

TEACHERS GUIDE

to “All Clean!”

Multidisciplinary classroom activities based on the Young Naturalists nonfiction story in *Minnesota Conservation Volunteer*, July-August 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 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!

“All Clean!”

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



SUMMARY. Washing hands, brushing teeth, and taking baths are routine activities for humans. But what do animals do to stay clean and healthy? This Young Naturalists feature shared how animals use the tools they have—claws, bills, tongues, and more—to tidy up.

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. “All Clean!” 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:

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, 4.2.2.2, 5.2.1.1, 5.2.2.2., 6.5.1.1, 6.5.2.2, 7.5.1.1, 7.5.2.2, 8.5.1.1, 8.5.2.2)

Craft and Structure (Benchmarks 3.2.4.4, 4.2.4.4, 5.2.4.4, 5.2.6.6, 6.5.4.4, 7.5.4.4, 8.5.4.4)

Integration of Knowledge and Ideas (Benchmarks 4.2.9.9, 5.2.7.7, 5.2.9.9, 6,5.7.7)

WRITING BENCHMARKS (GRADES 3-8)

Text Types and Purpose (Benchmarks 3.6.2.2, 4.6.2.7, 5.6.2.2, 6.7.2.2, 7.7.2.2, 8.7.2.2)

Research to Build and Present Knowledge (Benchmarks 3.6.7.7, 4.6.7.7, 5.6.7.7, 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 Technical Subjects (Grades 6-8)

Key Ideas and Details (Benchmarks 6.13.1.1)

Integration of Knowledge and Ideas (Benchmark 6.13.9.9)

WRITING BENCHMARKS: LITERACY IN SCIENCE AND TECHNICAL SUBJECTS (GRADES 6-8)

Research to Build and Present Knowledge (Benchmark 6.14.7.7)

SCIENCE (*CODING IS BASED ON THE 2019 COMMISSIONER APPROVED DRAFT OF MN ACADEMIC STANDARDS IN SCIENCE)

SCIENCE AND ENGINEERING PRACTICES

1. Asking questions (for science) and defining problems (for engineering)
3. Planning and carrying out investigations
6. Constructing explanations and designing solutions
8. Obtaining, evaluating, and communicating information

CROSS CUTTING CONCEPTS

2. Cause and effect: mechanism and explanation
6. Structure and function
7. Stability and change

DISCIPLINARY CORE IDEAS

Life Sciences 1: From molecules to organisms: Structures and processes; 2: Ecosystems: Interactions, Energy, and Dynamics

Earth and Space Sciences 3: Earth and Human Activity

Engineering, Technology, and the Application of Science: 1: Engineering design; 2: Links among Engineering, Technology, Science, and Society

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. Give your students a chance to share their stories about cleaning behaviors they've observed with pets or wildlife. 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/) and encourage each to make notes during the group discussion. Within the groups, have students describe what they already know about bird nests 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 create a taxonomy that organizes the various cleaning strategies described in the article. They are welcome to sort however they'd like – by type of animal, type of cleaning job,

type of tool, or something else. Display the various approaches afterward to demonstrate the variety of ways traits can be categorized. (3) Have students determine and share the main idea of the story (orally or in writing), recount key details, and explain how they support the main idea.

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. This article focuses on mammals and birds, but other animals clean themselves, too. Explore how and why various insects clean themselves.

2. One of the functions of cleaning is removing “freeloaders,” such as parasites and plant seeds that spread by sticking to fur. But even as animals have evolved behaviors to rid themselves of these freeloaders, the freeloaders have evolved traits to evade these strategies. Invite students to choose a parasite or sticky seed and investigate how it evades animals’ efforts to rid themselves of it. If possible, gather seeds of the type you’re studying (e.g., thistles, burrs) and use magnifying glasses to study the structures up close. Students can share what they learn through a presentation, poster, or written report.

3. Take a deep dive into research into how animals dry themselves by shaking. What is behind the observation that small animals shake faster than big ones? What kinds of animals do this, and which ones don’t? Have students make predictions or hypotheses and design a real or hypothetical experiment to test their predictions. Supplement students’ observations and experimentations with online research.

4. How have—or might—the way animals clean themselves spark ideas for how we can clean ourselves or things in our environment? The biomimicry website [AskNature](#) offers lots of examples of how people can use the way animals and plants keep clean to invent new cleaning strategies. This [article and its videos](#) on how animal’s body hair helps keep animals clean might also inspire cleaning innovations! Invite students to design a cleaning device or technique based on what they learned from the article on how mammals and birds clean themselves. If time allows, students could prototype their design using building materials such as sticks, rubber bands, glue, sandpaper, and paper clips.

5. The article describes how some animals of the same species clean each other (allo-preening). But some animals clean animals of other species! Invite students to do a bit of online sleuthing to find examples of animals that clean other species and learn how this kind of cooperative behavior benefits both parties involved.

6. The article mentions a study that showed how bathing helps starlings fly better. If you have older students, read the original research paper, "[Water bathing alters the speed–accuracy trade-off of escape flights in European starlings](#)," together and use it to illustrate the various steps of scientific process: finding preliminary information, forming a hypothesis, testing the hypothesis, analyzing the results, drawing conclusions, and sharing the findings. Invite students to come up with an investigable follow-up question prompted by the study's results, and then suggest and design an experiment to find out the answer.

7. An example from the article of a dust-bather is the bison. The depressions formed by bathing bison are known as wallows. Older students can be invited to explore additional functions of wallows, particularly how wallowing modifies the physical and biological characteristics of the prairie.

8. What about teeth? Do animals in the wild brush their teeth? Ask students to speculate about the importance of teeth-cleaning for wild animals and what animal behaviors might help keep their teeth clean naturally? Then students can work together to check their speculations, either through online research or a conversation with a local veterinarian or biologist.

WEB RESOURCES

MINNESOTA DNR WEB PAGES

GENERAL TEACHER AND STUDENT RESOURCES

[Minnesota DNR Teachers' Resources](#)

WEB RESOURCES:

[Nature's Bathtime](#)

[Ever Wonder ... How Animals Clean Themselves?](#)

RELATED YOUNG NATURALISTS ARTICLES

[The Greatest of Feet](#)

VIDEOS

[Why do dogs shake to dry off?](#)

STUDY QUESTIONS ANSWER KEY

1. Name four ways in which cleaning up benefits an animal. **It helps them stay warm, dry, safe, and free from parasites.**

2. Which of these might an animal use to clean itself?

- a) Beak
- b) Tongue
- c) Claw
- d) Teeth
- e) b & c
- f) **all of the above**

3. How is a cat's saliva like shampoo? Circle all that are correct based on the article.

- a) **It is liquid.**
- b) It is creamy.
- c) **It acts like a detergent.**
- d) **It helps remove dirt.**
- e) It smells good.

4. How does shaking benefit a mammal? **It removes water, loose hair, parasites, and dirt.**

5. Why is wet fur a problem? **Wet fur can suck heat from the animal's body, potentially causing it to freeze to death.**

6. Name two benefits of allopreening. **It helps an animal clean parts of its body it can't reach on its own and can strengthen pair bonds.**

7. How does a bat clean its ears? **It wets its thumb with spit and sticks it in its ear.**

8. Name two techniques a beaver uses to clean itself. **It can use its forked claw to comb its hair. It can rely on another beaver to clean its back.**

9. Why might a Minnesota bear be more likely to scratch its back on a tree in the spring than in the fall? **Many mammals grow thick winter coats in the fall that help them stay warm in winter. Shedding the thick fur in spring helps them stay cool during warmer months.**

10. Name two benefits a duck gets from preening its feathers. **Answers may include clean feathers, straighten feathers, moisturize feathers, remove feathers, align feathers, remove sheaths from new feathers, to look good to mates.**

11. What three traits do turkeys and bison have in common that makes dust bathing a suitable strategy for staying clean? **They may not live near a lot of water, they have suitable places to kick up dust, and they have parasites that can be fended off with dust.**

Challenge: On average, the Great Plains had how many bison wallows per square mile? **1,500,000 divided by 500,000 = 3 wallows per square mile.**

MINNESOTA COMPREHENSIVE ASSESSMENTS ANSWER KEY.

1. Name three things a mammal might want to remove from its fur. **Answers may vary but should include at least some of the things mentioned in the story: dirt, ticks, lice, microscopic organisms, parasites, thorns, thistles, burs, organic matter, loose hairs, water.**
2. How is a cat's tongue like a comb? It has projections that help remove foreign objects from fur.
3. How does a deer clean its face?
 - a. By licking it.
 - b. By rubbing it against a tree.
 - c. By scratching it with a back foot.**
 - d. By having another deer lick it.
4. What common trait do teeth, claws, and hooves have that make them handy for cleaning fur? **All are hard and can reach different parts of the body. (Students will need to make inferences to answer this, so accept any reasonable answer.)**
5. What did scientists learn by taking videos of animals shaking?
 - a)Shaking is a good way to remove dirt.
 - b)The bigger the animal, the faster the shake.
 - c)Shaking is a good way to remove water.**
 - d)Shaking can make an animal hypothermic.
 - e)a & b
 - f)All of the above.

VOCABULARY LIST

Align – line up

Barbs – a hooked bristle

Evade – escape or avoid

Maneuvers - movements

Moisturize – add liquid to

Mutual – shared with each other

Parasite – a creature that take resources from another living thing without giving back