



HAYES FARM
TRAVELLING GARDEN TOOL KIT
MONARCH BUTTERFLIES
AND MILKWEED
GRADES 3 - 5



Today we will learn about the Monarch's

Anatomy

Habitat

Lifecycle

Migration

Food source

Special relationship with Milkweed

Handling Butterflies

It is important to never grab a butterfly by the wings or put them into jars.

Wings have a powder on them which looks like tiny scales under a microscope.

These scales shed and get replaced like skin cells, but if you rub the powder off it can make the wings more likely to tear.

If they are inside of jars they may hurt their wings on the glass.

They are totally harmless; they don't sting or bite.

You can look at butterflies up close if you are patient, because they will sometimes land on your body or they will stay on a flower for a good amount of time.

What do Monarchs look like?



Photo: Leanne Guenther

Orange and black markings with white spots inside of the black bands on the edge of wings.

Two sets of wings

Six legs

Body sections

1. Head, which has a Compound Eye, Antennae and a Proboscis
2. Thorax (where the wings and legs attach)
3. Abdomen (end where the organs are)

Anatomy of the Head

Antennae (plural)/ Antenna (singular)

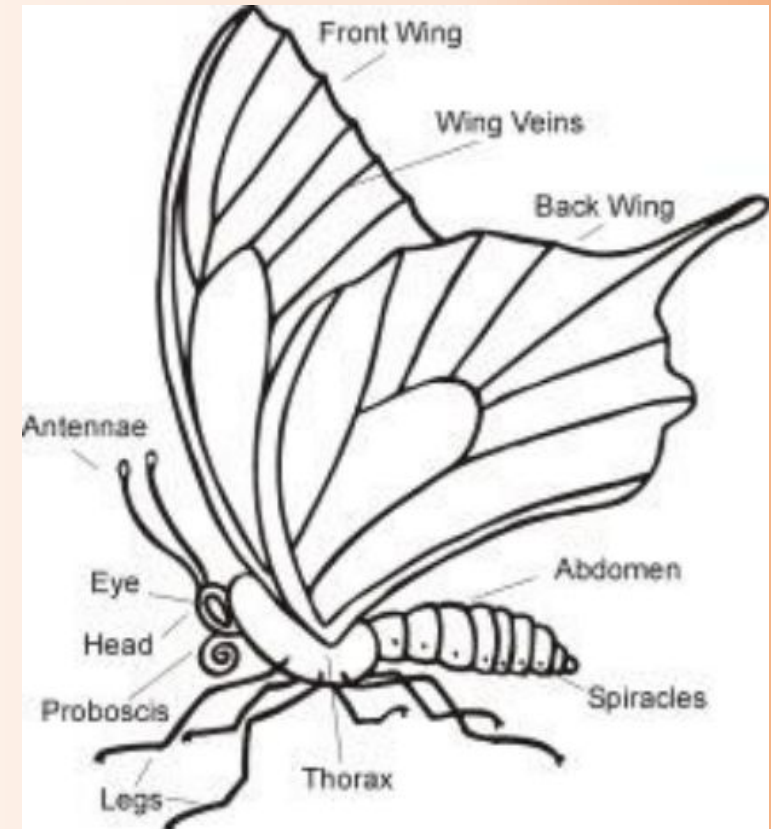
Attached at the top of the head pick up scents in the air, help with balance and in detecting motion.

Compound eyes

- Made up of many smaller “eyes” which each have their own lens.
- Butterflies don’t see clear images like humans, they can see forwards, backwards, above and below themselves all at the same time!
- They can also see ultraviolet light. Some flowers have special markings on them that can only be seen in ultraviolet light. A flower that looks yellow to us can have a blue ring inside to a butterfly.

Proboscis

The proboscis is the butterfly’s mouth used like a straw to suck up liquids like nectar, water, fruit juices, leaking tree sap, etc.



Anatomy of the Body

Six Legs

- The leg has 5 sections
- Their feet can 'taste' chemicals they walk on!
- Some butterflies, like the Monarch, appear to have only 4 legs, the first pair of legs is very small, and tucked against the thorax and hidden in the body's fuzz.

Abdomen

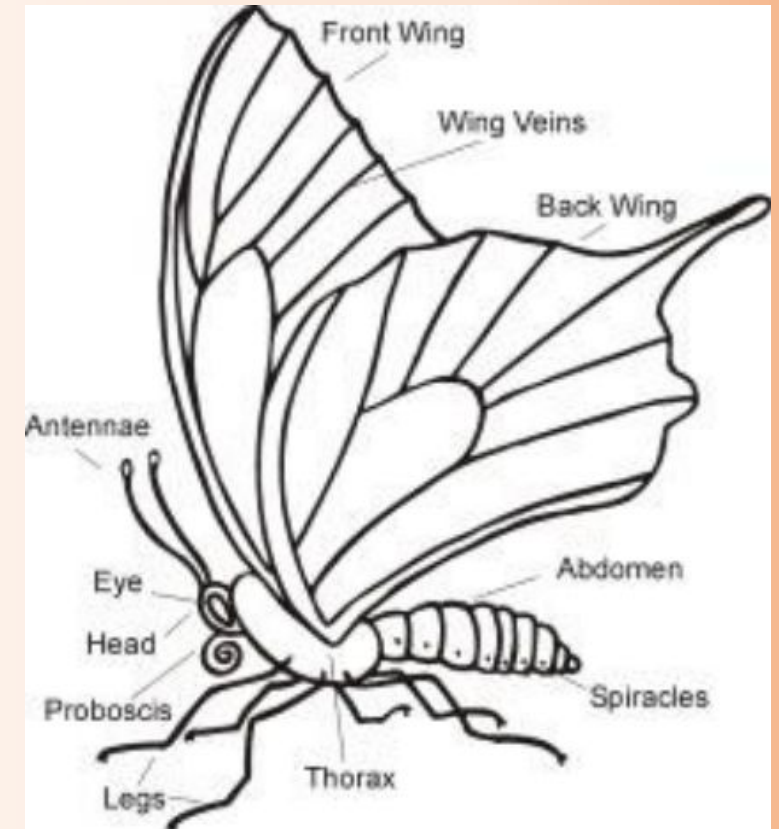
1. Digestive tract is inside the abdomen. This is where the butterfly processes foods and wastes

2. Spiracles

Tiny holes found on the sides of the abdomen that let air in to travel to breathe.

3. Reproductive Organs

All of the important male and female organs involved in reproduction are found in the abdomen. This is where the eggs remain safe until a female butterfly lays them.



Identifying Monarchs



Viceroy's look a lot like Monarchs, but they have a black line on their lower wings. They may want to look like Monarchs, because Monarch butterflies are poisonous. Predators may think they are Monarch and avoid trying to eat them. This “lookk-a-like” behaviour is common in nature and is called *Mimicry*.

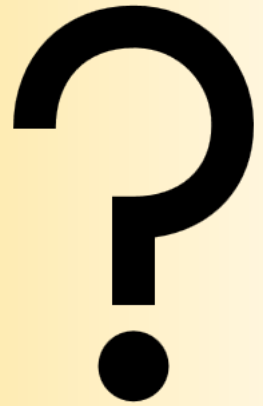
Butterfliesathome.com

Why are Monarchs important to us?

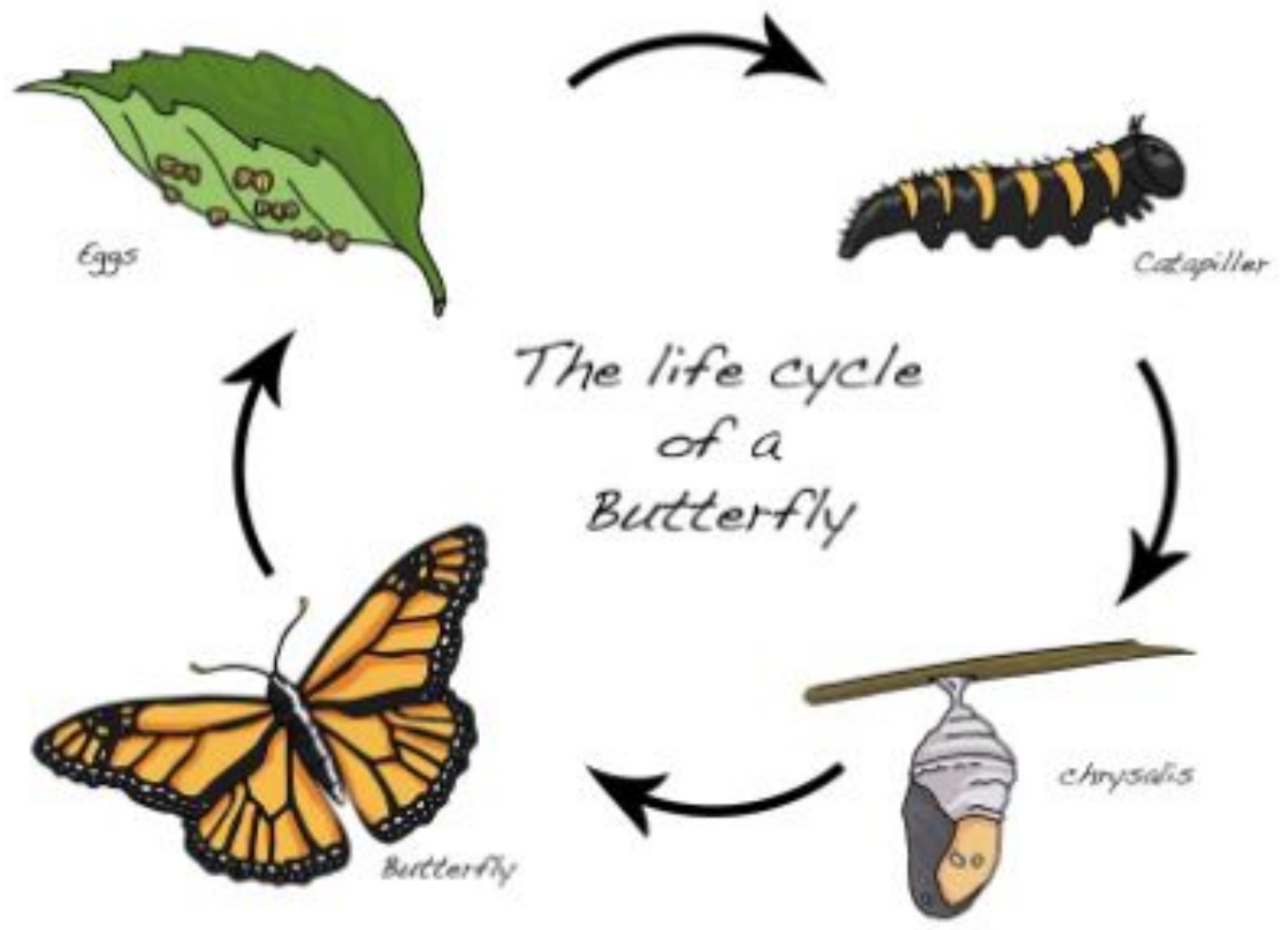
They are considered to be a *species at risk*

- This means that their habitat or food source has been affected
- They can be affected by changing weather and temperatures

We need to take care of Monarchs and their habitats to help new generations.



***Does anyone know about the
life cycle of butterflies?***



Butterfly Life Cycle



Photo: Leanne Guenther
Larvae and Chrysalis

Metamorphosis: transforming from one form into another.

1. Eggs

Adult female monarchs lay their eggs on the underside of milkweed leaves. These eggs hatch in 3-5 days.

2. Larvae (caterpillar)

Feed on milkweed for 8 -14 days. They change several times by shedding their skin (*molting*).

They grow to about 2 inches long, and store lots of food in their body for the next stage.

They will spin a little silk pad (*cocoon*) under a leaf or twig.

3. Forming the Pupa (chrysalis)

The larvae attach themselves head down, they crawl into their cocoon. Once inside, they shed their outer skin and begin to change into a pupa (or chrysalis).

In about 2 weeks the caterpillar transforms into a butterfly.

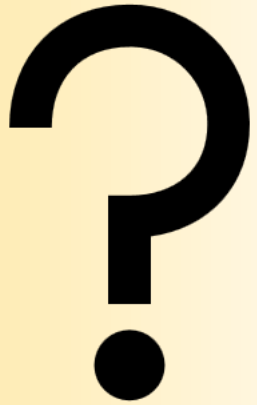
4. Adult

After leaving the chrysalis, it inflates its wings with blood stored in its abdomen. The wings have to stiffen and dry before it flies away

Where do Monarch butterflies live?

Butterflies are found in gardens, meadows, marshes, roadsides, and other natural areas.

They will be found in places that have flowers that they like to eat from and a water source.



*Does anyone know where Monarchs
go when it gets cold in
New Brunswick?*

Where do Monarchs travel?

Each year they *migrate*, or travel to a new ecosystem where it is warmer and there is more food.

Monarchs in New Brunswick make a very long flight from Canada to Mexico each year before winter. Monarchs west of the Rocky Mountains (British Columbia) go to California.

The longest documented flight was 2,750 miles, from Grand Manan Island, Canada to the overwintering grounds in Mexico.

Monarchs that go to Mexico meet in the mountainous, Oyamel Fir Forest which is a bit like the forest in New Brunswick in the springtime. The temperature here is perfect for them, between 0 – 15 degrees Celsius.

Monarchs coming from all over Eastern North America join together in Texas before continuing their trip to Mexico together!

The egg that hatches in N.B may not be the one that arrives in Mexico or Texas, most Monarchs live 2 to 6 weeks, the generation that flies south can live up to 7 months.

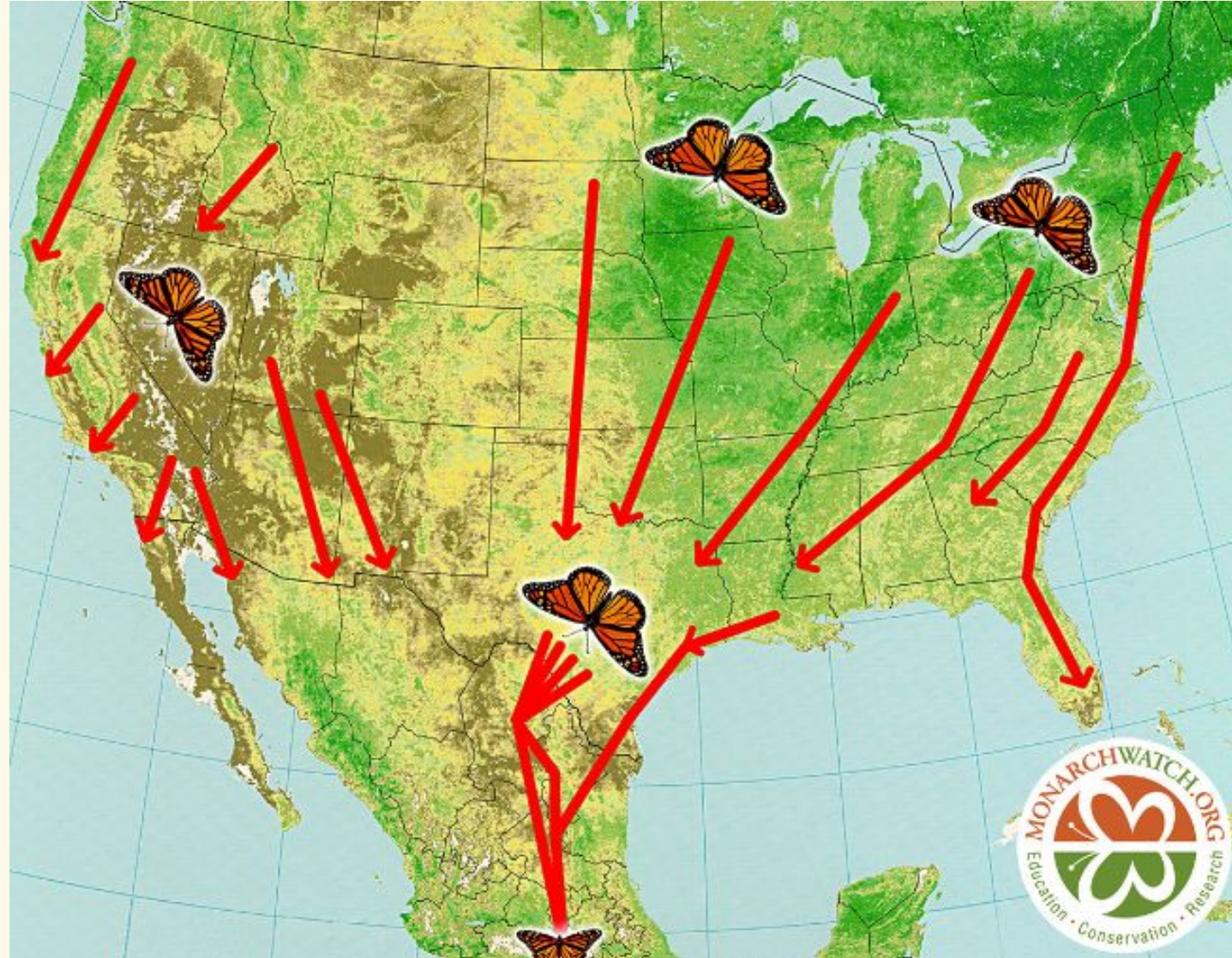
Let's have a look...





Photo: Wikipedia – Oyamel firs and Monarchs

Migration Paths

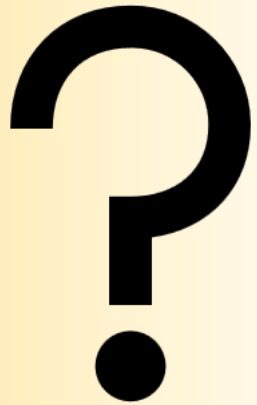


Let's turn go online and watch a "humming bird" drone
watch Monarchs wake up for the day in Mexico!

https://youtu.be/IW0ySU_hAz0



Video: PBS - Public Broadcasting Service for educational usage only



*Does anyone know what kind of food
Monarch caterpillars eat?*

*Does anyone know what kinds of food
adult Monarchs eat?*

What do Monarch Caterpillars eat?

Milkweed is the only thing the larvae can eat! The adult females lay eggs on the underside of leaves. When the eggs hatch the larvae eat the leaves.

Milkweed has a poison in it, but most animals won't eat it because it tastes very bad.

Because the Monarchs eat Milkweed, they become poisonous to predators.

They have evolved to have such a special relationship with Milkweed that they are resistant to the poison.

We must be very careful never to put milkweed into our mouth because it will make us sick!



Photo: Leanne Guenther



Photo: Leanne Guenther

- Milkweed flowers smell lovely!...kind of like lilacs
- The seeds come in long pods
- The seeds are attached to long, white hairs
- In N.B the types are
Common milkweed and
Swamp milkweed



Photo: Amy Floyd

*Can anyone think of why the seeds
would be attached to this fluff?*



Exactly! So that the seeds can travel further on the wind.

Fun Fact! This fluff (called silk) used to be used in life jackets because it floats so well, but is also very warm.

Symbiosis

The Monarch caterpillars can eat the milkweed leaves without getting sick.

Having eaten the leaves makes the Monarch poisonous to predators.

So this is indeed a special relationship called

Symbiosis - An interaction between two different organisms that generally benefits both.

What do adult Monarch butterflies eat?

Nectar is a sweet liquid made by plants and their flowers.

The sweetness can range from 8% to as high as 50%.

The concentration of sugar in Coca-cola is only 10%!

Nectar is produced by glands in flowers called *nectaries*.

Nectaries can be located on any part of a plant, but the most familiar ones are in flowers.



Photo: Leanne Guenther

How to Help

The fall migration from southern Canada all the way to central Mexico depends on sugars (energy) produced mostly by the late-flowering plants (asters and goldenrods), without which the Monarchs would have no energy source to make that spectacular long-distance migration.

Steps you can take to help monarch butterflies:

1. Plant milkweed the only food the caterpillar eats
2. Plant late-blooming native plants:
Black-eyed Susan (Sunflower Family),
Aster (Daisy Family),
Goldenrod (Sunflower Family)
3. Leave more goldenrod. Many people cut goldenrod down because they think it causes allergies. This is not true! Other plants like ragweed that bloom at the same time can cause allergies.

Let's Guess, which flower is this?



Goldenrod

Aster

Black-eyed Susan



Photo: Kenraiz Krysztof Ziarnek



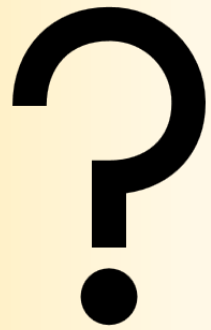
Goldenrod

Aster

Black-eyed Susan



Photo: Marilyn Miller



Goldenrod

Aster

Black-eyed Susan

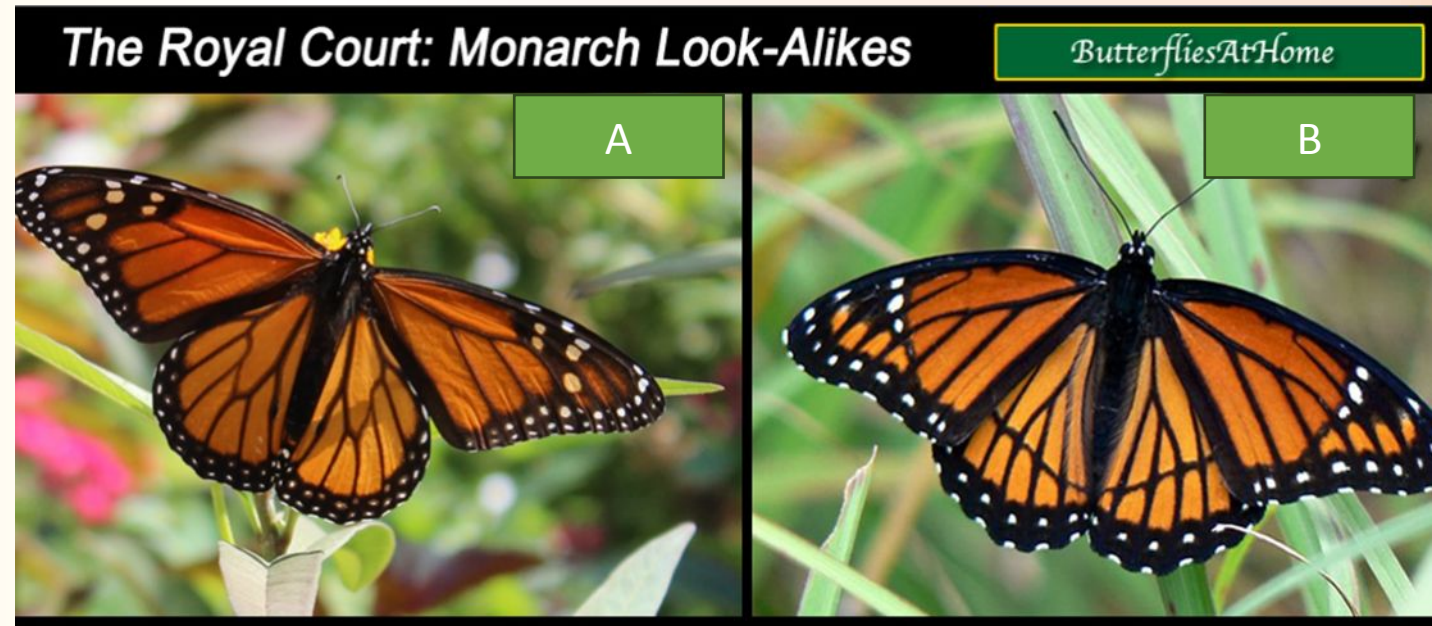


Photo: Wikipedia, Public Domain

Which butterfly is the Monarch?

A or B?

How can you tell?



The Royal Court: Monarch Look-Alikes

ButterfliesAtHome



It was A

Remember the Viceroy has a black line on it's lower wings

Vocabulary

Antenna (singular)/Antennae (plural)

Chrysalis – The hard/ enclosed case where the pupa changes into an adult insect.

Cocoon – An envelope of silk that the butterfly caterpillar makes and goes into before it becomes a pupa.

Cold stratification – Putting seeds through a cold then warm process to mimic winter, then spring.

Metamorphosis – When an insect or amphibian go through two or more distinct stages to become adults.

Migration – Moving from one ecosystem to another, usually to find food, mates or to get to warmer weather.

Mimicry – When one animals has markings that make it look like another animal. The marking provide it with a benefit, like seeming to be poisonous or have stingers.

Molting – Shedding skin to re-grow new skin.

Nectaries – Parts of flowers that produce nectar.

Proboscis – The tube on the head of an insect that collects nectar.

Pupa – The stage where the insect is inside of the chrysalis.

Species at risk – An animal that has been negatively affected by conditions like habitat loss. Their numbers are too low!

Spiracles – Small holes along the abdomen of insects that help them breath.

Thorax – The mid-section of an insect (where legs and wings attach).

Activity - Milkweed seed bombs

Milkweed seeds need to have a period of 'winter' before they will start to grow. The first-year plant leaf is very different from the second-year leaf.

- The seed bomb must be thrown into the planting area sometime during our winter months. If you need to, you can store milkweed seeds in the freezer, but having them outside over the winter is the best. This process is called *cold stratification*.
- Plant them in wild areas, or in the back of your yard, they can spread from their roots a bit.
- We add other seeds to the bomb so you can tell where the plant is growing

Directions for making seed bombs

1. Take the clay (about 1 tablespoons), knead it and make a thin flat circle.
2. Place a small amount of soil in the center of the circle, add a few seeds to the soil.
3. Wrap the clay around the soil and make a nice ball.
4. Allow the ball to dry. The clay protects the soil and seeds inside, the soil gives the seeds somewhere nice to grow.



L'Arche Fredericton
making seed bombs

We look forward to seeing you on the farm!



Hayes Farm