

# TAKE & MAKE KIT

## Butterfly Migration

TIME: 30 min

CONTAINS SMALL PIECES

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## What's in this kit?

Imagine a bigger, stronger, faster version of yourself built to go farther and longer, and equipped to survive harsh conditions. Do you think something like that exists? For monarch butterflies, it does! A super generation of monarch butterflies can travel thousands of miles south for the winter. Check out this kit to see what it takes to make it through the monarch migration and learn about the butterfly life cycle.

### You will learn:

- Monarch migration
- Metamorphosis
- Pollination
- Conservation

## Let's Get Started!

### Materials

US map  
Liquid glue  
Pasta shapes  
Rice  
Colored paper  
Tissue paper  
String  
Black marker

### Tools

Scissors

## Monarch Butterfly Migration

Monarch butterflies are the only butterflies known to make a two way migration across thousands of miles. Every summer a super generation of monarch butterflies are born in the north. This super generation is bigger, will fly farther, and won't lay eggs until after winter.

Compared to normal butterflies that live for a few weeks, these monarch butterflies will live four times longer. They follow the warmer weather south until they reach their overwintering location. Those that make it through the winter will produce the next generation who will begin the return journey back north.

After 2-3 generations have passed, the monarchs will have reached their northern homes. There they will lay the eggs that will hatch into the next super generation who will repeat the process again.



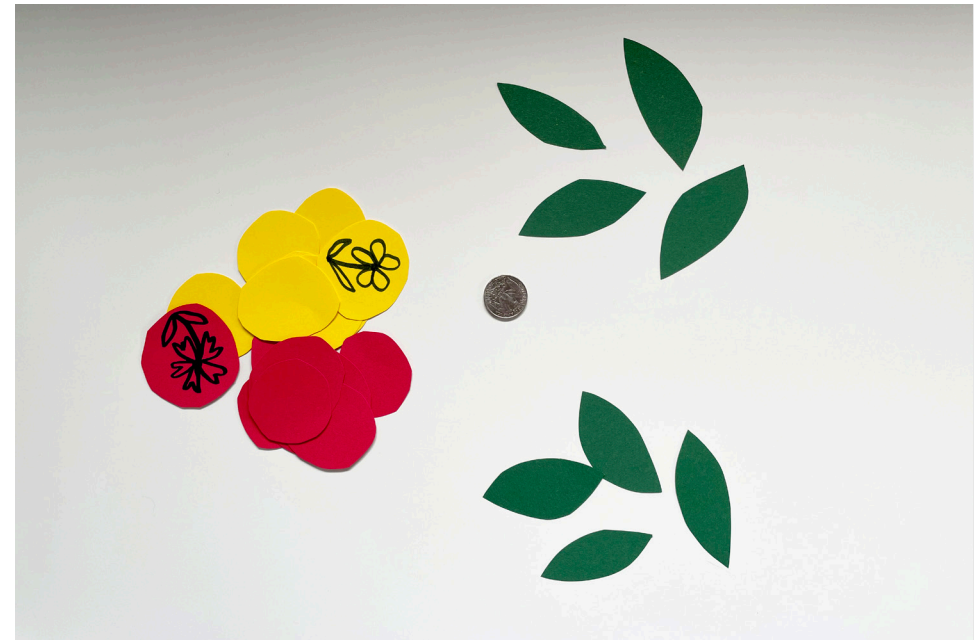
This image was originally posted to Flickr by Scott Clark at <https://www.flickr.com/photos/17032507@N00/2784484796>

## Activity 1 - Fueled by food

In this activity you will test the probability of finding food to fuel a monarch butterfly's journey. Monarchs fly thousands of miles to their overwintering destination and have to survive the winter without eating. They will only eat milkweed in the early stages of their life and then feed on the nectar from flowers as adults. Will your butterflies find enough food for their journey?

### Step 1 - Cut your game tokens

Save the orange colored paper for a later activity. Use the green paper to cut leaves that represent milkweed. Use the remaining colors to cut out circles that represent nectar. Feel free to decorate these or draw flowers on them. Each player needs four milkweed tokens and up to five nectar tokens.





## Step 2 - Game directions

You will need a two sided object like a coin or a bottle cap. One side is designated the heads up side and the opposite is designated the tail side.

### Rules!

There are 5 rounds of the game. Every player starts with 4 milkweed tokens. Place all remaining tokens in the center bank.

Take turns flipping the coin. If you get a heads up, collect a nectar token. If you get tails, return a milkweed token to the center bank. Don't forget to keep track of what round you are on. Do this for 4 rounds.

Imagine each round is like a generation of butterflies. When you lose a milkweed token, think about the real life consequences.

After 4 rounds, count how many tokens you have.

If you have **more milkweed tokens than nectar tokens**, your butterflies will find it hard to survive the winter. Their journey might not have been filled with adequate food sources (nectar from flowers).

If you have the **same amount or more milkweed tokens than nectar tokens**, your butterflies have made it to their overwintering destination and will likely survive without looking for food.

Play one more round. If you get heads, collect a nectar token. If you get tails, stay the same (don't return anything to the pile and don't collect anything). This is a bonus round that might help all your butterflies survive.

**How did you do?** After five rounds, if you have more nectar tokens than milkweed tokens, your butterflies will have no problem surviving winter. Their journey to their overwintering destination was rich in nectar. Your butterflies were able to eat and store energy to keep them happy and healthy over winter.



## Did You Know?

Monarchs need milkweed to survive. Adults lay eggs on the leaves of milkweed plants and larvae (caterpillars) eat the milkweed they are born on. It's becoming increasingly hard to find milkweed due to land development and use of weed killers.

Fortunately, many organizations have pledged to restore and conserve areas dedicated to repopulating monarchs.

What do you think you can do to help ensure that monarchs get enough food throughout all stages of their life?

What kind of conservation efforts happen in your area?

## Activity 2 - The Monarch Life Cycle

You might be familiar with the adult monarch butterfly with its signature black and orange wings. However, butterflies go through a transformation called metamorphosis to reach their final form as adults. Metamorphosis is the process of changing from one form to another.

For butterflies there are four forms in their life cycle:



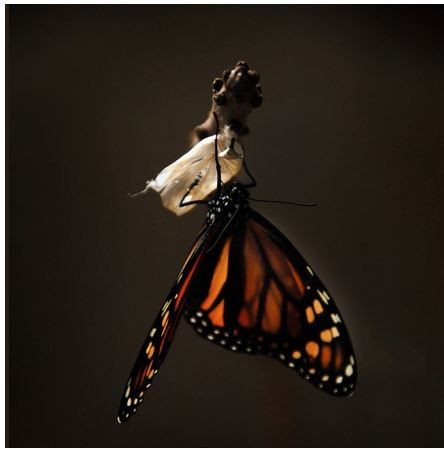
**EGG**



**LARVA (CATERPILLAR)**



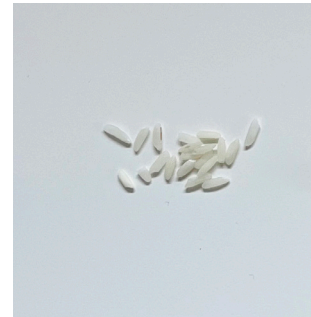
**PUPA (CHRYsalIS)**



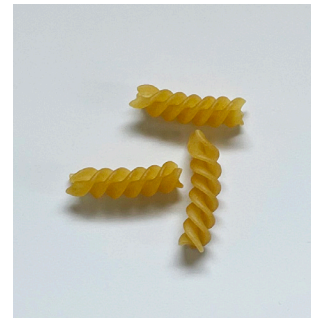
**BUTTERFLY.**

## Step 1 - Organize shapes

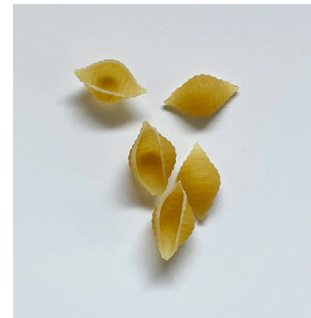
We will be using rice and pasta shapes to represent the different forms of the butterfly life cycle. Separate the rice, rotini, shells and bowties.



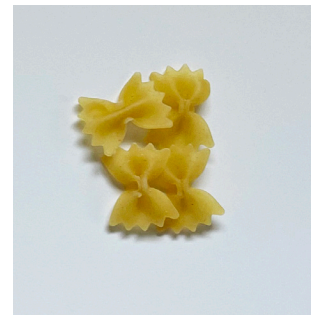
The rice represents butterfly eggs. In nature butterfly eggs are nearly the size of the period at the end of this sentence. Other butterflies lay hundreds of eggs on one leaf to ensure their survival. However, monarch butterflies lay one single egg on one single leaf of the milkweed plant.



The rotini represents larva, also known as caterpillars. Once an egg hatches it becomes a larva. It will eat the leaf it was born on and grow from 1 centimeter up to 5 centimeters.



The shells represent pupa or the chrysalis. Once the caterpillar is fully grown and has finished eating, it will enter the chrysalis stage where it will go from being a caterpillar to a butterfly!



The bowtie represents an adult butterfly. After spending time recreating itself to have wings and a new body, the adult butterfly is ready to emerge from its chrysalis. You'll know it's ready when the chrysalis changes color and becomes transparent so that you can see the color of the butterfly.



## Step 2 - Glue the shapes

Use some of the leaves you cut out for Activity 1. Glue one of each item onto one leaf.



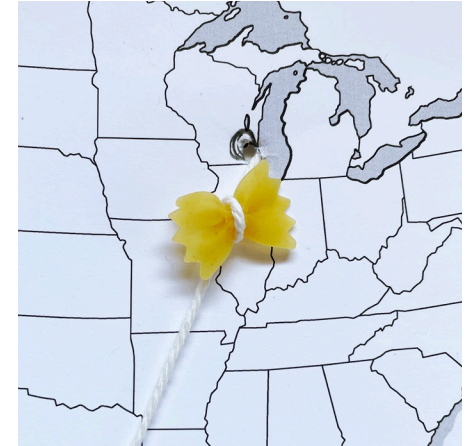
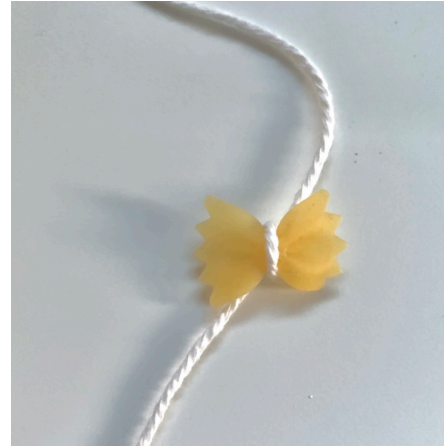
## Step 3 - Migration map

While the glue is drying on the leaves, take your map of North America and use a pencil to punch holes in the two indicated areas. This represents a general path monarch butterflies will travel north and south.



Take your string and cut it in half. Tie the bowtie pasta in the middle of the string. Do this carefully so your pasta doesn't break.

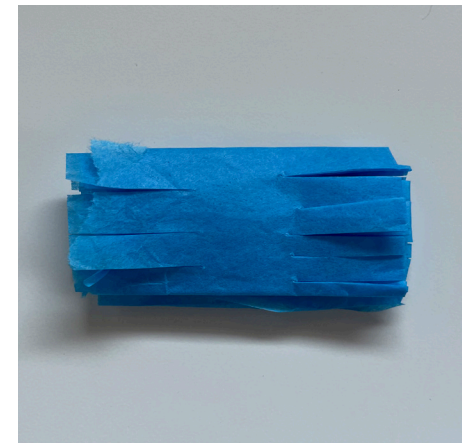
Lace the strings through the two points and tie them off in the back. Make sure you can move your butterfly without the string coming out.



Feel free to color in your map and indicate what season it will be on either side of the butterfly migration.

## Step 4 - Decorate the butterfly migration map

Create a flower with the tissue paper. Use about a 4x4 inch piece of tissue paper. Fold the tissue paper in half and then in half again. Cut about an inch along the sides to create some fringe. Do not cut all the way through.



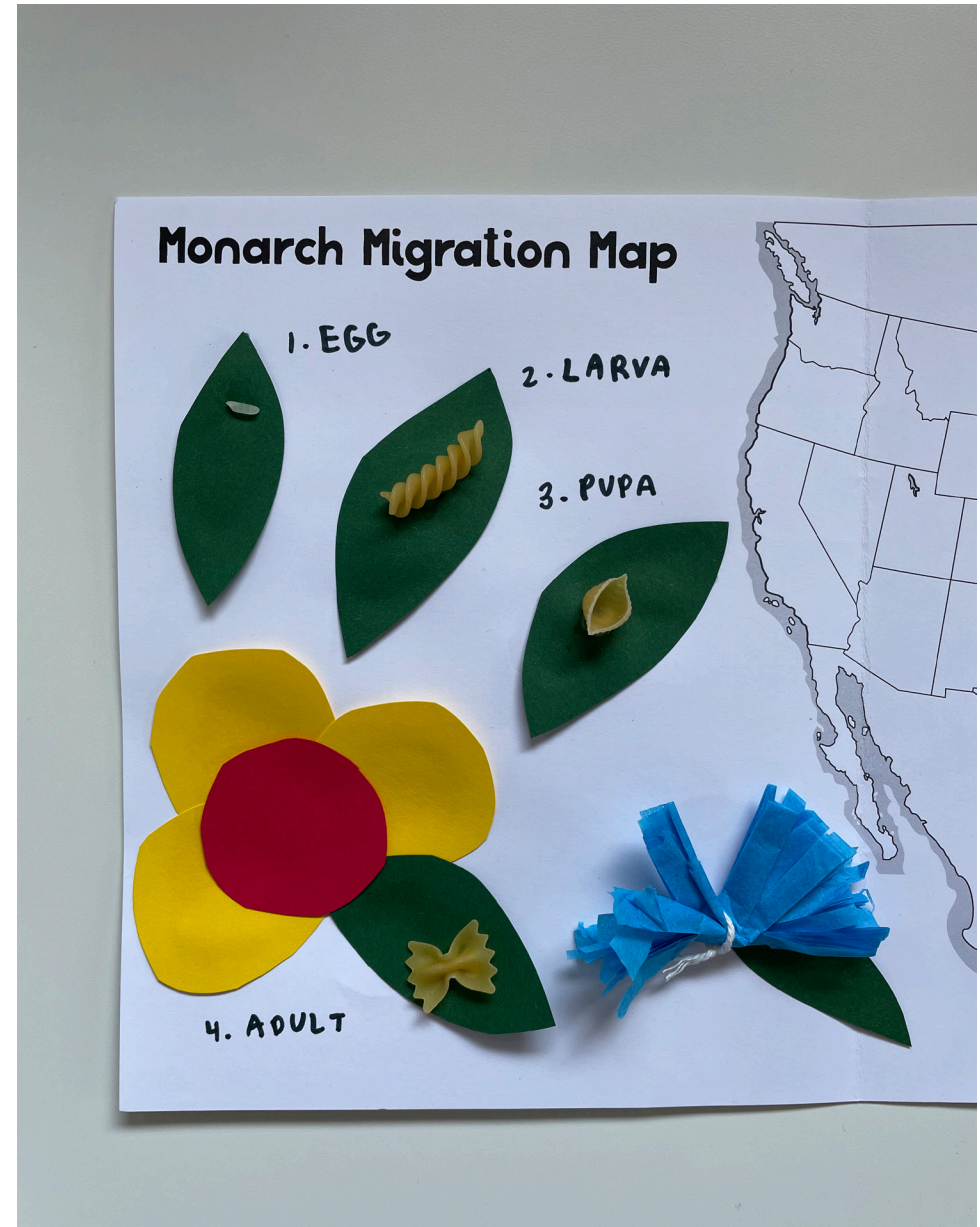


Fold the paper accordion style and tie the center together with the leftover string. Fray the edges and attach the flower to your map. Feel free to use any leftover materials and any paper you have at home to make more designs.



## Step 5 - Show off your map

Add the pieces you created for the butterfly life cycle onto your migration map. Label each stage of the butterfly life cycle. Pull the string from behind your map to show the two way butterfly migration. You did it! You made a diagram of the butterfly life cycle and monarch migration!



## Challenge!

Take your remaining piece of orange paper and use the black marker to draw some butterfly wings. Can you help make the butterfly journey back to the library? There are 200 of these kits distributed in Milwaukee. You may notice that each sheet of orange paper has a number out of 200 on it. After you draw some butterfly wings you may choose to share a picture on Instagram and tag us **@MPLCreates**. You can also email it to us at **mplcreates@milwaukee.gov** or bring it back to your library. All the butterflies will come to the Mitchell Street branch for a display. We hope to see your butterfly make its way to us so we can have all 200 butterflies on the wall!



## Go Beyond

What stage of development are you in? Something changes at each stage of a butterfly's life cycle. Can you think of the ways you have changed since you were born? Take some time to reflect on how far you've come on your journey and write down some thoughts on it. Maybe you can do some journaling on your orange butterfly wings. Metamorphosis is the transformative process of changing from one form to a completely new one, while still being uniquely you! What is your moment of metamorphosis? Tell us more about it, we'd love to hear your story.





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