GRACE PLACE®
For Children & Families

Home-Learning Activity

WEEK OF: May 11
Activity #1

THIS ACTIVITY IS FOR GRADE/S:
Middle School

Title of Activity:

Nature Art Bugs

Learning Outcome:

Knowledge of camouflages and why they are important in nature.

Description of Activity:

See the attached activity sheet(s) and follow the steps outlined.

Be sure and share your nature art bug on the Naples Botanical website or please email a picture to Ms. Pam. pam@graceplacenaples.org

Activity Resources:

See attachment for the rubric.

Naples Botanical GARDEN

Activity: Nature Art Bugs

Materials:

- Fallen plant material like leaves, flowers, sticks, pinecones, seed pods (choose a variety of colored leaves, spotted leaves, anything visually interesting)
- Bin for collecting plant material
- Cardboard squares
- Mod Podge or any glue
- Paints

Steps:

1. Collect plant material found around your home or neighborhood. This is a great chance to get outside and enjoy the outdoors. Collect a variety of plant material such as flowers, leaves, sticks, seeds, and seed pods.

2. Lay out your materials and select a square of cardboard. The size of this piece of cardboard is your choice and may depend on the type of material you have collected.
   Optional: These squares can be pre-painted with acrylic paint. It's best to use one solid color for the squares so that the bugs will stand out once created.

3. Begin designing your bug on the piece of cardboard to practice before gluing. Play with different ways to arrange the plant material you collected.
   Remember: bugs have three main body segments: a head, thorax, and abdomen. Think about including other body parts like antennae, legs, or even wings!

4. Glue pieces to the cardboard and let sit for at least two minutes to dry.

5. Bug complete! Share your bug for everyone to see.
   Optional: share your bugs on social media! Use #stayplanted to share your Nature Art Bug with us at the Garden!

Discussion questions:

- Is your bug camouflaged? What kind of camouflage? What is camouflage?
- Where would your bug be able to hide?
- What kind of plants would this bug like to live on?

Learn more:

Camouflage is a type of coloration and/or pattern that helps animals and plants hide in their surroundings. There are four main types of camouflage: concealing coloration, disruptive pattern, disguise, and mimicry.

- Concealing coloration/Blending
    - Colors or patterns that allow an animal or plant to blend in with its environment
    - Fixed camouflage: usually a solid color with scattered markings that match a certain environment. This kind of coloration wouldn't work if the animal or plant was removed from its environment.
        - *What kind of plants or animals use fixed camouflage?*
            - Snowy owl, polar bear. In Florida: Florida panther, white-tailed deer, butterfly chrysalides
            - **Special Plant: Lithops**
                - Often called "living stones", lithops are native to the dry climate of southern Africa.
                - To stop thirsty critters from eating them, lithops have adapted to disguise themselves as stones
                - Their leaves aren't green; they're grey or brown and covered in stone-like patterns – makes them virtually invisible against the brown, rocky ground
                - No hiding once they bloom! The flowers are bright and beautiful
    - Background matching: refers to animals that can alter their coloration to match their surroundings
        - *What kind of plants or animals alter their coloration to match their surroundings?*
            - Chameleon, flounder, octopus, anole lizards
- Disruptive pattern
    - Patterns that break up an animal's outline or conceal certain body parts; some disruptive patterns can confuse predators by making them think the animal or plant is sick or dead
        - *What kinds of plants or animals have disruptive patterns in their coloration?*
        - **Special Plant: *Caladium steudneriifolium***
            - Caladiums are native to the rainforests of southeast Ecuador
            - Caladiums are a favorite food of the voracious mining moth caterpillar. These moths lay their eggs *in* the leaves of the plant; when the eggs hatch, the caterpillars eat their way through the leaves, leaving behind white trails that *mimic* natural patterns called variegation

- Plants in the Araceae family, like caladiums, have learned to deter the moths by purposely pretending it has already been eaten. And it works! Leaves that feature the white patterns are far less likely to get munched on by the caterpillars.
- *Monstera deliciosa* is another cool plant that uses a form of disruptive pattern to confuse predators. Monstera is often called the "Swiss cheese" plant because of the holes in its leaves. These holes make predators think that the leaf has been eaten, so they move on to find a new, whole leaf.

    - The stripes of a zebra's coat create a disruptive pattern for flies (compound eyes have a hard time seeing stripes), and a leopard's spots break up the outline of its body – making them virtually invisible against a jungle background.
    - Here in Florida, baby alligators hide themselves with the help of their patterned stripes, which makes them very hard for large predators to find among the reeds and plants that grow in low-lying banks of watering holes
    - Disruptive eye mask: a band of color that conceals an animal's eye and allows the animal to better avoid being seen by a predator. This pattern is commonly found on frogs, fish, and birds.
    - Q: *What category does camouflage clothing fall under?*
        - A: Pattern and disguise; the patterns on camouflage clothing match the colors of the environment they are intended for and the shapes break up the outline of the human body, making it very hard to see.
- Disguise
    - An animal or plant takes the appearance of something else in its environment.
    - Many insects and small reptiles/amphibians disguise themselves as leaves or sticks
        - Leaf bugs, stick insects, leaf-tailed geckos, long-nosed horned frog, mantis species (orchid mantis, dead leaf mantis)
        - The Florida leaf wing is an endangered butterfly species that, when its wings are closed, looks exactly like a dead leaf! When it opens its wings, they are bright orange on the top side.
        - **Special Plant: The bee orchid**
            - This orchid flower looks and smells just like a female bee.
            - When male bees stop by to say hello, they become covered in the orchid's pollen – which is basically a free pollination service for the orchid.
    - Mimicry
        - An animal or plant that has adapted to look like a different species
            - A mimic octopus can change the color of its skin and the shape of its body to resemble coral, fish, and even stingrays.
            - **Special Plant: *Boquila trifoliolata* vine**

- Native to temperate rainforests of Chile and Argentina
- Grows like your average vine: crawls on the forest floor, spirals up, and hangs on host plants
- Here's the fun part: Boquila can change the shape (and sometimes color) of its leaves to match the host plant.
- Acts more like a chameleon than a plant!
- *Why does it disguise itself?* By disguising its leaves among the host plant, Boquila is less likely to be munched on by hungry caterpillars (which the forests of Chile and Argentina are full of)
    - In some cases, Boquila could be mimicking a toxic plant or a gross-tasting plant to deter predators (Batesian mimicry; see below)
- *How does it disguise itself?* It's a mystery!
    - One theory suggests that there are airborne chemical signals being passed between the Boquila leaves and the host leaves.
- This plant may be proof that plants are far more talented than we ever imagined!

- Batesian mimicry: when a harmless animal or plant adapts to look like a dangerous animal or plant
    - Scarlet king snakes are harmless, but they look just like venomous coral snakes (Red touch black, friend of Jack. Red touch yellow, kills a fellow).
    - Banded water snakes look just like cottonmouth snakes (a cottonmouth's mouth looks like it is full of cotton because their mouths are white on the inside).
    - Viceroy and queen butterflies mimic monarch butterflies because predators recognize monarchs as toxic. Monarch caterpillars eat milkweed, which makes them poisonous.