2020 Teacher Packet
Fred & Dorothy Fichter Butterflies are Blooming
Exhibition Overview

They come from across the world to brighten our little corner of it. Join us as we explore the wondrous journey of thousands of butterflies and moths during spring’s most anticipated exhibition.

Each March and April, a bounty of butterflies is released in the Lena Meijer Tropical Conservatory to take flight. This exhilarating experience is the nation’s largest temporary tropical butterfly exhibition and a perennial point of pride for Meijer Gardens.

Escape the chilly air and surrender to the sights and smells of our balmy paradise, a home away from home for thousands of butterflies and moths. These world travelers come to Meijer Gardens from the tropical regions of Central and South America, Asia and Africa and represent over 60 species.
As you stroll through the exhibition, don’t miss the Monarch caterpillars munching on milkweed in the Grace Jarecki Display Seasonal Greenhouse. Watch the butterflies basking in the sun in the Lena Meijer Tropical Conservatory. Keep an eye out for the Common Morpho, whose iridescence impresses in flight, and other brush-footed beauties like the Clearwing, Lacewing and Zebra Mosaic. Likewise, the longwings quietly captivate with elongated elegance and distinctive patterns, as seen in the Doris, Postman, Longwing and Tiger. Graceful gliders like the Emperor Swallowtail, Scarlet Mormon and Tropical Swallowtail command attention as well. We challenge you to spot each one.

**Main Concepts**

- The life cycle of both butterflies and moths consists of four stages: egg, larva (caterpillar), pupa (chrysalis - butterfly or cocoon - moth) and adult. This process of change is known as complete metamorphosis.
- Butterflies and moths are found in various habitats all around the world. They inhabit every continent except Antarctica.
- Each butterfly species has distinctive flight patterns — ranging from soaring to hovering. They fly to forage for food, escape danger, attract mates and more.
- Wing colors, patterns and shapes help butterflies survive in a variety of ways.
- The Wardian case (featured in the Victorian Garden Parlor) launched an era of discovery by allowing plants to be transported safely around the world.

**Butterflies and Moths**

While butterflies and moths are both scaly-winged insects, there are several physical and behavioral characteristics that distinguish the two. The following are general guidelines only; exceptions to each rule exist.

- Butterflies fly during the day (diurnal) and most moths fly at night (nocturnal).
- Butterflies have knobbed antennae and moths have feathery or straight antennae.
- Butterfly bodies are usually slim while many moth bodies are plump and hairy.
- Butterfly caterpillars form a chrysalis. The silk moth caterpillars spin a cocoon.
- Butterflies are found flying in the Tropical Conservatory while moths spend time in the Observation Station.

**Tips for Planning Your Field Trip**

Apply online as early as possible. This is a very popular exhibition. Many teachers schedule their butterfly field trip months in advance. Make your reservation by completing the online Registration Request Form at [http://www.meijergardens.org/field-trips/](http://www.meijergardens.org/field-trips/).
Monday is typically the lightest traffic day. If you have very young children, or students who would benefit from a quieter visit, consider coming on a Monday.

The first ten days in March are an excellent time to view the butterflies. Many groups mistakenly think that there won't be many butterflies early in the exhibition. There are thousands of butterflies when the exhibition officially opens on March 1.

Spring Break week for the Grand Rapids school district is April 3-10. Despite the lack of school groups, this is the most popular week of the entire exhibition. It is not recommended that large groups visit this week.

If it is important that your students have the possibility of witnessing a tropical butterfly emerge from its chrysalis, or to view the full range of chrysalides, consider scheduling your visit before April 15.

Temperatures in the Tropical Conservatory average between 80-85 degrees. Students should dress with these temperatures in mind. Coats should be left in the coat room or on the bus. Backpacks may not be taken into the conservatory. If possible, please consider leaving backpacks on the bus.

Remember, guests may visit the Conservatory more than once. Tickets are good for the entire day. If crowding or heat becomes an issue, do not hesitate to leave the exhibition and return later.

Do not allow or encourage students to touch butterflies or to capture or coax the butterflies to land on them.

There are many exhibition-related items for sale in our Gift Shop. Because of space limitations, however, no more than twelve students can be accommodated in the shop at one time. We request that one chaperone accompany every six students.

**New this year: Meijer-Shedleski Picnic Pavilion**

Open now, the new Meijer-Shedleski Picnic Pavilion has dramatically expanded our outdoor eating space. This new pavilion offers convenient access to restrooms as well as to nearby parking. This space is available to school groups and the public on a first-come, first-served basis. Lunchroom rentals may also be available on request in our Covenant Learning Center. For any inquiries please email us at fieldtrips@meijergardens.org

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**Field Trip Options**

Reduced Group Admission (Self-Led Tour)
Enjoy the exhibition at your own pace. Our butterfly exhibition is extremely popular, so the exhibition is strictly a self-led experience. Roaming docents will be available to answer questions, explain life cycle stages, assist with identifying butterflies and point out interesting behaviors.

Self-Led Activities

Explore the exhibition using a self-led activity which can be found on our field trips page. For questions about these materials or to request self-led activities for your visit, please email us at fieldtrips@meijergardens.org

- **Butterfly Field Journal**
  This activity is available as a printed notebook or in a printable PDF online. Using your journal as a guide, select one species of butterfly and make your own observations. Note flight patterns, wing speed, feeding preference, puddling behavior, camouflage techniques and more. To request these guides in advance, please inquire at fieldtrips@meijergardens.org

- **Why These Wings? Worksheet**
  Use this worksheet to locate different butterflies in the Tropical Conservatory. Think critically about why butterflies have unique markings.

- **Life Cycle Wheel**
  Take a journey through the life cycle of a butterfly. Learn about the different stages of metamorphosis with this fun activity. Print, assemble and bring it along for your visit at Meijer Gardens. Show what you’ve learned to your friends and family!

Classroom Activities

**“Modeling Metamorphosis: Butterfly Life Cycle Art Project”**  
*(Recommended: Kindergarten- 3rd Grade)*

Students learn about metamorphosis while creating a multi-media diagram using pasta to portray the four stages of the butterfly life cycle. Fascinating factoids about each stage are shared, as well as concepts of insect anatomy, camouflage and other defensive/ adaptation strategies.

- Curriculum Connections:
  - NGSS: 1-LS3-1 Heredity: Inheritance and Variation of Traits
  - NGSS: 1-LS1-1 From Molecules to Organisms: Structures and Processes

**“Examining Adaptations: Wing It!”**  
*(Recommended: 3rd- 8th Grade)*

Students will learn how butterflies fly and how their wings help to keep them safe from predators. They will also observe pinned specimens and discover wings that are perfectly clear and wings that advertise they’re poisonous. Those who look closely will discover what else wings can reveal – from a butterfly’s gender to its age.
Students will participate in a critical thinking activity, using their observational skills.
  - Curriculum Connections:
    - 3-Ls3-1 Heredity: Inheritance and Variation of Traits
    - 3-Ls4-2 Biological Evolution: Unity and Diversity

Outdoor Programs
For a full list of programs and descriptions please visit our [field trips page](#).

**Educational Components**

**Wardian Case – Victorian Garden Parlor**
Launch your own era of exploration as you learn about how the Wardian case allowed plants to be shipped around the world. In 1829, Dr. Nathanial Ward observed life thriving in a glass jar, which inspired him to invent the Wardian case. These cases were first used as a way to successfully transport living plants around the world on ships. Later, they were used decoratively to grow and display plants. This remarkable invention set the stage for terrariums from miniature to our five stories tall Tropical Conservatory.

**Caterpillar Room- Seasonal Display Greenhouse**
Search for Monarch caterpillars and chrysalides and learn about a butterfly’s fascinating life cycle.

**Lena Meijer Tropical Conservatory**
View tropical butterflies from around the world. More than 7,000 butterflies of more than 60 species will be released during the course of the exhibition.

**Observation Station**
This is an enclosed area where the butterfly chrysalides and moth cocoons are pinned to long, foam rods. This station has clear walls on two sides to provide easy viewing. If lucky, guests may witness a butterfly or moth emerge.

**Release Boxes**
Release boxes are located on pedestals in several sunny areas in the Tropical Conservatory. Release times vary. Butterflies are released when their wings are ready for flight.

**Identification Guides**
Each chaperone with a school group will receive an exhibition guide showing colored photographs of many of the species of butterflies represented in the exhibition.

**Docents**
Knowledgeable docents will be available in the Tropical Conservatory and in the Seasonal Display Greenhouse to answer your questions and discuss the life cycle of the butterfly.

**Interactive Components in the Lena Meijers Children’s Garden**
Additional educational activities are available in the Lena Meier Children’s Garden. For daily options, check in at the Information Center in the Children’s Garden.

**Suggested Additional Activities**

**Recommended Reading for Young Children**
- *Clara Caterpillar* by Pamela Duncan Edwards
- *Good Night Sweet Butterflies* – by Dawn Bentley
- *Monarch Butterfly* by Gail Gibbons
- *A Very Hungry Caterpillar* by Eric Carle
- *Waiting for Wings* by Lois Ehler
- *Starting Life: Butterfly* by Claire Llewellyn
- *Flying Colors: Butterflies in Your Backyard* by Nancy Loewen
- *Are you a Butterfly?* by Judy Allen

**Learn more about a Blue Morpho Butterflies Adaptive Wings**
A morpho butterfly’s wing appear blue, but they have no blue pigment at all. How is this possible? Find out at [https://bit.ly/2Sym34V](https://bit.ly/2Sym34V)

**Plant a School or Home Butterfly Garden**
North American Butterfly Association’s Program for Butterfly Gardens & Habitats has produced regional butterfly gardening brochures. Each one focuses on a particular region of North America and includes such information as butterfly nectar flowers, plants to avoid in this region, top caterpillar food plants, common butterflies for local gardens and yards as well as unusual butterflies found locally. To learn more, visit [www.naba.org/pubs/bgh.html](http://www.naba.org/pubs/bgh.html).

**Participate in a 4th of July Butterfly Count**
Learn more about this national census from the North American Butterfly Association website, [www.naba.org](http://www.naba.org).

Learn more about Monarch migration. Visit the website for Monarch Watch ([www.monarchwatch.org](http://www.monarchwatch.org)) and Journey North ([www.learner.org/jnorth](http://www.learner.org/jnorth)) for more information on the Monarch butterfly’s amazing migration.

Learn more about how you can help the Monarch butterflies Monarch butterflies are very climate dependent. Find out why these butterflies have gone down in numbers over the past few years by visiting [https://www.worldwildlife.org/species/monarch-butterfly](https://www.worldwildlife.org/species/monarch-butterfly).

### Vocabulary List

While visiting the Tropical Conservatory, you might hear some unfamiliar words. This vocabulary list will help you become a butterfly and moth expert!

**Terrarium:** A container that is often sealed and made of glass, which is used to grow and display plants.

**Camouflage:** Patterns of color that blend into the surrounding environment.

**Metamorphosis:** A development change in form or structure. A butterfly has a “complete metamorphosis” with four distinct stages.

**Emerge:** Come out into view, as from concealment.

**Journey:** An act of traveling from one place to another.

**Nectar:** A sweet liquid made by flower's nectar that is used by bees to make honey. Many butterflies feed on nectar.

**Predator:** An animal that eats other animals.

**Migrate:** To move a long distance from one place to another, primarily to warmer climates.

**Chrysalis:** The casing made of a hardened protein that surrounds the butterfly pupa.
**Cocoon:** The silk casing that a moth caterpillar spins around itself before it turns into a pupa.

**Eyespot:** A rounded eye-like mark on an animal, commonly found on butterfly wings to frighten or confuse predators.

**Pupa:** The stage between the larva (caterpillar) and imago (adult) stage. A butterfly pupa is also called a chrysalis.

**Nocturnal:** Active at night.

**Diurnal:** Active during the day.

**Antennae:** Long, thin sensory organs, located on an insect’s head that detect odor and vibration.

**Thorax:** The middle section of a butterfly’s body that the wings and legs are attached to.

**Milkweed:** The host plant for the Monarch butterfly (the plant that the Monarch caterpillars feed on). The plant gets its name from its white, milky sap.

**Proboscis:** A hollow straw-like sucking tube that a butterfly uses to gather liquids.

**Transparent:** Easy to see through.

**Host Plant:** The plant a caterpillar feeds on.
How Did I Get My Name?

**Longwings**

Longwing butterflies have a name that is connected to their wing type. Instead of having rounder wings, their wings are elongated in a horizontal direction.

**Postman**

The Postman butterfly gets its name because of its daily travel routine, which is the same from day to day, flower to flower. This mimics a postman on his route from mailbox to mailbox.

**Morpho**

Morpho butterflies get their names from the effect of their dual-sided wings with bright blue on one side and brown on the other. When they are flying, it looks like they are flashing in and out of sight.
Swallowtails get their names from the “tails” on the back edge of their wings that resemble the forked tails of swallow birds. However, you may notice that not all swallowtail butterflies have tails.

Brushfooted Butterflies

Brushfooted butterflies look like other butterflies, except their front legs look like small “brushes”. They include some of the most brilliantly colored and patterned butterflies.

Lacewings

Lacewings were named for their lacy looking wings. The patterns on the lower surfaces of their wings are so intricate they resemble doilies.
Quite noticeably Clearwing butterflies have wings that are clear. They are also called Glasswings. Their unique transparent wings allow the butterfly to camouflage easily.

**Atlas Moth**

Atlas Moths, also called Hercules Moths, are said to have gotten their names from Greek mythology, or because of their map-like wing patterns.

**Nymphs**

Butterflies such as the Tree Nymph include “Nymph” because of its shortened Latin family name “Nymphalidae”.

**Wege Butterfly**

The Wege butterfly was named in honor of Peter Wege, a philanthropist, ardent conservationist and former chairman of Steelcase. Wege did much to help aid conservation efforts in Costa Rica, where the butterfly was discovered. This butterfly is in the “Skipper” family, named after its quick flight manner. To see a pinned specimen of this butterfly, visit our Peter Wege Library.