

Pollinate Norcross Activity Workbook

Preschool - 2nd Grade



Celebrate Pollinators with us!

Fun activities for young families - learn about pollinators, gardening,
and conservation.

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www.norcrossga.net/1956/sustainability



This workbook was created with the help/support of Gwinnett Soil and Water Conservation District

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NATIONAL POLLINATOR WEEK

WHAT CAN YOU DO TO HELP?



1. **Be kind to your pollinator friends.** Pollinators like bugs and birds are small and fragile. It's easy for people to hurt them. Be gentle and quiet when they are near!
2. **Look, but don't touch!** When you see a butterfly, bee, beetle, or hummingbird outside, look, but don't touch! Pollinators won't hurt you if you leave them alone and are nice to them.
3. **Don't use poison sprays.** Bug your family to stop using poison sprays in your house and garden. This poison kills bad bugs, but it hurts pollinators too. Bug your family to buy ORGANIC fruit and vegetables. These are grown without poison sprays, so they keep pollinators safe and happy.
4. **Keep pollinators' homes safe.** And help make habitat for pollinators. Take care of a garden. Plant some flowers. When you find a bug in your house, gently take it outside to its natural habitat.
5. **Bug someone!** Bugs and pollinators are fun and interesting. Teach your family and friends about these important animals. Teach them to say "Thanks Bugs!" You can "bee" an expert! ★

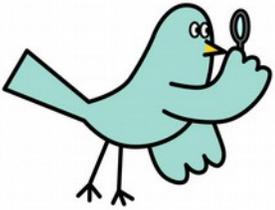
Coevolution Institute

423 Washington Street, 4th Floor

San Francisco, CA 94111-2339

Phone: (415) 362-1137

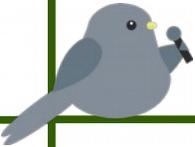
Email: info@coevolution.org



Backyard NATURE HUNT



Can you find these things in your pollinator garden or backyard?

<p>A flower you didn't plant (wild flower)</p>	<p>Someone singing in a tree</p> 	<p>A pollinator who can lift 10 – 50 times her own weight (ant)</p>	<p>A place where wild bees might dig a hole to nest (bare patch of soil)</p>
<p>An insect with wings, who used to be a caterpillar (butterfly)</p>	<p>Something birds love to feed their babies (caterpillar)</p>	<p>A baby plant (seedling)</p>	<p>A tree leaf with lobed edges</p> 
<p>The seed pod from a pine tree</p> 	<p>Flowers with at least 2 pollinators visiting them</p>	<p>A large bee with a “furry rear” (bumblebee)</p>	<p>Something that provides shelter for insects and small animals (stick or log pile)</p>
<p>Tree bark that feels smooth when you touch it</p>	<p>A tiny red beetle with black spots who is good for gardens</p> 	<p>A shadow caused by a tree</p>	<p>A place where butterflies might stop to sip nutrients (mud puddle)</p>
<p>A pollinator originally brought from Europe by the colonists to make honey (honeybee)</p>	<p>An insect who resembles a bee but has a tiny waist (wasp)</p>	<p>Something trees provide that helps soil stay healthy (leaf mulch)</p>	<p>A bee with a “shiny hiney” (Carpenter Bee)</p>



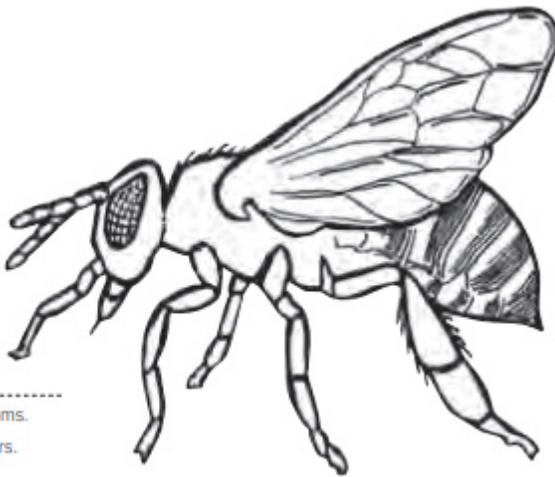
MEET OUR POLLINATORS!

COLOR IN EACH POLLINATOR BELOW!

FUN FACT: LOOK BESIDE EACH POLLINATOR TO SEE THEIR FAVORITE FLOWER

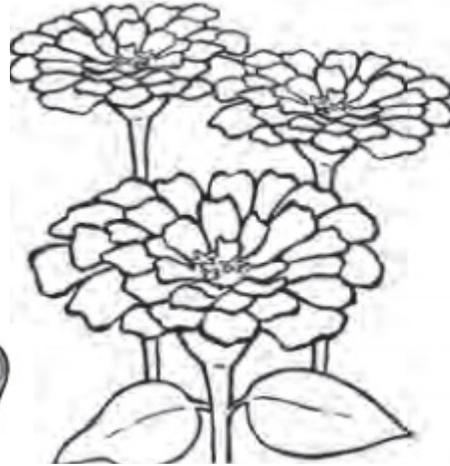
BEE

I like sweet-smelling blossoms.
I like clusters of small flowers.
I eat nectar and pollen.
I like having a place to land while I eat.



Zinnia

I have clusters of small flowers.
I have a flat top to stand on.
I come in bright colors such as yellow, red, and orange.



SNAPDRAGON

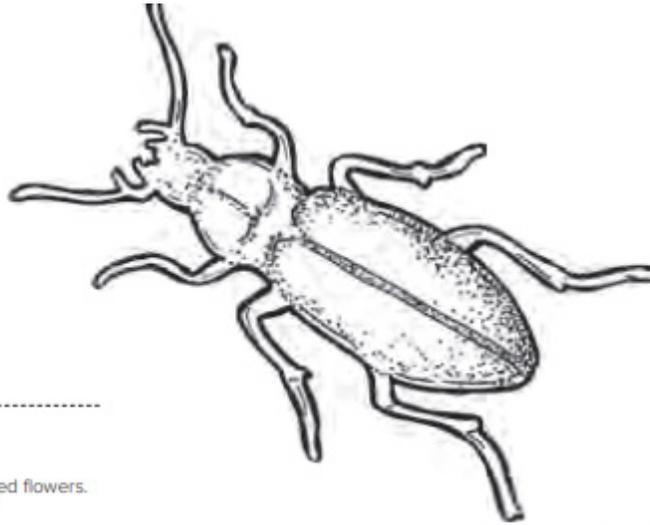
My flowers have handy landing pads.
I smell sweet.
I have lots of small blossoms.
My flowers come in many colors.



BUTTERFLY

I'm attracted to bright flowers.
Nectar is my main food.
I need a place to stand while I eat.





BEETLE

I eat lots of pollen.

I like white flowers.

I like, open, bowl-shaped flowers.



MAGNOLIA

I'm bowl-shaped.

My petals are white.

I open during the day.

I have lots of pollen to offer.



HUMMINGBIRD

I hover to eat.

My main food is nectar.

I like red and purple flowers.

I'm attracted to tube-shaped flowers.



MONARDA

My petals are tubeshaped.

I have lots of nectar.

My petals are bright red or purple.



BUILD A POLLINATOR HABITAT

- Provide a water source
- Include flowers of various colors, shapes, and sizes
- Choose plants of different heights
- Plant for a succession of bloom - try for bloom as much of the year as possible
- Limit or avoid insecticides
- Leave some bare soil for ground nesting and mason bees
- Remember that garden debris like twigs and hollow stems can be bee homes
- Learn more about the native bees in your area
- Contact your local UGA Extension office for more information

<https://GGaPC.org>

Planning your garden – think like a pollinator.

Go Native. Pollinators are "best" adapted to local, native plants, which often need less water than ornamentals.

Bee Showy. Flowers should bloom in your garden throughout the growing season. Plant willow, violet, and mayapple for spring and aster, joe-pye weed and goldenrod for fall flowers.

Bee Bountiful. Plant big patches of each plant species for better foraging efficiency.

Bee Patient. It takes time for native plants to grow and for pollinators to find your garden, especially if you live far from wild lands.

Bee Gentle. Most bees will avoid stinging and use that behavior only in self-defense. Male bees do not sting.

Bee Chemical Free. Pesticides and herbicides kill pollinators.

Bee Sunny. Provide areas with sunny, bare soil that's dry and well-drained, preferably with south-facing slopes.

Bee Homey. Make small piles of branches to attract butterflies and moths. Provide hollow twigs, rotten logs with wood-boring beetle holes and bunchgrasses and leave stumps, old rodent burrows, and fallen plant material for nesting bees. Leave dead or dying trees for woodpeckers.

Bee Friendly. Create pollinator-friendly gardens both at home, at schools and in public parks. Help people learn more about pollinators and native plants.

Bee Aware. Observe pollinators when you walk outside in nature. Notice which flowers attract bumble bees or solitary bees, and which attract butterflies.

Bee a little messy. Most of our native bee species (70%) nest underground so avoid using weed cloth or heavy mulch.

Bee Diverse. Plant a diversity of flowering species with abundant pollen and nectar and specific plants for feeding butterfly and moth caterpillars.



MAKE YOUR OWN BEE MASK

Instructions:

Materials Needed: colored pencils, scissors, and string

Step 1: Color in the mask

Step 2: Cut out the mask along the outside (watch out for the tags on the side!) and eye slots

Step 3: Fold the side tags and tie a string through each side

Step 4: Be a Bee!

Help pollinators!

Grow pollinator-friendly flowers.

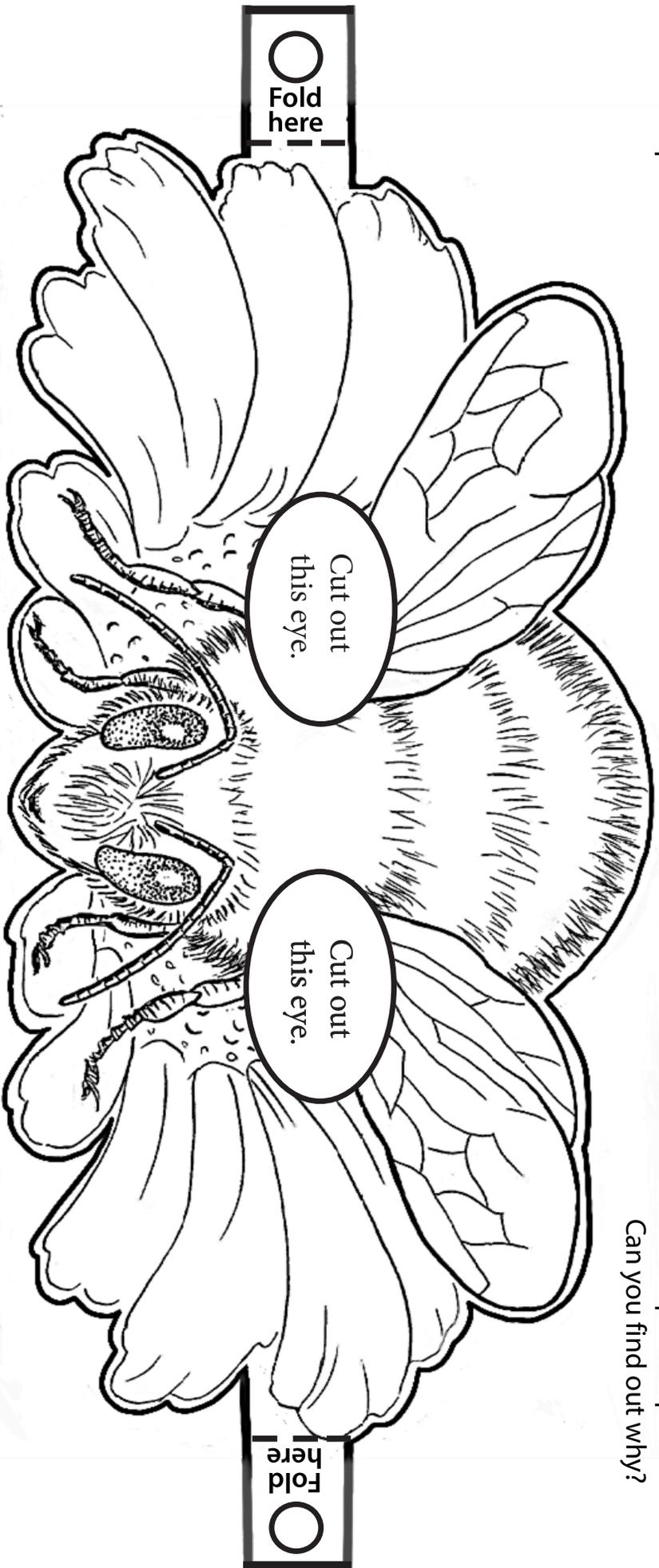
Protect nest sites and host plants.

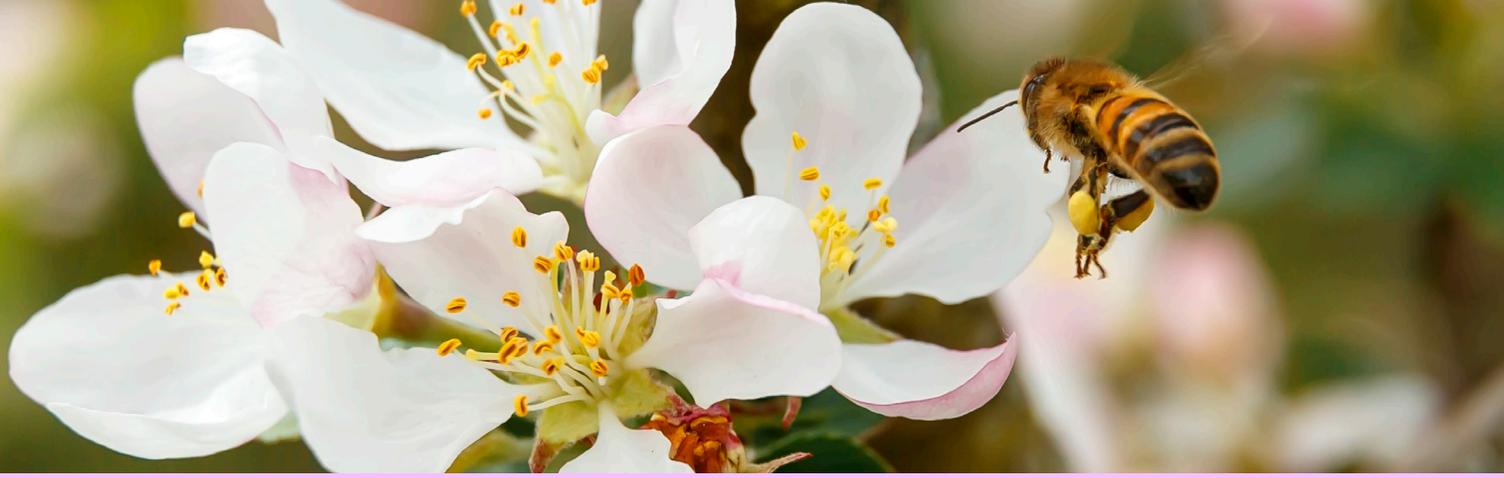
Avoid using pesticides.

Spread the word!

Bumble bees have a lot of hair that makes them fuzzy. They have stripes on their body in the colors black, yellow, and sometimes even orange. Bumble bees are important pollinators.

Can you find out why?





BEE SMART SNACKS

Delicious Pollinated Treats!

Enjoy your pollinator-inspired snacks! Consider pairing the snack portion of this lesson with fun optional educational extensions:

Optional extension 1: Before students are allowed to take/eat a snack, they have to try to name the pollinator that helped bring it to us. (ie. If there is a plate of fig newtons, the student would say “Wasps helped the figs to grow so we can have fig newtons.”)

Optional extension 2: In groups (one group for each snack item), have students create small signs or thank you cards for each snack telling the reader what pollinator(s) made it possible. (ie. “Thanks to the bees that brought us these strawberries.”)

Optional extension 3: Have students create their own recipe and bring in a snack for a potluck pollinator party to celebrate pollinators!

Simple Snacks

- **Honey graham “sandwich”** - honey graham crackers spread with cashew or almond butter topped with dried cranberries and chocolate chips
- **Stuffed tomatoes** - cherry tomatoes cut in half stuffed with cream cheese and chopped chives sprinkled with toasted sesame seeds
- **Simple guacamole** – mash 1 ripe avocado, sprinkle with salt and pepper, squeeze lemon juice and put a dollop on a cucumber slice and top with a piece of roasted red pepper
- **Fruit salad** – cut slices of apples, blueberries, grapefruit, kiwi, melons, orange, peaches, pears, and strawberries to create a healthy snack
- **S’mores** – honey graham crackers, chocolate, and marshmallows

Apiscotti (bee-enabled biscotti)

1/2 C butter

1/2 C sugar

1/4 C honey

3 eggs

1/2 t salt

1 t almond extract

1/ 4 t nutmeg

2 t baking powder

2 1/2 to 3 C flour

1/2 C dried cranberries, chopped

1/2 C dried cherries, chopped

1/2 C blanched sliced almonds, chopped

1. Preheat oven to 350 degrees. Cream sugar and butter together; mix in honey until smooth. Beat eggs until frothy and then add salt, almond extract, nutmeg and baking powder. Combine sugar/butter mixture with egg mixture. Add flour until dough is a consistency that can be handled.

2. Refrigerate dough for one hour or more. Divide chilled dough into three parts and flatten each third into rectangles (use additional flour if needed).

3. Place in a line in the center of each flattened section of dough and fill with chopped cherries, cranberries, and nuts. Fold the sides of each rectangle over to form a loaf with filling in center and seal. Place loaves on greased cookie sheet at 350 degrees for 45 minutes to one hour or until golden brown. Slice on a slant while hot into 1/2 inch slices. For crispier slices, return to oven for 15-20 minutes or until golden-brown (the color of a honey bee).

****Of the 12 ingredients in this recipe, 7 depend on the pollination services of *Apis mellifera* (butter, honey, almond extract, nutmeg, cranberries, cherries, almonds)—hence the name “Apiscotti.” Without *Apis mellifera* (European honey bee), breakfast (and every other meal) would be infinitely less interesting and colorful.**

It's not just honey! We can thank pollinators for giving us many of the ingredients we use to satisfy our sweet tooth. The Pollinator Partnership thanks Dr. May Berenbaum for sharing her original recipe with us.

“I became acutely aware of the plight of pollinators as a result of chairing the National Academy of Sciences study on the status of pollinators a few years ago and have gained a new appreciation in particular of bees and ALL that they do for us, and I've been doing everything I can to raise awareness in the general public ever since....It's not hard to do – honey bees, as you know, contribute on average to about one-third of what we eat and with Apiscotti, I just effortlessly upped the percentage. What was hard to do was to decide which honey bee-related items NOT to include in the recipe—there are so many delicious things that bees bring to our tables!” - May Berenbaum, Ph. D., Professor & Department Head, University of Illinois



Cranberry-Chocolate Tart (10 to 12 servings)

Thank you to *Bon Appetit* magazine for this recipe.

Cranberry Topping

½ cup cranberry juice, divided
1 teaspoon unflavored gelatin
1 12-ounce bag fresh or frozen cranberries
¾ cup sugar
2 teaspoons fresh lemon juice
1 teaspoon finely grated lemon peel
1 teaspoon grated peeled fresh ginger
Pinch of salt
4 tablespoons finely chopped crystallized ginger

Pour ¼ cup cranberry juice into small bowl; sprinkle gelatin over. Let stand until softened, 15 minutes. Combine ¼ cup cranberry juice, cranberries, and next 5 ingredients in medium saucepan; bring to boil, stirring until sugar dissolves. Reduce heat to medium; simmer until cranberries are tender but plump, 5 minutes. Strain into bowl; set cranberries aside. Add gelatin mixture to hot juice in bowl; stir until gelatin dissolves. Stir cranberries back into juice. Chill until cranberry mixture is cold and slightly thickened, at least 8 hours or overnight.

Do Ahead: Can be made 2 days ahead. Cover and chill. Stir chopped crystallized ginger into cranberry mixture.

Crust

1 ¼ cups chocolate wafer cookie crumbs (made from about 6 ½ ounces cookies, finely ground in processor)
¼ cup sugar
1/8 teaspoon salt
5 to 6 tablespoons unsalted butter, melted

Position rack in center of oven and preheat to 350 degrees F. Combine chocolate wafer cookie crumbs, sugar, and salt in medium bowl; add 5 tablespoons melted butter and stir until crumbs feel moist when pressed together with fingertips, adding remaining 1 tablespoon melted butter if mixture is dry. Press crumb mixture firmly onto bottom and up sides of 9-inch-diameter tart pan with removable bottom. Bake chocolate crust until beginning to set and slightly crisp, pressing with spoon if crust puffs during baking, about 14 minutes. Transfer tart pan to rack and cool crust completely before filling.

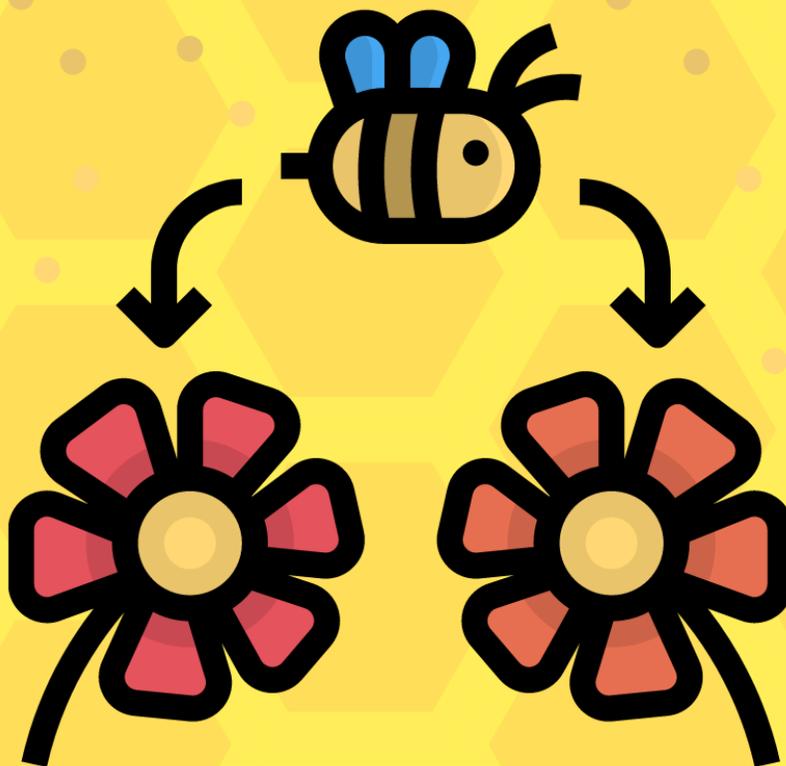
Marscapone Filling

1 8-ounce container marscapone cheese
½ cup powdered sugar
½ cup chilled whipping cream
1 teaspoon vanilla extract
Thin strips of crystallized ginger (optional garnish)

Using electric mixer, beat all ingredients except ginger in medium bowl just until thick enough to spread (do not overbeat or mixture may curdle). Spread filling in cooled crust.

Do Ahead: Can be made 1 day ahead. Cover and Chill.

Spoon cranberry mixture evenly over marscapone filling. Chill at least 2 hours and up to 6 hours. Garnish with crystallized ginger strips, if desired. Cut tart into wedges and serve cold.



POLLINATOR SEED LOLLIPOPS

What you will need:

- 4 Parts Air Dry Clay
- 1 Part Compost/Soil
- 3 Packs of Native Pollinator Seeds
- Popsicle Sticks
- Glue Gun



Directions:

- Combine four parts of clay and add 1 part of compost/soil in a bowl.
- Once mixed add two packs of seeds to the clay mix and combine.
- When seeds are evenly distributed throughout the clay, pinch a small piece off of the clay mix and roll into a ball then flatten to about a 1/4in round.
- Add hot glue to the popsicle stick and insert the stick inside of the flattened round.
- Lay flat and allow 24 hours to dry.

Honey Bee Word Search

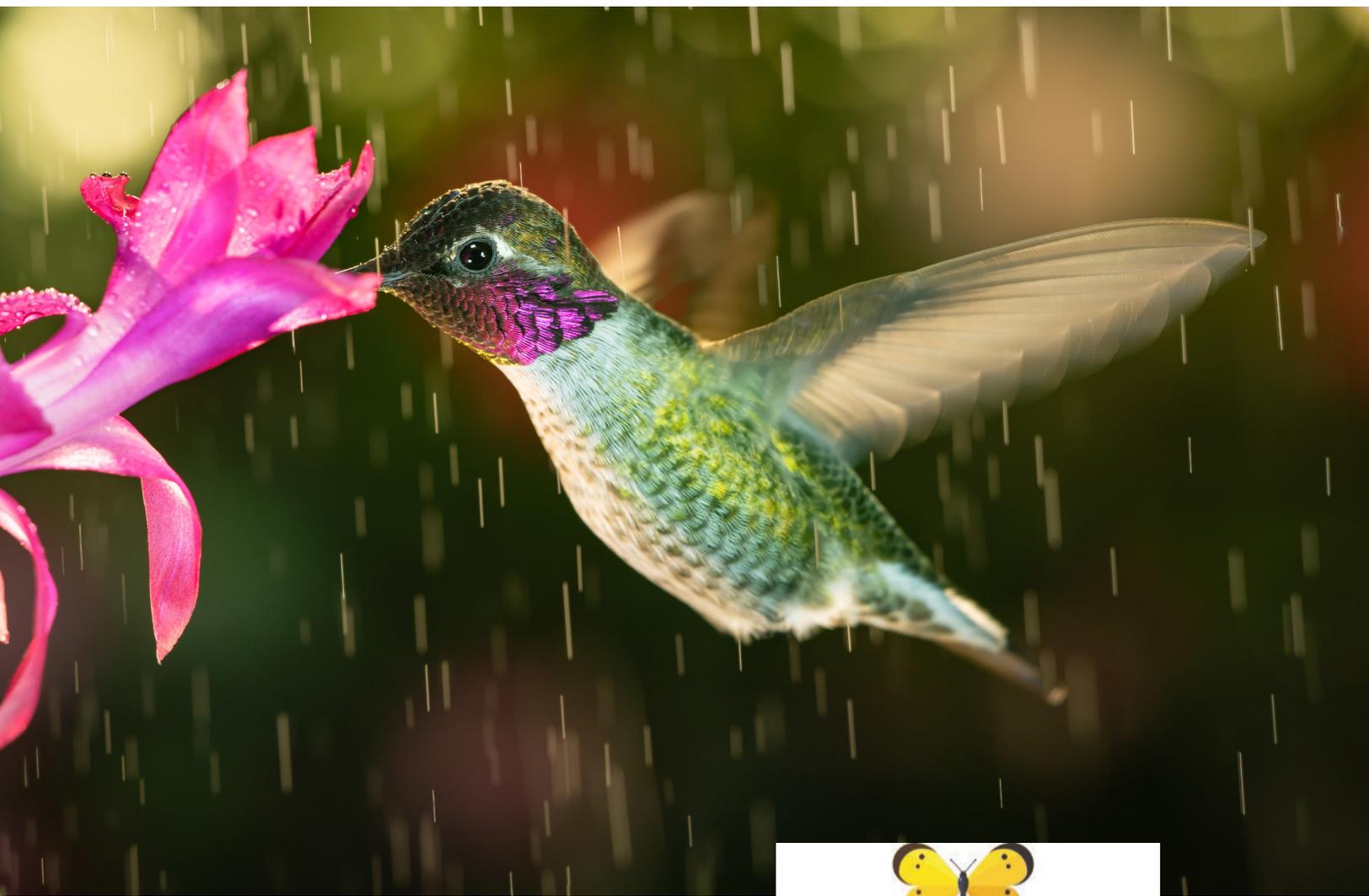


V A Q N C R E S V H
U J Q S E O T S A O
T L M W F I L Z I N
K Z O H N Y C O Q E
I L N G C K S L N Y
F X E I N S E C T Y
A A L V X M R A W S
M W L M I X N H K K
K R O I U H D B S B
P P C L S D O Z J



Colony Honey Sting
Flower Insect Swarm
Hive Pollen Wax





GREAT GEORGIA Pollinator Census

Answers to Frequently Asked Questions:

Can anyone participate? The census is designed for Georgia citizens, of all ages, to participate. School groups, garden groups, families, as well as individuals are encouraged to be a part of the project. This year, during the COVID crisis, we feel most people will be counting at home with their families.

When is the census? This year's census takes place on August 20th and 21st, 2021.

Do I have to be an entomologist to participate? Absolutely NOT! We are asking for only basic insect identification and we will host training prior to the event through this website. You will be asked to categorize the insects you see into these categories:

- Bumble bees
- Carpenter bees
- Honey bees
- Small bees
- Wasps
- Flies
- Butterflies
- Other Insects

How exactly will we do the counts? You will be asked to choose a favorite pollinator plant (a plant from your garden that shows a lot of insect activity) for counting. You should count and identify the insects that land on the flowers of that plant for 15 minutes. A page on this website will be open starting early on August 20th for you to upload your counts.

Can I participate more than once during the two day counting period? Absolutely!

Is this event an appropriate project for schools doing STEM work? Yes, we have lesson plans and ideas for teachers who are teaching virtually as well as ideas for those who are physically in the classroom.

Who do I contact with any questions or for more information? Becky Griffin, of University of Georgia Extension's Urban Ag Center, is the project coordinator. Contact her at beckygri@uga.edu



Pollination



Hummingbird

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Want to Learn More?

Go to the Norcross Library and pickup some books, or order online or over the phone with curbside pickup.

6025 Buford Hwy
Norcross, GA 30071
(770) 978-5154

Kid's Books

How to Bee

By: MacDibble, Bren

Flowers

By: Gibbons, Gail

Flower Talk: How Plants Use Color to Communicate

By: Levine, Sara

You Wouldn't Want to Live Without Bees!

By: Woolf, Alex

The Thing about Bee's: A Love Letter

By: Larkin, Shabazz

A Sunflower's Life Cycle

By: Thomson, Ruth

The Honey Bee's Hive: A Thriving City

By: Joyce L. Markovics

The ABC's of Plants

By: Kalman, Bobbie

Science

Protecting Pollinators: How to Save the Creatures That Feed Our World

By: Helmer, Jodi

Our Native Bees: North America's Endangered Pollinators and the Fight to Save Them

By: Embry, Paige

Storey's Guide to Keeping Honey Bees: Honey Production, Pollination, Bee Health

By: Sanford, Malcolm T.

Pollen: Darwin's 130 Year Prediction

By: Pattison, Darcy

Wildlife Heroes: 40 Leading Conservationists and the Animals They Are Committed to Saving

By: Scardina, Julie

Deceptive Beauties: The World of Wild Orchids

By: Ziegler, Christian

Where Have All the Bees Gone?: Pollinators in Crisis

By: Hirsch, Rebecca E

Gardening

Gardening for Butterflies: How You Can Attract and Protect Beautiful, Beneficial Insects

By: Black, Scott Hoffman

Good Bug, Bad Bug: Who's Who, What They Do, and How to Manage Them Organically - All You Need to Know about the Insects in your Garden

By: Walliser, Jessica

Attracting Beneficial Bugs to your Garden: A Natural Approach to Pest Control

By: Walliser, Jessica

Attracting Native Pollinators: Protecting North America's Bees and Butterflies

By: The Xerces Society

How to Grow More Vegetables: (and Fruits, Nuts, Berries, Grains, and Other Crops) Than You Ever Thought Possible on Less Land than You Can Imagine

By: Jeavons, John

The Wildlife-friendly Vegetable Gardener: How to Grow Food in Harmony with Nature

By: Hartung, Tammi

The Fruit Gardener's Bible: A Complete Guide to Growing Fruits and Nuts in the Home Garden

By: Hill, Lewis

Cooking

Eat the Beetles! An Exploration Into Our Conflicted Relationship With Insects

By: Waltner-Toews, David

Online

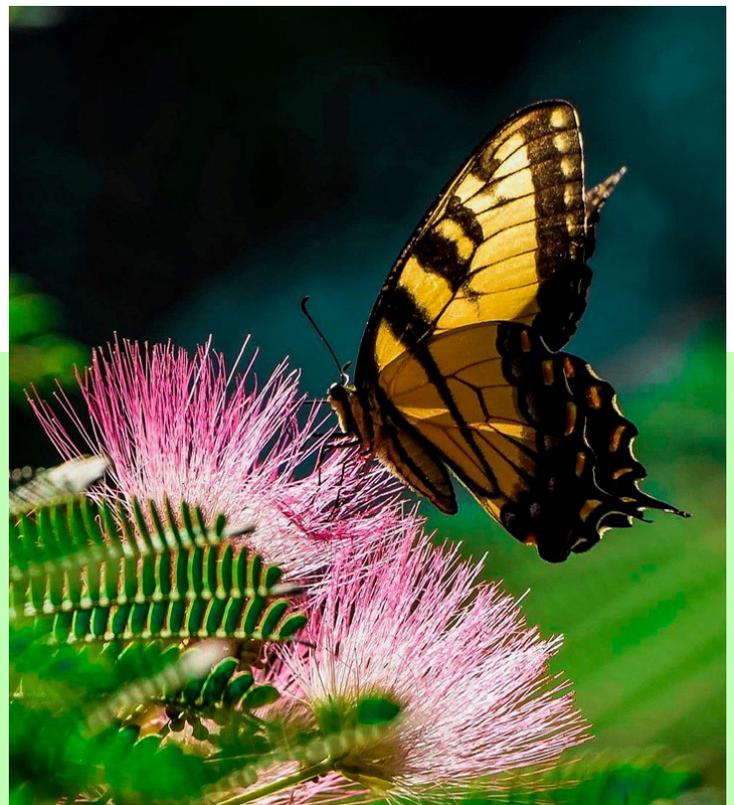
GCPL's [Daily Distraction](#)

ASU Honey Bee Hive [Virtual Tour](#)

eRead Kids - [Books about Bees](#)

OverDrive for Kids - [Nature](#)

Non-fiction eBooks on [Tumblebooks](#)



Photographed by Eli Miller at the Chattahoochee River National Recreation Area



Register Your At-Home Pollinator Garden

with the City of Norcross to receive your own "Pollinator Friendly Garden" sign and to be highlighted on a City-wide, Pollinator Garden Map. Scan the QR Code below, or visit <https://arcg.is/11GfGn> to complete the registration application!

