Young Naturalists

Teachers Guide

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"Wild Anglers" Multidisciplinary Classroom Activities

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

Young Naturalists teachers guides are provided free of charge to classroom teachers, parents, and students. This guide contains a brief summary of the article, suggested independent reading levels, word count, materials list, estimates of preparation and instructional time, academic standards applications, preview strategies and study questions overview, adaptations for special needs students, assessment options, extension activities, Web resources (including related Conservation Volunteer *articles), copy-ready study questions with answer key, and a copy-ready vocabulary sheet and vocabulary study cards. There is also a practice quiz (with answer key) in Minnesota Comprehensive Assessments format. Materials may be reproduced and/or modified a to suit user needs. Users are encouraged to provide feedback through an online survey at www.mndnr.gov/education/teachers/activities/ynstudyguides/survey.html. If you are downloading articles from the website, please note that only Young Naturalists articles are available in PDF.*

Summary

"Minnesota's Wild Anglers" introduces readers to seven species of birds and mammals that prey primarily on fish. Students learn about adaptations, fishing strategies, and how young are fed and taught to fish. Photographs of each species accompany text. This article will be sure to interest students as the fishing opener approaches.

Suggested reading levels:	third through middle/junior high school grades
Total words:	2,090
Materials:	Paper, poster board, colored pencils, crayons, pens, and markers, as well as print and online resources your media specialist may provide
Preparation time:	One to two hours, not including time for extension activities

Estimated instructional time:

One or two 50-minute class periods (not including extensions)

Minnesota Academic Standards applications:

"Minnesota's Wild Anglers" may be applied to the following Minnesota Department of Education standards:

Language Arts

Reading Benchmarks

Informational Text K–5; 6–12
Key Ideas and Details
Craft and Structure
Integration of Knowledge and Ideas
Range of Reading and Level of Text Complexity

Foundational Skills K–5
Phonics and Word Recognition
Fluency

Writing Benchmarks K–5; 6–12
Text Types and Purposes
Writing Process (6–12: Production and Distribution of Writing)
Research to Build and Present Knowledge
Range of Writing

Speaking, Viewing, Listening and Media Literacy Benchmarks K–5
Comprehension and Collaboration
Presentation of Knowledge and Ideas
Media Literacy

Language Benchmarks K–5
Conventions of Standard English
Knowledge of Language
Vocabulary Acquisition and Use

Reading Benchmarks: Literacy in Science and Technical Subjects 6–12
Key Ideas and Details Craft and Structure
Integration of Knowledge and Ideas
Range of Reading and Level of Text Complexity

Writing Benchmarks: Literacy in History/Social Studies, Science and Technical Subjects 6–12
Text Types and Purposes
Writing Process: Production and Distribution of Writing
Research to Build and Present Knowledge
Range of Writing

Science

Life Science

Grades 3, 5
3.4.1 Structure and Function in Living Organisms
5.4.1 Structure and Function in Living Organisms
5.4.2 Interdependence Among Living Systems
5.4.4 Human Interaction With Living Systems

Grades 3, 7
3.4.3 Evolution in Living Systems
7.4.2 Interdependence Among Living Systems
7.4.3 Evolution in Living Systems
7.4.4 Human Interaction With Living Systems

Mathematics

Grade 6
6.1.1.3; 6.1.3.3 Number and Operation

Arts
Grades K–12
1. Artistic Foundations: Visual Arts
2. Artistic Process: Create or Make: Visual Arts
3. Artistic Process: Perform or Present: Visual Arts
4. Artistic Process: Respond or Critique: Visual Arts

Language Arts standards were undergoing a major revision at the time this article was published. Format and content will change significantly. Minnesota Academic Standards are available at www.education.state.mn.us. Teachers who find other connections to standards are encouraged to contact Minnesota Conservation Volunteer.

Preview

Your preview will depend on how you apply the content to the standards. For example, if you are reading the article in science you may ask students to survey the article. Examine the photographs. Use the **KWL** strategy (Ogle, 1986) to find out what your students already know (**K**) about birds and animals that catch fish, what they would like to learn (**W**), and eventually what they learned (**L**) while reading the article and related materials, and through participating in extension activities. You might begin by asking small groups to brainstorm their ideas. Then combine the groups' data to make a class list. Display your **K** and **W** ideas on poster board or paper (see Vocabulary preview). Add to your **L** list as you read and discuss the article. See www.teach-nology.com/web_tools/graphic_org/kwl for a KWL generator that will produce individual organizers for your students. Individual organizers may be useful as students read the article for answers to **W** questions. KWL also gives you the opportunity to introduce interdisciplinary connections you will make during extension activities. If you use the article in math, science, or art class you may wish to focus your prereading discussion on academic standards that apply for that class.

Another strategy for accessing prior knowledge is a brainstorming web. You may download a printable web at www.teachervision.fen.com/tv/printables/TCR/0743932080_007.pdf.

Vocabulary preview

See the copy-ready vocabulary list included in this guide. You may wish to modify the list based on your knowledge of your students' needs or the subject you are teaching. Pretesting vocabulary individually, in small groups, or with your entire class can be an effective vocabulary preview strategy. You may then post-test at the conclusion of this activity (see Assessment section below). Pay particular attention to words in italics. Definitions are provided in the text.

You may wish to use the study cards found at the end of this guide. Cut along the horizontal line; fold in the middle and tape or staple. Study cards (see *Strategic Tutoring*, Hock, Deshler, and Schumaker 2000) can be applied to any subject area. On one side of the card, in large letters, write a key word or phrase that students are expected to know. In smaller letters frame the word or phrase in a question or statement. On the other side of the card, in large letters, write the answer to the question. Finally, in smaller letters, frame the answer in a question or statement. Blanks are provided to allow you or your students to add new words or phrases.

Study questions overview

Study questions parallel the story (the answer to the first question appears first in the article, followed by the second, and so on). Preview the entire guide with your class before you read the article. You may wish to read the story aloud and complete the study questions in class, in small groups, or as an independent activity. The questions may be assigned as homework, depending on the reading ability of your students. Inclusion teachers may provide more direct support to special needs students (see Adaptations section). The study questions may be also used as a quiz. Note: Items 1, 3, 5, and 10 and the Challenge require varying degrees of critical thinking.

Adaptations

Read aloud to special needs students. Abbreviate the study questions or highlight priority items to be completed first. If time allows, remaining items may be attempted. Peer helpers, paraprofessionals, or adult volunteers may lend a hand with the study questions. With close teacher supervision, cooperative groups can also offer effective support to special needs students, especially for extension activities.

Assessment

You may use all or part of the study guide, combined with vocabulary, as a quiz. Other assessment ideas include: (1) Students may write an essay comparing and contrasting two or more species in the article. See (www.readwritethink.org/files/resources/lesson_images/lesson275/compcon_chart.pdf and www.readingquest.org/strat/compare.html) for printable compare-and-contrast diagrams. (2) Have students write multiple-choice, true-false, or short-answer questions, then select the best items for a class quiz. (3) Poster presentations may display concepts from a compare/contrast essay. Students may describe adaptations that give a species an advantage. Posters may also match adaptations to species. (4) Group students by species. Ask each group to create a TV commercial for their species that promotes conservation of that species.

Extension activities

1. Invite a DNR nongame biologist to visit your classroom to present information about one or more of the species in the article. See www.dnr.state.mn.us/eco/nongame/index.html.
2. Cormorants prey on fish, and have been blamed for adversely affecting the walleye catch on some Minnesota lakes. Students may research this issue and report in writing or in a poster presentation. You may also invite a fisheries biologist (see www.dnr.state.mn.us/areas/fisheries/index.html) to your classroom to present on cormorants.
3. The *Conservation Volunteer* has published several articles you may wish to bundle with this article. See Related Articles.
4. Challenge students to learn more about one or more of the species in this article. The green heron is a tool user. What other species use tools? See Web resources.
5. Compare and contrast how people catch fish with the species in this article. Perhaps students can design a new fishing product that mimics one or more of the adaptations described in the article.
6. Challenge students to write and illustrate haiku poems fish predators, their prey, and their habitats. See www.wikihow.com/Write-a-Haiku-Poem for excellent step-by-step haiku instructions with accompanying video.

Web resources

Minnesota DNR
www.dnr.state.mn.us/eco/nongame/index.html
www.dnr.state.mn.us/areas/fisheries/index.html

Tool use in birds
www.stanford.edu/group/stanfordbirds/text/essays/Tool_Using.html
whyevolutionistrue.wordpress.com/2011/02/03/another-tool-using-bird/
www.sciencemag.org/site/feature/data/crow/

Loons
www.dnr.state.mn.us/birds/commonloon.html
www.allaboutbirds.org/guide/common_loon/id
www.wcs.org/saving-wildlife/birds/common-loon.aspx

Pelicans
www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNFC01010
animals.nationalgeographic.com/animals/birds/pelican/
creagrus.home.montereybay.com/pelicans.html

Web resources continued

Great Blue Herons
www.allaboutbirds.org/guide/great_blue_heron/id
birdweb.org/birdweb/bird_details.aspx?id=41
www.nhptv.org/natureworks/greatblueheron.htm

Great Egrets
www.dnr.state.mn.us/nongame/videos/great_egrets.html
www.allaboutbirds.org/guide/Great_Egret/id
www.enchantedlearning.com/subjects/birds/printouts/Greategretprintout.shtml

Green Heron
www.allaboutbirds.org/guide/green_heron/id
identify.whatbird.com/obj/32/_/Green_Heron.aspx

Bald Eagles
www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKC10010
www.allaboutbirds.org/guide/bald_eagle/id
kids.nationalgeographic.com/kids/animals/creaturefeature/baldeagle/

Osprey
www.peregrinefund.org/explore_raptors/osprey/osprey.html
www.allaboutbirds.org/guide/osprey/idanimaldiversity.ummz.umich.edu/site/accounts/pictures/Pandion_haliaetus.html

North American River Otter
www.dnr.state.mn.us/mammals/riverotter.html
minnesota.publicradio.org/display/web/2009/08/17/mississippi-river-otter/
www.mnzoo.org/animals/animals_riverotter.asp

Minnesota DNR Teacher Resource
www.mndnr.gov/education/teachers/index.html

Note: All Web sites were active at the time of this guide's publication. However, some may no longer be active when this guide is accessed.

Related articles

Related *Minnesota Conservation Volunteer* Young Naturalists articles are available online at www.mndnr.gov/volunteer/articles/index.html, including:

July-August 1997
"Pelicans of Marsh Lake"
www.dnr.state.mn.us/volunteer/julaug97/pelicans.html

July-August 2000
"Fly Like an Eagle"
www.dnr.state.mn.us/volunteer/julaug00/eagle_survey.html

March-April 2003
"Return of the Osprey"
www.dnr.state.mn.us/volunteer/marapr03/osprey.html

May-June 2003
"The Slinky, Stinky Weasel Family" (YN article with teachers guide)
www.dnr.state.mn.us/young_naturalists/weasels/index.html

March-April 2004
"Rookery Blues"
www.dnr.state.mn.us/volunteer/marapr04/rookery.html

January-February 2005
"Between Ice and Hard Times"
www.dnr.state.mn.us/volunteer/janfeb05/hardtimes.html

July-August 2007
"Hoot, Tremolo, Yodel, and Wail" (YN article with teachers guide)
www.dnr.state.mn.us/young_naturalists/loons/index.html

March-April 2010
"Let's Find Out" (YN article with teachers guide)
www.dnr.state.mn.us/young_naturalists/scientific_method/index.html

September-October 2010
"Dangerous Migration"
www.dnr.state.mn.us/volunteer/sepoct10/this_issue.html

January–February 2011
"The Greatest of Feet" (YN article with teachers guide)
www.dnr.state.mn.us/young_naturalists/feet/index.html

References

Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring.* Lawrence, Kan.: Edge Enterprises, 2000.
Ogle, D.S. K-W-L Group Instructional Strategy. In A.S. Palincsar, D.S. Ogle, B.F. Jones, and E.G. Carr (Eds.), *Teaching Reading as Thinking: Teleconference Resource Guide*, pp.11–17. Alexandria, Va.: Association for Supervision and Curriculum Development, 1986.

Study Questions

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

1. Why do you suppose Minnesota has so many birds and animals that prey on fish? _____

_____

_____

2. Describe a common loon's fishing strategy. _____

_____

_____

3. Explain how the adaptations listed below help loons catch fish:

a. Giant webbed feet _____

_____

b. Air sacs _____

_____

c. Hollow bones _____

_____

4. What makes the great blue heron unique among heron species in North America? _____

_____

5. Compare and contrast a great blue heron's fishing technique with a common loon's. _____

_____

_____

6. How do herons and egrets feed their young? _____

_____

7. Why do great egrets stir up the lake or river bottom with their feet? _____

_____

8. Why do you think the author calls the green heron a "fishing superstar?" _____

_____

_____

9. Why is the bald eagle an opportunist? _____

_____

_____

10. Describe the sequence of photos on pages 8 and 9. _____

_____

_____

11. Are osprey opportunists? Why or why not? _____

_____

_____

12. What percentage of the time do osprey catch fish? _____

_____

13.How are an osprey's feet adapted for catching fish? _____

_____

_____

14. River otters have several adaptations that enable it to prey on fish. Describe at least two. _____

_____

_____

15. Match the species to its adaptation:

a. river otter _____	1. denticals
b. pelican _____	2. long, skinny legs
c. great blue heron _____	3. reversible toe
d. osprey _____	4. vibrissae
e. common loon _____	5. large, pouched bill

Challenge: What can people learn from observing wild anglers? Describe at least two advantages a human angler might gain from imitating one or more of the species in this article. _____

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_____

_____

Study Questions Answer Key

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

1. Why do you suppose Minnesota has so many birds and animals that prey on fish? **Minnesota is the Land of 10,000 Lakes. There are a lot of fish to catch here**.
2. Describe a common loon's fishing strategy. **A loon puts its head under the water as it swims along the surface. When it sees a fish it dives and chases the fish. It catches the fish in its bill and swallows the fish whole.**
3. Explain how the adaptations listed below help loons catch fish: **Answers may vary. Allow students to be creative.**

a. Giant webbed feet—Swim fast on the surface or under water, enabling loons to swim faster than prey fish.
b. Air sacs—Enable loons to sink or float by letting out or taking in air. The loon can dive fast if it lets out air.
c. Hollow bones—A loon's bones are hollow, but not as hollow as bones of other birds. This makes the loon heavier than other birds and helps it dive faster.

4. What makes the great blue heron unique among all heron species in North America? **It is the largest heron species in North America.**
5. Compare and contrast a great blue heron's fishing technique with a common loon's. **Answers may vary. Comparisons: both must hunt quietly and move quickly. Both use vision to locate fish and a sharp beak to catch their prey. Contrasts: One (heron) wades and the other (loon) dives. One fishes in very shallow water (heron) and the other (loon) fishes in shallow to deep water.**
6. How do herons and egrets feed their young? **They catch their prey, swallow it, take it back to the nest, and regurgitate it into their chicks' beaks.**
7. Why do great egrets stir up the lake or river bottom with their feet? **It uncovers insects and crustaceans to eat.**
8. Why do you think the author calls the green heron a "fishing superstar?" **It does something only a few birds do. It uses a tool to catch its food.**
9. Why is the bald eagle an opportunist? **It will eat almost anything, alive or dead.**
10. Describe the sequence of photos on pages 8 and 9. **Answers may vary. Encourage detail. A bald eagle is diving toward the water to grab a dead fish. It skims along the surface until it reaches the fish, grasps it in its talons and takes it to the shore.**
11. Are osprey opportunists? Why or why not? **No. They only eat live fish that they catch.**
12. What percentage of the time do osprey catch fish? **70 percent**
13. How are an osprey's feet adapted for catching fish? **They have a reversible toe that helps the bird hold onto its catch.**
14. River otters have several adaptations that enable it to prey on fish. **Describe at least two. Answers may vary, and may include: sensitive whiskers, oily fur, nostrils and ears that close, webbed feet, long body and strong tail, sharp teeth, front paws that can hold fish. Students should be able to explain how each adaptation helps the otter survive.**
15. Match the species to its adaptation:

a. river otter 4
b. pelican 5
c. great blue heron 2
d. osprey 3
e. common loon 1

Challenge: What can people learn from observing wild anglers? Describe at least two advantages a human angler might gain from imitating one or more of the species in this article. **Answers may vary. Encourage creativity. Students may include: moving quietly, use vision to locate fish, using sharp hooks, and watching where wild anglers are fishing.**

Minnesota Comprehensive Assessments Practice Items

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

1. *Pondian haliaetus* is the scientific name for
   A. the bald eagle.
   B. muskrats.
   C. osprey.
   D. none of the above.

2. The North American river otter eats only fish.
   A. True
   B. False

3. What does the term "adapted trait" mean?

_____

_____

_____

4. Regurgitation is the means by which great blue herons
   A. locate their prey.
   B. land on rough water.
   C. find a mate.
   D. feed their chicks.

5. The green heron is known for what unusual behavior?
   A. It uses bait to catch fish.
   B. It flies very fast.
   C. It flies slowly.
   D. It can mimic the calls of other birds.

Minnesota Comprehensive Assessments Answer Key

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

1. *Pondian haliaetus* is the scientific name for **C. osprey.**

2. The North American river otter eats only fish. Justify your answer. **B. False**

The river otter eats a variety of animals, including fish, crayfish, amphibians, and turtles.

3. What does the term "adapted trait" mean? **An adapted trait is an inherited characteristic that increases an organism's reproductive success.**

4. Regurgitation is the means by which great blue herons **D. feed their chicks.**

5. The green heron is known for what unusual behavior? **A. It uses bait to catch fish.**

Vocabulary

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

adapted traits	inherited characteristics that give a species a better chance to reproduce
amphibian	animal that metamorphoses from a juvenile water-breathing form (tadpole) to an adult air breather (frog)
angler	someone who fishes with a hook (angle), usually attached to a line and fishing rod.
aquatic	living in or near water
crustacean	large group of arthropods, including crabs, crayfish, and shrimp
demeanor	outward behavior
juvenile	immature animal (teenager)
opportunistic forager	predator that selects the most available prey
regurgitate	to throw up
species	animals that resemble one another and may interbreed
talons	curved raptors' claws

Vocabulary Study Cards

"Minnesota's Wild Anglers" by Michael A. Kallok. Published in the May-June 2011 *Minnesota Conservation Volunteer*, or visit www.mndnr.gov/young_naturalists/wild_anglers.

Cut along the horizontal lines, fold in the middle and tape or staple. Blanks are provided to allow you or your students to add new words or phrases.

What are **adapted traits**?	FOLD HERE	**Inherited characteristics that give a species a better chance to reproduce** are called
What is an **amphibian**?	FOLD HERE	**An animal that metamorphoses from a juvenile water-breathing form (tadpole) to an adult air breather (frog)** is an
An **angler** is	FOLD HERE	**Someone who fishes with a hook (angle), usually attached to a line and fishing rod** may be called an
An **aquatic** animal or plant	FOLD HERE	An animal or plant that **lives in or near water** is

What is a **crustacean?**	FOLD HERE	**A member of a large group of arthropods, including crabs, crayfish, and shrimp** is a
What is an animal's **demeanor**?	FOLD HERE	An animal's **outward behavior** is its
What is a **juvenile** animal?	FOLD HERE	**An immature animal (teenager)** is called a
What is an **opportunistic forager**?	FOLD HERE	**A predator that selects the most available prey** is called an
To **regurgitate** is to	FOLD HERE	To **throw up** is to

What is a **species**?

FOLD HERE

A group of **animals that resemble one another and may interbreed** are called a

What are **talons**?

FOLD HERE

Curved raptor claws are called

FOLD HERE

FOLD HERE

FOLD HERE