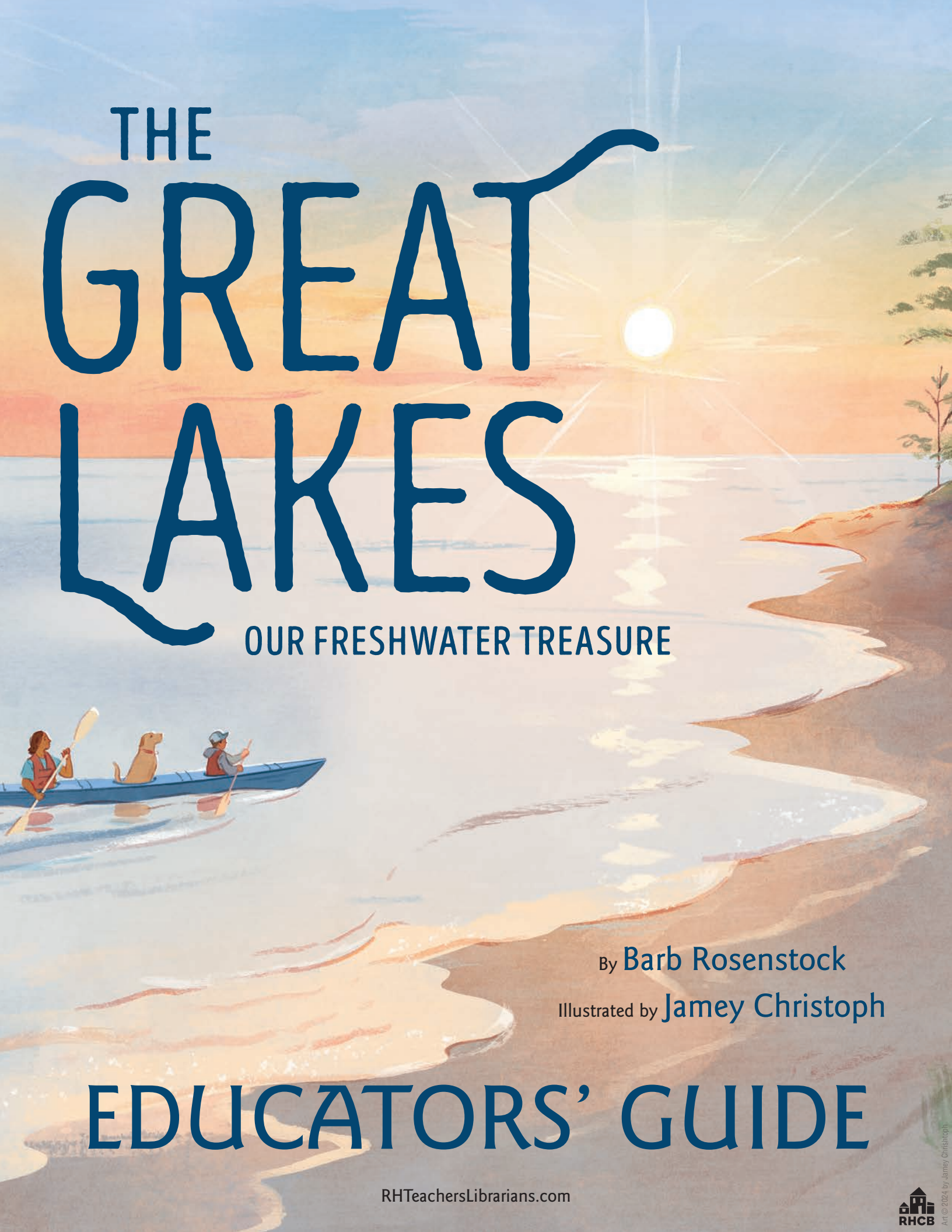




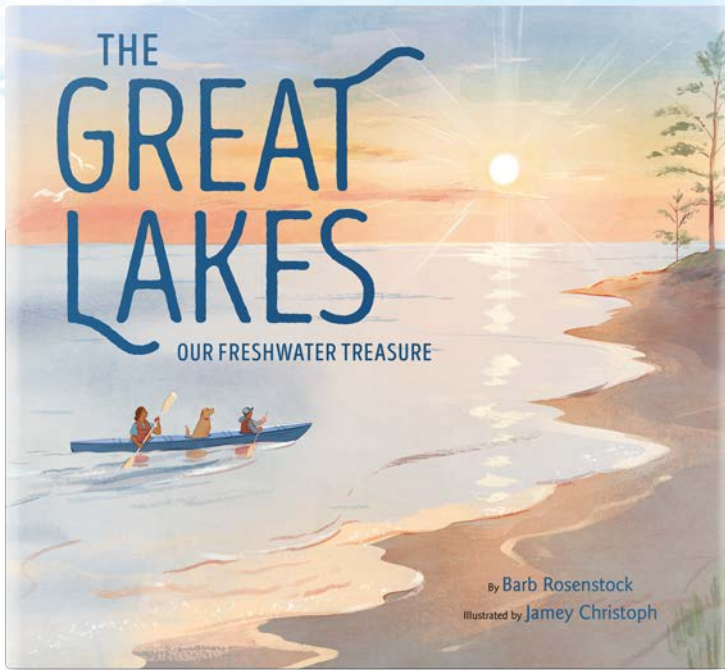
THE GREAT LAKES

OUR FRESHWATER TREASURE

By Barb Rosenstock

Illustrated by Jamey Christoph

EDUCATORS' GUIDE



About the Book

Take an incredible illustrated journey to explore the Great Lakes, from their glacial origins to the unique species in residence to the impact humans have had on this rare freshwater treasure. This informational picture book about the five largest lakes in North America is an excellent introduction to curricular units on the Great Lakes and a clever complement to lessons on water, glaciers, the water cycle, and watersheds for elementary school students. The fun, accessible artwork makes key concepts like the lakes' vital role in providing freshwater to Earth's inhabitants easy to understand and offers both wide and close-up perspectives to aid discussion and instruction.

★ “The closing details on the role of the lakes in Anishinaabe culture and a generous source list make this a must-buy for schools and public libraries.”
—Booklist, starred review

★ “A richly detailed picture book . . . Readers young and old will learn something new and be inspired to protect these precious resources.”
—School Library Journal, starred review

About the Author



Ann & Kam Photography

Barb Rosenstock is the author of the Caldecott Honor Book *The Noisy Paint Box*, *Vincent Can't Sleep*, *Through the Window*, and *Mornings with Monet*, as well as many other books. Her most recent book, *Mystery of the Monarchs*, is a 2023 NCTE Orbis Pictus Recommended Title, included on the 2024-2025 Texas Bluebonnet Award (TBA) Master List, and a Junior Library Guild Selection. She lives outside Chicago with her family. Barb has always lived near the Great Lakes and wrote this book to satisfy her lifelong curiosity about their formation.

About the Illustrator

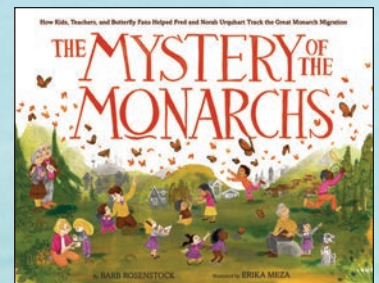
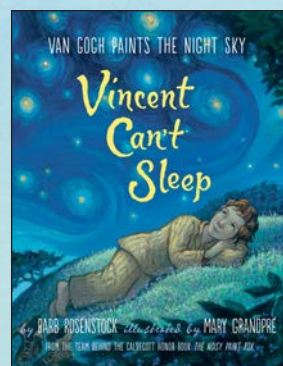
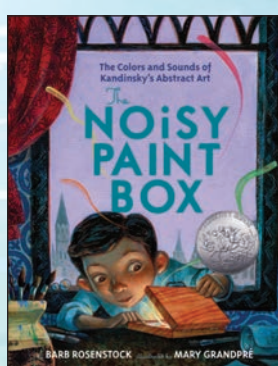


Bradley Eckert

Jamey Christoph is the illustrator of several picture books, including *Stonewall: A Building. An Uprising. A Revolution.*, *Bones in the White House: Thomas Jefferson's Mammoth*, and *Gordon Parks: How the Photographer Captured Black and White America*.

He has also created illustrations that have appeared in the *New York Times* and the *San Francisco Chronicle* and has received distinguished recognition from the Society of Illustrators. Jamey lived for many years in Ohio with his partner and their dog.

More Books by Barb Rosenstock



Classroom Activities

Get to Know Glaciers

Examine the beginning of the book, discussing how glaciers are formed and introducing related vocabulary such as *compression*, *firn*, *ice sheet*, *debris*, *till*, *basin*, *erosion*, *deposition*, and other grade-level-appropriate terms. To give students a sense of the size and impact of glaciers, you may want to share a video such as National Geographic's "[Climate 101: Glaciers.](#)"

Next, get kids thinking about the ways glaciers move and the effects they can have on the Earth's surface. Students can explore ice in action and predict and observe the effects of glaciers when they get hands-on with their own miniature versions.

Materials Needed for Glacier Demonstrations:

- Ice cube trays OR cardboard juice/milk containers
- Pie pans
- Plates
- Dirt, gravel, rocks, and sand
- Flour
- Light-colored modeling clay
- Rolling pin
- Large, rimmed sheet pans OR cafeteria trays

You will need to:

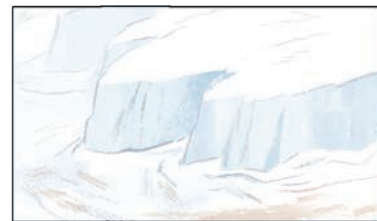
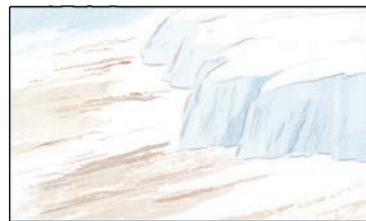
- Freeze gravel, dirt, sand, and/or small rocks into ice blocks. Plastic ice cube trays can make small glaciers. Create larger glaciers using cardboard juice or milk containers—just cut away the container after freezing—or aluminum pie pans. (You can have students help prepare these for freezing and talk about how a glacier accumulates the materials it transports.)
- Plan to let frozen model glaciers warm up a bit before giving them to students, so that rocks at the bottom are exposed and loose, providing a rough base.

Break students into small groups to have them prepare surfaces for their glaciers. Depending on the size of the glacier models, kids can use their hands (or a rolling pin) to press and flatten

a trail of clay over a tray, cookie sheet, or plate. If not using clay, flour or sand can be sprinkled in an even layer. Or, have student groups each prepare different surfaces and ask students to predict the effects of their glaciers on each surface.

After students have noted their predictions, provide each group with a glacier. Students should use some pressure to push down on their glacier as they move it slowly back and forth across the surface, recording what the impacts are to the surface—does it mark the surface, distribute dirt or rocks, etc.? Let them compare their results to their predictions, noting how this glacial movement relates to the formation of the Great Lakes.

Next, have students rest their glacier in the tray and let it melt. Ask them to predict how the meltwater will affect the rocks, sand, and dirt in the glacier and the surface material on the tray. Have them check on the glacier frequently to see how rocks, sand, and dirt are distributed by the melting ice and what impact the meltwater has on the tray's surface material.



Discuss the roles glacial deposits and meltwater played in the development of the Great Lakes. Finish your glacier exploration with a discussion of local areas or places students may have visited that show evidence of glaciers and a look at where in the world an ice sheet or continental glacier like the ones that created the Great Lakes can be found.

Modifications and Extensions

- Investigate how glaciers uplift land and form depressions. Cover three ice cubes in an empty pie pan with sand and let it sit overnight. Have students predict what will happen and then compare their prediction to what they find in the pan the next day.
- Examine how glaciers pick up and move materials. Partially cover the angled surface of a paint tray with clay. Place a small pile of sand on top of the clay and add an ice cube to the sand pile. Let it melt for a minute then check the bottom of the ice cube, noting any changes. Then return the ice to the sand and rub it up and down the paint tray, noting the impact to the sand and clay. Leave the ice cube at the top of the tray and let students predict what will happen to the sand and clay when the ice cube melts. Have them compare their prediction to the results.
- Sweeten the learning experience by making an [Ice Cream Glacier](#).

Resources

[National Snow and Ice Data Center](#)

Water in Motion

Understanding the water cycle is an important part of understanding not only the ecosystem of the Great Lakes but also recognizing how the freshwater we need is distributed around the planet. Revisit students' understanding of the water cycle or explore it for the first time by having students show the continuous movements of the water cycle with movements of their own.

Ask students to think about the process of water changing from one form to another and

its movement in and around the Earth and the atmosphere. Have them brainstorm ideas for presenting those transformations and movements through movement sequences or dance. As students come up with their representations, they should write down what each movement sequence looks like and which part of the water cycle it is. Students can perform their water cycle dance for the class or make a video to share.

Students may be familiar with the processes of evaporation, condensation, and precipitation, but there's much more to the water cycle! Talk with students about the basics—water evaporates into water vapor, condenses to form clouds, and precipitates back to earth in the form of rain and snow—but also share a water cycle diagram and discuss:

- *Transpiration*: when plants take up water from the soil and then release water vapor through their leaves
- *Runoff*: when precipitation that reaches the Earth's surface flows over land and enters water bodies like lakes, streams, and rivers
- *Infiltration*: when precipitation infiltrates the Earth's soil surface
- *Percolation*: when precipitation moves down through the soil as groundwater and is stored in the aquifer
- *Groundwater flow*: when water journeys slowly underground to lower elevations
- *Discharge*: when groundwater moves to an area where it enters a lake or stream and becomes surface water
- *Sublimation*: when solid ice and snow change to water vapor, skipping the liquid state
- *Deposition*: when water vapor changes into ice without going through the liquid phase



Modifications and Extensions

- Have students create movement sequences that work for their own range of movement and preferences, such as developing finger plays or hand motions or using a prop.
- Combine different student-designed movement sequences to create a water cycle dance the entire class can perform together.
- Explore the complexities of the water cycle by playing [What-a-cycle](#).

Resources

[Water Cycle \(with diagram\)](#)

Make Watershed Connections

Toward the end of the book, author Barb Rosenstock explains what happened when the Europeans who displaced Native people started overusing the natural resources of the Great Lakes region. Have students look at the illustrations and discuss how and why those behaviors and actions affected the waters of the Great Lakes.

Then help students understand why everything we do on land impacts our water by having them create a model watershed. You will need to consider whether you want to develop one model watershed as a demonstration or have students work in pairs or individually to create their own models. You can also think about creating larger scale watersheds if you move the project outdoors.

Supplies Needed:

- Plastic containers or boxes of different sizes from the recycling bin
- Natural materials such as rocks, sticks, or piles of leaves
- A large-sized rimmed sheet pan or other flat container that can hold water
- A sheet of light-colored plastic (you could split open a white garbage bag)
- Spray bottles filled with water
- Small pieces of sponge
- Washable markers
- Cooking oil
- Food coloring
- Confetti, glitter, or sprinkles
- Optional: appropriate scale toys or models of buildings, flora, and fauna

Gather students around your collected materials and discuss what a watershed is—the land that drains precipitation into a body of water—and how everyone in the world lives in a watershed. Ask them to share their ideas for how the materials in front of them could be used to make a model watershed. Remind students how the watershed landscape is shaped—that is its hills, mountains, and valleys—determines how the water flows.

Have students use the materials from the recycling bin or natural materials to develop their landscape on the sheet pan. Provide a plastic sheet to drape over their formations and have them smush the plastic down where there are gaps between items to form their hills, mountains, and valleys, making sure that the plastic stays tucked inside the pan. Ask them to also be sure that their hills, mountains, and valleys can drain to a central location, such as a lake or river, and that their model includes a shallow depression to hold water. They can also add models of buildings, flora, and fauna to their watersheds.

Ask students to predict where water will go in their watershed when it rains. Have them use a marker to draw paths on the plastic sheet to show their predictions. Provide a spray bottle with water and let students make it rain on their watershed, noting where the water goes and where it collects.



Talk about how the water collects in their models and ask students to think about what would happen if more than just water moved through their watershed. Provide cooking oil, food coloring, and colorful bits (confetti, glitter, or sprinkles) for students to add to land areas of their models and discuss how fertilizers, pesticides, and manure run-off, and household and industrial chemicals used on land eventually end up in the water. After students add their pollutants to the landscape, have them make it rain on their watershed, noting where pollutants collect. Have them explore how they might trap pollutants by adding bits of sponge to serve as wetlands, which filter runoff.

Finish your exploration of watersheds by discussing your own local watershed. How does it compare to the Great Lakes watershed? To the models created by students? Get students thinking and talking about why their local watershed is important, what kind of impact humans have on it, and how they might improve it to help keep bodies of water clean and safe for swimming, fishing, and supporting life.

Modifications and Extensions

- Go big and eco-friendly with your watershed model by creating it outdoors, using reusable tarps and biodegradable materials for pollutants.
- Observe how surface water flow is determined by the shape of the land using a more basic [watershed model](#).
- Participate in or organize your own watershed cleanup, removing litter from parklands, shorelines, and other locations to help keep trash and debris out of waterways.

Resources

[EPA's How's My Waterway watershed finder](#)

Give Voice to Water

Both the Author's Note and the letter in the back matter issue a call for conservation and active stewardship of the Great Lakes and the entire planet. Have students think about all the ways water affects their lives and make a list as a class. Looking at the list, ask students to think more about their lifestyle and how their habits affect the environment. What could they change or do to use less water or help reduce human impact on the environment?

Share the reproducible water drop for students to create their own cinquain, concrete poem, or free-verse poem that celebrates water's value and importance and expresses something they feel should be done to care for and protect this precious resource.

Let students know you plan to display their water drop poems throughout your school or on a dedicated bulletin board to inspire others and promote action and change.

Modifications and Extensions

- Focus on giving voice to the Great Lakes and ask students to write a poem inspired by their reading of *The Great Lakes: Our Freshwater Treasure*.
- For third grade and up, launch poets with one or more of the thirty prompts shared by thirty children's authors and poets and by poetry educators for the [#WaterPoemProject](#).

Rachael Walker (belleofthebook.com) created this guide.

She consults on a wide variety of educational programs and multimedia projects, and develops educational materials and reading resources for children, parents, and teachers.

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Speak Up for Water

Poetry inspires and can promote action and change. Write a poem to remind others of how wonderful water is and what they can do to protect our water sources.

