

# Teachers Guide

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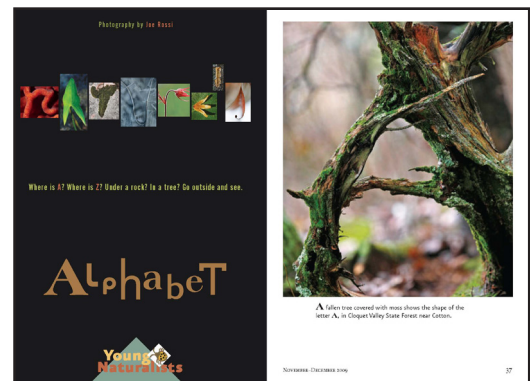
## “Nature’s Alphabet” Multidisciplinary Classroom Activities

Area Schools,  
Bemidji, Minnesota

Teachers guide for the Young Naturalists article “Nature’s Alphabet.” Photography by Joe Rossi. Published in the November–December *Minnesota Conservation Volunteer*, or visit [www.mndnr.gov/young\\_naturalists/natures\\_alphabet](http://www.mndnr.gov/young_naturalists/natures_alphabet)

*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](http://www.mndnr.gov/education/teachers/activities/ynstudyguides/survey.html). If you are downloading articles from the Web site, please note that only Young Naturalists articles are available in PDF.*



### Summary

“Nature’s Alphabet” is a departure from previous Young Naturalists articles. Twenty-six photographs depict the letters A through Z in upper or lower case, and in manuscript or cursive forms. Teachers of students in grades kindergarten through high school may find this article useful.

### Suggested reading levels:

kindergarten through high school grades

**Total words:** 488

**Materials:** Paper, poster board, pencils, pens, markers, Minnesota maps (available on line), alphabet books your media specialist may provide, online resources.

**Preparation time:** One to two hours, not including extension activities.

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**Estimated instructional time:**

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

**Minnesota Academic Standards applications:**

“Nature’s Alphabet” may be applied to the following Minnesota Department of Education standards:

**Language Arts**

**I. Reading and Literature**

A. Word Recognition, Analysis and Fluency

B. Vocabulary Expansion

C. Comprehension

**II. Writing**

A. Types of Writing

B. Elements of Composition

C. Spelling

D. Research

E. Handwriting and Word Processing

**III. Speaking, Listening and Viewing**

A. Speaking and Listening

B. Media Literacy

**Mathematics**

**Grades K–5**

Number and Operations

**Science**

**Grades K 4, 7**

**IV. Life Science**

B. Diversity of Organisms

**Social Studies**

**Grades K–8**

**V. Geography**

A. Concepts of location

B. Maps and globes

**Grades 9–12**

B. Essential skills

**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

Complete Minnesota Academic Standards are available at [www.education.state.mn.us](http://www.education.state.mn.us). Teachers who find other connections to standards are encouraged to contact the *Conservation Volunteer*.

**Preview**

The alphabet book is a traditional children’s literature genre. Your district and public libraries should have several to many examples you may use to introduce this article. Display alphabet books and ask students in small groups or as a class to brainstorm natural forms that look like letters of the alphabet. Make a list on poster board or a large piece of paper and post for reference as you read the article.

**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).

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*,

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### Vocabulary preview continued

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

Teachers familiar with previous Young Naturalists guides will notice a difference in the study questions for “Alphabet.” Study questions do not parallel the story, as they do in other guides. 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: All the items 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 select a favorite photograph and write a brief essay on why it is their favorite. (2) Students may design a matching quiz from letters not used in this study guide. Teachers may then select the best items for a class quiz. (3) Poster presentations may follow Assessment activity #1 and include a critique by classmates.

### Extension activities

1. Take your class for a walk in your school forest or in a nearby natural area. Take one or more digital cameras along to record natural forms in the shape of letters. Photos may then be used for Extension #5.
2. There are nine locations cited in the article. Challenge your students to find them all on a state highway map or at these links:  
[www.mndnr.gov/state\\_forests/map.html](http://www.mndnr.gov/state_forests/map.html)  
[www.mndnr.gov/state\\_parks/map.html](http://www.mndnr.gov/state_parks/map.html)  
[maps.dnr.state.mn.us/wildlife/wma/visitor\\_maps/WMA09001\\_CarlosAvery\\_VisitorMap.pdf](http://maps.dnr.state.mn.us/wildlife/wma/visitor_maps/WMA09001_CarlosAvery_VisitorMap.pdf)  
[www.invominnnesota.com/lakes/rabideaulake.htm](http://www.invominnnesota.com/lakes/rabideaulake.htm)  
[maps.google.com/maps?hl=en&client=safari&rls=en-us&resnum=0&q=minnesota+red+lake&um=1&ie=UTF-8&hq=&hnear=Red+Lake,+MN&gl=us&ei=r5XQSufBOPk4NobWuZ8N&sa=X&oi=geocode\\_result&ct=title&resnum=1&ved=0CA4Q8gEwAA](http://maps.google.com/maps?hl=en&client=safari&rls=en-us&resnum=0&q=minnesota+red+lake&um=1&ie=UTF-8&hq=&hnear=Red+Lake,+MN&gl=us&ei=r5XQSufBOPk4NobWuZ8N&sa=X&oi=geocode_result&ct=title&resnum=1&ved=0CA4Q8gEwAA)  
[www.fs.fed.us/recreation/map/xmn\\_wi\\_mi.html](http://www.fs.fed.us/recreation/map/xmn_wi_mi.html)  
[geology.com/cities-map/minnesota.shtml](http://geology.com/cities-map/minnesota.shtml)  
You may print the maps or access them online. Once the locations in the article have been found provide a blank map of Minnesota ([www.waterproof-paper.com/printable-maps/minnesota/minnesota-outline-map.pdf](http://www.waterproof-paper.com/printable-maps/minnesota/minnesota-outline-map.pdf)) for students to label.
3. On page 44 there is a photo of a mystery moth. Send your students to this site to discover its name: [www.butterfliesandmoths.org/map?\\_dcs=1&ds=24](http://www.butterfliesandmoths.org/map?_dcs=1&ds=24)
4. There are about 20 plants and animals in this article. Assign mini-research projects to

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### Extension activities continued

- individuals or groups. There are sites listed in Web Resources. Students may write brief papers or prepare poster sessions on their organism.
5. Students in small groups, as a class, or as individuals may create their own natural alphabet books. A variety of media, including photographs, drawings, and paintings may be used.

### Web resources

#### **Moss, fungi, and lichens**

[www.wisegeek.com/what-is-the-difference-between-lichen-and-moss.htm](http://www.wisegeek.com/what-is-the-difference-between-lichen-and-moss.htm)  
[intl.concord.org/beacon/lichen\\_team.html](http://intl.concord.org/beacon/lichen_team.html)

#### **Painted turtles**

[www.smm.org/warnernaturecenter/animals/paintedturtle/](http://www.smm.org/warnernaturecenter/animals/paintedturtle/)  
[www.enchantedlearning.com/subjects/turtle/Paintedturtle.shtml](http://www.enchantedlearning.com/subjects/turtle/Paintedturtle.shtml)

#### **White-tailed deer**

[www.nhptv.org/NATUREWORKS/whitetaileddeer.htm](http://www.nhptv.org/NATUREWORKS/whitetaileddeer.htm)  
[www.enchantedlearning.com/subjects/mammals/deer/Whitetailprintout.shtml](http://www.enchantedlearning.com/subjects/mammals/deer/Whitetailprintout.shtml)

#### **Reeds and rushes**

[www.pondplants.com/aisle50.html](http://www.pondplants.com/aisle50.html)  
[www.bwsr.state.mn.us/wetlands/publications/wetland.pdf](http://www.bwsr.state.mn.us/wetlands/publications/wetland.pdf)

#### **Black spruce**

[www.myminnesotawoods.umn.edu/minnesota/minn\\_typ\\_blkspruce.html](http://www.myminnesotawoods.umn.edu/minnesota/minn_typ_blkspruce.html)  
[www.mndnr.gov/trees\\_shrubs/conifers/blackspruce.html](http://www.mndnr.gov/trees_shrubs/conifers/blackspruce.html)

#### **Snails**

[sev.lternet.edu/~jnekola/nekola%20pdf/mndnr-2000.pdf](http://sev.lternet.edu/~jnekola/nekola%20pdf/mndnr-2000.pdf)  
[www.mndnr.gov/invasives/aquaticanimals/faucet\\_snail/index.html](http://www.mndnr.gov/invasives/aquaticanimals/faucet_snail/index.html)  
[www.kiddyhouse.com/Snails/](http://www.kiddyhouse.com/Snails/)  
[www.geocities.com/sseagraves/snailfacts.htm](http://www.geocities.com/sseagraves/snailfacts.htm)

#### **Pelicans**

[www.mndnr.gov/volunteer/julaug97/pelicans](http://www.mndnr.gov/volunteer/julaug97/pelicans)  
[animals.nationalgeographic.com/animals/birds/pelican.html](http://animals.nationalgeographic.com/animals/birds/pelican.html)

#### **Monarchs and milkweed**

[ed.fnal.gov/entry\\_exhibits/insect/monarch.html](http://ed.fnal.gov/entry_exhibits/insect/monarch.html)  
[www.dnr.state.wi.us/org/caer/ce/eeek/veg/plants/milkweed.htm](http://www.dnr.state.wi.us/org/caer/ce/eeek/veg/plants/milkweed.htm)

#### **Maple trees**

[www.mndnr.gov/trees\\_shrubs/deciduous/index.html](http://www.mndnr.gov/trees_shrubs/deciduous/index.html)

#### **Birch trees**

[www.mndnr.gov/trees\\_shrubs/deciduous/index.html](http://www.mndnr.gov/trees_shrubs/deciduous/index.html)  
[www.na.fs.fed.us/SPFO/pubs/howtos/ht\\_birch/ht\\_birch.htm](http://www.na.fs.fed.us/SPFO/pubs/howtos/ht_birch/ht_birch.htm)

#### **Oak trees**

[www.mndnr.gov/trees\\_shrubs/deciduous/index.html](http://www.mndnr.gov/trees_shrubs/deciduous/index.html)  
[www.arcytech.org/java/population/facts\\_oaks.html](http://www.arcytech.org/java/population/facts_oaks.html)

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### Web resources continued

#### Gray squirrels

[www.mndnr.gov/mammals/squirrels/index.html](http://www.mndnr.gov/mammals/squirrels/index.html)  
[animaldiversity.ummz.umich.edu/site/accounts/information/Sciurus\\_carolinensis.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Sciurus_carolinensis.html)

#### Fiddlehead ferns

[en.wikipedia.org/wiki/Fiddlehead\\_fern](http://en.wikipedia.org/wiki/Fiddlehead_fern)

#### Prairie smoke flowers

[www.hort.wisc.edu/mastergardener/Features/flowers/Geum\\_triflorum/Geum\\_triflorum.pdf](http://www.hort.wisc.edu/mastergardener/Features/flowers/Geum_triflorum/Geum_triflorum.pdf)

#### Rabbits and hares

[www.mndnr.gov/mammals/rabbits\\_hares/index.html](http://www.mndnr.gov/mammals/rabbits_hares/index.html)

#### Trout lilies

[www.2bnthewild.com/plants/H33.htm](http://www.2bnthewild.com/plants/H33.htm)  
[files.dnr.state.mn.us/natural\\_resources/ets/dwarf\\_trout\\_lily.pdf](http://files.dnr.state.mn.us/natural_resources/ets/dwarf_trout_lily.pdf)

#### Wild rice

[www.mndnr.gov/snapshots/plants/wildrice.html](http://www.mndnr.gov/snapshots/plants/wildrice.html)

#### Teacher Resources

[www.mndnr.gov/education/teachers/index.html](http://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](http://www.mndnr.gov/volunteer/articles/index.html), including:

#### July–August 1994

“Butterflies: Flying Flowers”

[www.mndnr.gov/young\\_naturalists/butterflies/index.html](http://www.mndnr.gov/young_naturalists/butterflies/index.html)

#### November–December 1994

“Shadow Tails”

[www.mndnr.gov/young\\_naturalists/squirrels/index.html](http://www.mndnr.gov/young_naturalists/squirrels/index.html)

#### January–February 1996

“Busy Biomes” (Study guide)

[www.mndnr.gov/young\\_naturalists/biome/index.html](http://www.mndnr.gov/young_naturalists/biome/index.html)

#### September–October 1996

“Oh, Deer!” (Study guide)

[www.mndnr.gov/young\\_naturalists/deer/index.html](http://www.mndnr.gov/young_naturalists/deer/index.html)

#### March–April 1999

“Tremendously Marvelous Trees” (teachers guide available)

[www.mndnr.gov/young\\_naturalists/trees/index.html](http://www.mndnr.gov/young_naturalists/trees/index.html)

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### Related articles continued

#### January–February 2003

“Hopping With Hares and Rabbits” (teachers guide available)  
[www.mndnr.gov/young\\_naturalists/hares\\_rabbits/index.html](http://www.mndnr.gov/young_naturalists/hares_rabbits/index.html)

#### January–February 2006

“Lichens: Two Lives in One” (teachers guide available)  
[www.mndnr.gov/young\\_naturalists/lichens/index.html](http://www.mndnr.gov/young_naturalists/lichens/index.html)

#### May–June 2006

“Look Down in the Woods” (Study guide)  
[www.mndnr.gov/young\\_naturalists/forest\\_floor/index.html](http://www.mndnr.gov/young_naturalists/forest_floor/index.html)

#### January–February 2009

“Ubiquitous Conifers” (teachers guide available)  
[www.mndnr.gov/young\\_naturalists/conifers/index.html](http://www.mndnr.gov/young_naturalists/conifers/index.html)

#### March–April 2009

“Sugar from Trees” (teachers guide available)  
[www.mndnr.gov/young\\_naturalists/syrup/index.html](http://www.mndnr.gov/young_naturalists/syrup/index.html)

### References

Hock, M.F., Deshler, D.D., and Schumaker, J.B. *Strategic Tutoring*. Lawrence, Kan.: Edge Enterprises, 2000.

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## Study Questions

Teachers guide for the Young Naturalists article “Nature’s Alphabet” Photography by Joe Rossi. Published in the November–December 2009 *Minnesota Conservation Volunteer*, or visit [www.mndnr.gov/young\\_naturalists/natures\\_alphabet](http://www.mndnr.gov/young_naturalists/natures_alphabet)

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Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

Fill in the letter or letters to answer the riddles.

1. You might find us near Lake Rabideau. \_\_\_\_\_ and \_\_\_\_\_
2. I camouflage my letter. I fly at night. What letter am I? \_\_\_\_\_
3. I am hiding in lichen-covered rocks near Gitche Gumee. \_\_\_\_\_
4. Look for us in the Big Woods. \_\_\_\_\_ and \_\_\_\_\_
5. My lower case can be seen in a flick. \_\_\_\_\_
6. I am found in a musical plant. \_\_\_\_\_
7. You can use me to make a canoe. \_\_\_\_\_
8. My letter sits on top of my noggin. \_\_\_\_\_
9. I may not win the race, but I am safe in my carapace. \_\_\_\_\_
10. I cotton to moss. \_\_\_\_\_
11. The initials C. A. will lead you to me. \_\_\_\_\_
12. I have wet feet and I follow behind. \_\_\_\_\_

*Challenge:* Can numbers be found in nature? If so, give at least three examples. \_\_\_\_\_

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## “Nature’s Alphabet”—Teachers Guide

### Study Questions Answer Key

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1. You might find us near Lake Rabideau. **G** and **h**
2. I camouflage my letter. I fly at night. What letter am I? **T**
3. I am hiding in lichen-covered rocks near Gitche Gumee. **Z**
4. Look for us in the Big Woods. **D** and **W**
5. My lower case can be seen in a flick. **n**
6. I am found in a musical plant. **P**
7. You can use me to make a canoe. **s**
8. My letter sits on top of my noggin. **V**
9. I may not win the race, but I am safe in my carapace. **B**
10. I cotton to moss. **A**
11. The initials C. A. will lead you to me. **E**
12. I have wet feet and I follow behind. **I**

*Challenge:* Can numbers be found in nature? If so, give at least three examples. **Answers will vary.**

**Encourage creativity. Students may look for the Arabic numerals, Roman numerals, tally marks, arrays, etc.**



**Minnesota Comprehensive Assessments Practice Items**

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Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

1. All the letterforms were photographed

- A. in a city.
- B. near waters and woods.
- C. at a zoo.
- D. in a studio.

2. How many letterforms were found in living things?

- A. five
- B. nineteen
- C. seven
- D. twenty-one

3. Joe Rossi is a \_\_\_\_\_ .

- A. painter
- B. park ranger
- C. photographer
- D. wildlife biologist

4. Draw your favorite letterform from this article. Why did you pick it?

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5. What letterforms were found in wetlands?

- A. A and B
- B. B and E
- C. M and L
- D. r and n

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### Minnesota Comprehensive Assessments Answer Key

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1. All the letterforms were photographed **B. near waters and woods.**
2. How many letterforms were found in living things? **B. nineteen**
3. Joe Ross is a **C. photographer.**
4. Draw your favorite letterform from this article. Why did you pick it? **Answers will vary.**
5. What letterforms were found in wetlands? **B. B and E**

## Vocabulary

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<b>carapace</b>	thick hard shell of animals such as crabs or turtles
<b>fiddlehead fern</b>	edible fern that resembles a fiddlehead as its early growth emerges
<b>fungi</b>	single- or multi-celled organisms without chlorophyll that live off other organisms
<b>lichen</b>	gray, green, or yellow fungi/algae organisms that grow on rocks and tree bark
<b>moss</b>	simple nonflowering plant with short stems that grows in shady, moist places
<b>prairie smoke</b>	early blooming wildflower
<b>reeds</b>	tall, slender grasses that lives in marshes
<b>rushes</b>	marsh plants with round stems, such as cattails, that may be used for making baskets
<b>trout lily</b>	a wildflower that gets its name from its speckled leaves, which look like the skin of a trout
<b>xeric soil</b>	extremely dry most of the year

# “Nature’s Alphabet”—Teachers Guide

## Vocabulary Study Cards

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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 is a  
**carapace?**

FOLD HERE

**The thick hard shell of animals such as crabs or turtles is a**

What is a  
**fiddlehead fern?**

FOLD HERE

**An edible fern that resembles a fiddlehead as its early growth emerges is called a**

What are  
**fungi?**

FOLD HERE

**Single- or multi-celled organisms without chlorophyll that live off other organisms are called**

What are  
**lichens?**

FOLD HERE

**Gray, green, or yellow fungi/algae organisms that grow on rocks and tree bark are called**

What is  
**moss**?

FOLD HERE

**A simple nonflowering plant with short stems that grows in shady, moist places is**

**Prairie smoke**  
is

FOLD HERE

**An early-blooming wildflower is called**

**Reeds**  
are

FOLD HERE

**Tall slender grasses that grow in marshes are called**

**Rushes**  
are

FOLD HERE

**Marsh plants with round stems, such as cattails, that may be used for making baskets are called**

What is a **trout lily**?

FOLD HERE

**A wildflower that gets its name from its speckled leaves, which look like the skin of a trout, is a**

Xeric soil is

FOLD HERE

Soil that is extremely dry most of the year is called

FOLD HERE

FOLD HERE

FOLD HERE

FOLD HERE