



### What Happened to this Habitat?

*You can use monarchs to teach about many things! Stone Mountain Memorial Association (SMMA) uses the monarch butterfly to help students apply their knowledge in other contexts and to different disciplines. The activities relate a grade-level specific GPS to monarch life, habitat or migration. Use this lesson as a post-trip activity following your 2nd Grade Into The Wild field trip.*

*GPS correlation: S2E3. Students will observe and record changes in their surroundings and infer the causes of the changes. a. Recognize effects that occur in a specific area caused by weather, plants, animals and/or people.*

#### **Preparation:**

Read the background information. Print the worksheets, or make an overhead or display on your Interactive white board. Make copies for each student or pair of students. Approximately 13 markers per worksheet will be needed for the Habitat Board (BINGO card) activity. Markers can be coins, math counters or simply small pieces of paper.

#### **Background information:**

In this lesson, students will learn about changes in the habitat of the monarch butterfly in Georgia and Mexico. They will infer the causes (weather, plants, animals or people) of these changes.

In Georgia's Stone Mountain Park, plants are important to the monarch butterfly's life. Monarchs need milkweed, their **host plant**, on which they lay their eggs so that the caterpillars can eat the leaves once they emerge. Their metamorphosis could not be completed without this plant. They also need **nectar sources**, flowers containing the sugary liquid which many adult butterflies drink as food. Many species of milkweed and wildflowers are native to Georgia. A **native plant** is one that occurs naturally in a particular region, ecosystem or habitat without direct or indirect human intervention.

There are also many **non-native** plants in Georgia (and all over the United States). They were brought here either intentionally, for their medicinal, ornamental or food value or by accident, hidden in soil, crop seed or ballast. Most of these non-natives came from other continents, but a few have spread from other parts of the U.S. Some of these non-native plants have no natural controls here, and are able to out-compete and gradually take the place of our native plants. Whether they are called alien, introduced, or exotic, these non-natives are highly invasive.

Plants are also important to the monarchs in Mexico. Although monarchs do not normally lay eggs during the winter when they are in Mexico, they do drink nectar from the wildflowers and they **roost**, or rest, by hanging in huge clusters from the branches of oyamel fir and pine trees. These trees grow atop the Transvolcanic Mountain Range. Their upper branches and leaves form a **canopy**, or cover, that protects the butterflies from rain and snow and holds the warm air in at night time after the sun sets.

Because the tree canopy is so important for the monarchs, in 1986 the President of Mexico created a law called the Monarch Butterfly Biosphere Reserve to protect the trees. This law does not allow the cutting of trees in areas where the monarchs roost and it also limits the number of trees that can be cut down, or **logged**, in areas that surround the Reserve.

Plants provide food, shelter, and water for the monarch, but they can also get water from wet ground near streams or seeps. (A **seep** is a place where groundwater flows slowly to the surface and often forms a pool.) Butterflies are not able to drink from deep or flowing water as birds might do.

Consider now what plants need to grow. They need air, sunlight, water and soil. The air and sunlight surround the plant. Water comes from precipitation and soils are formed from weathering of rocks (and decomposition of plants and animals). Physical **weathering** is the breakdown of rocks on the Earth's surface and can be caused by effects of wind, water, heating and cooling. These smaller pieces of rock and soil can also be carried away, or eroded, by wind and water leaving bare rock.



### **Activity:**

Review the concepts of changes in their surroundings, cause and effect with students. Use the background information to define and explain new terms. Read them the essential question so they understand the focus of the lesson. Hand out worksheets and markers, then read the situations to the students.

### **What happened to this habitat? Situations in Georgia and Mexico.**

These do not need to be read in order. They are simply numbered for convenience.

1. In Stone Mountain Park, milkweed, the host plant for the monarch butterfly, used to grow in the open fields and on roadsides. But over time, many non-native plants have invaded these areas, choking out the milkweed and other native plants.

*Answer: Plants*

2. Oyamel fir and pine trees grow atop the Transvolcanic Mountain Range in Mexico providing roosting places for the monarchs during winter. In some areas of this protected Reserve, loggers have removed trees illegally, opening up the canopy, exposing the butterflies to harsh weather.

*Answer: People*

3. A new parking lot was built in Stone Mountain Park to provide more parking spaces for visitors. The land was cleared of trees and wildflowers for this project. These wildflowers had previously provided a nectar source for the monarchs.

*Answer: People*

4. In Mexico, new trees are growing in the forest. They sprang up from the seeds dispersed by the trees that are already there. These new trees will provide additional roosting places for the monarch and protection from the weather.

*Answer: Plants*

5. In the Wildlife Trails area at the Park, deer are eating the milkweed that we planted for the monarch butterfly. Luckily they are just eating the leaves and not the roots so the milkweed will grow back.

*Answer: Animals*

6. Rain and wind have weathered the mountains in Mexico for years. This weathering process has broken down the volcanic rock into soils in which a variety of plants can grow.

*Answer: Weather*

7. Rain and wind have weathered and eroded the Stone Mountain area for years. This process has exposed about 1/3 of the granite rock we call Stone Mountain. Although there are some forested areas on Stone Mountain, many places remain bare and windswept, unable to sustain any plant life.

*Answer: Weather*

8. Rain water percolates into the ground. Seeps have made the ground in the mountain meadow at the sanctuary in Mexico wet. This is a perfect place for the monarch to drink water because the water is not too deep.

*Answer: Weather*



**Essential Question:**

The habitat of the monarch butterfly both in Georgia and Mexico has been affected by weather, plants, animals and people. Listen carefully to each situation. Which one of these factors has affected the habitat? There will be one correct answer for each situation.

Use a marker to hold a place on the HABITAT BOARD for each correct answer. You may only use one marker for each situation read. The monarch butterfly symbol is a free space. Try to fill every space in one row or in one column to win!

**HABITAT BOARD**

 <b>WEATHER</b>	 <b>PLANTS</b>	 <b>FREE SPACE</b>	 <b>PEOPLE</b>	 <b>ANIMALS</b>
 <b>ANIMALS</b>	 <b>FREE SPACE</b>	 <b>PLANTS</b>	 <b>PEOPLE</b>	 <b>WEATHER</b>
 <b>PLANTS</b>	 <b>WEATHER</b>	 <b>PEOPLE</b>	 <b>FREE SPACE</b>	 <b>PLANTS</b>
 <b>FREE SPACE</b>	 <b>ANIMALS</b>	 <b>WEATHER</b>	 <b>WEATHER</b>	 <b>PLANTS</b>
 <b>PEOPLE</b>	 <b>PLANTS</b>	 <b>ANIMALS</b>	 <b>ANIMALS</b>	 <b>FREE SPACE</b>