

### **Grade 3: Unit 6, Week 5 Raising Butterflies**

Read Aloud: **Flight of the Monarch** by Janet Riehecky

Wonderful Words: *flit, poisonous, transform, nectar, fierce*

#### **Flight of the Monarch**

Orange, white, and black wings shimmer in the sunlight as the monarch butterfly flits from flower to flower. Its delicate beauty makes it look like a fragile creature. But this is not true. Though it weighs less than a paper clip, the monarch butterfly makes one of the most amazing journeys of any creature in nature. It will face enemies and storms to travel as far as two thousand miles on its way to a safe place to spend the winter. And it will travel the same path its great-grandparents did.

Like most butterflies, the monarch usually lives only four to six weeks. Each year during the spring and summer, several generations of monarchs are born and die. But the butterflies that hatch in late August and early September are different. They can live for six months instead of six weeks. And they will make an incredible journey.

The journey of the monarch butterfly begins on the underside of a leaf. Female monarchs seek special plants where they can lay their eggs. Only a poisonous plant called the milkweed will do. A female checks around carefully before laying an egg. There must be no spiders or other enemies nearby. The plant must be healthy and in an area sheltered from strong winds.

When she finds exactly the right plant, the female carefully attaches one small egg to the underside of the leaf. Then she flies away to find another plant. She may lay as

many as 400 eggs. The mother monarch does not return to see if the egg hatches. Each egg is on its own.

The egg is about the size of the head of a pin. It will hatch three to five days after it is laid. When the tiny caterpillar bursts from the egg, it is very hungry. The first thing it will eat is the eggshell itself, which is rich in protein. Then it will start on the leaf. The leaf is poisonous, but that doesn't affect the caterpillar. It simply stores the poison in its body. The poison will give the caterpillar a bitter taste. A bird or other enemy that eats one monarch caterpillar will probably get sick—and will not eat that type of caterpillar again.

The caterpillar's body has colorful stripes of yellow, green, white, and black. Though it is small, the caterpillar is an eating machine. Its jaws are very strong and it has a large stomach. It will eat so much it will actually burst out of its skin. The body of the caterpillar contains no bones to help it keep its shape. Instead, the skin becomes hard as air touches it. Its hard skin also does not allow the caterpillar to grow as other creatures do.

When the caterpillar gets too big for its skin, the skin splits and the caterpillar wiggles out of it. This shedding of the skin is called molting. During the two or three weeks of this stage of its life, the caterpillar will shed its skin four times. It starts out less than an eighth of an inch long and ends up about two inches long—weighing 2,700 times more than when it started.

The last time a caterpillar molts, it does so in a special way.

It searches for a protected spot such as a branch that is out of the wind. Hanging its head down in a J-shape, it spins a small button of sticky silk that it uses to attach itself

to the branch. When it sheds its skin for the last time, its body hardens in the air. It has become a beautiful, jade-green chrysalis.

Within the chrysalis a miracle takes place. The caterpillar is transformed into a butterfly. This change is called metamorphosis, and it is one of the mysteries of nature. The long, fat caterpillar that crawled on the ground seems to melt away into a slender, delicate creature of the air.

The transformation in the chrysalis takes twelve to fifteen days. After about a week, you can see the developing butterfly through the sides of the chrysalis. When the change is complete and the weather is just right, the chrysalis breaks open and the butterfly wiggles out.

At first its wings are wet and its body is swollen. But as the wings dry, the butterfly begins to pump them. Pumping sends blood through its veins and slims its body. This process takes several hours. Eventually the wings are dry enough to try a few short flights. Soon the monarch is gliding through the air with ease.

The butterfly is almost entirely different from the caterpillar. The most obvious difference is that it once had a long, fat, yellow, green, black, and white body with eight pairs of legs. It now has a short, slender body with only three pairs of legs and two pairs of orange and black wings. There are other changes as well.

The caterpillar had strong jaws for chewing leaves. The butterfly can't chew at all. It has a long, curled tongue which it uses like a straw to sip nectar from flowers. The caterpillar had simple eyes that could barely tell the difference between day and night. The butterfly has compound eyes. Compound eyes have many flat surfaces. They allow the butterfly to see thousands of images and detect movement and color. Inside the

slender body of the butterfly, its throat has grown much longer and its stomach much smaller.

But the butterfly does keep at least one thing from its caterpillar days. The poison it ate as a caterpillar is still in its body. If the butterfly was attacked, it would die. But its bitter taste would teach its enemy to avoid other orange and black butterflies.

The monarchs born in spring and summer are fully grown in just a few days. Scientists don't know why those born in the fall are not. Perhaps they respond to the angle at which the sun's rays reach Earth. Or perhaps they sense that the days are growing shorter and colder. No one knows why, but fall monarchs do not simply mate, lay eggs, and die. They fly south.

Monarchs live throughout most of the United States and southern Canada. In the fall millions of them begin to travel, or migrate. Most migrating monarchs follow one of two paths: one east of the Rocky Mountains, one west.

Each year the monarchs follow the same path used by the monarchs the year before. The monarchs even stop to rest on many of the same trees that other butterflies rested on the year before.

Monarchs can cover amazing distances as they migrate. They can fly as fast as twenty miles an hour and cover more than a hundred miles in a single day. But they can only travel when the sun shines. Monarchs cannot maintain their body heat without help from the sun. When the temperature falls below 55° F, they can't fly at all.

The sight of migrating monarchs is inspiring. Monarchs often travel in flocks of thousands and tens of thousands. Their orange and black wings can fill the sky with a vast cloud of beauty.

Many of the monarchs that begin the journey south do not survive the trip. They may be hit by a car or eaten by a cow. They could be injured in a storm or blown out to sea by the wind. But millions do make it south, and they gather on trees and bushes in their winter home.

Monarchs need a special type of place to shelter for the winter. First of all, the shelter needs to be warm. It also needs to be protected from strong winds and fierce storms. And it needs to have a water supply close by and lots of flowers to provide nectar.

The monarchs that live west of the Rockies usually head for Santa Cruz and Pacific Grove, both in California. Year after year they return to the exact same spots in those cities.

Monarchs that live east of the Rockies usually head for Mexico. For years scientists were unable to locate this winter home. But in 1974 researchers followed a trail of monarchs to a special spot in the Sierra Madre Mountains. To their amazement and delight they found hundreds of trees covered with monarch butterflies.

Thousands of monarchs may rest on a single tree, covering every inch of space. The sight of a butterfly tree is not easily forgotten. Sometimes the weight of all those tiny creatures becomes so great that a branch may actually break off and crash to the ground. Still they cling together, blanketing tree after tree with their bright beauty.

The monarchs spend much of the winter in a light sleep, saving their energy so they can survive until spring. As the days grow warmer and longer, the butterflies mate. Eventually they begin their journey north. Many will not live long enough to reach the

spot where they were born, but some will. And all along the way, the females lay eggs, beginning a new generation.

The migration of the monarchs is one of the miracles of nature. But it may be coming to an end. People are cutting down the trees that the monarchs rest on and plowing under the milkweed plants. Some of the winter resting grounds in California and Mexico have been set aside as protected areas by the United States and Mexican governments, but more needs to be done. Monarchs need safe areas all along their migration route. Many people are working so we can all enjoy the beauty and wonder of the flight of the monarchs.

### **flit**

**Define:** To **flit** is to move quickly and lightly.

**Example:** We watched the dancers **flit** across the stage at the ballet.

**Ask:** Why would birds **flit** around a bird feeder?

### **poisonous**

**Define:** When something is **poisonous**, it contains a drug or other substance that can harm or kill.

**Example:** Mr. Barnett put all **poisonous** paints and cleaners into a locked cabinet.

**Ask:** What **poisonous** animal can you name? Describe it.

### **transform**

**Define:** To **transform** is to change in form, character, or appearance.

**Example:** The super hero was **transformed** from an ordinary person into someone of great strength.

**Ask:** Into what is a tadpole **transformed** when it becomes an adult?

### **nectar**

**Define:** **Nectar** is the sweet liquid from flowers.

**Example:** Bees use the **nectar** from flowers to make honey.

**Ask:** Which birds or insects have you seen drinking **nectar** from flowers?

## **fierce**

**Define:** When something is **fierce**, it is very strong or violent.

**Example:** The **fierce** lion showed his teeth when he growled.

**Ask:** Why is it wise to stay away from someone with a **fierce** temper?