

**Zoom Into
Action**

Conservation Guide

Keep the environment safe for
plants, animals, and ourselves!



The Weezie
Foundation



PBS



Join the ZOOM Team and Protect Our Planet!

Americans make up only 5% of the world population, but use almost 30% of the world's resources. That means we're using lots of water, paper, oil, and other resources! We need to clean up our act!

But why does it matter how many resources we use?

It matters because **we share our world** with plants, animals, people, and other living things. And, almost all living things need the same natural resources to live—**fresh air, clean water, healthy foods**, and a **safe place** to live and raise babies. A **habitat** is a place with all of those things. If we use **more than our fair share** of natural resources, there may not be enough to go around.

Every day more and more plant and animal **habitats are lost** because of land development and pollution. That means that people are cutting down trees, putting up buildings, and dumping trash where animals and plants live and grow.

Just **think about it**. What would your life be like if you didn't have nutritious foods to eat, a safe place to live, clean water to drink and air to breathe?

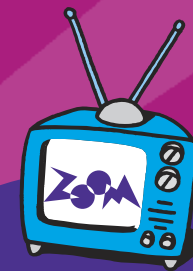
Can you make a difference?

You bet you can! Millions of kids around the world are doing just that. They're **learning** what plants and animals need for survival, **creating** new animal habitats, **cleaning** up public spaces, **saving** our natural resources, and much more. **You can, too**. It's easy, and this guide gives you great ideas to **get started**.

Just pick a project and ZOOM Into Action!

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What is ZOOM?

ZOOM is a daily TV show on PBS that challenges kids to "turn off the TV and do it!"

Check local listings to find out when ZOOM is on in your area, and visit the Web site at pbskids.org/zoom



Clean It Up

Did you know that Americans produce 200 million tons of garbage each year? That's 400,000,000,000 pounds—the weight of about 67 million elephants!

That's a lot of **garbage**! But where does all of it go? Most of it goes to **landfills**—a place where **waste** is dumped, compacted, and covered with dirt. But some of it ends up in our rivers and oceans, forests, or in our neighborhood parks or vacant lots. Trash looks bad and it's also not good for plants, animals, or you. Loose trash can **trap and hurt animals**. And rotting garbage can mix with rainwater and create contaminated water that damages our soil and underground water supplies.

It may sound like too big a problem for kids to handle, but **you can help!** Put trash where it belongs! **Organize a clean-up** and make litter history. Here's how.

1 Take charge.

Look around you. You'll probably see a place that could use a good **cleaning up**. It might be your schoolyard, neighborhood park, or even a bus stop. Choose an **outdoor place** that is important to you and clean it up!

2 Get help.

Tell your friends and family about your clean-up project. **Pick** a date and time that works for the most people.

3 Collect your supplies.

Gather all the things you'll need, like gloves, brooms and rakes, and trash bags. And don't forget to **make** your **Mechanical Grabbers!** (See page 3.)

4 Let the clean-up begin!

Now it's time to clean up. Get your **team working**. (Remember, if you find sharp objects like broken glass or other dangerous items, stop and ask an adult to help.)

5 Share your results.

So, how much trash did you collect? Visit the ZOOM Web site at **pbskids.org/zoom** and tell us about your project.



ZOOMers in Action

Girl Scout Troop 2628 of Maynard, MA, cleaned up a river in their neighborhood using mechanical grabbers.



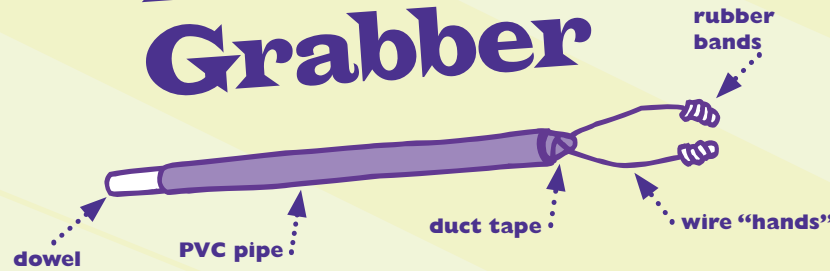


Mechanical Grabber

Pick up trash without touching it!

What You Need

- wire clothes hanger (Use the type with a cardboard tube attached to open-ended wire.)
- string
- rubber bands
- duct tape
- PVC plastic pipe (1 inch in diameter and 3 feet long)
- wooden dowel (1/4 inch in diameter and at least 3 feet long) (You can find duct tape, PVC plastic pipe and wooden dowels at a hardware store.)



1 Remove the cardboard tube from the hanger. **Reshape** the two sides to form the “hands” of the grabber.

2 Straighten out the hooked part of the hanger (the part that hangs over the rod in your closet).

3 Attach a dowel to the straightened hanger with duct tape. **Place** the straightened hanger and dowel into one end of the PVC plastic pipe. The “hands” of the hanger should poke out of one end of the pipe and the dowel should poke out of the other.

4 Add rubber bands or duct tape to each of the “hands” of the hanger.

5 Pull on the dowel to make the “hands” of the grabber come together and **push** on the dowel to release them.

6 Try it out. Can you pick up a piece of paper? A soda can? How can you **improve** your grabber?



Engineering Scoop

This mechanical grabber makes it easy to **grab trash**. You can lift up trash without bending over. Each **material** plays an important role in the design. The dowel **pulls** the “hands” together to **capture** an item and **pushes** them apart to release it. The duct tape or rubber bands keep the trash from **slipping** off the grabber.



Another simple way to make a grabber is to **create tongs** out of wooden paint stirring sticks (you can get them for free at any paint store), rubber bands, and paper. Which grabber do you think will **work better**? **Try** them both! **Which** would you rather use?



folded paper

Sent in by Girl Scout Troop 2628 of Maynard, MA

Go Green! Reduce, Reuse, and Recycle

Everybody knows that recycling is a good idea, but have you ever wondered why?

70% of the garbage that ends up in landfills and other places could be **reused or recycled**. If everyone recycled there would be **less garbage** in the landfills. That leaves more land for other living things to use.

It also takes **less energy** to make **recycled products** than it does to make new ones. Most energy comes from **burning fossil fuels** (like oil, coal, petroleum, and natural gas). The earth has a **limited amount** of these. Also, burning fossil fuels causes air pollution. If you use less energy, you create **less air pollution**. If you recycle, you also **use fewer natural resources**. For example, it takes **25 to 50% less energy** to make recycled paper than new paper.

Here are some easy ways for you to help **reduce the trash** you create, **save natural resources**, and **keep trash out** of landfills, rivers, oceans, and parks.

I Reduce: Use Only What You Need

- **Turn it off.** Use less electricity so there's less air pollution. **Climb** the stairs instead of using the elevator. **Turn off** the lights, TV, and computer when you're not using them.
- **Water matters.** Make an effort to **use less water**. Figure out how much water you usually use to take a shower (see the **Shower Estimation** activity on page 6). Then **come up with ways** to use less water. Ask your parents to **install** low-flow showerheads or **turn off** the water while you brush your teeth.
- **Check it out.** Look for and buy products that have **less packaging**. But if something you really need comes with packaging, try to **reuse or recycle** it.





ZOOMers in Action

Francesco visited a recycling plant and learned that each bundle of recycled paper saves 15 trees!

2 Reuse: Instead of Throwing It Out, Use It Again!

- **Save trees.** Don't waste that paper! Draw or write on **both sides** of it and **write** notes on scrap paper. After you read the Sunday comics, **reuse** them as colorful wrapping the next time you give a gift.
- **Make less waste.** **Reduce** your lunch trash. Rather than throwing away plastic utensils, **wash and reuse** them. **Pack** your lunch in **reusable containers** instead of paper or plastic bags. Just be sure to wash everything after each use.
- **Use fewer grocery bags!** Bring your own **cloth bags** to the grocery store when you shop. Or **bring back** the plastic or paper bags you got the last time.

3 Recycle: Whenever possible, give an item a second life!

- **Buy recycled products.** Ask your family or school to **use recycled paper** and other products. When you **buy** recycled products, the message is clear—you want to **protect** the environment.
- **Be helpful.** Does your town have a **recycling center**? If so, encourage your family and neighbors to recycle. **Paper, plastics, aluminum cans,** and **glass** can all be recycled. If your community or school doesn't have a recycling program, write to your elected officials about starting one. (Visit Write It! at www.kidsplanet.org/defendit/new/writeit.html to learn how.)

- **Be creative.** Find a **second use for trash**. Use old newspapers to **make** new paper (see the **Recycling Paper** activity on page 7). **Make** a Junk Picture Frame out of cardboard, buttons, and other small pieces of trash, (Visit www.pbskids.org/zoom for instructions.)





Shower Estimation

Calculate and conserve water.



What You Need

- a bucket
- a measuring cup
- a watch or timer

1 Next time you shower, **time** how long it takes.

_____ minutes per shower

2 **Hold** a bucket under your showerhead and run the water for **30 seconds**. Use a measuring cup to see **how many cups of water** you collected in the bucket. Then **figure out** how many cups of water you use in **1 minute**.

_____ cups in 30 seconds $\times 2 =$ _____ cups in 1 minute

3 Now figure out **how many** cups of water you use when you take a shower.

_____ number of cups in 1 minute \times _____ minutes
per shower = _____ cups per shower

4 Figure out **how many gallons** of water you use in your shower. (There are **16 cups** in 1 gallon of water.)

_____ cups per shower $\div 16 =$ _____ gallons per shower

5 **Use the water** from this experiment to water indoor or outdoor **plants**.



Science Scoop

Americans use an average of **25 gallons** of water per shower. How do you **compare**? Try the following **tips** to save water: **Limit** your shower time to five minutes. Ask your parents to **install a low-flow showerhead** that sprays less water than a regular showerhead. You'd be surprised how much water you can **save**!



Now it's time for you to experiment. How many gallons of water would you use if you turned the shower **off** when you soap your body or lather your hair and **turn it on** again to rinse? Choose **one thing** to change (that's the variable) and **predict** what you think will happen and why. Then **test it** out and send your results to ZOOM.



Visit the ZOOM Web site and enter your Shower Estimation results at pbskids.org/zoom



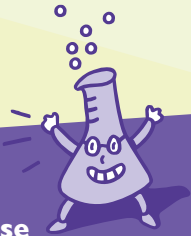


Recycling Paper

Breaking news! Newspaper turned into paper!

What You Need

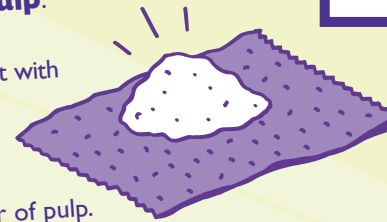
- newspaper (4–5 sheets to tear up and some extra sheets for the pressing process)
- large bowl
- hot water
- cornstarch
- measuring spoons
- aluminum foil
- wooden spoon
- scissors
- sharp pencil
- decorations like tissue paper, confetti, or glitter



Science Scoop

Newspaper is made of **cellulose** fibers, which come from plants. Paper is made of millions of these fibers tangled together in a thin layer. The fibers naturally **bond** to one another. **Water** breaks down this bond. When you covered the newspaper with water, the fibers in the paper **loosened** their hold on each other. Then you're able to **rearrange** the fibers into new paper. The cornstarch you added helped **bind** the cellulose fibers to each other again. When you left your recycled paper out to dry, the water **evaporated** from the pulp and the fibers **stuck** together again to form a piece of **recycled paper**.

- 1 Start** by cutting the newspaper into small pieces and put them in a bowl.
- 2 Pour** in enough hot tap water to cover the paper and mix it until all of the paper is wet.
- 3** Let the paper **sit** for a few hours. When it looks and feels like cooked oatmeal, you're ready to make paper.
- 4 Add** a few tablespoons of cornstarch and a little more hot water. **Mix** it all up again. This is the **pulp**.
- 5** Make a **strainer** out of a piece of aluminum foil. **Punch** lots of small holes in it with a sharp pencil.
- 6 Put** the aluminum foil on top of a pile of newspaper.
- 7 Cover** the aluminum foil with a thin layer of pulp. **Place** another sheet of aluminum foil on top and press down to drain the extra water.
- 8 Lift** the top sheet of foil and **decorate** the pulp with things like colored tissue paper, glitter, or confetti.
- 9 Fix** any holes in the pulp and replace the top sheet of foil.
- 10 Place** books on top of the pulp to **press** it flat. **Remove** the books and the top layer of foil. **Leave** the pulp out overnight (or longer) to dry.
- 11** Once the pulp is dry, carefully **peel it** from the foil. You just created paper!



Try making paper from other materials like cardboard or tissue paper. Write to ZOOM at pbskids.org/zoom and tell us how you made your recycled paper.



Changing newspaper into pulp takes several hours and the drying process can take a day or two.

Sent in by Tiffany and Boalong of Lincoln, NE





Build a Habitat

You **share your space** with other living things. It's a **habitat** for you and them. Like you, plants and animals need water, food, shelter, and space to survive. When people **clear land** to build malls, parking lots, houses, apartment buildings, and roads, many animals have to find a new place to live because their **habitats have been destroyed**.

But you can turn small spaces, right in your backyard or neighborhood, into habitats where animals can **live and flourish**. Start small with the **Make a Birdfeeder** activity on page 9. Then, if you are interested, **rebuild a larger habitat**. The resources listed on this page will help you learn what plants and animals are **native to your area** (naturally grow well there).

Find out how animals live and what they need to survive, and then develop a plan to build a habitat. **Have fun!**



Web Sites

National Wildlife Federation (NWF)
Schoolyard Habitats
www.nwf.org/schoolyardhabitats

Contact the NWF for information about creating a wildlife habitat in your schoolyard or backyard.

Earth 911
www.earth911.org/master.asp

Type in your zip code and get information about environmental programs in your community. Also includes a section just for kids, and an environmental glossary.

Gardening with Native Plants
www.wildflower.org/?nd=articles_grd

The Ladybird Johnson Wildflower Center has links to articles that will help you create a butterfly garden, plant wildflower seeds properly, and help you select which plants to use in your garden.

Native Gardening and Invasive Plants Guide
www.enature.com/native_invasive/

Use this guide from eNature to find plants that are native (naturally grow well) in your part of the country.

Books

City Kids Field Guide
by Ethan Herberman.
This book helps kids find wildlife in the city and explains how they survive.

Kid's Gardening: A Kid's Guide to Messing Around in the Dirt
by Kevin Raftery and Kim Gilbert Raftery.
Explore these great ideas for creating your own garden.

Project Spotlight

Turn to page 10 and find out how kids from Edgewood Elementary School in Maryland turned their yard into a butterfly garden.

National Wildlife Federation Attracting Birds, Butterflies and Other Backyard Wildlife

by David Mizejewski.
Learn about the needs of wildlife, apply wildlife-friendly gardening techniques, and create basic habitat elements for any size yard or garden.

Urban Roosts: Where Birds Nest in the City

by Barbara Bash.
Find urban wildlife using this guide.

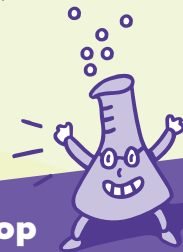


Make a Bird Feeder

Provide a tasty snack for birds.

What You Need

- A half-gallon cardboard milk carton, rinsed and dried
- scissors
- string
- birdseed



Science Scoop

While it's best for birds to get their **food** (like seeds and berries) from plants in their natural habitat, over 100 different types of birds in North America also eat food from **bird feeders**. You can make a bird feeder to **attract** birds back to spaces where people have developed the land. Or you can help birds by **planting** flowering bushes or berry-producing trees. These can also serve as places for birds to **build nests**. If water isn't available for birds to drink or bathe in, try creating a **birdbath** out of a shallow plastic container. Just remember, if you put out a bird feeder be sure to keep it **filled** with birdseed since birds come to depend on it. To learn more about **what birds need**, visit the National Audubon Society Web site at www.audubon.org/bird/at_home/bird_feeding/index.html

- 1 Cut** a rectangle in one of the carton sides. Leave about 2 inches of carton on the top and bottom and half an inch on either side.
- 2 Poke** a hole in the folded top of the milk carton with the scissors. **Thread** the string through it and tie it in a loop.
- 3 Fill** the bottom of the carton with birdseed.
- 4 Hang** the carton by the string on a tree branch, on a porch, or in some other outdoor location. Get an adult to help. Make sure you can see the feeder.
- 5 Observe** the different birds. Count how many visit the feeder in an hour, a day, or a week. Try to observe the feeder at the same time every day.



After finishing your bird feeder, make a **chart** like the one below. Look in a **field guide** (a book about wildlife) to find the **names** of the birds. How many **kinds** of birds visited the feeder and what **time** of day or night did they visit? What **patterns** did you notice?

Date and Time	
Description of bird.	
Describe the bird's behavior.	
Name of bird.	

Sent in by Samantha D. via e-mail.



The Weezy Foundation





Schoolyard Habitat

Spotlight

The kids at **Edgewood Elementary School** in Maryland decided to create a beautiful **butterfly garden** and safe haven for birds at their school. They also wanted to join more than 2,000 other schools across the country and have their habitat **certified** as an official **Schoolyard Habitat®** by the **National Wildlife Federation®**.

It took lots of **planning** and **hard work**, but **they did it!** First, they figured out how much **food, water, shelter, and space** for animals they already had in their schoolyard habitat. Then they got to work. They wanted to attract **bluebirds** and **butterflies**, especially the Viceroy butterfly. They **researched** what plants would attract these animals, what type of shelter they needed, how they live, what they eat, the life cycle of butterflies, how to plant plants, and more. Then, they **sketched** out their ideas and created a **master plan**.

With their plan in hand, they started to **create** their habitat. They thought of everything. They **designed** and **built bird boxes** with extended shelves to provide shade and holes in the bottom to help rainwater drip out. They got a donation and **planted** bright flowers and bushes, including willows, cottonweed, and aspen plants to attract Viceroy butterflies. The **birdbath** they added to the habitat had large landing rocks where birds could perch. And finally, as a **water source** for butterflies, they built a

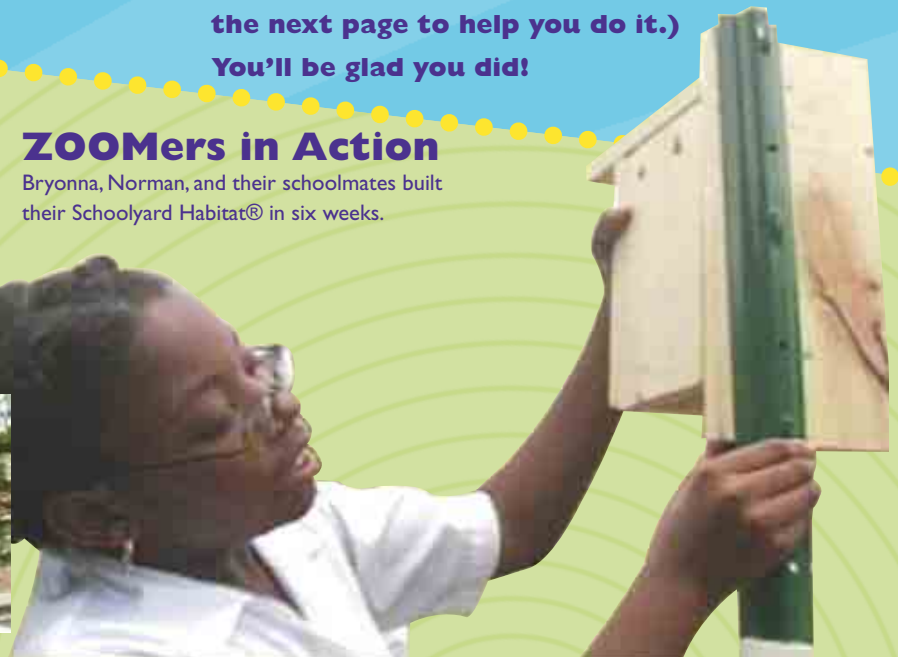
puddle dish (a partially buried tray filled with dirt, sand, and water), which provides them with water, nutrients, and minerals.

After all their hard work, Mr. Jerome from the National Wildlife Federation® **certified** their project as an **official Schoolyard Habitat®!** Way to go, Edgewood!!

Talk to your parents or teacher about making your backyard or schoolyard into an animal habitat. (See the resources on the next page to help you do it.) You'll be glad you did!

ZOOMers in Action

Bryonna, Norman, and their schoolmates built their Schoolyard Habitat® in six weeks.



Resources

Web Sites

Biodiversity 911: Saving Life on Earth

www.biodiversity911.org

Learn about the amazing variety of animals on earth and learn how to help them.

Education—National Wildlife Federation

www.nwf.org/education

Help protect wildlife by doing some of these activities and projects for kids of all ages.

Environmental Kids Club

www.epa.gov/kids

Explore environmental art projects, fun facts, and experiments at this site from the Environmental Protection Agency.

The Green Squad

www.nrdc.org/greensquad

The Natural Resources Defense Council gives you great ideas to make sure your school is a safe, healthy place that doesn't hurt the environment.

Kids Make a Difference

arborday.org/kids/

Learn how you can make a difference by planting trees.

Kids' Planet

www.kidsplanet.org/

Defend the planet by telling political leaders how you feel about protecting wildlife.

U.S. Fish and Wildlife Service: Educating for Conservation

www.fws.gov/educators/students.html

Explore and learn about fish, wildlife, plants, and their habitats and how you can help conserve, protect, and enhance them.

Books

50 Simple Things Kids Can Do to Recycle by Earthworks Group.

Find projects, and simple ideas that you can use to recycle at home and at school.

Project for a Healthy Planet: Simple Environmental Experiments for Kids

by Shar Levine and Allison Grafton.

Explore the causes of pollution and find ways to protect the environment.

Recycle! A Handbook for Kids

by Gail Gibbons.

Explains the process of recycling from start to finish.

Roots, Shoots, Buckets & Boots: Gardening Together with Children by Sharon Lovejoy.

Make your own theme garden by following these fun suggestions.

Where Does the Garbage Go?

by Paul Showers.

Shows how the waste we create can be recycled or end up in a landfill.



Credits

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By using this paper we saved:

47 fully grown trees
20,202 gallons of water
2,259 pounds of solid waste

