

TEACHERS GUIDE

TO “STANDING TALL”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, March-April 2021, 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 mndnr.gov/mcvmagazine and click on *past issues*.

Thank you for bringing Young Naturalists into your classroom!

“STANDING TALL”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, March-April 2021, mndnr.gov/mcvmagazine.



SUMMARY. Sandhill cranes are becoming increasingly common in Minnesota. This feature introduces young naturalists to the life history and unique traits of this big bird that can often be seen in farm fields in the spring and summer.

SUGGESTED READING LEVELS. Third through middle school grades

MATERIALS. KWL organizer; optional resources include dictionaries, video viewing equipment, 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. “Standing Tall” 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 THE 2019 COMMISSIONER APPROVED DRAFT OF MN ACADEMIC STANDARDS IN SCIENCE)

SCIENCE AND ENGINEERING PRACTICES

1. Asking questions and defining problems.
2. Developing and using models.
4. Analyzing and interpreting data.

7. Engaging in argument from evidence.
8. Obtaining, evaluating, and communicating information.

CROSSCUTTING CONCEPTS

2. Cause and effect
6. Structure and function
7. Stability and change

DISCIPLINARY CORE IDEAS

Life Sciences 2: Ecosystems: Interactions, energy, and dynamics
Earth and Space Sciences 3: Earth and human activity

MATH

Data Analysis and Probability (Benchmark 9-11.414)

SOCIAL STUDIES

Citizenship and Government (Benchmarks 4.1.1.1.1, 4.1.4.6.1, 5.1.1.1.2, 6.1.1.1.1., 6.1.5.10.1, 7.1.1.1.1, 8.1.1.1.1)
Economics (Benchmarks 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 0.2.1.2.1., 0.2.1.5.1, 0.3.1.5.1, 4.1.3.2.1., 4.2.1.2.1, 4.2.1.5.1, 6.1.2.2.1., 6.2.1.2.1., 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, 4.2.4.4, 5.2.4.4, 6.5.4.4, 7.5.4.4, 8.5.4.4)
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)

SPEAKING, VIEWING, LISTENING AND MEDIA LITERACY

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)
Presentation of Knowledge and Ideas (Benchmarks 3.8.4.4, 4.8.4.4., 5.8.4.4, 6.9.4.4, 7.9.4.4, 8.9.4.4)

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, 7, 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

Text Types and Purposes (Benchmarks 3.6.1.1, 3.6.2.2, 4.6.1.1, 4.6.2.2, 5.6.2.2, 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)

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 the [Department of Education website](#). Teachers who find other connections to standards may contact *Minnesota Conservation Volunteer*.

PREVIEW. Start by telling students you are going to show them a picture of a Minnesota bird that is taller than they are. Invite them to guess what the bird is and where it is found. Show students a picture of a sandhill crane in a field. Are they surprised that such a big bird can be found in Minnesota? That it can actually fly? Then divide them into small groups to do a [KWL activity](#). Within the groups, have students describe what they know (K) about sandhill cranes and what they wonder (W) about them. Give each student [a copy of the organizer](#) 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 your 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.

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. Whooping crane conservation offers an incredible story of innovation, dedication, and persistence. Watch one or more of the videos listed below, and explore resources for students on the [International Crane foundation website](#). Then discuss: Why are people putting so much time, money, and effort into saving this bird from extinction? What worked, and what didn't? What lessons might we learn from this story about protecting species that are not yet endangered?

2. Make [origami cranes](#).

3. In nature, red is sometimes a warning sign. Sometimes it serves the purpose of attracting mates. How does having a red head help a sandhill crane survive and thrive? Put on your internet detective caps and find out!

4. The story starts with a scientist banding a sandhill crane. Invite a bird bander to speak to your class about the how and why of bird banding. Invite students to choose a Minnesota bird and look into what we have learned about that bird from banding.

5. The [website of the International Crane Foundation](#) shows where people have reported seeing sandhill cranes. Check it periodically over the course of the spring or fall to watch the migration. Graph the number of birds over time. What shape of curve would you predict? Use this exercise as an introduction to different kinds of curves (asymptotic, sigmoid, bell, etc.) used to represent changes in population over time and what they tell us about the forces that shape population sizes.

6. The Migratory Bird Treaty Act played a huge role in the recovery of sandhill cranes after populations plummeted in the late 1800s. It has been reinterpreted in recent years to not include unintentional harm to migratory birds. Plan and conduct a Lincoln-Douglas debate around whether the act should apply to incidental harm. Or students could write an opinion piece with supporting reasons and information.

7. The crane represents one of seven Anishinaabe (Ojibwe) clans. Use [the lesson plan](#) to learn more about the Ojibwe clan system. If possible, invite an Ojibwe speaker to explore the role of the crane in Ojibwe culture.

8. How can something as big as a sandhill crane fly? Use internet explorations of bird flight as a launchpad for learning about the four forces that act on an object to help it

become and remain airborne.

9. Numerous efforts and actions raised awareness among the public and garnered support toward the passage of the Migratory Bird Treaty Act. Women were often blamed for the destruction of migratory bird populations due to their fashion interest in feather-decorated hats. However, women were also instrumental to helping shift public demand from feathered hats to bird-free alternatives like the “Audobonnet” from silk and ribbon. Florence Merriam Bailey organized a local chapter of the Audubon Society in 1886, encouraging the public to appreciate the beauty of birds in their natural habitats. Bailey also wrote books to help nonexperts identify and appreciate birds. Another example is Lilli Lehmann, a German opera star, who encouraged women to not wear feathers by providing autographs only if they promised not to do so. These examples can be a starting point for student investigations of lesser-known conservationists, and particularly a diversity of conservationists, who have been instrumental in supporting wildlife.

10. Ornithologist and naturalist John Audubon was one of the first artists to capture the images of birds in their natural habitats. He had a unique style, which has been described as making viewers feel as though the birds are looking at them, so they feel as though they have a connection to the birds. Encourage students to view different samples of Audubon’s paintings and ask their thoughts on how his style of depicting the birds has been described. Using Audubon’s work as an inspiration, have students create watercolor paintings of the sandhill crane with the aim of helping others connect to cranes through their artwork.

11. Some people think that the demand for birds at the turn of the 20th century was in part fueled by people feeling more and more distant from nature. Strangely, people may have used worn bird feathers on their hats to feel connected to the natural world. Today, there are also concerns about people feeling more distant from nature, especially as technology prompts more indoor lifestyles. Encourage students to discuss whether they agree with this perspective, and why or why not. Older students might be encouraged to look into this further, reading online sources about connections and/or disconnections to nature, and how this may relate to the conservation of birds and wildlife more broadly. A good starting point is the [Children Nature Network website](#).

WEB RESOURCES

MINNESOTA DNR

[Minnesota DNR Teachers’ Resources](#)

CRANES

[Cranes: Symbols of Survival](#)

SANDHILL CRANES

[Sandhill Cranes \(Minnesota DNR\)](#)

WHOOPING CRANES

[Flight to Survive: Saving Whooping Cranes](#)

RELATED MCV ARTICLES

[Breakfast With Cranes](#)

[The Resilience of Sandhill Cranes](#)

VIDEOS

[Sandhill Cranes Dancing](#)

[Thousands of Cranes Take Flight in One of Earth's Last Great Migrations](#)

STUDY QUESTIONS ANSWER KEY

1. Name two things that make sandhill cranes hard to study. **1) they are big 2) they startle easily**

2. Which of these are places sandhill cranes nest? Choose all that apply.

a. farm fields

b. wet meadows

c. upland forests

d. wetlands

e. grasslands

3. Name two ways in which whooping cranes and sandhill cranes are similar. **Answers may vary but may include: They both have round bodies, dark bills, slender necks, leathery legs. (Accept but push back on answers such as “They both have two legs” or “They both are birds.”).**

4. Name two ways in which whooping cranes and sandhill cranes are different. **Answers may vary but may include: Whooping cranes are white while sandhills are gray. Whooping cranes have black wingtips but sandhills don't. Whooping cranes have a red mask while sandhills has a red spot where its beak meets its face.**

5. Name four things that sandhill cranes eat. **Answers may vary. Foods mentioned in the article include grain, berries, plant roots, worms, crayfish, insects, snakes, mice, grubs, caterpillars, crop seedlings**

6. Where do Minnesota sandhills spend their winter?

a. the Texas coast

b. the southeastern U.S.

c. Minnesota

d. a & b

e. b & c

7. Why is Nebraska's Platte River important for sandhill cranes? **It provides them with**

a stopover spot when migrating to or from Texas.

8. What did the Migratory Bird Treaty Act of 1918 do? **It made it illegal to hunt or collect birds that migrate.**

9. What is a young sandhill crane called?

a. chick

b. colt

c. sandling

d. pipsqueak

10. How many sandhill cranes live in Minnesota? **Around 15,000.**

11. True or false: Sandhill cranes are endangered. **False. Populations are healthy and spreading.**

They hide, so it is hard to find them.

They are uncommon because the places they lived were cleared for farming.

They have a hard time finding their way around in a thick aspen forest.

They are uncommon because too many were hunted.

12. How is the range of sandhill cranes changing in Minnesota? **The breeding grounds of the Midcontinental and Eastern populations are starting to overlap in the central part of the state.**

13. Name two things that eat sandhill cranes. **Great-horned owls, foxes**

Challenge Question: **What percent of the world's crane species are found in Minnesota? $2/15 \times 100 = 13$ percent.**

MINNESOTA COMPREHENSIVE ASSESSMENTS ANSWER KEY.

1. Why was Wolfson looking for sandhill cranes? **He wanted to put bands on their legs so he and others could track their location and learn how healthy their populations are.**

2. What are four traits you can use to tell sandhill cranes and great blue herons apart? **Answers may vary but may include: Great blue heron has a stripe above its eyes; sandhill crane has a red forehead; sandhill crane lacks feathers on its crown; great blue herons fly alone; great blue herons forage in shallow water, while sandhills forage in fields, mud, or soil.**

3. _____ and _____ help sandhills save energy while they're migrating (**wind and thermals**).

4. Which of these helped drive sandhill cranes close to extinction?
- a. People hunted them for food.
 - b. People used their feathers to decorate hats.
 - c. People changed wetlands and prairies to farmland.
 - d. All of the above.**
5. How do sandhill cranes cause trouble for farmers? How do the cranes help farmers?
They eat crop seedlings. They eat insects that could harm crops.
6. How would a sandhill crane's voice be different if it had a shorter trachea?
- a. It would be higher pitched
 - b. It would be louder
 - c. It would be quieter**
 - d. it wouldn't be different

VOCABULARY LIST

confrontations – face-to-face meetings, often with potential for conflict

down – soft, fluffy feathers

grubs – insect larvae

lunging – moving rapidly

lush – rich, abundant

territory – the space an animal occupies and defends

waders – tall waterproof boots

When animals have **confrontations**, they have

Face-to-face meetings, often with potential for conflict, are called

Soft, fluffy feathers are known as

Down is a name for

When a bird eats **grubs**, it's eating

Insect larvae are also called

An animal that's **lunging** is

An animal that's **moving quickly** is

If a park is lush with flowers, that means the flowers are

You might call a park that's rich and abundant with flowers

The space an animal occupies and defends is its

An animal's territory is

Tall, waterproof boots are also known as

A person dressed in **waders** is wearing

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