

Sources and Further Reading for **THE LAST STRAW** Kids vs. Plastics



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Sources and Further Reading

Fantastic Plastic

Plastics have fueled health and safety advances and made vehicles lighter and more fuel efficient, reducing greenhouse gas emissions. They insulate buildings, making them more energy efficient. And they help build solar panels, wind turbines, and solar water heaters.

The good news about plastics

plasticmakeitpossible.com

chemicalsafetyfacts.org/plastics

P is for Peek-a-Boo Plastic

Write a list of the plastics you use in twenty-four hours. Or collect the plastic you use in a week. You'll be shocked at the size of the pile. Or try to go one day without using plastic. Bet you can't!

Quote: advances.sciencemag.org/content/3/7/e1700782.full

Facts about our plastic consumption: sciencedaily.com/releases/2017/07/170719140939.htm

A Sea Change

About half of the plastic in the ocean enters from Asia, especially from China, Indonesia, and the Philippines. To be fair, much of that plastic waste was shipped to Asia from the United States, Canada, Australia, and other countries to be recycled. Now Asian countries like China and Malaysia are sending it back and not accepting new shipments.

Quote: vox.com/2019/5/24/18635543/plastic-bags-whale-stomach-beached

Reports about whales ingesting plastic: nytimes.com/2019/03/18/world/asia/whale-plastics-philippines.html



Plastic in Asia:

latimes.com/world/la-fg-asia-plastic-waste-20190617-story.html

oceanconservancy.org/wp-content/uploads/2017/04/full-report-stemming-the.pdf



Plastic for Dinner?

Microplastics are less than 5 millimeters long (1/5 of an inch), about the size of a sesame seed or a black ant. They can be eaten by animals and travel up the food chain to humans. We also inhale microplastics floating in the air. Those who drink bottled water can get 86,000 more microplastics per year than those who drink from the tap. The health consequences have yet to be determined.

Quotes:

time.com/5601359/microplastics-in-food-air

pubs.acs.org/doi/10.1021/acs.est.9b01517

Microplastics and human health: ncbi.nlm.nih.gov/pmc/articles/PMC6132564



The Great Pacific Garbage Patch

Garbage patches are developing in the Indian Ocean, the North and South Atlantic, and the North and South Pacific, concentrated by rotating ocean currents called gyres. Scientists estimate there are about 5.2 trillion plastic fragments in the five gyres. To clean it up, you and the other 7.7 billion people on Earth would have to pick up about 675 pieces each. Tiny Henderson Island in the South Pacific is uninhabited and far from humans, but thanks to the gyres, it's one of the most polluted places on Earth.

Quote: onlinegreatpacificgarbagepatch.weebly.com/discovery.html

Sailing the garbage patch: <https://blog.nationalgeographic.org/2017/07/28/charlesmoore-is-now-a-two-time-garbage-patch-discoverer-and-i-can-tell-you-what-a-garbage-patch-looks-like>

Fionn Ferreira's project: www.thejournal.ie/irish-student-science-award-microplastics-4745270-Jul2019/fbclid=IwAR0XFZHtTOuHURq01nZBmFgvIQ8uld1gX-74mW-oMuMqQr-eBBnfYthWI4M

Ban the Bag

Single-use plastic bags are created using oil or natural gas that took millions of years to form, and we throw the bags away after about twelve minutes. (The energy needed to create twelve plastic bags could fuel a car for one mile!) These bags choke sea life, cattle, sheep, and camels, and they are rarely recyclable because they clog the machinery. Countries, states, and cities are working to ban them or charge fees to discourage their use. Note: Paper grocery bags require even more energy to produce, so the best option is a reusable bag that you can wash in the laundry.

Quote: *Plastic: A Toxic Love Story* by Susan Freinkel, p. 277

Key facts: biologicaldiversity.org/programs/population_and_sustainability/sustainability/plastic_bag_facts.html

Paper or Plastic: https://www.washingtonpost.com/business/energy/the-problem-with-plastic/2020/03/02/5ce95ec8-5ccc-11ea-ac50-18701e14e06d_story.html

Mr. Trash Wheel

Mr. Trash Wheel, installed in 2014, is now one of three solar- and water-powered contraptions helping to keep Baltimore's waters trash free. Created by John Kellett, the wheel has generated interest around the world,

including in India, Hawai'i, and Bali. To date, Mr. Trash Wheel has collected more than 11 million cigarettes, 1 million foam containers, 880,646 plastic bottles, a guitar, and a python! He even has his own Twitter account.

Quote: theoceancleanup.com/updates/quantifying-global-plastic-inputs-from-rivers-into-oceans

How Mr. Trash Wheel works: mrtrashwheel.com

The Road Back

The first plastic road was built in New South Wales, Australia. India has already paved 30,000 kilometers of road with plastic (that's more than 18,600 miles, or 7 times the distance between New York and Los Angeles as the crow flies). Other countries are taking notice. Ly and Tan's start-up company, Eco-Plastic, would not only clean up the tons of plastic littering Cambodia, but also transform the potholed roads causing accidents every year.

Quote: channelnewsasia.com/news/asia/cambodian-women-on-green-mission-build-roads-with-plastic-waste-10396120

How Ly and Tan set up Eco-Plastic:

phnompenhpost.com/business/cambodian-duos-eco-plastic-takes-second-bhutan-startup-challenge



From Bottles to Buddies

Sammie's buddy benches have attracted attention from Reese Witherspoon, Martha Stewart Living, the Today Show, and more.

Quote: sammiesbuddybenchproject.com/sammiesstory

Today Show video: today.com/video/everyone-has-a-story-honors-woman-who-helped-put-buddy-benches-in-school-1241005123909

For the Love of Frogs

Justin Sather has presented his ideas to Dr. Jane Goodall at her Roots and Shoots program.

Quote: fortheloveoffrogs.com

Jane Goodall's Roots and Shoots recycling programs:

rootsandshoots.org/projects/search?f%5B0%5D=im_field_rnsp_focus%3A7

Ode to the Jellyfish

Jellyfish can be invasive species, with tens of millions of them swarming Israel's coast in one week in 2019. (That number equals more than all the people in New York City, Los Angeles, Chicago, Houston, Phoenix, and Philadelphia combined!)

Quote: israelhayom.com/2019/07/15/marine-biology-experts-unpack-israels-jellyfish-problem

Dr. Angel's research: nocamels.com/2018/08/jellyfish-plastic-waste-israeli-scientists, gojelly.eu



What Can a Bottle Be?

EcoBricks are the brainchild of environmentalist Susanna Heisse. Schools built from bottles clean up villages and spread self-reliance and pride as the whole community gets involved. The idea has now spread to the Philippines and South Africa.

Quote: Author interview with Adam Flores, Hug It Forward, www.hugitforward.org.

All about ecobricks: theguardian.com/lifeandstyle/2014/may/29/ecobricks-and-education-how-plastic-bottle-rubbish-is-helping-build-schools and ecobricks.org

The Munching, Crunching Caterpillars

China are working with various fungi and bacteria that can speed plastic's decomposition, given the right conditions.

Quote: www.theatlantic.com/science/archive/2017/04/the-very-hungry-plastic-eating-caterpillar/524097

Caterpillars and plastic: www.nature.com/articles/d41586-017-00593-y

Be Straw Free

Americans use an estimated 170-390 million straws per day! (Lined up end to end, 390 million straws would circle the Earth twice.) Neither plastic nor paper straws are accepted at most recycling facilities, because they drop through the sorters and can contaminate other plastics being recycled. For the disabled or others who may need straws, reusable ones are available made of stainless steel, glass, reusable plastic, or bamboo.

Quote: nps.gov/articles/straw-free.htm

CNN interview with Milo video: youtube.com/watch?v=VtAjlU4-ffl

Straw FAQs: strawlessocean.org/faq

A Shining Light

Xóchitl's solar water heater can heat more than 10 liters (2.6 gallons) to 35-45°C (95-113°F), even in cold weather.

Quote: <https://es.theepochtimes.com/t-calentador-de-agua>

Science Awards: remezcla.com/culture/8-year-old-girl-who-built-solar-water-heater-is-first-to-win-this-mexican-science-award/

Stand Up, Speak Up

Amy and Ella Meek are speaking up on their website and on their TEDx Talk, teaching schools and businesses how to be "plastic clever" and building a team of Kids Against Plastic Ambassadors. You can join their Hall of Fame!

Quote: huffingtonpost.co.uk/maryann-ochota/kids-vs-plastic_b_15160036.html

Website: kidsagainstplastic.co.uk

Join the Crew

The FlipFlopi is a traditional Swahili dhow made of 100% recycled plastic, built to show how single use plastics could have a second life and a positive impact.

Quotes: allafrica.com/stories/201903130520.html

All about the Flipflopi: www.theflipflopi.com



Heavy Fact

Internationally, most scientists report facts in metric tons (each about 2204 pounds, unlike the US ton, which is 2000 pounds).

POETRY NOTES

The poems in this book use a variety of different poetry techniques and formats. Here's more information on each.



Mr. Trash Wheel gobbles trash floating down the Jones Falls River, protecting both the Baltimore, MD, harbor and the ocean beyond. Photo credit: Waterfront Partnership of Baltimore

“Fantastic Plastic” is a *question poem* in which a series of questions builds to dramatic effect.

“P Is for Peek-a-Boo Plastic” is an *ABC poem* that uses words with initial letters from A to Z. A similar type of poem is an *acrostic*, in which the first letter of each line spells out the subject of the poem when read from top to bottom.

“A Sea Change” is an *elegy*, a poetry form used to praise or mourn the dead, so it often has a sad or somber tone. Elegies follow no set form.

“Plastic for Dinner?” is an abbreviated version of a *cumulative poem* in the spirit of “This Is the

House That Jack Built.” Cumulative poems use repetition and usually come full circle.

“The Great Pacific Garbage Patch” is a *concrete or shape poem*, where words are arranged to form a picture of the subject of the poem. It can rhyme or not.

“Ban the Bag” is a poem composed of *couplets*, stanzas made of two lines that rhyme.

“Mr. Trash Wheel” is a *limerick*; each stanza has five lines with a rhyme scheme of aabba. Popularized by Edward Lear, limericks predominantly use anapests, one form of poetic meter. An anapest has three syllables, with one strong beat at the end: soft/soft/STRONG. It can be found in a string of words such as “in the bay” or in a single word such as dis/ap/PEAR. There are three strong beats in lines one, two, and five, and two strong beats in lines three and four.



Kids in San Martín Jilotepeque Guatemala, help collect and stuff plastic bottles to make ecobricks, which are used to build the walls of these schools. Photo credit: Hug It Forward

“The Road Back” is a *found poem*, which can take existing text found in signs, newspaper articles, graffiti, letters—any text—and use selected words to create a poem. The poet can add or delete text, change the lines or spacing, or leave the words unchanged. It's like a word collage.

“From Bottles to Buddies” is a *limerick*, as is “Mr. Trash Wheel.”



Once in place, bottles are covered with a layer of cement and the new walls are painted to create colorful classrooms. Photo credit: Hug It Forward

“For the Love of Frogs” is a poem written in *tercets*, three-line stanzas that can rhyme or not. This one has a *refrain* (a repeating line) in the third line.

“Ode to the Jellyfish” is an *ode*, which means it celebrates a person, animal, or object. It often has no formal structure and may or may not rhyme.

“What Can a Bottle Be?” is a *persona poem*, which is written from the point of view of the poem’s subject.

“The Munching, Crunching Caterpillars” is a poem in *free verse*, which has no set meter or rhyme scheme.

“Be Straw Free” is a *triolet*, an eight-line poem in which line one repeats as lines four and seven and line two repeats as line eight. The rhyme scheme is ABaAabAB; the capital letters show lines that repeat.

“A Shining Light” is a *cinquain*, a form of poetry composed of five lines with a pattern of two, four, six, eight, and two syllables.



Milo Cress delivered a congressional briefing about his “Be Straw Free” campaign on Capitol Hill, in Washington, DC. Photo credit: Odale Cress



The Flipfloi, a traditional Swahili dhow constructed from tons of plastic waste including flip-flops, sets sail from the Kenyan coast to raise awareness about plastic pollution. Photo credit: Andras Porffy

“Stand Up, Speak Up” is a *concrete* or *shape poem*, as is “The Great Pacific Garbage Patch.”

“Join the Crew” is a poem in *free verse*, as is “The Munching, Crunching Caterpillars.”

RESOURCES

The Big Picture

These videos give an excellent overview about plastic pollution around the world and how people are attempting to cope with it.

Videos

“A Whale’s Tail”—a cartoon about plastic pollution for the very young: www.youtube.com/watch?v=xFPoIU5iiYQ

“Kids Take Action against Ocean Plastic”—Excellent kid-friendly film: youtube.com/watch?v=hKFV9lquMXA

“How Much Plastic Is in the Ocean?”—Funny, informative PBS animated video: youtube.com/watch?time_continue=7&v=YFZS3Vh4lfI

“Single Stream Recycling—Leading the Way to Zero Waste”—Kid-friendly video about a sorting plant hosted by an animated can: youtube.com/watch?v=5YaTpL8nI7c

“How Big the Great Garbage Patch Really Is” —Animated video with kid-friendly facts: youtube.com/watch?v=vrPBYS5zzF8

For Further Reading: Children’s Books

One Plastic Bag: Isatou Ceesay and the Recycling Women of the Gambia by Miranda Paul; illustrations by Elizabeth Zunon. Minneapolis, MN: Millbrook Press, 2015.

Plastic Ahoy! Investigating the Great Pacific Garbage Patch by Patricia Newman; photographs by Annie Crawley. Minneapolis, MN: Millbrook Press, 2014.

Tracking Trash: Flotsam, Jetsam and the Science of Ocean Motion by Loree Griffin Burns. Boston: Houghton Mifflin, 2007.

NEWS YOU CAN USE

Annual Ocean Conservancy’s International Coastal Cleanup

Each year, Ocean Conservancy conducts a coastal cleanup in more than 100 countries to provide current data on the state of our oceans. Here’s the latest: oceanconservancy.org.

“Ten Tips to Reduce Your Plastic Footprint”

What you can do now according to the World Wildlife Fund: wwf.org.uk/updates/ten-tips-reduce-your-plastic-footprint.

Caution about Wood

When using wood products, look for the label from the Forest Stewardship Council (FSC) that certifies the item is eco-friendly. Check us.fsc.org/en-us/market/find-products

Educator Guides

Kids Against Plastic: “Lesson Guides & Resources”: How teachers can make students “plastic clever”: kidsagainstplastic.co.uk/learn/lesson-guides

National Oceanic and Atmospheric Administration (NOAA) “Ocean Pollution”: links to lesson plans, info, and videos: noaa.gov/education/resource-collections/ocean-coasts-education-resources/ocean-pollution

Recycling

Recycling regulations are determined by states and local municipalities, and new technology using optics and magnets is constantly changing how we recycle. So be sure to check your local recyclers for the latest dos and don'ts about what to place in your recycling bin.

Useful Websites

What do the numbers inside the triangular recycling symbol mean? Each identifies the type of plastic used, and not all can be recycled. Check with local recyclers to see which they can accept.

For more info, see “Plastics by the Numbers”: <https://learn.eartheasy.com/articles/plastics-by-the-numbers>

Need to know where to recycle items near you?

Check: search.earth911.com

Wondering if something is biodegradable?

Check the Biodegradable Products Institute: bpiworld.org

THE LAST STRAW: KIDS VS. PLASTICS

By Susan Hood Illustrated by Christiane Engel

About the Book

In this eye-opening book, the author asks: “How do we use—and reuse—the plastic we need, refuse the plastic we don’t, and avoid abusing the earth?” This book is filled with astonishing facts and figures that make it impossible for readers to ignore the catastrophic consequences of using plastic the way we do. Fortunately, the author also shares ways that we can turn the tide, and many of those ideas have been created and led by children! Readers will be inspired to learn more and join in to protect our planet.

Discussion Questions

- Read aloud the introduction written by Milo Cress. Was Milo asking people to make a big change in their lives or a small one? Can a small change make a difference in the world? How?
- Do we need to use plastic? Why or why not? Why do we use so much plastic?
- What are some surprising things that contain plastic?
- What effects does plastic have in our oceans? How does it affect people, animals, and the environment?
- Plastic bags in our oceans are particularly dangerous. What are alternatives to using plastic bags?
- Describe what can happen when a plastic utensil is thrown in the trash.
- How might jellyfish and wax moth caterpillars help to solve the plastic problem?
- Why is it important for children to speak up regarding this problem? Do you think children can make a difference?
- What did you notice about the way the author wrote this book? Did you notice that she used many different forms of poetry?

Extension Activities

Pollution Solution. Read about “Mr. Trash Wheel” on pages 18-19. Visit the website <https://www.mrtrashwheel.com> to watch videos and learn more about Mr. Trash Wheel. Discuss how this machine helps the city of Baltimore with their river pollution. Then ask students to think of their own invention that could help with the plastic problem. What would it look like? What would it do? Students should draw it, name it, and write about how it would work. (Younger students can describe it orally.) Then provide students with materials such as cardboard tubes, colored paper, pipe cleaner stems, and index cards to “build” their invention. Who knows, maybe one of their ideas might actually work!



See the Signs. Review the road signs on pages 20-21. Discuss why road signs are important and how they direct people or alert them to possible hazards or changes along the roadways. Tell the students they will be creating a road sign which could inform people about the hazards of using plastic. Discuss what the sign might look like. For example, it might encourage less use of plastic (“Save our oceans, don’t use plastic”), or it might suggest an alternative to using plastic (students can refer to page 40, ‘Use This, Not Plastic,’ for ideas). Display the signs around the school to inform others about the plastic problem.

Power to the Children. Have students write an informational report about a child/young adult who became an activist to fight the global use of plastic. Students can write about one of the children included in the book (Milo Cress, Fionn Ferreira, Sammy Vance, Justin Sather, Xóchitl Guadalupe Cruz López) or research another young person. Students should include what this person did as an activist and why he or she decided to get involved. Students should write a structured report which includes a topic sentence, facts, and a closing sentence.

Bottle It. There are lots of ways to reuse a plastic water bottle. The best way is to turn it into something new! Have the students bring in empty water bottles and brainstorm ideas about how to reuse the bottles. Try some of the students’ ideas or choose one of the following water bottle craft ideas. Directions for these simple crafts can be easily found on the internet.

- Make a vase
- Create a supply organizer
- Design a hanging planter
- Build a stress relief bottle
- Make a bottle bird feeder
- Concoct an oil and water discovery bottle
- Create a plastic bottle shaker