"Standing Tall" Multidisciplinary Classroom Activities
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Teachers guide for the Young Naturalists article "Standing Tall" by Christine Petersen. Published in the March–April 2021 *Minnesota Conservation Volunteer,* or visit www.mndnr.gov/young_naturalists/sandhill.

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 Level. Third through middle school grades

Materials: KWL organizer; optional resources for extension activities 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 Instructional 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

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 9-11.4.1.4)

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)

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)

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)

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, 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 the Department of Education website: www.education.state.mn.us. Teachers who find other connections to standards are encouraged to 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? Divide them into small groups to do a **KWL** activity. Within the groups, have students describe what they already know (**K**) about sandhill cranes 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 share what they think they mean. Tell them you will be reading a story that will help them understand these words so they can own 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 sandhill cranes. 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. [This website](#) of the International Crane Foundation (z.umn.edu/sandhill) 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 [this lesson plan](https://indianed.mpls.k12.mn.us/uploads/clan_system.pdf) (https://indianed.mpls.k12.mn.us/uploads/clan_system.pdf) 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. Students could be prompted to write informative texts describing conservationists and their contributions or share what they learned through a presentation.

9. 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.

10. 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: https://www.childrenandnature.org/. Students also might be encouraged to pick out one way or one thing they might do that seems appealing to them in the context of connecting to nature, or students could be encouraged to look into what is known about the benefits of time outdoors in nature, sharing what they learned with others through a presentation or some other a medium of choice.

Web Resources: Check out the following if you'd like to dive deeper into some of the topics covered by this Young Naturalists feature.

Cranes
Cranes: Symbols of Survival

Sandhill Cranes
Sandhill Cranes (Minnesota DNR)
Sandhill Cranes Dancing (video)
Thousands of Cranes Take Flight in One of Earth's Last Great Migrations (video)

Whooping Cranes
Flight to Survive: Saving Whooping Cranes [video]

General Teacher and Student Resources
Minnesota DNR Teachers' Resources
DNR Kids Page

Related Minnesota Conservation Volunteer Articles*

Breakfast With Cranes
The Resilience of Sandhill Cranes

*All *Minnesota Conservation Volunteer* articles, including past Young Naturalists stories and accompanying teachers guides, are available online in searchable PDF.

Study Questions
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Name_____ Date_____

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.**

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.**

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

CHALLENGE: **What percent of the world's crane species are found in Minnesota? 2/15 x 100 = 13 percent.**

Minnesota Comprehensive Assessments Practice Items
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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
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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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