April 22, 2020 marks the 50th anniversary of Earth Day. Since 1970, Earth Day has increased awareness of the planet we live on, and encouraged people to learn more about pollution, climate change, endangered species, and many other environmental issues.

#PBCEarthDay #EarthDay50

Celebrate the 50th anniversary of Earth Day at home with these simple, fun activities brought to you by Palm Beach County organizations.

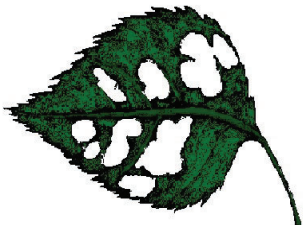
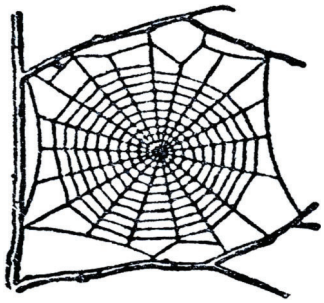
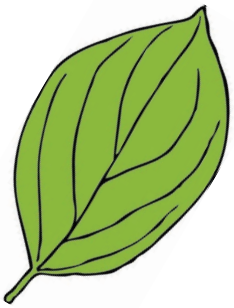
A Neighborhood Scavenger Hunt
with Okeeheelee Nature Center
Create a Bird Feeder
with FAU Pine Jog Environmental Education Center
Bird Behavior Scavenger Hunt
with FWC/Everglades Youth Conservation Camp
Create an Origami Zebra Longwing Butterfly
with U.S. Fish and Wildlife Service, Arthur R. Marshall Loxahatchee National Wildlife Refuge
Make an Insect Finger Puppet
with the Hobe Sound Nature Center
Earth Day Scavenger Hunt
with Daggerwing Nature Center
Make a Living Seed Necklace
with the South Florida Fair
The Awesome Adventures of Annie V.
with Ann Norton Sculpture Gardens
Cooking Plant Based
with Keep Palm Beach County Beautiful and Nikki Talks Food
Recycle Right Challenge
with the Solid Waste Authority of Palm Beach County
Create a Rain Gauge
with Mounts Botanical Garden
Upcycled Water Cycle
with South Florida Science Center and Aquarium
Tabletop Watershed Demonstration
with Grassy Waters Preserve
Take the Pledge
with Manatee Lagoon: An FPL Eco-Discovery Center
Create Your Own Earth
with the Loxahatchee River Center
Human Impact Lab: Water Quality
Video Lesson: What is Water Quality with Annie Beau the Sea Turtle
https://www.youtube.com/watch?v=73PjRvQjnLQ&t=6s
with Loggerhead Marinelife Center
Take a Virtual Trip to the Florida Keys
with ANGARI Foundation
One Green Step
with the City of West Palm Beach Office of Sustainability

And additional resources for at home science exploration!

A Neighborhood Scavenger Hunt

From Okeeheelee Nature Center

http://www.pbcnature.com/

Find a leaf that has been snacked on  by an insect	Find a spider web 	Find an insect with wings	A sign of an animal
A tree that's shorter than you	Find a place for a bird to get water	Find something you like!	Find food a frog would eat
Find a hole made by an animal	Find an insect with two or more colors	Find a quiet place, close your eyes and listen what do you hear?	A tree with rough bark
A bird with red on it	Moss, lichen or fungi– Oh my!	Find a leaf with veins 	5 pieces of litter Can you safely pick it up and put it in a trash can?

Create a Bird Feeder
with FAU Pine Jog Environmental Education Center

Encourage students to make their own milk carton bird feeders and hang them outdoors to observe the birds that visit their yards. This is a reuse project that the whole family can enjoy!

You will need:

- Clean milk carton
- Craft scissors
- Hole punch
- Sticks/Popsicle stick
- String
- Birdseed

Optional: acrylic paint, markers, crayons, and/or glue, bottle caps, and found natural objects for decoration.

Steps:

1. Cut 1-2 openings large enough for songbirds in the side(s) of a clean milk carton (bottom of opening(s) should be about 2" from bottom of carton).
2. Decorate your feeders with markers, paint, or crayons--or by gluing on plastic bottle caps or natural objects found outside (sticks, bark, etc.)
3. Punch a hole just below the "bird door" opening(s) and insert a small stick or popsicle stick to create a perch.
4. Punch a hole in the top of the carton and thread a string through to hang the feeder.
5. Add birdseed inside the "bird door" opening(s) and explore your yard to determine the best place to locate your bird feeder.

Further Investigation:

What else would birds need besides food? Once feeders are in place, continue to observe and learn more about the birds that visit--and to refill their feeders as needed. For more information about birds, visit The Cornell Lab of Ornithology at: https://www.allaboutbirds.org/news/.

BIRD BEHAVIOR SCAVENGER HUNT

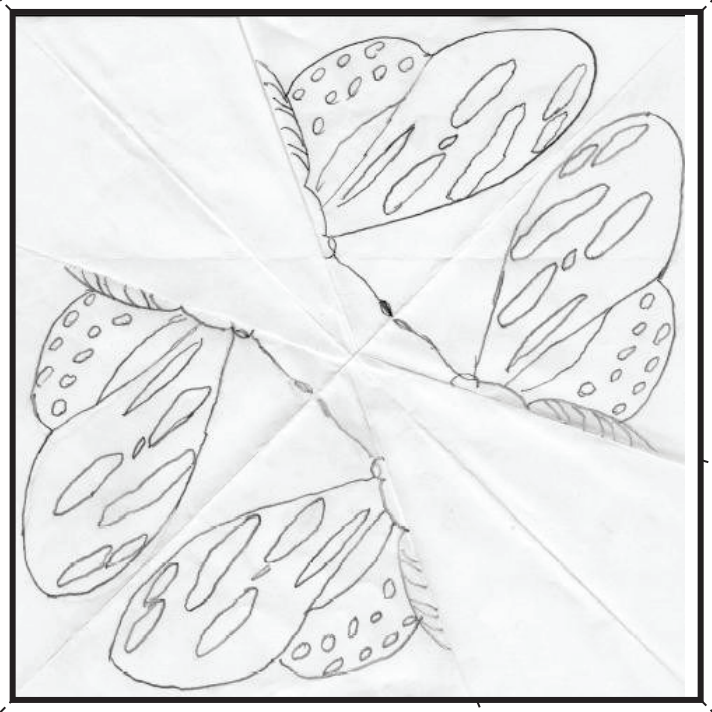
With FWC/Everglades Youth Conservation Camp

Singing or Calling	**Preening** (Sometimes looks as if it is nibbling, tugging, or combing its feathers with its beak)	**Bathing in Water**	**Soaring**
Flying (Its wings are beating)	**Perched on a Limb or Branch**	**Swimming**	**Walking or Hopping on the Ground**
Standing on the Ground	**Wading in the Water**	**Feeding**	**Flying with or gathering twigs, grasses, leaves, string, etc**
Climbing a Trunk or Branch	**Chiseling into the Side of a Tree or Branch**	**Perching on a Fence Post, Tree Snag, or Wire over an Open Area**	**A Small Bird Chasing a Large Bird**
A Group of Birds Flocking Together	**Hovering in Mid-Air** (Wings beating rapidly)	**Perched on the edge of a Nest**	**Free Space**

Create an Origami Zebra Butterfly

with U.S. Fish and Wildlife Service

Origami is the art of paper folding, which is often associated with Japanese culture. In modern usage, the word "origami" is used as an inclusive term for all folding practices, regardless of their culture of origin. The Zebra Butterfly is the Florida State Butterfly. You may even see them in your backyard. They have long wings and have black and yellow stripes.



(a) (b) (c) (d)

Step 1: Cut out the square

Step 2: Fold along diagonal line indicated by (a) to

create a triangle; the wings are visible on the outside Step 3: Fold along diagonal line indicated by (b) to

create a smaller triangle; the wings are on the bottom Step 4: With the smaller triangle, lift the first wing by folding along

to point the wing up

Step 5: Flip the paper over and lift the second wing by folding along

to match the first one

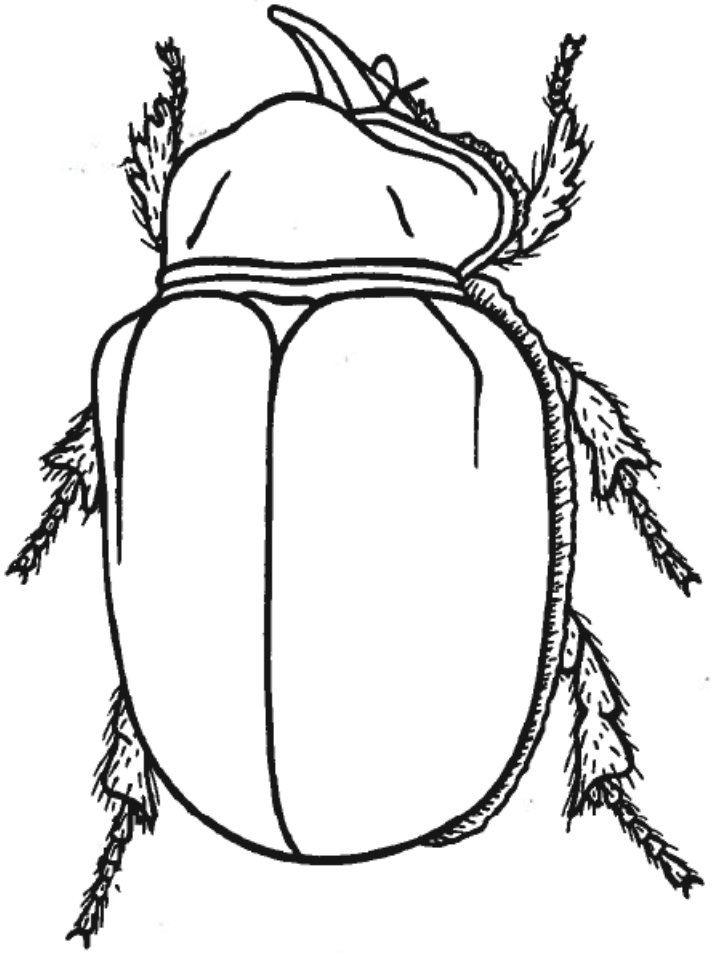
Step 6: Your Zebra longwing is complete! The wings can be colored black, the stripes and spots yellow

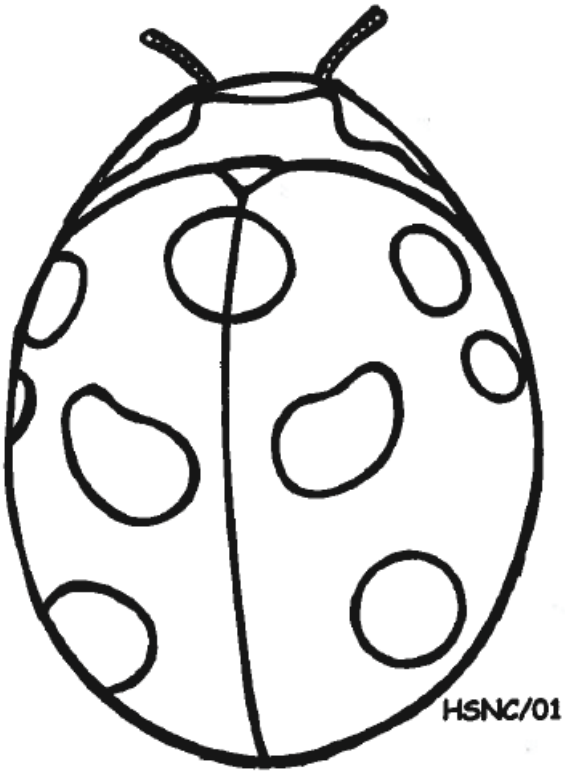
Further Investigation: Zebra Butterflies can live up to six (6) months as compared to other butterfly species who only live one (1) month. It eats pollen and nectar. They are the only butterflies who eat pollen. They became the Florida state butterfly in 1996.

Thanks to Matt Harwell, USGS for the origami design and UF and Wikipedia for information.

The Hobe Sound Nature Center presents:
Make an Insect Finger Puppet!

Have students cut out the insect and color it. Cut out the rectangle and tape to fit around their finger. Turn insect face down and tap the ring to the back. Use as a ring or finger puppet and put on a play!





Why do insects matter?

- Insects pollinate most of our plants and flowers and without them, we would not have a stable source of food.
- Insects themselves are a source of food for thousands of other species and humans and without them, our global ecosystems would collapse.
- Insects aerate our soil and aid in the process of recycling nutrients for use by other animals including humans.

Learn more online at https://www.earthday.org/wp-content/uploads/species/insects.pdf

Let's Celebrate the 50th Anniversary of Earth Day!

Daggerwing Nature Center encourages you to explore nature in your neighborhood with this fun scavenger hunt! How many can you find? Get creative!

Plants

- ☐ Grass
- ☐ Leaf
- ☐ Seeds
- ☐ Flower
- ☐ Acorn or other tree nut
- ☐ Moss
- ☐ Fruit tree
- ☐ Aquatic plant

Animals

- ☐ Bird
- ☐ Worm
- ☐ Flying insect
- ☐ Crawling insect
- ☐ Squirrel
- ☐ Spider web

Water and Land

- ☐ Body of Water
- ☐ Flat rock
- ☐ Raindrop
- ☐ Algae
- ☐ Aquatic animal

Clean Energy

- ☐ Hybrid car
- ☐ Electric car
- ☐ Bus
- ☐ Bike
- ☐ Solar Panel

Sky

- ☐ Funny shaped cloud
- ☐ Star
- ☐ Moon
- ☐ Flock of birds
- ☐ Planet

Reduce, Reuse, Recycle

- ☐ Recyclable item
- ☐ Reusable bag
- ☐ Five pieces of litter
- ☐ Something you have fixed
- ☐ Something you have repurposed

Share what you discovered @ facebook.com/daggerwing!

Palm Beach County Board of County Commissioners

Daggerwing Nature Center

Owned and operated by

PALM BEACH COUNTY PARKS & RECREATION

National Gold Medal Award Winner

Make a Living Seed Necklace

Materials Needed:

- Cotton Balls
- 2 x 3 ziplock bag with a hole punched in the top of the bag
- Yarn pieces cut to 24" minimum
- Spray bottle of water
- Seeds (Radishes grow quickly)

Instructions:

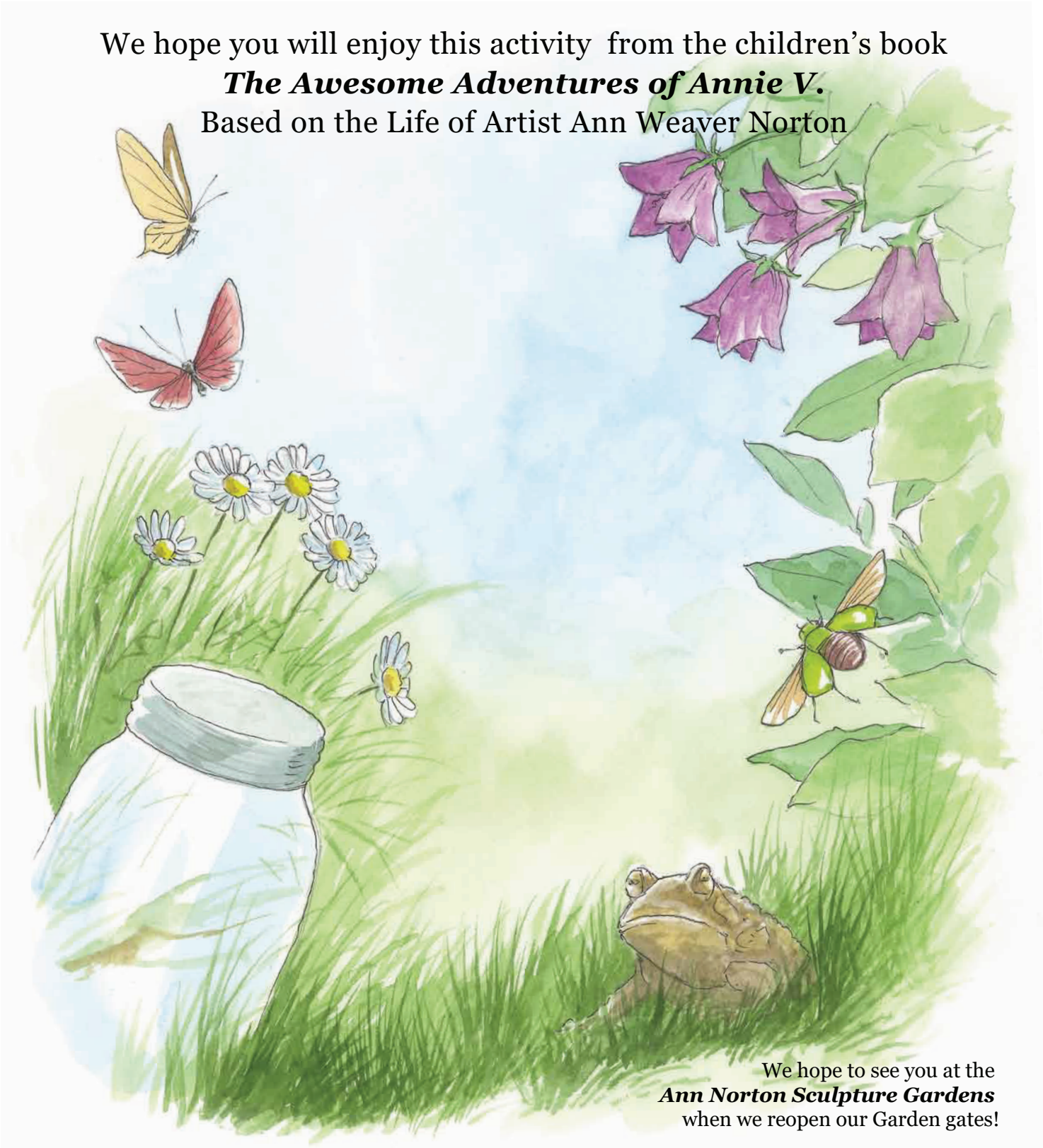
1. Place cotton ball in ziplock bag
2. Spray lightly with water (cotton should not be soaked) ***Moisture***
3. Place 1-2 seeds in the bag so it touches the cotton ***Soil***
4. Punch a hole in the bag below the zip closure **Air**
5. Lace the yarn through the hole in the bag, tie it to make a necklace
6. Put the bag inside your shirt next to your body ***Heat***

Seed germination is a basic growing skill that involves causing a seed to sprout. Germinating a seed is very easy to do. This activity will teach you about germination.

A few conditions must be present in order to properly germinate a seed. You will need proper Temperature (Body heat), Moisture (Spray bottle of water), Oxygen (air), and Darkness (inside your shirt). There are many different methods for germinating seeds, some prefer certain methods over others, but so long as you provide the basic requirements you should succeed. Initially, the seed absorbs water by wicking moisture through the seed coat into the seed itself. Moisture essentially brings the seed back to life. Once enough moisture has been absorbed by the seed, the exterior of the seed cracks open. At this point, the radicle emerges from the seed and forms into the root.

ANN NORTON
SCULPTURE GARDENS

We hope you will enjoy this activity from the children's book
The Awesome Adventures of Annie V.
Based on the Life of Artist Ann Weaver Norton



We hope to see you at the
Ann Norton Sculpture Gardens
when we reopen our Garden gates!

ACTIVITY : **Use this space to write a four-line poem inspired by the Ann Norton Sculpture Gardens or your garden at home. Be sure to capture your experience by using your senses: what you see, hear, smell, and touch in the garden! Try to include an interesting critter that could become a character in your poem.**

Cooking Plant Based

with Keep Palm Beach County Beautiful and Nikki Talks Food

Cook this recipe with Chef Nikki in her YouTube Channel:

https://www.youtube.com/nikkitalksfood

Eating some plant-based meals every week will reduce water and land use, lower pollution, slow deforestation and reduce destruction of topsoil....and it's healthy for you!

Chickpea Fries with Roasted Red Pepper Dipping Sauce

Yield 4 servings
Prep time 1 hour

Ingredients

For the Fries:
Chickpea flour 2 cups
Water 4 cups
Pro Seasoning 1 tablespoon
Cinnamon 1 teaspoon
Cumin ¼ teaspoon
Ginger, granulated ¼ teaspoon
Coriander ¼ teaspoon
Cayenne pepper 1/8 teaspoon
Black pepper ¼ teaspoon
Chopped cilantro 2 tablespoon
Canola oil for frying 1 quart

For the Sauce:
Vegan mayonnaise 1 cup
Roasted red pepper 1 each
Agave nectar 1 tablespoon
Cayenne Pepper pinch
Pro Seasoning TT

Method of prep for the fries:
Toast seasonings in a 2 quart sauce pan. Add water and bring to a boil. Slowly add chickpea flour to water while whisking vigorously. Lower the heat to a simmer and cook for 5 minutes, until the mixture looks sticky. Add cilantro and whisk. Pour mixture into a 9 x 9 pan lined with parchment paper or plastic wrap. Make sure the mixture is one even layer, nice and smooth. Let cool for 30 minutes. Once the mixture is firm enough to cut, cut the slab of chickpea mixture into French fry sized pieces. Heat oil in a deep fat fryer or in a large pot to 350 degrees. Fry chickpea fries until they are golden brown and crispy. Allow fries to drain on a cooling rack. Serve immediately.

Method of prep for the dipping sauce:
Add all ingredients to a blender jar. Puree until smooth. Serve with fries!

SWA 10-PART Recycle Right CHALLENGE!

Welcome to the 10 Part SWA Recycle Right Challenge!
Are you up for the SWA 10-Part Recycle Right Challenge! to Reduce, Reuse, Recycle, and Rethink your waste? Every weekday for 2 weeks, we will post a new Challenge on our Facebook page (www.facebook.com/SolidWasteAuthority/) and on our Education page (www.swa.org/education). We want you to take pictures as you complete the Challenges and post them to Facebook in the comment section below that day's Challenge post. We'll keep track of who successfully completes the daily SWA 10-Part Recycle Right Challenges. But, if you can't post to Facebook every day, you can use our online submission form found at www.swa.org/education. Those who correctly complete every SWA 10-Part Recycle Right Challenge by Earth Day, Wednesday, April 22, will receive SWA swag – could be any or all of the following: Earth Day poster, metal reusable straw, reusable cutlery, recycling magnet, and mood pencil depending on the number of successful entries. If you need help with any of the challenges, please visit www.SWA.org/RecycleRight.

Challenge 1: In Palm Beach County, we have a dual stream recycling program. This means we separate recyclable items into blue and yellow recycling bins. Take a picture of an item you would place in the blue recycle bin and share it with us.

Challenge 2: In Palm Beach County, we have a dual stream recycling program. This means we separate recyclable items into blue and yellow recycling bins. Take a picture of an item you would place in the yellow recycle bin and share it with us.

Challenge 3: Find a plastic bottle and a plastic bag. Look for the number on the items. Take a picture of both and share them with us. Let us know which one you think is recycled in your blue recycle bin and which one you could bring back to the grocery store to be recycled.

Challenge 4: Find an item we DO NOT want in the blue or yellow recycle bin because it could cause a problem at our Recovered Materials Processing Facility. Take a picture and share it with us and tell us why you think it cannot go in the recycling bins.

Challenge 5: Get creative! Think about an item you can reuse instead of throwing out. Take a picture and share it with us. Please tell us how you are reusing this item.

Challenge 6: Not all cardboard is the same when it comes to recycling. Can you take a picture to show an example of a cardboard item that cannot be recycled in your yellow bin and share it with us?

Challenge 7: Share your recycling knowledge with someone else and take a selfie/screenshot. Then, share your photo with us!

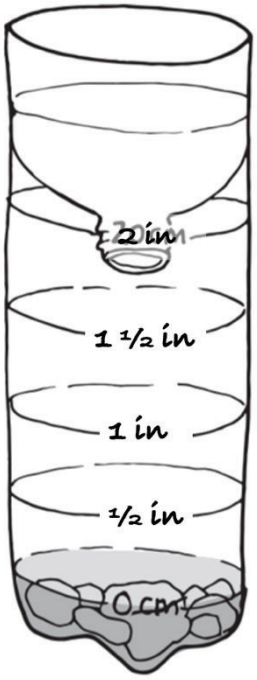
Challenge 8: Lots of items can be repurposed into new things. For example, you can use an old egg carton for paint during an art activity. ReThink and share a picture of something you repurposed.

Challenge 9: Take a picture of something from the bathroom that is recyclable and share it with us.

Challenge 10: Take a picture to show off where you store or dispose of all your recyclable items - your recycle bins, recycle dumpsters, etc. and send it to us. Now plan on filling them up after learning how to #RecycleRight throughout the SWA 10-part Recycle Right Challenge! Thanks for participating!

Create a Rain Gauge
with Mounts Botanical Garden

Plants need water to grow and thrive! How much water do our gardens get from rainfall? Scientists use a tool called a **rain gauge** to measure precipitation in an area during a specific time period. You can investigate the environmental conditions of your neighborhood by building your own rain gauge!



You will need:

- An empty, clean plastic soda or water bottle
- Rocks (stones or pebbles) for weight
- A permanent marker
- A ruler
- Scissors

Steps:

1. Carefully cut the top off the bottle and place some rocks into the bottom of the bottle.
2. Invert the top to make a funnel that will prevent evaporation of water.
3. Use the ruler and marker to draw lines in ½ inch increments on the bottle. This is how you will measure how much rain you collect.
4. Pour water into the bottle until it reaches the bottom line on the scale and label that "zero." Then, label the rest of the lines.
5. Put your rain gauge outside where it can collect water when it rains.
6. Every time you take a measurement, record the amount of rain, the time of day, and what the weather was like.

Further Investigation:

Palm Beach County's average yearly rainfall is 59.52 inches. How does your neighborhood compare?
How much rain typically falls during one rainfall?
How much rain falls in extreme storms, like a hurricane?
You can explore historical rainfall records on South Florida Water Management District's website. https://www.sfwmd.gov/weather-radar/rainfall-historical/daily

Activity adapted from NISE Network's Exploring Earth: Paper Mountains for more activities exploring Earth's water systems check out https://www.nisenet.org/catalog/exploring-earth-paper-mountains-2018

Upcycled Water Cycle

With the South Florida Science Center and Aquarium

Have you ever thought about where the water you are drinking from came from? Or how far it has traveled? The water we have on Earth today, has been here since before the dinosaurs! We have been recycling the same water around the globe for centuries using a little help from our atmosphere and the Sun. This process is called the **Water Cycle**. The water in rivers and streams **evaporates** when it heats up from the Sun and travels up towards the sky. Once it gets so high up, the water molecules start to **condense**, turning them into clouds. When those clouds cannot hold any more water, they start to **precipitate** back down towards the ground. This happens on a VERY large scale, but you can demonstrate this process right in your house!

You will need:

- An empty, clean, clear, sealable container
  - soda bottle, glass jar, plastic container, ziplock, etc.
- Permanent marker(s)
- Water

Steps

1. Using your permanent marker, draw a line about ½ to 1 inch up from the bottom of your container - this will be your water line
2. Towards the top of your container, draw a picture of the Sun using your marker
3. Next to your Sun, but leaving some space in between, draw some clouds with your marker
4. Draw an arrow from the water line up to the sun, and label it "**Evaporation**"
5. From the Sun to the clouds, draw an arrow and label it "**Condensation**"
6. Add some rain or snow falling from your cloud along with an arrow labeled "**Precipitation**"
7. Lastly, add some water to your container until you have reached the line you have made, and seal your container

What you have just created, is a closed Water Cycle system! Place your container in a place that receives Sunlight throughout the day. Do you notice it starts to get a little foggy in your container? What do you think that is? How about the little bits of water that start to fall down the inside of your container? Seem familiar? Keep an eye on it for a few days and watch the natural process in your own home!

Key words:

Evaporation: The process of water warming up and changing from a liquid to a gas (water vapor)
Condensation: The process of water vapor cooling back down to a liquid
Precipitation: The act of the liquid water falling back to the ground as rain, snow, sleet or hail

Tabletop Watershed Demonstration
With Grassy Waters Preserve

This fun and easy activity uses just a few materials to demonstrate what watersheds are, and how pollution gets into bodies of water. It can be done very simply, or more complicated concepts can be introduced for older children. It also pairs well with written assignments.
A video of this activity will be posted on the Grassy Waters website and FaceBook page.

Key Words:
Watershed, pollution, runoff, precipitation.

Materials:
1. Large sheet of paper. The paper will represent an area of land with multiple watersheds.
2. Markers. The markers will represent different types of pollution.
3. Spray bottle or cup with water. The spray bottle or cup will represent rain.

Instructions:
1. Put the paper on a flat surface, a plastic table or the floor works well. If you are doing this activity indoors, you may want to put a tarp, drop cloth, or some trash bags underneath, to catch any water that gets spilled.
2. Choose several different markers and assign each color to represent a different type of pollution (litter, smog, oil, fertilizer, etc.).
3. Use markers to draw or scribble on the paper. This represents pollution being put on the land.
4. Scrunch the whole piece of paper into a giant ball (try not to tare it), and then loosely uncrumple it. Now your area of land has some topography, such as hills and valleys (tip: you can put a rock or small cup under the paper to make a larger 'hill').
5. Roll the edges of the paper a little bit to contain the water that is about to be sprayed onto it.
6. Use the spray bottle or sprinkle water from a cup to represent rain falling on your area of land. Only do this for about 30 seconds to a minute so that the paper does not become too saturated.
7. Look to see where the rain has collected into bodies of water on the low parts of your land.
8. See if you can tell which types of pollution are now in each body of water. Remember what the markers represented?
9. Use your finger to trace an area where all the rain that fell came into the same body of water, that's a watershed. Each body of water has a watershed.

Questions for students:
1. What happens to pollution when it rains?

2. Can you outline the watershed for three different bodies of water on your paper?

3. How are does pollution affect wildlife?

4. How does pollution affect you?

5. How can you keep pollution out of the water?

MANATEE LAGOON

AN FPL ECO-DISCOVERY CENTER®

Take the Pledge

Take the pledge to help protect manatees and our environment! Fill out the cutout below with one of our conservation pledges or make up your own. Color in and decorate your manatee, and share it with us on social media by tagging @ManateeLagoon.

To watch Manatee Lagoon's virtual Earth Day lesson, go to **VisitManateeLagoon.com/Virtual-Learning** and select the video called **"Earth Day: Celebrating Manatees and the Lake Worth Lagoon."**

Conservation pledge ideas:

- Reduce, Reuse, Recycle
- Pick up trash
- Obey waterway signs
- Learn more about manatees

I, _____, pledge to
(First Name)

_____

_____

to help protect manatees and the Lake Worth Lagoon.

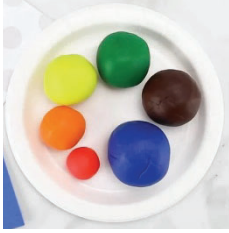
MANATEE LAGOON

AN FPL ECO-DISCOVERY CENTER®

Create your own Earth

with The Loxahatchee River Center

The Earth is made of four layers and each layer is made from different Earth materials! Scientists study these layers to learn more about the Earth. The four layers are the **crust**, **mantle**, **outer core** and **inner core**. Each layer affects life on Earth differently! You can study these layers by making your own 3D Earth complete with crust, mantle, outer core, inner core, ocean and land!

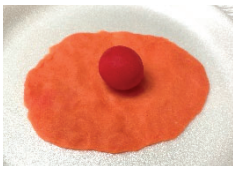


You will need:

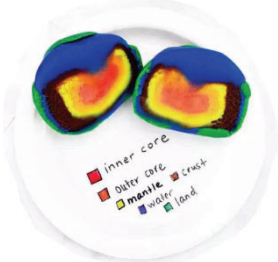
- Playdough (six different colors)
- Plastic knife

Steps:

1. Gather your six playdough colors and assign each color to a layer. There will be a 'layer' of playdough for the **crust**, **mantle**, **outer core**, **inner core**, **ocean**, and **land**. *(example: red- inner core, orange- outer core, yellow- mantle, brown- crust, blue- ocean, and green- land)*
2. Once you have assigned your colors it's time to make playdough balls! Each layer will get bigger and bigger, so you want to start with the inner core as the smallest playdough ball and make each layer larger as you make them.
3. Next, take your outer core ball and flatten it against the table, then place your inner core in the middle of the flattened outer core. Now wrap the outer core around the inner core until it is completely covered.



4. Repeat that step with each layer until you reach your 'land layer'. For your 'land layer' tear off pieces of playdough and shape to resembles continents!
5. Once you have finished your layers you can cut your Earth ball in half to reveal all four layers of the Earth! Now you have a 3D model of the Earth and all its layers.



Did you know?

- The crust is the layer of Earth that you live on!
- The mantle is the largest layer of Earth.
- The outer core is made of liquid iron/nickel and it controls Earth's magnetic field! The magnetic field controls your compass, protects the Earth from solar winds and produces the northern and southern lights (also known as aurora borealis and aurora australis).
- The inner core is made of solid iron and it is as hot as the surface of the Sun.

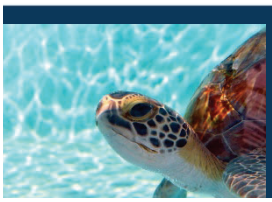
For further investigation you can visit https://www.ducksters.com/science/composition_of_the_earth.php

Human Impact Lab: Water Quality

Loggerhead Marinelife Center

Loggerhead Marinelife Center is an ocean conservation organization and sea turtle hospital located adjacent to one of the most important sea turtle nesting beaches in the world. The Center features an on-site campus hospital, research laboratory, educational exhibits and aquariums, and also operates the Juno Beach Pier, which hosts world-class angling and sightseeing. The Center's conservation team works with 76 local and international organizations across six continents to form partnerships and share conservation initiatives and best practices that are core to its mission of ocean conservation. The Center is expanding and has launched its Waves of Progress capital expansion campaign, designed to accelerate and amplify LMC's conservation and education impact.

Our mission is to promote conservation of ocean ecosystems with a special focus on threatened and endangered sea turtles. Our vision is to be recognized locally and internationally as the leading authority in sea turtle education, research and rehabilitation.



Visit Marinelife.org to learn more about Loggerhead Marinelife Center!

Lesson Objectives

- I can define what an acidic solution is and give examples of common household items that are acidic.
- I can define what a basic solution is and give examples of common household items that are basic.

Vocabulary

- pH scale: a scale used to measure how acidic or basic a liquid is
- Acids: a special kind of chemical that has a lot of hydrogen ions; reads less than 7 on the pH scale (Lemon, orange, tomato juices)
- Bases: a special kind of chemical that has a lot of hydroxide ions; reads more than 7 on the pH scale (salt water, soapy water, bleach)

Material

- Red cabbage
- Stove top and a pot for boiling
- 5 clear containers
- 5 household liquids (such as lemon juice, apple juice, vinegar, hand soap, coffee, etc.)

Make your own pH indicator!

Directions: In this activity, you can make your own pH indicator at home using common food scraps! Then, use that indicator to test the pH of everyday household liquids! For the activity description, we will be using red cabbage. If you do not have red cabbage at hand, other plant food items such as red onion, red apple skins, blueberries, grape skins, and plums work, as well. All of these food items contain a pigment called *anthocyanin*. This pigment has a pH of approximately 7 (neutral) and will change colors when an acidic or basic liquid is added to it.

Preparing the pH indicator:

1. Chop up a red cabbage into small pieces. Continue chopping until you have about 2-3 cups of cabbage pieces.
2. Place the cabbage pieces into a pot and fill the pot with tap water until the water level is high enough to cover the cabbage.
3. Place the pot on the stove on high heat until the water begins to boil. Continue boiling the cabbage mixture for 5-10 minutes, or until the water becomes a deep purple/violet color.
4. Take the pot off of the stove and let cool.
5. Once the pot is cooled, filter out the cabbage material from the water by using a strainer by placing the strainer over a bowl, or container, in order to capture the water.
6. The water, which should be a deep purple/violet color containing the *anthocyanin*, is now your indicator.

Testing common household liquids:

1. Pour your indicator solution into 5 clear containers (~1 cup of indicator into each container). Clear containers are preferred since opaque containers will make it harder to read the end results.
2. Test a different household liquid in each of the separate containers by pouring ½ cup of the liquid into the container of indicator.
   -Example test liquids for acids include: lemon juice, apple juice, coffee
   -Example test liquids for bases include: hand soap, vinegar, bleach

Reading the results:

The pH of the household liquid will change the color of the indicator solution once added. If acidic, the solution will turn a reddish color. If basic, the solution will turn a bluish-green color. To determine the pH, use the color chart below:

Approximate pH Range	1 to 5	6 to 7	8 to 9	10 to 11	12 to 14
Color	Red	Violet	Blue	Blue green	Green

Table image credit: Carolina Biological Supply Company

Take a Virtual Field Trip to FL Keys Coral Reefs
with ANGARI Foundation

Wish you could getaway to explore a coral reef? Want to learn about reefs and how scientists study them? Join Dr. Ian Enochs from the National Oceanic and Atmospheric Administration (NOAA) and his team for an expedition aboard the research vessel *ANGARI* to the Florida Keys National Marine Sanctuary. Survey reef health using SCUBA and camera rigs, collect a coral core for scanning, and visit the Experimental Reef Lab at the University of Miami's Rosenstiel School of Marine & Atmospheric Science to learn about ongoing experiments...
Do all this and more from the comfort of home using immersive 360 media!

You will need:

- Computer, tablet, smart phone, or virtual reality headset
- Internet access

Steps:

1. Navigate to *Generation Ocean: Coral Reefs* (https://angari.org/film) using chosen device.
2. Watch the 360 film, remembering to look up, down, and all around. If viewing on a computer, use cursor to control where you look.
3. Dive deeper into the Cheeca Rocks site featured in the film and other sites around the Florida Keys National Marine Sanctuary, using 360 images (https://sanctuaries.noaa.gov/vr/florida-keys). What marine life do you observe? Is it abundant? Diverse? Does it differ among sites?
4. Ready to help protect coral reefs? Dr. Enochs mentioned that some sunscreens are harmful to reefs. Learn more from this infographic (https://oceanservice.noaa.gov/news/sunscreen-corals.html) and check the sunscreen you have at home. Does it contain any of the harmful ingredients? If so, consider reef-safe alternatives for the future!

Further Investigation:

Wonder what's happening on reefs around the world right now? Explore sea surface temperature and coral bleaching via NOAA's Coral Reef Watch (https://coralreefwatch.noaa.gov).
Use what you've learned to create an art piece (ex. sculpture from recycled materials, drawing, informational poster) to encourage others to protect coral reefs - share with family, friends, and us (via social media)!

One Green Step

City of West Palm Beach Office of Sustainability

Earth Week Activities

One Green Step Campaign: (now – April 30th) The Office of Sustainability is launching a social media campaign for Earth Day called 'One Green Step' and we want you to be involved! Send us a short video or picture with you in it showing One Green Step (selfie with a reusable water bottle, planting flowers, etc.) that you're taking to be more sustainable. We will feature your submission on our social media pages (@WPBGreen on Facebook, Twitter, and Instagram). Videos should be short – no longer than 30 seconds. Send videos and photos to echristian@wpb.org or text to (561) 247-4733. Have fun, be creative! For more information visit wpb.org/EarthDay.

Virtual Rain Barrel Workshop & Pick-Up: (April 22nd 4pm-6pm; registration will close on April 20th) City of West Palm Beach water customers can celebrate Earth Day with a free rain barrel! Registration is required. Visit wpb.org/EarthDay for more info and to register. Register beforehand in order to be approved, watch the virtual workshop, and receive confirmation to pick-up your rain barrel. Special pick-up day will be on Wednesday, April 22nd.

Tree Giveaway Pick-Up: (April 25th 10am-12pm; registration will close on April 23rd) City of West Palm Beach residents and businesses can celebrate Earth Day and Arbor Day with free trees! Tree application is required. Visit wpb.org/EarthDay for more info and to apply. Special pick-up day will be on Saturday, April 25th.

About RISE:

Resources in Science Education is a group of Palm Beach County organizations that focus on providing STEAM (Science, Technology, Engineering, Arts, and Mathematics) based learning opportunities.

Additional Resources from RISE Organizations:

ANGARI Foundation

www.angari.org

Ocean Expert Exchange live online
Q&A sessions with marine scientists
https://angari.org/ocean-expert-exchange-2020

Ocean Expert Exchange recordings, vessel-based marine research and *Scientist Spotlight* videos available via YouTube

Additional At-Home and Virtual Learning Opportunities
https://angari.org/education-outreach

Ann Norton Sculpture Gardens

www.ansg.org

253 Barcelona Road, West Palm Beach • 561.832.5328 • www.ANSG.org

At Home and Virtual Learning Opportunities
The Adventures of Charlie Pierce – The American Jungle
https://www.ansg.org/harvey-oyer-iii/
Earth Day 2020
https://www.ansg.org/earth-day-ansg/

City of West Palm Beach Office of Sustainability

www.wpb.org/EarthDay

@WPBGreen on Facebook, Twitter, and Instagram

Daggerwing Nature Center

www.pbcnature.com

Live animal feedings on Facebook
Wednesday through Saturday at 3:15 p.m.
Earth Day Drawing Contest
Details at: https://www.facebook.com/Daggerwing/
Additional coloring sheets and activities at:
http://discover.pbcgov.org/parks/Daggerwing/FunPages.aspx

FAU Pine Jog Environmental Education Center

www.pinejog.fau.edu

Gain access to FREE activities from Maggie's Earth Adventures! Parents and teachers can sign up at http://www.missmaggie.org/sign-up/.

In addition, learn how to access Miss Maggie's Treasure Trove for FREE by filling out the request form at https://gsrp.wufoo.com/forms/miss-maggies-treasure-trove/

FWC Everglades Youth Conservation Camp

at J.W. Corbett Wildlife Management Area
https://fyccn.org/eycc

Grassy Waters Preserve

Facebook: @GrassyWatersPreserve

Online Education Resources
https://www.wpb.org/government/public-utilities/grassy-waters-preserve/school-programs/teacher-resources

Science in 60 Seconds
https://www.youtube.com/playlist?list=PLBStMaSddHhzhGw0K4z95KedAKAy6y4gZ

The Hobe Sound Nature Center

www.hobesoundnaturecenter.com

For a list of current program offerings for school aged students and more visit:
http://hobesoundnaturecenter.com/programs

Sign up for our online "Naturalist Corner" emails and receive 10% off in our Owl's Roost Gift Shop*! *when normal hours resume
https://mailchi.mp/4122f1c6bbb4/hobesoundnaturecenter?fbclid=IwAR3PDnhq8vHWwf1xlgpFs6aNMqm4PsJ1DCTzk0l5xSFMMMOJwsMiT06QC0s

Keep Palm Beach County Beautiful, Inc.

www.keepPBCbeautiful.org

Join us for Cleanup and Beautification projects as soon as COVID-19 restrictions are lifted.
Look for information soon on the International Coastal Cleanup scheduled for October 2020!

Loggerhead Marinelife Center

www.marinelife.org

Virtual Coastal Classroom
- Live on Facebook
  - Weekdays at 2 p.m.
  - Weekends at 11 a.m.
- Previous recordings available on YouTube

Additional At-Home and Virtual Learning Opportunities
https://marinelife.org/homelearn/

The Loxahatchee River Center

https://lrdrivercenter.org

Additional At-Home and Virtual Learning Opportunities
https://www.facebook.com/loxahatcheerivercenter/
https://www.youtube.com/channel/UCwtVsfFCrjRq-uFkUG5wVUw

Manatee Lagoon – An FPL Eco-Discovery Center

www.visitmanateelagoon.com

At-Home and Virtual Learning Opportunities

New video recordings and activities posted
Mondays, Wednesdays and Fridays at 10 a.m.

Previous recordings and activities available
https://www.visitmanateelagoon.com/virtual-learning

Mounts Botanical Garden

www.mounts.org

Explore the Garden
https://www.mounts.org/visit-virtually/

Additional At-Home and Virtual Learning Opportunities
https://www.mounts.org/virtual-youth-programs/

Okeeheelee Nature Center

www.pbcparks.com
Facebook: @OkeeheeleeNatureCenter

PBC Parks TV
https://www.youtube.com/user/pbcparks

The Solid Waste Authority of Palm Beach County

www.swa.org

Virtual Programs and Previous Recordings

Getting Schooled by the SWA
Weekdays at 11 a.m.
www.swa.org/education

South Florida Fair
www.southfloridafair.com
Our Earth Matters
January 15 – 31, 2021

Facebook and Instagram:
@SouthFloridaFair
Yesteryear Village Virtual Activities
https://www.southfloridafair.com/p/yesteryearvillage/virtual-activities

South Florida Science Center and Aquarium
www.sfsciencecenter.org

Virtual Science Programs on Facebook
Tuesdays at 9 a.m. – Future Scientist Story Time
Wednesdays at noon – Virtual Aquarium Programs
Thursdays at 2 p.m. – At Home Science Shorts
Live Science Demos on Facebook at 3 p.m.
https://www.sfsciencecenter.org/virtual

Stay-At-Home STEM
https://www.sfsciencecenter.org/stay-home-stem

U.S. Fish and Wildlife Service
Arthur R. Marshall Loxahatchee National Wildlife Refuge
Find out more about the only national wildlife refuge in Palm Beach County along with other activities by visiting our website at http://www.fws.gov/refuge/arm_loxahatchee or visit us on Facebook at http://www.facebook.com/ARMLoxahatcheeNWR