YOUTH MAGAZINE OF THE TEXAS WILDLIFE ASSOCIATION FEBRUARY 2021

CRITTER CONNECTIONS

TEXAS WILDLIFE ASSOCIATION
CONSERVATION LEGACY

Moths

Yucca

Yucca are a group of flowering plants that grow in Texas. They naturally grow in warm and dry habitats with sandy soils, but they are adaptable to different environments. Different species of yucca are planted in decorative landscapes all across Texas. They provide food, shelter and nesting sites for small animals and some species are beneficial to humans as soap, shampoos and medicine.

They are evergreen shrubs, which means they have leaves year-round. Their pale green leaves are typically long and pointy, like a dagger and grow out from a central location. Some species grow close to the ground, while others grow up on tall woody trunks. Creamy white flowers grow on a stalk in the center of the cluster of leaves. Nocturnal animals like moths and in some cases, bats, typically pollinate the bell-shaped flowers.

One species of yucca has a mutualistic relationship with a species of moth. This means that they both depend on each other to survive. The adult moth blends in perfectly with the flowers. The female moth gathers pollen from one flower and deposits it on another flower on a nearby plant and then she lays her eggs in the flower. The flowers protect the eggs and larvae as they grow. Pollination ensures the yucca will produce fruit, which provide seeds for new plants to grow.

Photos and article source: Ladybird Johnson Wildflower Center
Front Cover Photo: Rosy Maple Moth by Andy Reago & Chrissy McClarren

Moth Craft

1. Use the provided moth template or download and print a copy here: bit.ly/CC_Moth
2. Choose a location outside or inside that your moth will use to blend in.
3. Color your moth so that it camouflages in the area you selected.
4. Cut out your moth and tape it in the location you chose in step 2.
5. How well did it blend in? Ask your friends and family if they can find your moth.

Did you know...

… that some species of moth in the Genus *Calyptra* will drink blood?
… that there are 10 times more species of moth than butterfly?
… that while many moths are nocturnal, there are several species that are awake in the daytime?
… that moths vary in size from a couple millimeters (mm) to almost a foot in length?
… that adult moths are an excellent food source for insect-eating bats?
… that some species of moth do not have a mouth in the adult stage of their life cycle because they are not alive long enough to require food?
… that moths often mimic other things as a form of camouflage, like leaves, wasps, hummingbirds, and even bird droppings?

Luna Moth

Photo source: Andy Reago & Chrissy McClarren

Color Me

Luna Moth

(Actias luna)

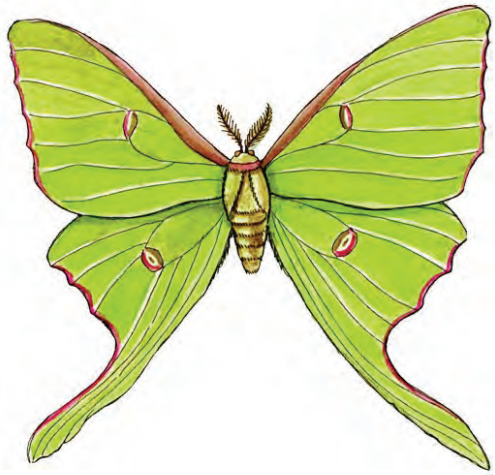


Image © Sheri Amsel, www.exploringnature.org

Moths

by Elanor Dean

There are close to 160,000 different species or types of moth in the world and over 350 species in Texas. This is nearly 10 times more species worldwide than their daytime cousin, the butterfly. Moths are insects, which means they have six legs, and their body is split into three parts, the head, thorax and abdomen. They also have two sets of wings connected to their thorax, known as the forewings at the top and hind wings at the bottom. On their head, they have a large pair of compound eyes made up of thousands of individual eyes called **ommatidia** (om-uh-**tid**-ee-uh) and a pair of small simple eyes which can sense light. They have a straw-like tongue called a **proboscis** (pro-**bos**-kiss) which they use to sip nectar from flowers and they taste using special structures on their feet. Moths smell using their antennae which are typically long and thin or featherlike. Antennae are one of the ways to tell moths and butterflies apart. Butterflies have club-like structures at the tips of their antennae, moths do not.

Hollow-spotted Blepharomastix

Moths and butterflies belong to the insect order **Lepidoptera** (leh-puh-**dop**-tr-uh) which means scaly wing in Greek. Have you ever caught a butterfly or moth and noticed a powdery substance on your hands? That powder is actually microscopic scales which have rubbed off of their wings. Scales are important in several ways, they help the moth fly, keep it warm and provide structure and color which creates patterns on their wings.

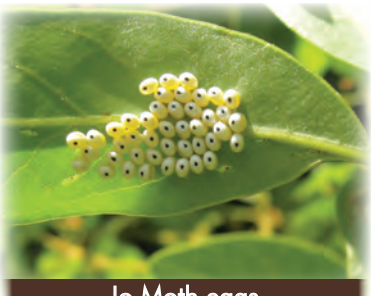
Wing scales

Many species of moth are plain in color to blend in with trees and rocks in their habitat, but there are several species that are bright and colorful, especially species that are active during the day. While most moths are nocturnal, some are diurnal or active in the daytime. One example of a diurnal moth is the white-lined sphynx, also known as the hummingbird moth because of its large size and flight pattern which is similar to a hummingbird. Moths are experts of camouflage, displaying colors and patterns to blend in with their environment. Many moths are colored to blend in with tree bark, but some species go a step further and mimic or copy other things. Some moths have angular wings and are patterned to resemble dead leaves, some mimic other insects like wasps and some are colored to look like a blob of bird droppings. Another defensive adaptation is the presence of eye spots. For example, the Io moth has large spots on its hindwings that resemble eyes, to scare off potential predators.

Bird Dropping Moth

Io Moth

Moths have a four stage life cycle and go through complete metamorphosis. The four stages are the egg, larvae (caterpillar), pupa (cocoon) and adult moth. The adult moth will lay her eggs somewhere that will serve as a food source for the larvae, such as a plant. Some species



Io Moth eggs

of moth will lay eggs on fabric, which can be a problem when the hungry caterpillars hatch and start chewing holes in your favorite sweater.

Caterpillars eat and eat as they grow through several stages called **instars.** During each instar they will molt or shed their skin and grow until they are ready for the pupa stage. Like the adult moths, caterpillars also have defensive adaptations. Some are colored to blend in with their environment, some are poisonous and will display bright colors, while others are covered with spines or stinging hairs to deter predators. One species, called the bagworm, builds a protective case around its body using silk and then attaches tiny pieces of twigs and leaves. It crawls around with this 'bag' covering the back half of its body and will become fully encased inside during the third stage of its life cycle. Once the caterpillar is ready to change into the pupa stage, most species of moth will spin a protective cocoon made of silk.


Moth cocoons

When the cocoon is built, they will shed their skin for a final time and become a pupa, using the cocoon as a protective case. During this stage, they go through an amazing change from caterpillar to adult moth. Their entire body breaks down into a liquid goo and then rebuilds the adult structures. When the pupa is ready to hatch it must cut its way out or release chemicals to soften the cocoon, allowing it to escape. When the adult moth emerges, its abdomen is very large and its wings are tiny. It pumps a blood-like substance called **hemolymph** into its wings, allowing them to expand. Once its wings have dried, the adult moth will begin to search for food and a mate to begin the life cycle all over.


Rosy Maple Moth caterpillar


Rosy Maple Moth

Moths that drink nectar are important pollinators. When they enter a flower seeking food, their fuzzy bodies gather pollen which they transport to other flowers. This allows flowering plants to complete their own life cycle. Moth pollinated flowers for nocturnal species are typically white or pale colored and produce a strong, sweet scent. Some flowers have ultraviolet markings, which are invisible to us, but moths are able to see little paths which lead them deep into the flower where the nectar is abundant. In addition to being pollinators, moths are also an important food source for other species of wildlife, especially for nocturnal predators like bats. A large colony of Mexican free-tailed bats, like the millions that live in Bracken Cave, can eat over 200 tons of moths in a single evening. Moths are so interesting and serve important roles in their environment. Check out Nancy's Corner to learn some ways you can see moths.


Evergreen Bagworm


Giant Leopard Moth


Flannel Moth


Inornate Pyrausta

WORD BANK

Ommatidia – the individual eyes that form the compound eyes of an insect

Proboscis – a straw-like mouthpart found in some species of wildlife

Lepidoptera – the Order or scientific group that includes butterflies and moths

Instar – the different stages of larval growth in the life cycle of some insects like moths

Hemolymph – a blood-like substance found in invertebrates like insects

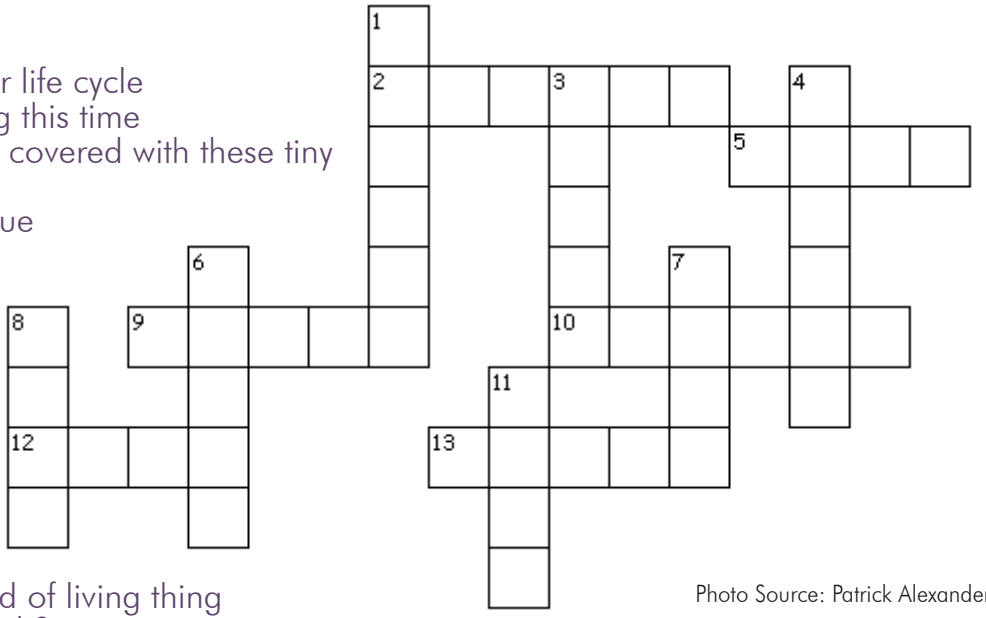
Sources: Britannica Encyclopedia, Smithsonian, USDA
Photos from Wikimedia Commons: Robert Webster, Andy Reago & Chrissy McClarren, Peter Znamenskiy, Katja Schulz, Gary Foster, Shawn Hanrahan, Judy Gallagher

Moth Crossword

Across

2. moths drink this from flowers
5. moths have this many stages in their life cycle
9. nocturnal animals are awake during this time
10. the body and wings of a moth are covered with these tiny structures
12. the flying insect featured in this issue
13. moths use these to fly

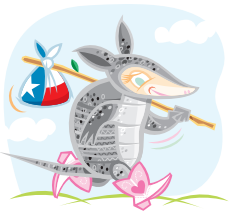

White-lined Sphinx



Down

1. moths, ants and beetles are this kind of living thing
3. the second largest state in the United States
4. moths help flowers by moving tiny grains of this from flower to flower
6. you turn this on when you want a room to be brighter, moths are attracted to this
7. nighttime flying mammals that eat moths
8. a shortened term that describes when living things blend in with their environment
11. moths spin a cocoon using this

Photo Source: Patrick Alexander
Created by Puzzlemaker at DiscoveryEducation.com



Nancy's Corner

Tips to see moths:

1. Moths are naturally attracted to lights, so leave your porch light on at night.
2. Hang a white sheet outside at night and shine a light on it.

Once the moths arrive, draw what you see, take photographs and post your observations into iNaturalist. You can also join our project on iNaturalist, Statewide Stewards, to see species other people have documented.

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TWA is a membership-based, non-profit organization whose goal is to educate all people, especially the youth of Texas about conservation, management and stewardship of wildlife and habitat on private land.

All education programs are made possible through memberships, grants and donations. Learn more about the levels of membership as well as the educational programs TWA offers on our website.
All membership levels include a one-year subscription to the TWA monthly *Texas Wildlife* magazine.

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` ____ Family $250 ____ Active $150 ____ Associate* $75 ____ Online $35

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TEXAS WILDLIFE ASSOCIATION

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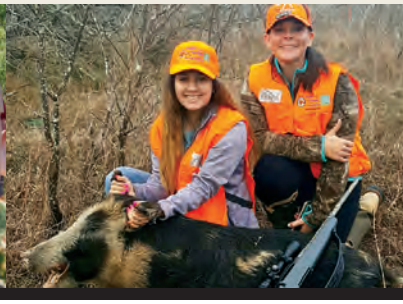
Providing essential funding to the education programs of Texas Wildlife Association

Please consider making a tax-deductible investment to TWAF, and help us as we continue to change minds and lives, through natural resource education. Together, we can make sure that Texans understand the importance of wild things, wild places, and the stewards who care for them.



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