www.birds.cornell.edu/allaboutbirds/studying/feathers/color/document_view
www.whatbird.com/browse/attribute/birds_na_147/110/Color/
www.webexhibits.org/causesofcolor/17B.html

Baltimore oriole
www.allaboutbirds.org/guide/Baltimore_Oriole/id
www.mbr-pwrc.usgs.gov/infocenter/i5070id.html

Eastern bluebird
www.allaboutbirds.org/guide/Eastern_Bluebird/id
www.wild-bird-watching.com/Blue_Birds.html

Belted kingfisher
www.allaboutbirds.org/guide/Belted_Kingfisher/id
www.seattleaudubon.org/birdweb/bird_details.aspx?id=267

Bobolink
www.allaboutbirds.org/guide/Bobolink/id
nationalzoo.si.edu/scbi/MigratoryBirds/Featured_Birds/default.cfm?bird=Bobolink

Scarlet tanager
www.allaboutbirds.org/guide/Scarlet_Tanager/id
www.mbr-pwrc.usgs.gov/infocenter/i6080id.html

Northern flicker
www.allaboutbirds.org/guide/Northern_Flicker/id
identify.whatbird.com/obj/181/_/Northern_Flicker.aspx

Minnesota DNR teacher resources
www.mndnr.gov/education/teachers/index.html

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

Related articles

Related *Minnesota Conservation Volunteer* Young Naturalists articles are available online at www.mndnr.gov/volunteer/articles/index.html, including:

January–February 1995
"What's Making a Racket?"
www.dnr.state.mn.us/young_naturalists/woodpeckers/index.html

November–December 2001
"Color on, Color off" (with teachers guide)
www.dnr.state.mn.us/young_naturalists/coloroncoloroff/index.html

January–February 2004
"The Nature of Feathers" (with teachers guide)
www.dnr.state.mn.us/young_naturalists/feathers/index.html

March–April 2007
"What's in a Bird Song?" (with teachers guide)
www.dnr.state.mn.us/young_naturalists/birdsong/index.html

September–October 2009
"Have Fun Painting Ducks" (with teachers guide)
www.dnr.state.mn.us/young_naturalists/painting_ducks/index.html

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

Teachers guide for the Young Naturalists article "Why is a Bluebird Blue?" by Gustave Axelson with illustrations by Julie Martinez. Published in the July–August 2010 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/bird_color.html

Name _____ Period _____ Date _____

1. How does color benefit male birds? _____

_____

2. What advantage do very blue male bluebirds have? _____

_____

3. How did the Baltimore oriole get its name? _____

_____

4. How do a male oriole's bright colors affect its interactions with other male orioles? _____

_____

_____

5. What is a bluebird's true color? _____

6. If a bluebird is not blue, why does a it appear blue?_____

_____

7. What sets female belted kingfishers apart from other female birds? _____

_____

8. What purpose might the white spot under a kingfisher's eyes serve? _____

_____

9. The bobolink is also called the _____ _____.

10. In winter what colors is the male bobolink? _____

11. How is the Latin name for the scarlet tanager misleading? _____

_____

12. Some describe the scarlet tanager's song as a _____.

13. Another name for the northern flicker is the _____.

14. What famous vacation destination is named after the flicker? _____

_____

Challenges: If you were to design the plumage for a male bird, what colors would you choose and why? __

_____

_____

Why do you suppose the females of most bird species are not colorful? _____

_____

Study Questions Answer Key

Teachers guide for the Young Naturalists article "Why is a Bluebird Blue?" by Gustave Axelson with illustrations by Julie Martinez. Published in the July–August 2010 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/bird_color.html

1. How does color benefit male birds? **Brightly colored feathers help attract a mate.**
2. What advantage do very blue male bluebirds have? **Research shows they attract more mates.**
3. How did the Baltimore oriole get its name? **Its colors were the same as on the coat of arms of Lord Baltimore.**
4. How do a male oriole's bright colors affect its interactions with other male orioles? **It is more threatening to other males, which means it may be attacked more often than dull-colored males, and that it may scare away other males from its territory.**
5. What is a bluebird's true color? **Gray**
6. If a bluebird is not blue, why does a it appear blue? **When light strikes a bluebird's feather it reflects off air pockets and only blue light is visible. (Answers may vary.)**
7. What sets female belted kingfishers apart from other female birds? **Female belted kingfishers are as colorful as the males. Females of most bird species are not colorful.**
8. What purpose might the white spot under a kingfisher's eyes serve? **It may reflect more light, which may help the kingfisher see fish or other prey in the water.**
9. The bobolink is also called the **skunk blackbird.**
10. In winter what colors is the male bobolink? **Black and brown**
11. How is the Latin name for the scarlet tanager misleading? **It means olive-sided one, which is the color of an immature bird.**
12. Some describe the scarlet tanager's song as a **robin with a sore throat.**
13. Another name for the northern flicker is the **yellow-shafted flicker.**
14. What famous vacation destination is named after the flicker? **Madeline Island in northern Wisconsin has the Ojibway name, *Mooningwanekaaning minis*, which means "the island of the yellow-shafted flicker. "**

Challenges: If you were to design the plumage for a male bird, what colors would you choose and why? Why do you suppose the females of most bird species are not colorful? **Answers will vary. Students may choose almost any bright color, however, the advantages of bright plumage must include attracting a mate and defending territory. Brightly colored females would attract attention, not an advantage while sitting on a nest.**

Minnesota Comprehensive Assessments Practice Items

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Name _____Period _____Date_____

1. The nuchal patch is found on the
   A. eastern bluebird.
   B. yellow-shafted flicker.
   C. bald eagle.
   D. none of the above.

2. Scarlet tanagers are known for their
   A. beautiful songs.
   B. drab coloring.
   C. bright red plumage.
   D. desert habitat.

3. Belted kingfishers eat
   A. nightcrawlers.
   B. fish and frogs.
   C. small birds.
   D. algae.

4. From a distance the eastern bluebird appears
   A. purple.
   B. yellow.
   C. gray.
   D. red.

5. The Baltimore oriole is named after
   A. a baseball team.
   B. a city in Maryland.
   C. an English nobleman.
   D.a river in England.

Minnesota Comprehensive Assessments Answer Key

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1. The nuchal patch is found on the **B. yellow-shafted flicker.**
2. Scarlet tanagers are known for their **C. bright red plumage.**
3. Belted kingfishers eat **B. fish and frogs.**
4. From a distance the eastern bluebird appears **C. gray.**
5. The Baltimore oriole is named after **C. an English nobleman.**

Vocabulary

Teachers guide for the Young Naturalists article "Why is a Bluebird Blue?" by Gustave Axelson with illustrations by Julie Martinez. Published in the July–August 2010 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/bird_color.html

coat of arms	emblem that powerful families display on shields, clothing, coaches, and buildings
immature	not yet fully developed or full grown
naturalist	person who studies natural history
onomatopoetic	words that imitate sounds
species	group of plants or animals that are similar enough to reproduce with one another
theory	scientific explanation for a phenomenon that may be tested by the scientific method

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 **coat of arms** is an	FOLD HERE	An **emblem that powerful families display on shields, clothing, coaches, and buildings** is a
Immature means	FOLD HERE	**Not yet fully developed or full grown** means
A **naturalist** is a	FOLD HERE	A **person who studies natural history** is a
What are **onomatopoetic** words?	FOLD HERE	**Words that imitate sounds** are

A
species
is a

FOLD HERE

A **group of plants or animals that are similar enough to reproduce with one another** is a

A
theory is a

FOLD HERE

A **scientific explanation for a phenomenon in nature that may be tested by the scientific method** is a

FOLD HERE

FOLD HERE