



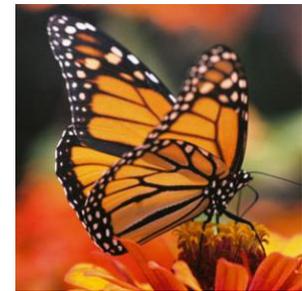
Butterflies: Frequent Fliers

Name: Butterflies Metamorphosis, Migration, and Mitigation

Grade: K-5

Topic: *Students will learn the butterfly life cycle, migration pathways, habitat challenges, and how we can all help.*

Time:



Introduction:

Learn about:

- ▶ Butterfly metamorphosis by watching a chrysalis transform into a butterfly.
- ▶ Butterfly migration pathways. Texas is on the butterfly highway!
- ▶ The importance of butterflies as pollinators
- ▶ What we can do to help butterflies

Materials:

Kit will include:

- ▶ Chrysalis
- ▶ Insect Habitat
- ▶ Pollinator Wildflower seeds



Videos and additional information can be found on the DFW Earth Day website

Key Terms:

Butterfly - a nectar-feeding insect with two pairs of large, typically brightly colored wings that are covered with microscopic scales. Butterflies are distinguished from moths by having clubbed or dilated antennae, holding their wings erect when at rest, and being active by day.

Chrysalis - a pupa of a butterfly; the hardened outer protective layer of a pupa.

Larva - the immature, wingless, and often wormlike feeding form that hatches from the egg of many insects

Metamorphosis - Typically marked and more or less abrupt developmental change in the form or structure of an animal (such as a butterfly or a frog) occurring subsequent to birth or hatching

Migrate - to move from one country, place, or locality to another

Pupa - an intermediate stage of a metamorphic insect (such as a bee, moth, or beetle) that occurs between the larva and the imago, is usually enclosed in a cocoon or protective covering, and undergoes internal changes by which larval structures are replaced by those typical of the imago

Imago - an insect in its final, adult, and typically winged state

Procedure:

The Butterfly Kit contains a chrysalis attached to a horizontal branch and a netted enclosure. An attached card will tell you the date/time when the butterfly is expected to emerge. You can leave the plant outside of the netted enclosure so the students can observe. Be sure to put the plant with the chrysalis inside the netted enclosure as the time of emergence gets closure!

Class Discussion: Butterfly Metamorphosis

Metamorphosis in butterflies is complete metamorphosis because of its distinctive stages: the egg, the larvae (Caterpillar), the pupa (Chrysalis) and the adult stage. The insect's physical features are different in all the stages of metamorphosis.

Butterfly Life Cycle

Stage 1: The Egg

The female butterfly lays the egg on the surface of a leaf or a stem. The egg is tiny, oval or cylindrical and varies in color. The popular larvae form of a butterfly known as the caterpillar gradually grows inside the egg. These eggs hatch according to the favorable conditions outside, if it's warm, the eggs faster otherwise it takes a few weeks.

Stage 2: The Larva (Caterpillar)

The larvae or in this case a caterpillar that hatches goes on an eating rampage. In this stage they eat, molt and repeat that process constantly. After hatching the caterpillar is extremely hungry and eats constantly. The caterpillar eats its way out of the egg and then continues to eat plants in the outside world.

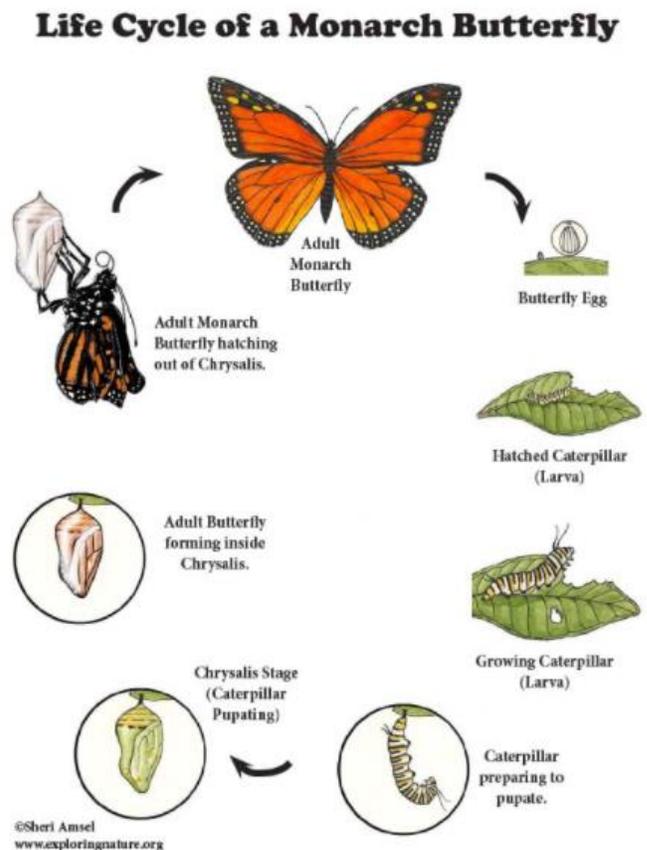
Stage 3: The Pupa (Chrysalis)

The caterpillar forms a vessel around it, called the 'pupa'. Inside the pupa the caterpillar gradually grows and develops. During this stage the pupa creates skins around the vessel that makes the exterior hard. The chrysalis protects the pupa till it transforms into a butterfly and breaks out of the vessel.

Stage 4: The Imago (Butterfly)

Sometimes an adult butterfly is called imago. The adult butterfly has compound eyes, two antennae and dust-like scales on the wings and legs that come off if one comes into contact with the insect.

The most prominent and known stage to human beings is the adult stage when the Chrysalis breaks out of the vessel with colorful scaly wings. At first these scaly wings are folded against the body of the butterfly because of its brittle nature. Once it pumps blood into the wing the butterfly flies in search of food and other butterflies to mate with. After the mating is completed, the female butterfly lays eggs on a leaf or flat surface and the whole cycle begins all over again.



Observe the Butterfly Metamorphosis

Step 1: Watch your chrysalis change as the butterfly grows inside

Step 2: Put the chrysalis in the netted habitat when the date/time for the emergence is close.

Step 3: The adult butterfly emerges. It will stay still for several hours once it emerges. Don't touch – just watch.

Step 4: When the butterfly is ready to fly, it will leave the branch with the chrysalis. It is now ready to be released.

Step 5: Take the netted enclosure outside and open it to watch the butterfly come out and fly away. It may take a few minutes for it to leave.

Step 6: Wave goodbye to your butterfly and know that you have had a wonderful opportunity to see part of the life cycle of the butterfly!!

Class Discussion: Monarch Migration Pathway

The annual migration of North America's monarch butterfly is a unique and amazing phenomenon. The monarch is the only butterfly known to make a two-way migration as birds do. Unlike other butterflies that can overwinter as larvae, pupae, or even as adults in some species, monarchs cannot survive the cold winters of northern climates. Using environmental cues, the monarchs know when it is time to travel south for the winter. Monarchs use a combination of air currents and thermals to travel long distances. Some fly as far as 3,000 miles to reach their winter home!



Traveling South

Eastern North American monarchs fly south using several flyways then merge into a single flyway in Central Texas. It is truly amazing that these monarchs know the way to the overwintering sites even though this migrating generation has never before been to Mexico!

Traveling North

As warm temperatures and lengthening days arrive, the migratory generation of monarchs finishes the development they halted prior to their migration. They become reproductive, breed and lay the eggs of the new generation. This starts the northern journey back to North America. Unlike the generation before them, who made a one-generation journey south, successive generations make the journey north.

Multiple Generations

Generation 1 monarchs are the offspring of the monarchs who overwintered in Mexico. Each successive generation travels farther north. It will take 3-4 generations to reach the northern United States and Canada.

Texas is on the Monarch Highway

Texas is an important state in monarch migration because it is situated between the principal breeding grounds in the north and the overwintering areas in Mexico. Monarchs funnel through Texas both in the fall and the spring. During the fall, monarchs use two principal flyways. One traverses Texas in a 300-mile wide path stretching from Wichita Falls to Eagle Pass. Monarchs enter the Texas portion of this flyway during the last days of September. By early November, most have passed through into Mexico. The second flyway is situated along the Texas coast and lasts roughly from the third week of October to the middle of November. Early each March overwintering monarchs begin arriving from their overwintering grounds in Mexico. Seeking emerging milkweeds, they move through Texas laying eggs before dying. Their offspring continue heading north, leaving most of Texas behind, the first of several new generations of monarchs that re-populate the eastern half of the United States and southern Canada

Conclusion/Key Take away:

The life cycle of a butterfly is fascinating as we learn how caterpillars are born from eggs and then transform into the beautiful butterflies we see. It is important to leave butterfly eggs and caterpillars alone so that their cycle can be completed, and a butterfly can emerge!

Get Involved:

Spring Migration Event:

<https://tpwd.texas.gov/calendar/dinosaur-valley/monarch-butterfly-surveying>

Fall Migration Event:

Grapevine Flutterby:

<https://byjus.com/biology/butterfly-life-cycle/>

Plant a Butterfly Garden and get Certified:

<http://ntxbutterflygardens.com/butterfly-garden-certification/>

Sources:

Texas Parks and Wildlife *TPWD: Monarch butterfly*. Monarch Butterfly and Other Insect Pollinators- Texas Nature Trackers - Wildlife Diversity Program - Texas Parks & Wildlife Department. (n.d.). Retrieved March 7, 2022, from https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/monarch/#:~:text=Texas%20is%20an%20important%20state,monarchs%20use%20two%20principal%20flyways

U.S. Forest Service. Forest Service Shield. (n.d.). Retrieved March 7, 2022, from https://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/migration/