YOUNG NATURALISTS

TEACHERS GUIDE

to "MEET YOUR LOCAL HAWKS"

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, September-October 2024, 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!

"Meet Your Local Hawks"

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, September-October 2024, mndnr.gov/mcvmagazine.

Summary. Minnesota is home to 9 species of hawks. To many people, they might look a lot alike. "Meet Your Local Hawks" introduces Young Naturalists to these 9 species, helping readers learn to distinguish them from one another by their physical characteristics and habitats.

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. 10–15 minutes, not including time for extension activities.

Estimated instruction time. 30–60 minutes, not including extension activities.

Minnesota academic standards applications. ""Meet Your Local Hawks" activities may be used to support the following Minnesota Department of Education standards for students in grades 3–8:

Writing Benchmarks Literacy in Science and Technical Subjects

Research to Build and Present Knowledge (Benchmarks 3.6.7.7, 4.6.7.7, 5.6.7.7, 6.7.7.7, 6.7.8.8, 7.7.7.7, 7.7.8.8, 8.7.7.7)

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: Informational Text

Key Ideas and Details (Benchmarks 3.2.1.1, 3.2.2.2, 3.2.3.3, 4.2.1.1, 4.2.2.2, 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, 4.2.5.5, 5.2.4.4, 5.2.5.5, 6.5.4.4, 7.5.4.4, 8.5.4.4)
Integration of Knowledge and Ideas (Benchmarks 3.2.7.7, 4.2.7.7, 4.2.9.9, 5.2.7.7, 5.2.9.9, 6.5.7.7)

Speaking, Viewing, Listening and Media Literacy

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)
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)

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. Analyzing and interpreting data
6. Constructing explanations
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Cross Cutting Concepts

6. Structure and function
7. Stability and change

Disciplinary Core Ideas

Life Sciences 1: From molecules to organisms: Structures and processes
Life Sciences 3: Heredity: Inheritance and variation of traits
Earth and Space Sciences 3: Earth and human activity

Social Studies

Geography (Benchmark 4.3.4.9.1)

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 hawks? 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 hawks 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 story. Select the best items for a class quiz. (2) Have students write a short description (or short identification clues for a "guess who" game) for each of the 9 hawks. Then ask students to "trade" their list of descriptions with another student, seeing if they can identify the hawks from their peers' descriptions or clues.

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. The Minnesota Biological Survey (MBS) conducts field surveys for breeding birds, including several hawk species. Invite students to learn more about the different techniques used to collect this data and discuss their ideas as to why multiple techniques are used for collecting data. Students also can be prompted to think about pros and cons of each data collection technique. Then invite students to explore the MBS bird distribution maps for hawk species from the Young Naturalist story, to see if the data depicted in these maps align with habitat descriptions in the story. Then prompt students to think about why bird observation data may differ from general descriptions of habitat ranges or existing species distribution maps. Older students may be prompted to explore what makes an out-of-range bird sighting an outlier versus indicating a change in traditional distribution ranges.

2. Falconry is the traditional art and practice of training and flying falcons and other birds of prey, including hawks. Falconry has been practiced for over 4000 years in many parts of the world. Originally falconry was a way for people to hunt wild prey for food. Today it has cultural, social, and recreational aspects as well. Invite students to learn more about this sport, including how one would obtain the falcon and permit, Minnesota regulations regarding caring for and training the birds of prey, and the training required of the falconer to participate in this challenging sport. Then ask students to practice their skills of selection, organization, and analysis of relevant content by writing an informative/explanatory text about taking up the sport of falconry.

3. Introduce students to leucism (loss of pigmentation causing a bird to have white or pale feathers) through the short National Park Service article, "That's no Snowy Owl... It's a Leucistic Red-Tailed Hawk!" Students can then conduct internet research to learn more about leucism and how it differs from albinism. Using evidence gathered through their research, ask students to construct an explanation using evidence from various sources for how this variation of leucism may provide disadvantages in surviving and finding mates.

4. Figurative language is often associated with fictional writing, yet it can be used in nonfiction to help readers connect to the information at hand. For example, the story author uses figurative language to describe the red-tailed hawk (the robin or chickadee of Minnesota hawks). Invite students to practice their figurative language skills by extracting one descriptor or identifying characteristic for each of the 9 hawk species in the story and modifying it with figurative language (such as a simile, metaphor, personification, hyperbole, alliteration, or onomatopoeia).

5. When people think of bird conservationists, John James Audubon often comes to mind. But there are many more people throughout history and present-day that have worked tirelessly toward bird conservation. Invite students to learn about Rosalie Edge

and her connection to hawk conservation. Students could then be asked to select another female bird conservationist (for example Genevieve Estelle Jones, Harriet Lawrence Hemenway and Minna Hall, Florence Merriam Bailey, Rachel Carson, Frances Hamerstrom) or a more current bird conservationist, such as one of those featured by the American Bird Conservancy. Students can conduct internet research to learn more about their selected conservationists and then report what they learned through an oral report, PowerPoint presentation, or a creative "first person" enactment.

6. Introduce students to the IUCN Red List (the International Union for Conservation of Nature's Red List of Threatened Species), which is the world's most comprehensive information source on the global extinction risk status of animal, fungus, and plant species. Invite students to select one of the hawks featured in the Young Naturalist story and determine its red list category and if the population of that species is increasing or decreasing globally. After exploring the information contained on their selected species, including threats to hawk populations, invite students to construct an argument as to why this database is an important conservation tool.

7. Introduce students to the difference between observation and inference (observations are what you directly experience with your senses; inferences are guesses about your observations that may or may not be correct); then explain that both observations and inferences can lead to research questions that scientists can pursue through further investigation. Show students 2023 season highlights from Cornell's Red-Tailed Hawk Cam. As they watch, ask students to make observations, writing them down on a list. Then ask students to go back through their list to re-check that they have listed observations, not inferences. Next, have students watch the footage again, this time making inferences about what is happening based on their observations and prior knowledge. Then invite students to share examples of inferences, explaining what evidence helped them make that inference. If students have different inferences from the same observation, invite them to think about what new observations could help them determine which inference is more likely. For more information to guide you in this extension, see Cornell Lab's Students as Scientists nature-based inquiry teacher's guide.

Web Resources

Minnesota DNR Web pages

Birds of Minnesota
Minnesota Breeding and Map List

General Teacher and Student Resources

Minnesota DNR Teachers' Resources

Young Naturalists Stories:

There's No Place Like Nest
Peck, Pluck, Probe, and Preen
Raptors in the Neighborhood

Minnesota Conservation Volunteer stories

Birdwatch Close to Home
Hawking for Hares
Where Raptors Soar

Curricula and Resources

University of Minnesota Raptor Center
Cornell Lab Bird Lessons and Activities
Audubon Adventures

Study questions answer key

1. Which of the three types of hawks described in the story inhabit both forests and open spaces in Minnesota?
a) **Buteos**
b) Accipiters
c) Harriers
d) Falcons

2. Name three ways hawks are adapted to hunting and eating their prey. **Suggested responses: They have large, front-facing eyes that help them see tiny things far away and in 3-D. Their feet have needle-sharp hooked talons that can quickly snatch and cling to their prey. They have large, curved beaks with a point at the end that can stab and tear their prey into smaller pieces.**

3. True or false: If you see a hawk nearby that isn't one of the 9 species described in the story, you most likely are seeing a species not native to Minnesota. **False. Most likely you are seeing a young (immature) hawk. Immature hawks can look very different from their parents!**

4. Which hawk featured in the story has fluffy feathers on its legs and the tops of its feet?
a)Sharp-shinned hawk
b)Northern harrier
c)Rough-legged hawk
d)Red-tailed hawk

5. Place the following descriptors in order from broadest to most specific: hawk, raptor, American Goshawk, bird, accipiter. **Bird, raptor, hawk, accipiter, American Goshawk.**

6. Which of the species in the story has a name that comes from the Old English word for "goose hawk?"
a) American goshawk
b) Sharp-shinned hawk
c) Northern harrier
d) Broad-winged goose hawk

7. The red-shouldered hawk and broad-winged hawk both have banded tails. Which of the two hawks has the tail with more bands than the other? **Red-shouldered hawk**

8. If you saw a hawk at your birdfeeder, which of the following would it most likely be?
a) Northern harrier
b) Coopers hawk
c) American Goshawk
d) Red-shouldered hawk

Challenge question: The story mentions that broad-winged hawks migrate in flocks to Central and South America to spend the winter there. In 2003, counters at Hawk Ridge in Duluth, a common spot for spying migrating hawks, counted more than 100,000 broad-winged hawks in a single day! If North American's broad-winged hawk population is about 1 million, what percentage of the North American broad-winged hawk population would you have witnessed had you been at Hawk Ridge on that day in 2003? **10%**

Minnesota comprehensive assessments answer key

1.Using details from the story, contrast the wing shape and general flight pattern for buteos, accipiters, and harriers. **Buteos have large, wide wings for soaring high above the ground. Accipiters have short wings and long tails that help them steer among the trees and fly with a flap-flap-glide rhythm. Harriers have long wings and a long tail for gliding low to the ground.**

2. Why is the red-tailed hawk harder to identify?
a. It is very uncommon in Minnesota and not often seen by people.
b. It is camouflaged (its feathers blend in with the trees' leaves).
c. It flies very fast.
d. It comes in 9 different color variations.

3. Based on the story details, what can you infer regarding what the author hopes you will do after reading the story?
a. Donate money to help protect hawks and their habitat.
b. Visit state parks and wildlife refuges.
c. **Introduce your friends to these magnificent hawks that we have in Minnesota.**
d. Build bird feeders so that hawks have more food to eat during the winter.

4. Which of the following is text evidence to support the claim that hawks are migratory birds of prey?
a. **The story says that the rough-legged hawk "lives in the Arctic during the summer and flies south to various, including Minnesota, for winter."**
b. The author of the story is a naturalist who knows a lot about hawks and their movements.
c. Minnesota has 9 species of hawks, and other states like California have more than 9 species.
d. All of the above

5. The author describes the red-tailed hawk as the robin or chickadee of Minnesota hawks for what reason?
a) It is found in many places.
b) It is generally a favorite hawk species for most people.
c)The author was trying to make the story more interesting for people who don't know much about birds.

Vocabulary list

Talon – the claw of a bird of prey
Pudgy – chubby
Lanky – skinny
Elusive – difficult to see or find
Scamper - run with quick light steps, either with excitement or fear
Prospective – likely to come about, or expected
Maneuver – to move skillfully or carefully
Deciduous - trees and shrubs that seasonally shed leaves

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