YOUNG NATURALISTS

TEACHERS GUIDE

to "Wild Neighbors"

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, September-October 2023, 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 words, 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!

"Wild Neighbors"

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, September-October 2023, mndnr.gov/mcvmagazine.

Summary. Wild turkeys disappeared from Minnesota in the 1900s, driven out by habitat change and hunting. Today, it seems like they're everywhere! Through this Young Naturalists feature, students will learn about this unusual bird's unique traits as well as the story of its disappearance and reappearance in our state. Enjoy!

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. "Wild Neighbors" 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:

Visual Arts: Artistic Process (Benchmarks 0.2.1.5.1, 4.2.1.5.1, 6.2.1.5.1)

English Language Arts (Grades 3-8)

Reading Benchmarks: Informational Text

Key Ideas and Details (Benchmarks 3.2.1.1, 3.2.2.2, 4.2.1.1, 5.2.1.1, 5.2.2.2, 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, 3.2.9.9, 4.2.7.7, 4.2.9.9, 5.2.7.7, 5.2.9.9, 7.5.9.9, 8.5.9.9)

Writing Benchmarks (Grades 3-8)

Text Types and Purpose (Benchmarks 3.6.3.3, 4.6.3.3., 5.6.3.3, 6.7.3.3, 7.7.3.3, 8.7.3.3)

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)

Language benchmarks Grades 3-8)

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 Tecchnical Subjects (Grades 6-8)

Key Ideas and Details (Benchmarks 6.13.1.1, 6.13.2.2)

Writing benchmarks: Literacy in Science and Technical Subjects (Grades 6-8)

Research to Build and Present Knowledge (Benchmark 6.14.7.7)

Speaking, Viewing, Listening and Media Literacy (Grades 3-8)

Comprehension and Collaboration (Benchmarks 3.8.1.1, 3.8.3.3, 4.8.1.1, 5.8.1.1, 6.9.1.1, 7.9.1.1, 8.9.1.1)

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
3. Planning and carrying out investigations
6. Constructing explanations and designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Cross Cutting Concepts

2. Cause and effect

5. Energy and matter
6. Structure and function
7. Stability and change

Disciplinary Core Ideas

Life Sciences 1: From molecules to organisms: Structures and processes
Life Sciences 2: Ecosystems: Interactions, energy, and dynamics
Earth and Space Sciences: 3: Earth and human activity

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

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Preview. What do your students already know about wild turkeys? Give them a chance to share their thoughts and observations. Then divide them into small groups to do a KWL activity. Give each student a copy of the organizer (see teach-nology.com/web_tools/graphic_org/kwl/). Within the groups, have students describe what they already know about wild turkeys and what they wonder about them and encourage each to write down their thoughts on the organizer. As you read and discuss the article and carry out extension activities, they can then record what they learn. If you'd like to try something different, you might wish to check out the THC and KLEW frameworks.

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.

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.

Assessment. You may use all or part of the study guide, combined with vocabulary, as a quiz. Other assessment ideas include: (1) Have students write multiple-choice, true-false, or short-answer questions based on the article. Select the best items for a class quiz. (2) Have students write a first-person essay from the perspective of a wild turkey, including as many

facts as possible in their story. (3) Have students write and illustrate a "Top 10" list of things they learned about wild turkeys.

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. Have students imagine they are a podcaster preparing to interview a wild turkey expert. Have them prepare a list of questions to ask. Then have students pair up and take turns interviewing each other. If possible, record the interviews and make them available for others to listen to.

2. Iridescence is a common feature in nature. Explore the difference between pigment and structural color. What might be the adaptive advantages of structural color? (The article hints at one by noting that turkeys often appear brown from a distance.) Engage students in learning about structural color by comparing acrylic paint and interference acrylic paint using this lesson from the National Informal STEM Education Network.

3. In a combined art and writing project, have students draw a wild turkey and write a haiku, narrative, or other creative text to accompany it. If you wish, you can provide some guidance with a turkey-drawing video like this one. Encourage students to include the various physical features described in the story in their illustration (number of toes, color of various parts, etc.)

4. Different animals cool themselves in different ways. Humans sweat, dogs pant, and turkeys move blood into their wattles. Invite students to each choose an animal (hopefully different ones) and research how they keep themselves cool. When everyone is done, have each present their findings and see if you can group them according to similar strategies.

5. Why do turkeys (and many other birds) bob their heads when they walk? Brainstorm together possible hypotheses about the adaptive value of this behavior. Divide into groups and have each group design an investigation to test one of the ideas. Then look online to see what scientists have concluded about this behavior. How did THEY use the scientific method to come to their conclusion?

6. The article mentions the American tradition of the Thanksgiving turkey. Take a classroom poll to find out if students have a preference between white and dark meat (whether in chicken, turkey, or other poultry). Then have students research the science between dark and white turkey meat. Or students could investigate the accuracy of the

commonly held belief that eating turkey will make you sleepy!

7. What do turkeys, horses, and harbor seals have in common? Invite students to take a few guesses before sharing that turkey poults, like baby horses and harbor seals, are precocial. Poults are born with downy feathers and are pretty self-sufficient! They can walk, run, and get their own food. Have students make a list of 10 animals and then look up whether the animals on their list are precocial, altricial, or somewhere in between.

8. State wildlife management agencies are keeping an eye on wild turkey populations, particularly as some southern states are seeing a decline. Scientists are studying the effects of a variety of factors, such as predation, rapid habitat development, and climate change (including heavier rainfall) as they monitor wild turkey populations and set hunting limits. The Great Lakes Indian Fish & Wildlife Commission (GLIFWC) recently released a second edition of its Climate Change Vulnerability Assessment, which weaves together Traditional and Scientific Ecological Knowledge to examine vulnerability of a number of wildlife species, including the wild turkey, to climate change. This assessment can be a way to introduce students to how regional tribal communities are using knowledge to predict and interpret patterns of interactions among and between organisms and abiotic components of ecosystems. After reviewing the information on the wild turkey, students can skim through other species that interest them to learn more about the projected impacts or on cultural practices.

Web Resources

Minnesota DNR Web pages
Wild Turkey
Wild Turkeys of the Whitewater

General Teacher and Student Resources
Minnesota DNR Teachers' Resources

Web Resources:
Animal Diversity Web: Wild Turkey
All About Birds: Wild Turkey
The Fall and Rise of Minnesota's Wild Turkeys

Iridescence/Structural Color
Bio-Inspired Materials: Structural Color in Nature
Structural Color Explained

Study questions answer key

1. True or false: Turkeys are native to Minnesota. **True.**

2. What is a female turkey called?
a. Tim
b. Christine
c. Gobbler
d. Hen
e. Poult

3. What do turkeys eat? **Nuts, berries, grass seeds, plant roots, salamanders, snails, insects.**

4. What is a male turkey called?
a. Tim
b. Christine
c. Gobbler
d. Hen
e. Poult

5. Match the body part to the description:
Wattle – Flap of skin on the front of the neck
Beard – long, thin group of feathers hanging from the neck
Snood – skin on forehead that turns red when courting
Spur – sharp part of leg

6. What eats turkeys? Predators mentioned in the story include **coyotes, raccoons, skunks, owls, eagles.**

7. What is a young turkey called?
a. Tom
b. Christine
c. Gobbler
d. Hen
e. Poult

8. Match the number with the fun fact it represents
5,000 = number of feathers on a turkey
10 = common number of eggs in a brood
20 = number of pounds an adult turkey weighs
40 = number of inches tall an adult turkey stands
29 = number of turkeys the DNR released in Minnesota in 1973

100,000 = number of turkeys in Minnesota today
28 = usual number of days between when an egg is laid and it hatches
100,000 = estimated number of wild turkeys in Minnesota today
Bald Eagle – both

9. Which part of Minnesota do turkeys not thrive in?
a. Big Woods
b. Lake Superior region
c. Minnesota River Valley
d. Twin Cities
e. Boundary Waters

10. True or false: Adult turkeys eat more plants than animals. **True**

11. A group of turkeys is called a:
a. flock
b. bunch
c. herd
d. horde

12. Which of these is not listed as a material used in a barn swallow nest?
a. mud
b. saliva
c. feathers
d. plant material

13. Match the season with the event:
Spring – turkeys mate
Spring - toms fight
Summer – hens lead their broods around to find food
Summer – toms fight
Fall – young males leave their mother
Fall – turkeys gobble up acorns

13. True or false: Turkeys fly south for the winter. **False**

14. Which three parts of a turkey don't have feathers? **Legs, head, neck**

Challenge question: Challenge question: Why is it important that turkeys see humans as higher in their pecking order? So the turkeys give way to humans rather than challenge us.

Minnesota comprehensive assessments answer key.

1. How does a wattle help a turkey survive? **It gives off heat, helping the turkey to cool its body.**

2. Why did turkeys disappear from Minnesota? **European settlers destroyed habitat they depended on and hunted them until there were none left.**

3. True or false: Turkeys have poor vision. **False. The story tells us they have keen vision and hearing.**

4. Why do hens gather in groups with their poults?
a. So they can gobble together
b. Because there is safety in numbers
c. To gather acorns
d. So their young can learn to play together

5. True or false: Wild turkeys make good pets. **False. They can harm humans.**

6. Name at least two benefits turkeys get from trees. **1) they eat acorns, and other fruit and seeds trees make. 2) They roost in trees at night.**

Vocabulary list

brood – offspring
conservation – the practice of taking care of something so it isn't destroyed
domestic – tame
keen – sharp
predators – animals that eat other animals
range – area in which a species is normally found
roost – to settle in to rest

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