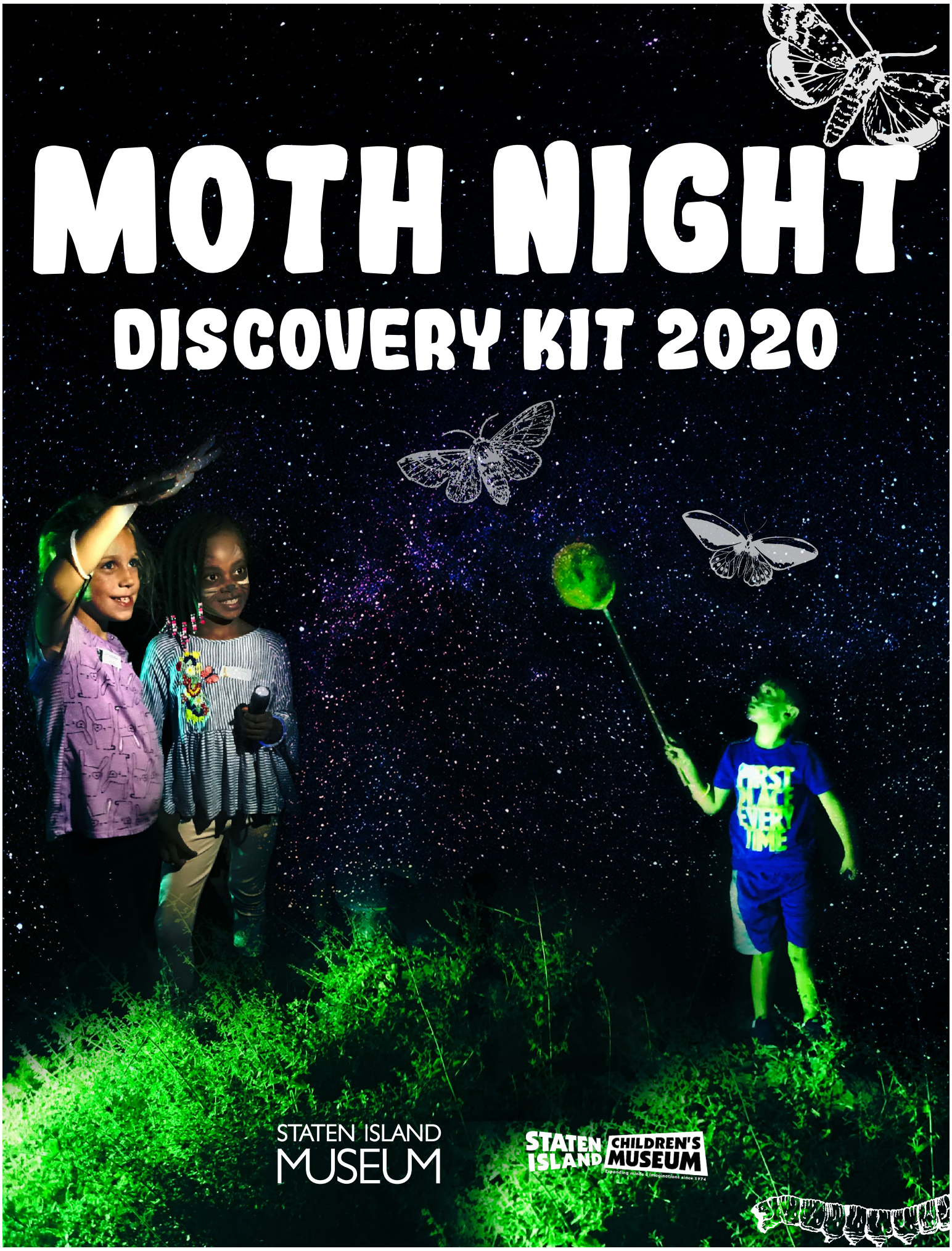
MOTH NIGHT

DISCOVERY KIT 2020



STATEN ISLAND MUSEUM

STATEN ISLAND CHILDREN'S MUSEUM
Expanding minds & imaginations since 1974

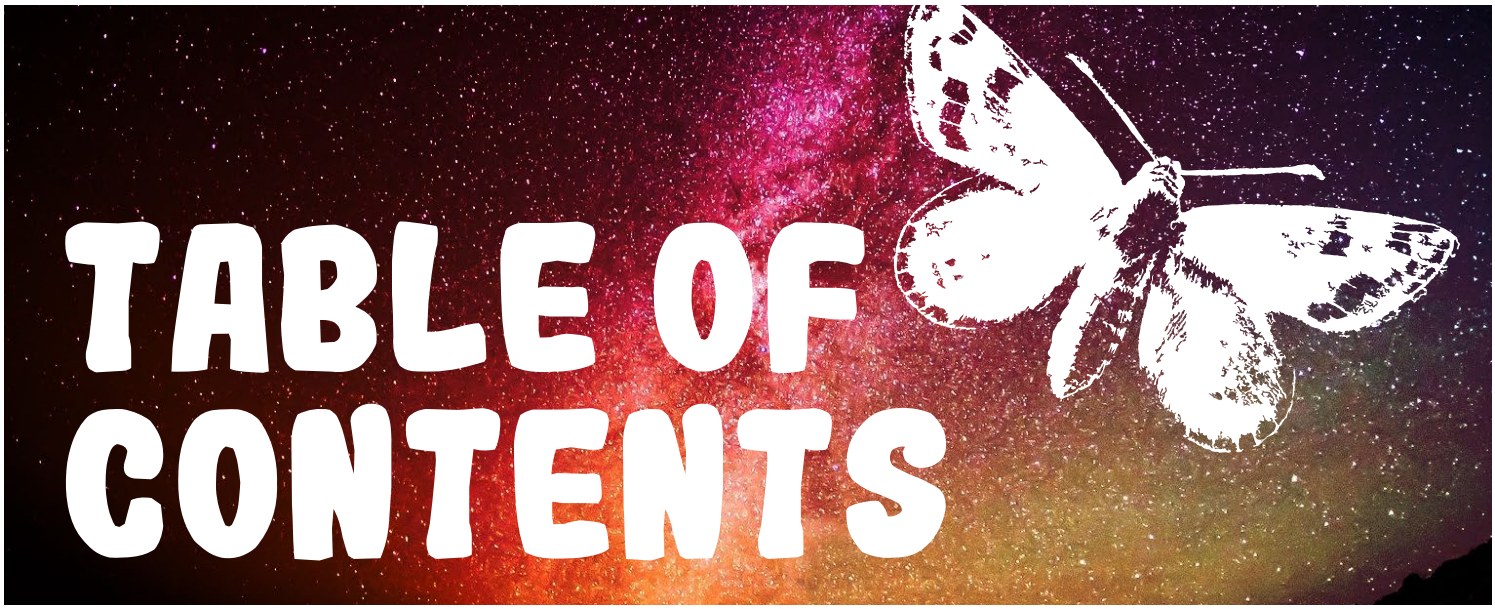


TABLE OF CONTENTS

"DECODING DUSK"

When the sun begins to set, another world arises. But what is dusk and why is it such a popular time for a variety of species? Learn all about this unique time period and some common misconceptions that float around about the creatures that begin to appear at this time with Ashley Gary, The Wildlife Host.

Ashley Gary is a science communicator known online as The Wildlife Host. Since 2018 she has been sharing her love and passion for wildlife with her community on both Instagram and Twitter. Along with sparking curiosity in people about the natural world, she also promotes positivity and following your dreams. It was following her dreams and forging ahead that lead to the creation of The Wildlife Host brand and the opportunity to reach thousands of people with the message of appreciation and stewardship of the biodiversity around us.

Keep learning with Ashley by following **@thewildlifehost** on Instagram

FLASHLIGHT SCAVENGER HUNT

When it starts to get dark out, using your senses will help you experience the world outside. As you walk around, use your eyes, ears, nose, and hands to find the following things from nature.

Remember to ask your adult for help when touching things in the natural world. Let's get started!

WHAT TO BRING:

- Flashlight
- Adult chaperone
- Your eyes, ears, nose & hands
- Pencil and paper
- Sense of adventure!

1. **Feel the night breeze.** Which direction is it coming from? Can you hear it, too?
2. What does the night air smell like?
3. Do you hear any sounds? List them here: _____, _____, _____, _____.
4. Can you hear the birds calling? How many different songs can you hear?
5. Do you see any shadows? What's making the shadow?
6. **Look up at the sky.**
   a. Can you see the moon? What shape is it?

7. Do you notice anything glowing in the dark around you? _____
8. What is reflecting light? Where is the light coming from? _____
9. Listen closely, can you hear insects buzzing, humming or chirping?

   Get help identifying the sounds of this summer chorus with Laurel Symes, an evolutionary biologist at Dartmouth College: **Click here**
10. Are you near the woods? Can you hear the gray treefrog?

    Fact: "One member of this Greenbelt choir is the gray treefrog (*Hyla versicolor*), a species of small arboreal frog native to Staten Island. The Gray treefrog has large, sticky toe pads that enable it to cling to tree bark and shrubs."

    Learn more here: **Click here**

    Hear its call here: **Click here**
11. **Find:** A flying insect
    What was it? _____

...MORE ON THE NEXT PAGE

FLASHLIGHT SCAVENGER HUNT ...CONTINUED

12. Find: A crawling insect
Where did you find it?_____

13. Find: A spider web.
What kind is it?


☐ Tangle Web


☐ Sheet Web


☐ Funnel Web


☐ Orb Web

14. Find: A flower.
Is the blossom open or closed? ☐ Open ☐ Closed

Fact: "Plants that tuck themselves in for bedtime exhibit a natural behavior known as nyctinasty. Scientists know the mechanism behind the phenomenon: In cool air and darkness, the bottom-most petals of certain flowers grow at a faster rate than the upper-most petals, forcing the flowers shut. But scientists are not quite sure why some plants, particularly flowers, evolved this way. There are several theories, though."

Learn More Here

WHEN YOU'RE DONE...

1. What new things did you discover using your senses?

_____

_____

_____

2. What did you find that wasn't on the list?

_____

_____

_____

"LOVE AT FIRST LIGHT"

Have you ever wondered why moths are attracted to lights? Danielle will show you an easy at-home experiment you can set up to observe the many species of moths near you.

Danielle Belleny is a wildlife biologist, science communicator, and avid birder from San Antonio, Texas. Through a series of "happy accidents" and a ton of hard work she has found herself in a profession that brings her immense joy. As a wildlife biologist, Danielle gets to take a closer look at how and why ecosystems function. Her favorite part about her job is being able to share her knowledge of nature with others. She is a co-organizer of #BlackBirdersWeek and The BlackAFinSTEM Collective, an organization focused on sharing the experiences of Black conservationists and outdoor enthusiasts.

Keep learning with Danielle by following @BellzIsBirding on Instagram and Twitter

LOVE IS IN THE AIR: MOTH MATE MAZE

Since many moths are only out at night, they have to find each other in the dark. Moths often have fluffy, or plumose, antennae to help detect the pheromones, or chemical trails, of another moth. Male's antennae are usually much fluffier than females, in order to help him find a mate. Some species of moths can sense and track a mate from miles away!

Can you help the moth follow the pheromone trail and find their mate?

"LOOKING CLOSELY AT THE MOTH COLLECTION"

Join Colleen in exploring the moth collection at the Staten Island Museum. Look closely at species such as Atlas moths, sphinx moths, and the White Witch! Learn about the diversity of moth species and why museums keep specimens in the first place.

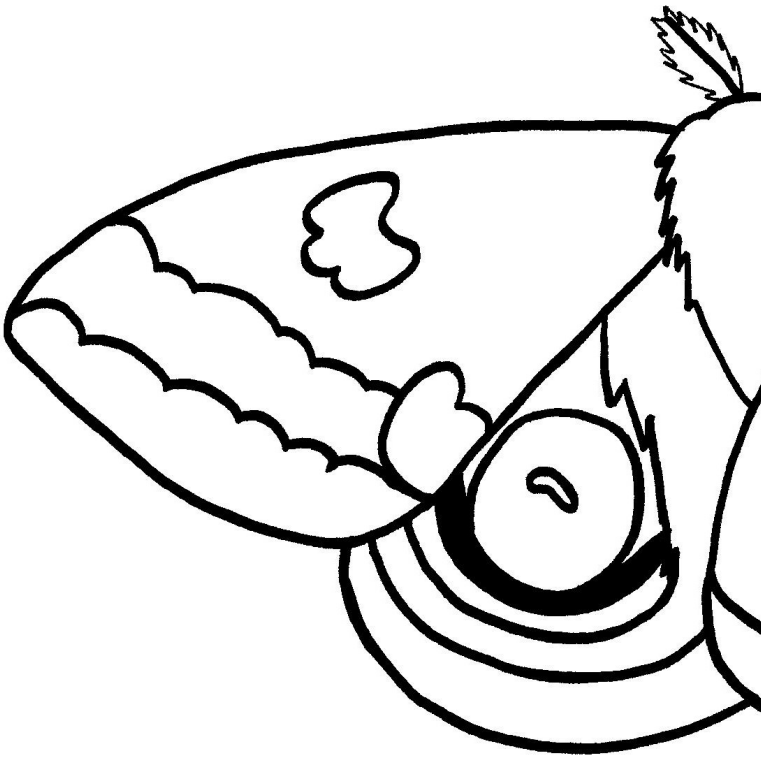
Colleen R. Evans is the Staten Island Museum's Director of Natural Sciences. A biologist who specializes in museum collections, Colleen also brings a wide knowledge of arthropods and science education to her post. She earned her BS and MS in Biology at the University of North Texas, where she specialized in natural history collection digitization. She previously served as the collections manager at Georgia Southern University where she managed the university's natural history collections, including the U.S. National Tick Collection.

Keep learning with the Staten Island Museum by going to www.statenislandmuseum.org

PATTERN MIRROR ACTIVITY

Moth wings are mirrors of each other, so the wings on one side of the body are identical to the ones on the other side.

Can you draw the matching wings for this Io moth?
Connected to the Io moth illustration.



FUN FACT:
Io moth caterpillars, especially when young, are gregarious (live in groups) and sometimes form lines, "marching" in single file.

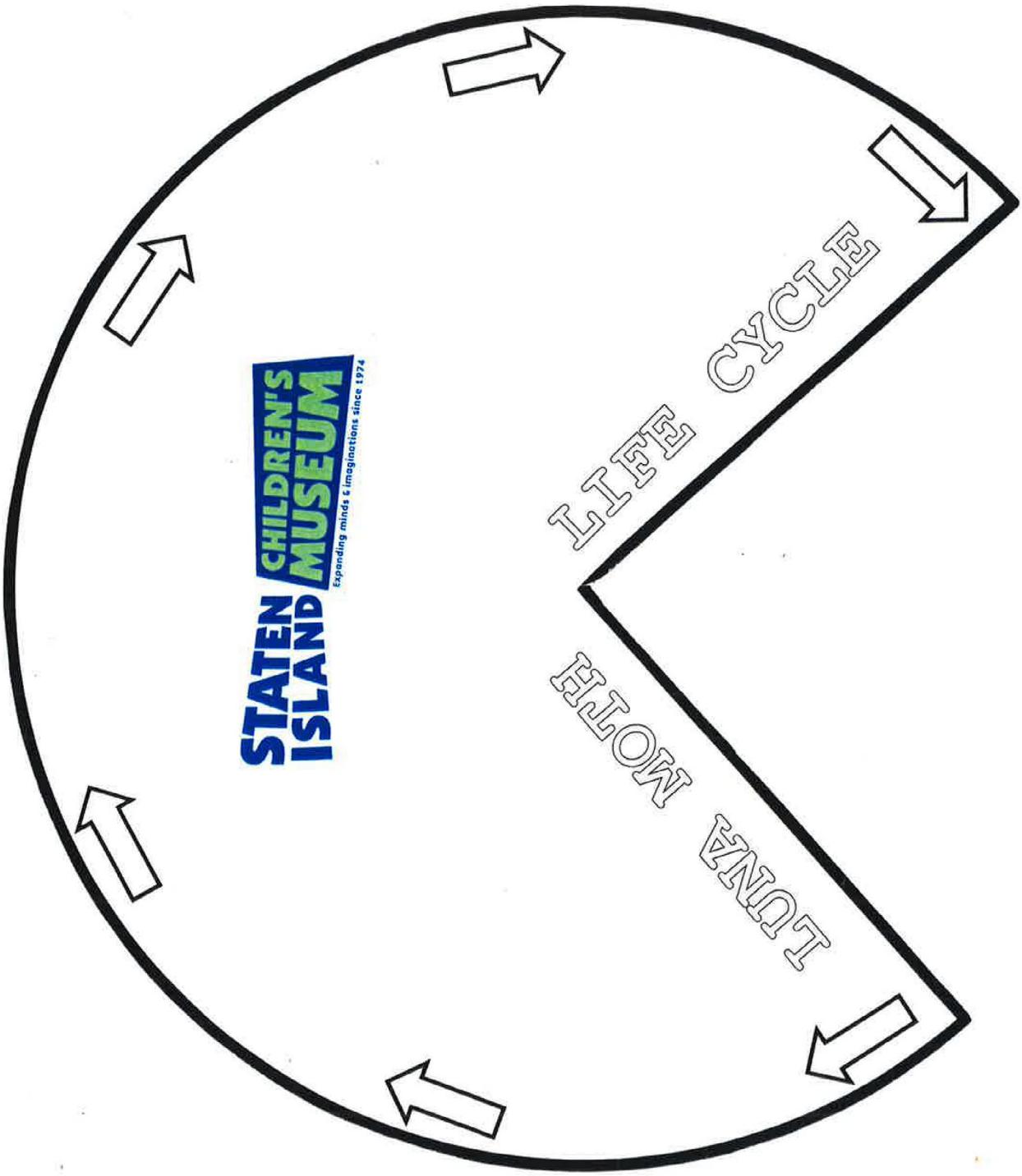
"LUNA MOTH LIFE CYCLE"

Learn about Luna Moth life cycles with The Staten Island Children's Museum. Then using the provided template, follow the step by step instructions to create your very own life cycle wheel.

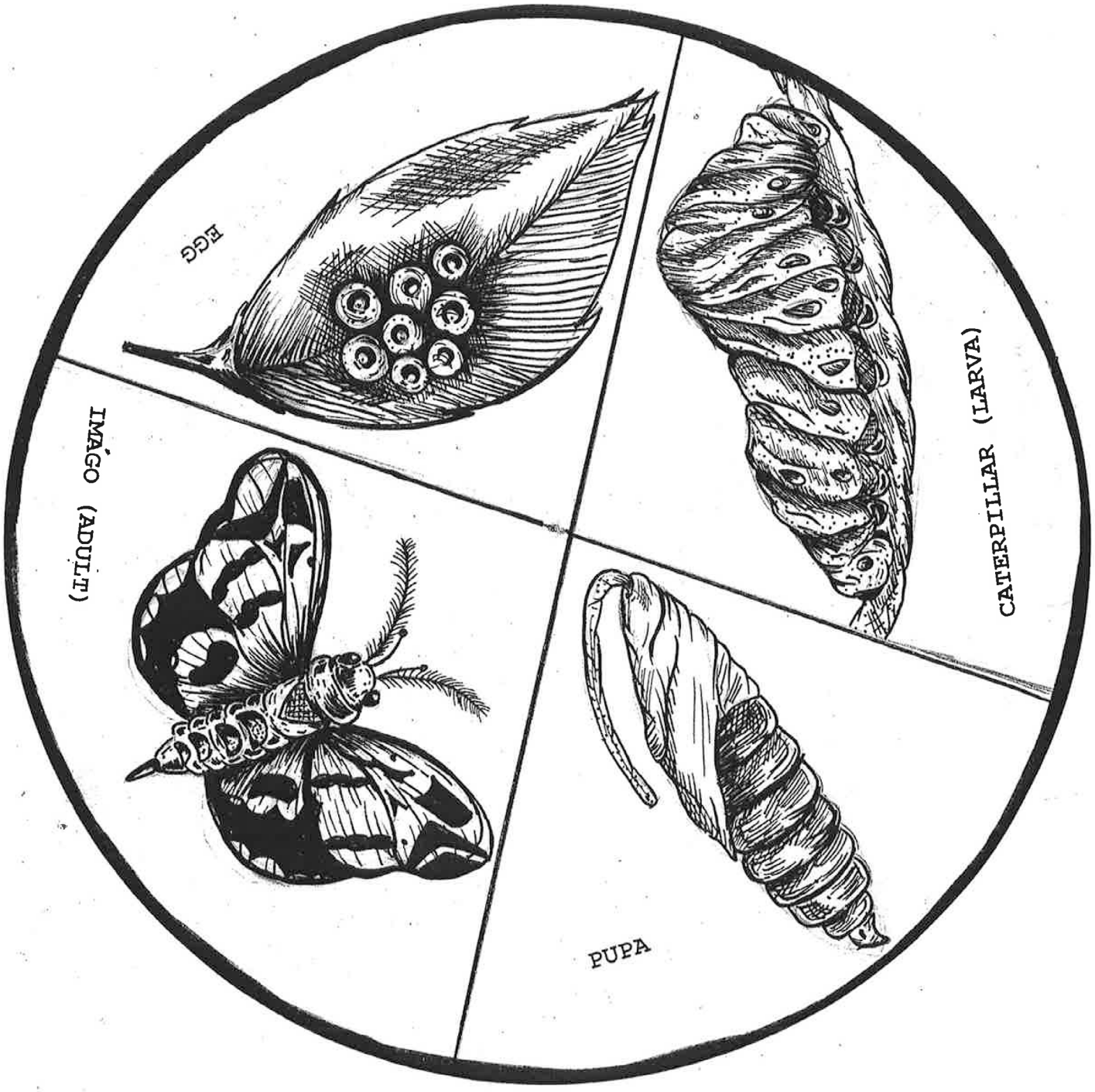
FUN FACT:
This insect doesn't have a mouth or a digestive system! It only lives for about a week after leaving the cocoon and it doesn't ever eat.

Keep learning with the Staten Island Children's Museum by visiting
www.sichildrensmuseum.org

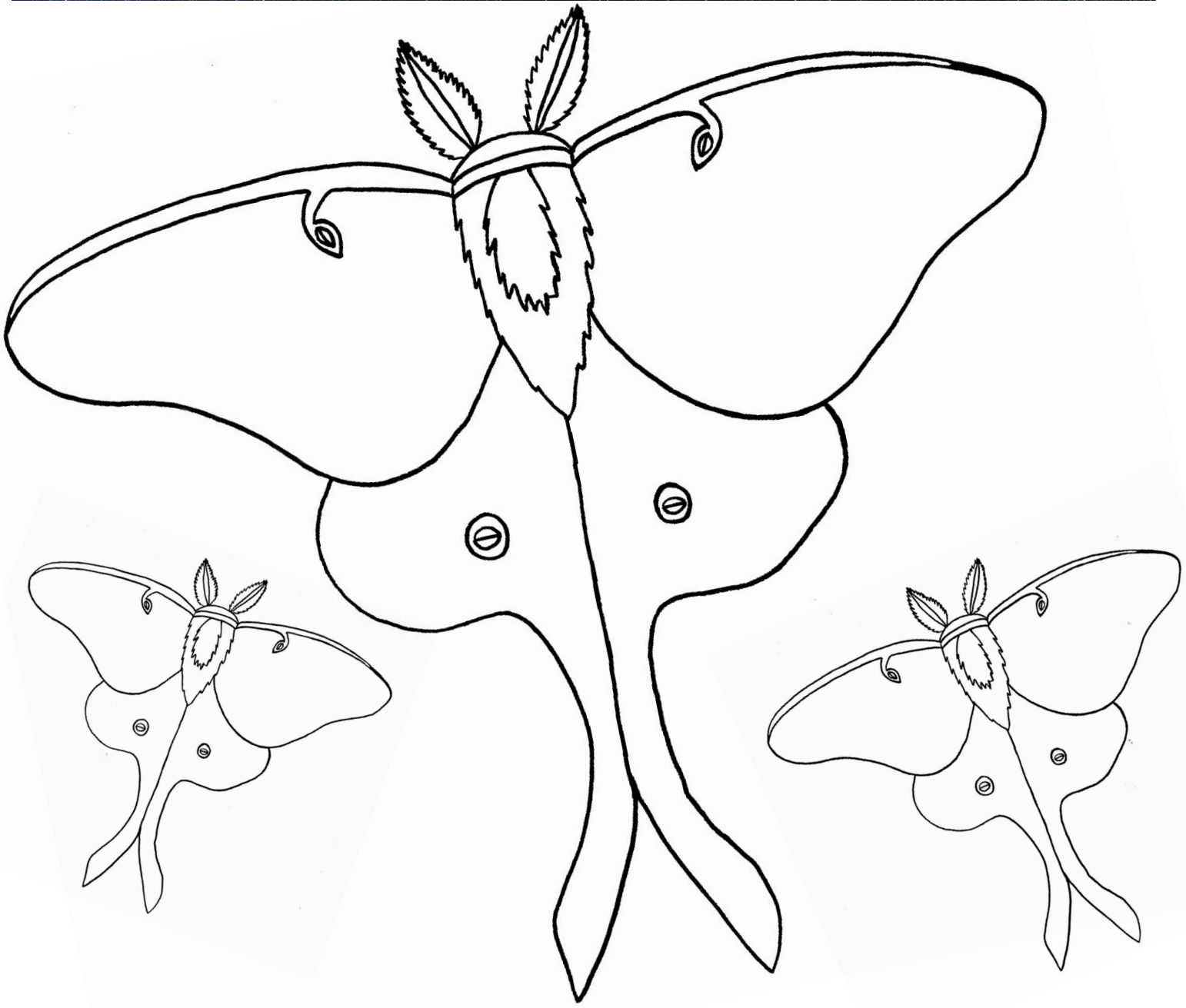
LUNA MOTH LIFE CYCLE
WITH THE STATEN ISLAND CHILDREN'S MUSEUM



LUNA MOTH LIFE CYCLE
WITH THE STATEN ISLAND CHILDREN'S MUSEUM

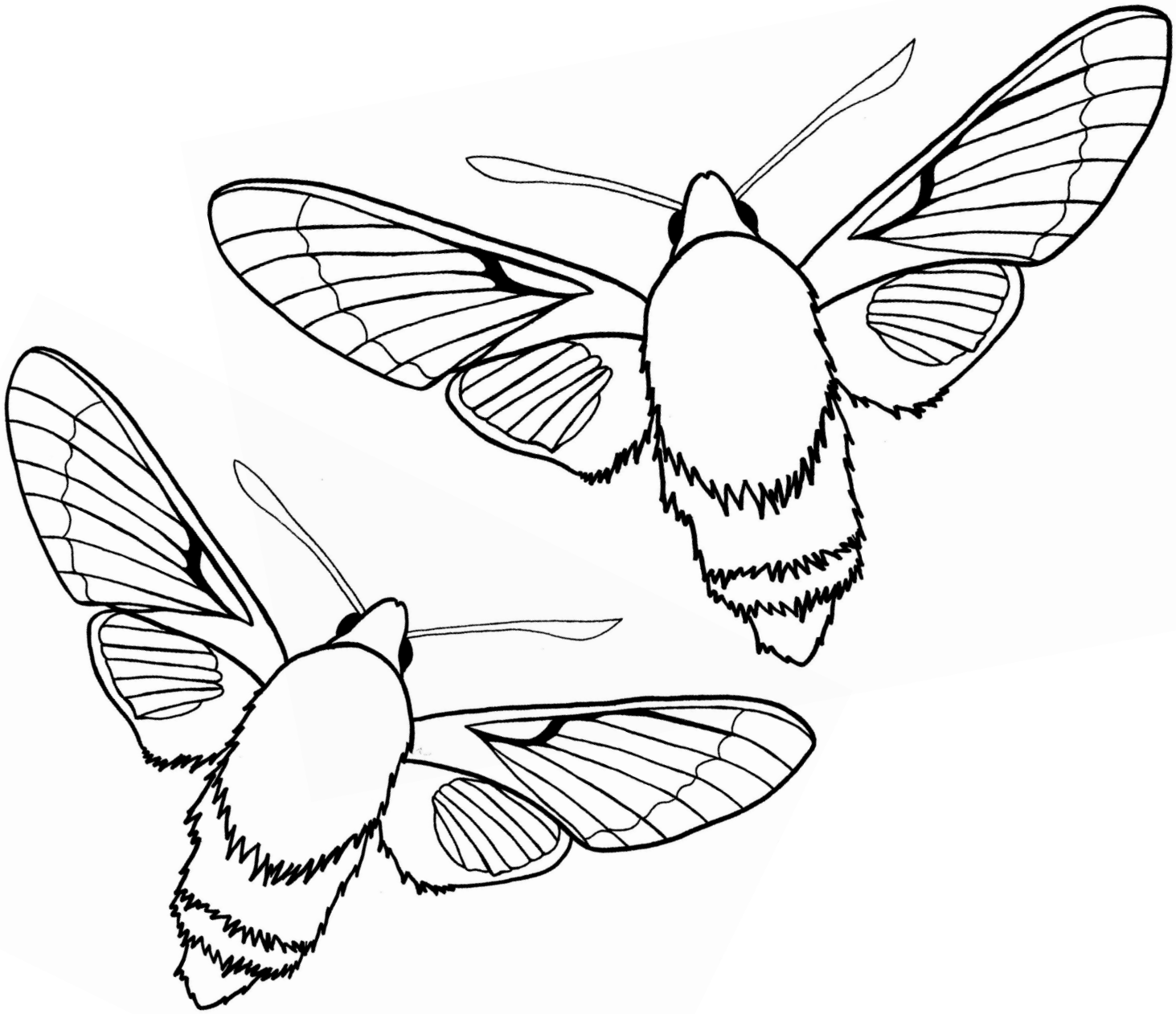


LUNA MOTH COLORING PAGE



FUN FACT:
Moths can be just as big and colorful as butterflies. Luna moths are bright blue-green and can have a wingspan as large as 7 inches across!

SNOWBERRY CLEARWING COLORING PAGE

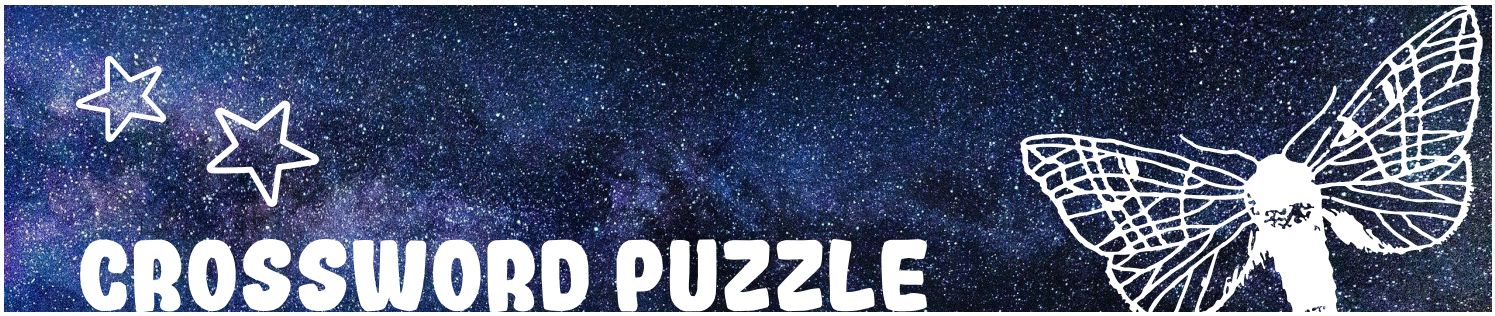


FUN FACT:
Moths don't only come out at night. Some clearwing moths are out during the day, feeding on nectar from flowers. People often mistake them for bees or hummingbirds!

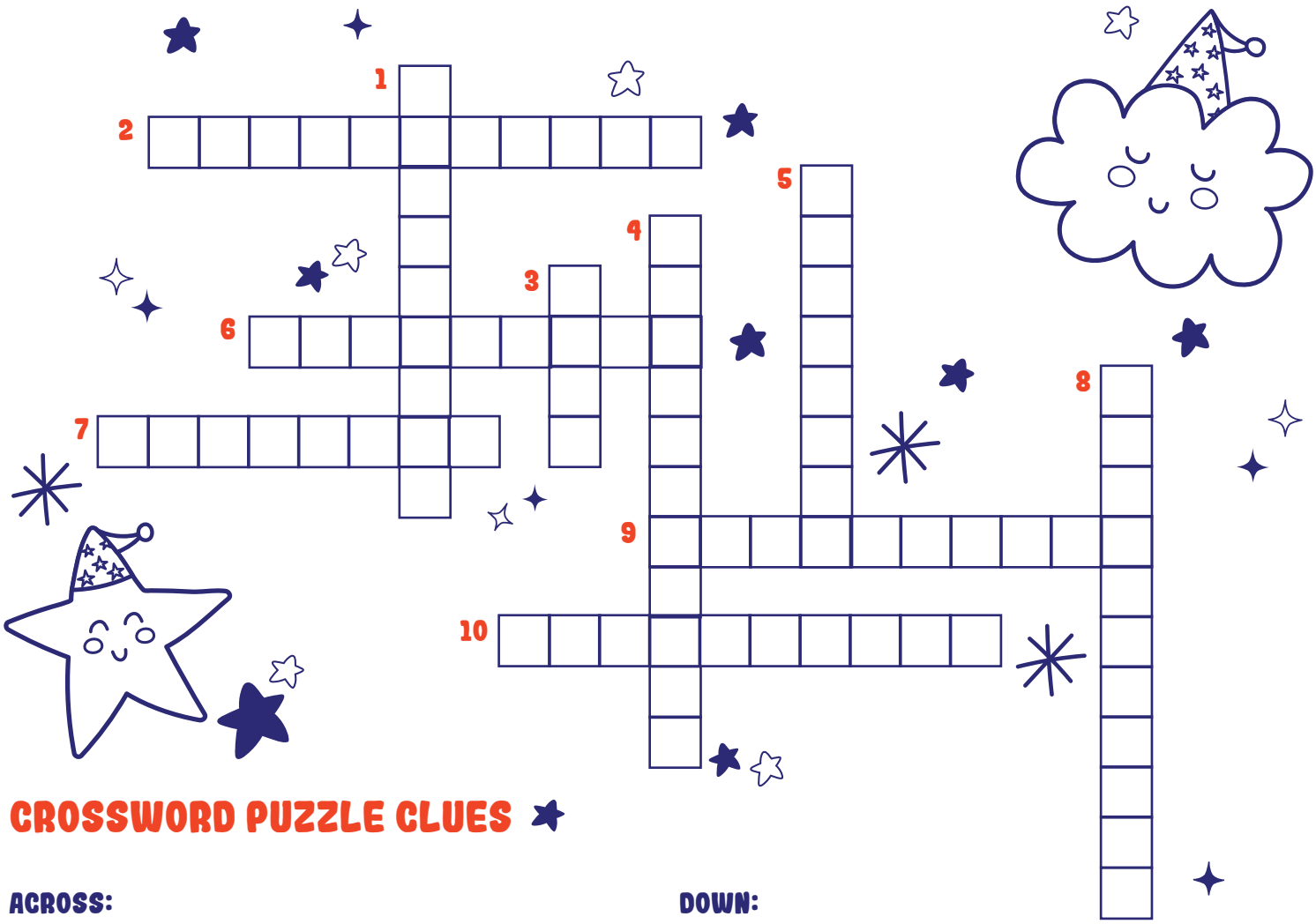
"HOW TO RAISE BUTTERFLIES AT HOME"

Is it possible to raise butterflies at home? Learn tips and techniques from amateur lepidopterist Cooper Keane.

Cooper Keane is a 14 year old budding lepidopterist. Raising butterflies has been a passion of his since he was 5 years old and he has always been happy to share it with others. It all began when his mother brought home a parsley plant that had multiple caterpillars on it. He found these caterpillars and proceeded to try and raise them. Over the years he has modified his methods to include newfound tips and tricks to raise these magnificent insects. His favorite part is the satisfaction of releasing the butterflies and knowing that all of his hard work has paid off.



CROSSWORD PUZZLE



CROSSWORD PUZZLE CLUES

ACROSS:

2. This taxonomic order includes moths and butterflies.

6. Chemical signals animals emit. The highly sensitive antennae of many moths help them detect this attractive chemical from miles away.

7. Help an insect sense their environment. Moths have feathering on them, butterflies don't. The feathering can be easy to see, looking almost like combs or saws on either side of the stems.

9. Patterns that help an animal blend in with their environment

10. General term for insects or other animals that transfer pollen between plants

DOWN:

1. Active at night, these creatures generally have highly developed senses of hearing, smell, and specially adapted eyesight to help them navigate the darkness.

3. Member of the insect Order Lepidoptera along with their close relative the butterfly

4. These animals are active primarily during twilight. There's a very smart reason for this: they're avoiding predators.

5. These insect parasites feed on human blood and are attracted to the carbon dioxide, lactic acid, and octenol found in our breath and sweat.

8. The larva of a butterfly or moth. They might be hairy, have warning coloration, or be colored to resemble their surroundings.

1. Nocturnal 2. Lepidoptera 3. Moth 4. Crepuscular 5. Mosquito 6. Pheromone 7. Antennae 8. Caterpillar 9. Camouflage 10. Pollinator

"HOW TO MAKE A LIGHT ATTRACTOR"

Entomologists use light attractors to study nocturnal insects in an area. Artificial lights attract moths, flies, crane flies, mayflies, beetles, and all sorts of other insects. Make your own light attractor to uncover and study nighttime insects with a little help from Colleen Evans, Director of Natural Science.

Colleen R. Evans is the Staten Island Museum's Director of Natural Sciences. A biologist who specializes in museum collections, Colleen also brings a wide knowledge of arthropods and science education to her post. She earned her BS and MS in Biology at the University of North Texas, where she specialized in natural history collection digitization. She previously served as the collections manager at Georgia Southern University where she managed the university's natural history collections, including the U.S. National Tick Collection.

Keep learning with the Staten Island Museum by going to www.statenislandmuseum.org

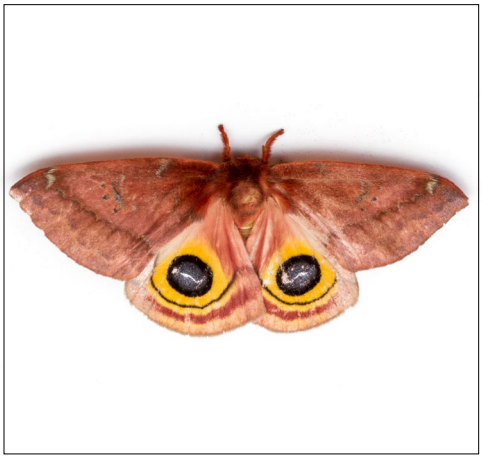
LIGHT ATTRACTOR FIELD GUIDE

These are just some of the insects you might draw to your light attractor:

ANOPHELES MOSQUITO

ANTLION

ASIAN TIGER MOSQUITO



IO MOTH

CAMEL CRICKET

CRANE FLY

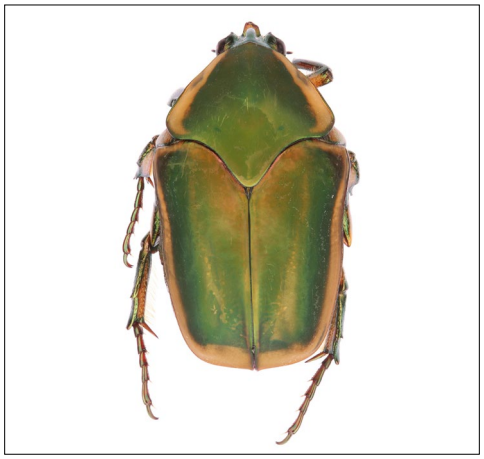
EASTERN EYED CLICK BEETLE

FIREFLY

GRAPEVINE BEETLE

LIGHT ATTRACTOR FIELD GUIDE... CONTINUED

GREEN CUTWORM MOTH



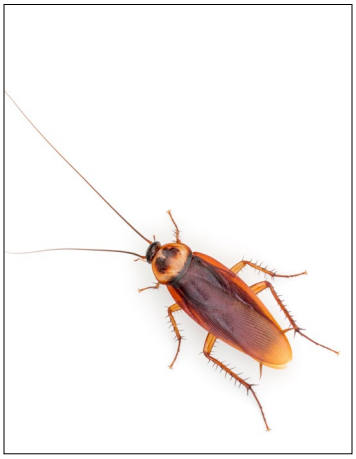
GREEN JUNE BEETLE

JAPANESE BEETLE

KATYDID

LUNA MOTH

NON-BITING MIDGE



AMERICAN COCKROACH

PLUME MOTH

GEOMETER MOTH

WAVY-LINED EMERALD

"OUR NOCTURNAL NEIGHBORS: OWL PROWL"

The deep, dark corners of the woods are home to unique birds, beasts, and bugs. Join Cliff Hagen as he facilitates a virtual experience in the night woods of Staten Island while eliciting responses from our nocturnal neighbors by mimicking their hoots, whinnies and whistles.

PROTECTORS OF PINE OAK WOODS

Cliff Hagen, a life-long Staten Islander, is president of Protectors of Pine Oak Woods, Staten Island's all-volunteer environmental preservation organization. The mission of Protectors of Pine Oak Woods is two-fold, calling for an increased stewardship of park properties and the environmental education of our community to facilitate the preservation of open space on Staten Island. For more than two decades Cliff Hagen has been a teacher of special education with the Department of Education as well as On Your Mark and is concerned with the health and wellness of our community.

To learn more about preserving Staten Island for owls and other wildlife visit Protectors of Pine Oak Woods at www.siprotectors.org.

MOTHS: MASTERS OF CAMOUFLAGE

Moths are a good food source for lots of animals, like birds or frogs. In order to avoid being eaten, some species have evolved wing patterns that allow them to blend into their environment. Sometimes these patterns are highly specialized to resemble lichens on trees or even bird poop!

Look closely and see if you can spot the moths in each of these photos.


BY: PAVEL KIRILLOV


BY: VIPIN BALIGA


BY: C. EVANS


BY: JOHN TANN

MOTHS: MASTERS OF CAMOUFLAGE

BY: JUDY GALLAGHER

BY: JUDY GALLAGHER

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www.statenislandmuseum.org/athome
for more information about upcoming programs and exhibitions.

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