

Help Monarch Butterflies

by Nicholas De Libero



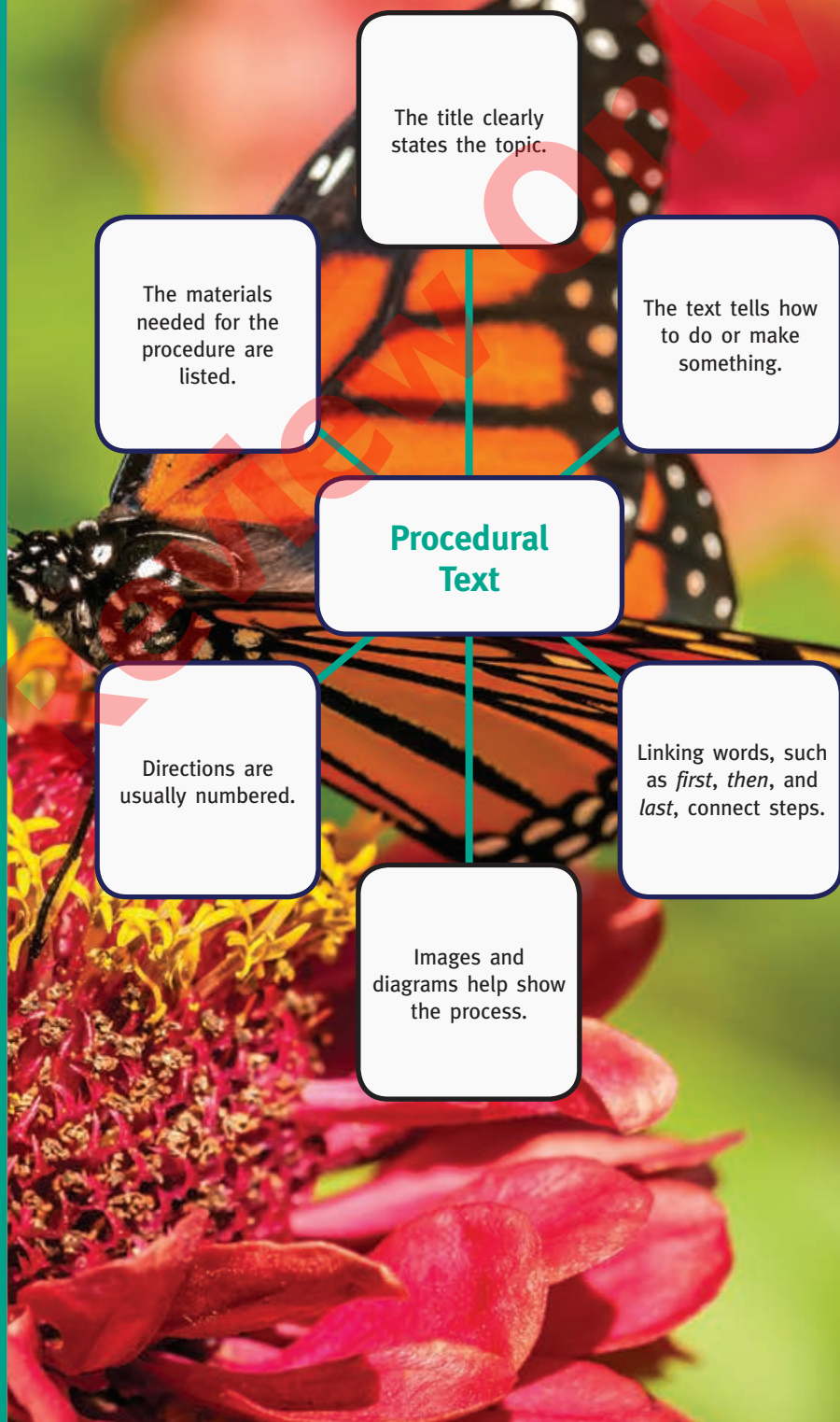
How can
growing flowers
help monarch
butterflies?

Level T/50

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Monarch Butterflies in Need

Monarch butterflies are stunning insects. Their orange wings lined with black and dotted with white are admired around the world.

In recent decades, the monarch butterfly population has decreased.

According to the National Wildlife Federation, the monarch population in North America dropped from 150 million to 100 million between 2015 and 2016. This fact has alarmed scientists around the world.

In order to help monarchs, it is important to understand their **life cycle**. By knowing how monarchs grow, from eggs to adult butterflies, people can prevent the further decline of the monarch population. It is also helpful to learn about the monarch's **anatomy**, and how its different body parts help it to find food and fly.

Full-grown monarch butterflies **migrate**. Many migrate, for thousands of miles. A professor at Cornell University, Anurag Agrawal, thinks that monarchs face serious challenges while migrating.

Agrawal thinks that these challenges may be causing the population to decline. In particular, monarchs have fewer food sources to provide them with the energy they need to complete their migration.

This book describes the monarch butterfly's life cycle, anatomy, and migration pattern. It provides information about how people are working to help monarchs. It also explains how to grow a butterfly garden, which can provide monarchs with the food they need to thrive.

Monarch Butterfly Winter Population (Pismo Beach, California)



The Life Cycle and Anatomy of Monarchs

Monarch butterflies have four stages in their life cycle: egg, caterpillar, pupa, and adult butterfly. The complete transformation takes around four weeks, but warmer weather can speed up the process.

Egg

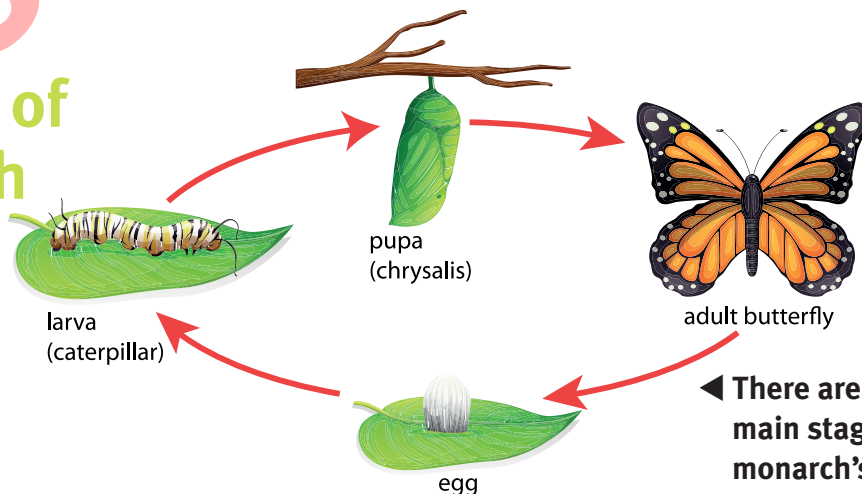
Female monarchs lay hundreds of eggs. An adult female monarch will lay one egg on the underside of a single milkweed leaf. As a result, a female monarch needs many milkweed leaves on which to lay all her eggs.

Larva

After about four days, the monarch egg hatches, and out comes a caterpillar. This is called the larval stage. The caterpillar is yellow with white and black stripes. For food, the caterpillar eats its own eggshell, and then it begins to eat the milkweed leaf it was born on.

The hungry caterpillar will continue to feed on milkweed leaves. As it grows, it repeatedly molts, or sheds its skin. After 8–14 days, it will latch on to a leaf with its hind legs and hang upside down. It is now ready for the next stage.

Life Cycle of a Monarch Butterfly



◀ There are four main stages in the monarch's life cycle.



Pupa

The caterpillar forms a J-shape. As the caterpillar sheds its old skin for the last time, it forms a jade green **chrysalis**. The caterpillar is now in the pupa stage. Inside the chrysalis, **metamorphosis** begins. The pupa forms wings and develops a long, thin tongue.

Butterfly

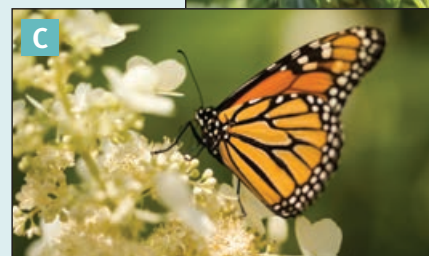
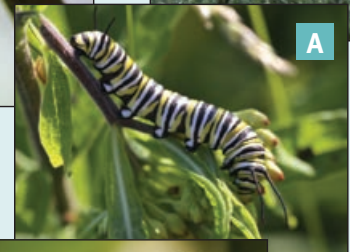
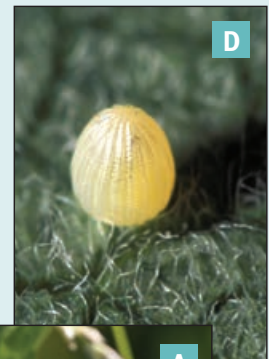
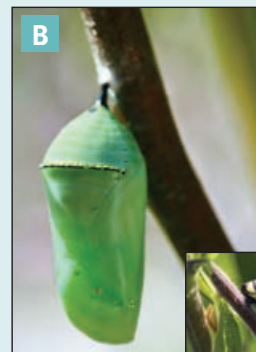
In 8–10 days, the pupa has transformed into an adult butterfly. The front of the chrysalis splits open, and the adult butterfly comes out. Initially the monarch's wings are still wet, so it cannot fly. After approximately 3–4 hours, the wings are dry and the monarch is ready to fly. At this stage, the butterfly no longer eats milkweed. It will now drink **nectar** from various flowers.

LET'S TRY IT

Stages of the Butterfly Cycle

These pictures show the stages of a monarch butterfly's life cycle. Write the letter for each stage in the correct order of the life cycle. Then identify the name of each stage represented in each picture.

See answers on page 24.

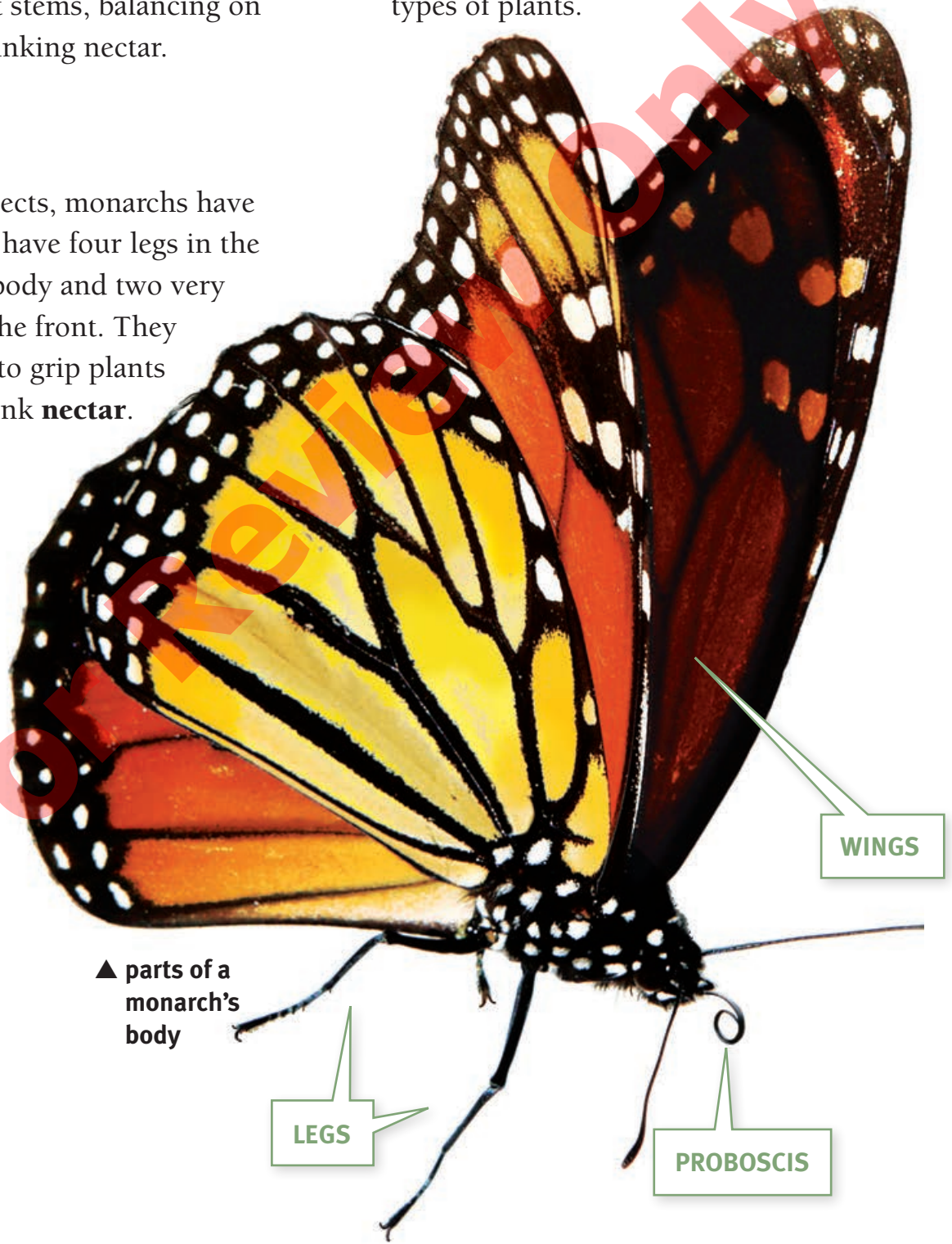


The transformation to adult requires a lot of energy. Now that the butterfly is fully grown, it needs to find nectar to replenish itself in order to survive. The body of a full-grown monarch is uniquely suited to traveling from flower to flower, grasping plant stems, balancing on petals, and drinking nectar.

Legs

Like all insects, monarchs have six legs. They have four legs in the back of their body and two very small legs in the front. They use their legs to grip plants in order to drink **nectar**.

In addition, monarch legs have a unique feature. Monarchs have **sensory organs** on their feet. These sensory organs detect what kind of plant they land on and the quality of the plant. This means that monarchs use their feet to identify different types of plants.



WINGS

▲ parts of a monarch's body

LEGS

PROBOSCIS

Proboscis

Monarchs do not have jaws. Instead, they have a long mouthpart known as a proboscis. This allows them to slurp nectar from plants.

The proboscis appears as a long straw-like tube that can extend and stretch. When a monarch isn't drinking, it curls up its proboscis into a coil.

Wings

Butterfly wings are covered with tiny **scales**. A monarch gets its color from the overlapping and layering of these scales. The orange and black colors act as a warning sign to predators that monarchs are poisonous to eat.

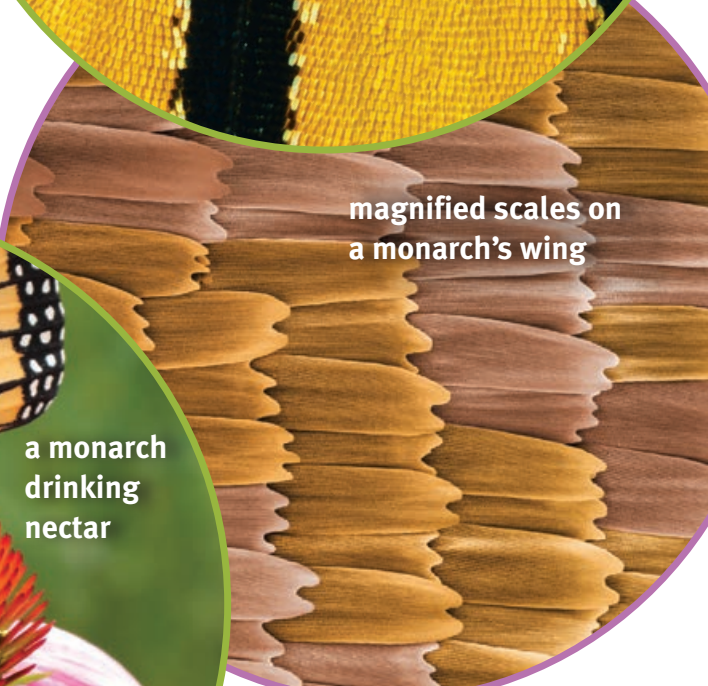
Butterfly wings are able to repel water. When the water drips from their wings, it also cleans their bodies and removes any dirt. Too much dirt can prevent a butterfly from flying.



a monarch's
proboscis



scales on a
monarch's wing



magnified scales on
a monarch's wing



a monarch
drinking
nectar

Monarch Migration

Every year, over 100 million monarch butterflies migrate, or travel, across North America. Monarchs migrate during both the fall and the spring. Each time they migrate, they travel nearly 5,000 kilometers (more than 3,000 miles).

Scientists are still unclear exactly how monarchs navigate across North America, but somehow, monarchs manage to arrive in the same destinations year after year.

Map of Monarch Migration





Spring Migration

Monarchs migrate for different reasons in the spring than they do in the fall. Scientists think that monarchs migrate each spring in search of milkweed. Milkweed plants are essential to the monarch life cycle because they are the primary plants upon which monarchs will lay their eggs. They are also the only plant that monarch caterpillars can eat.

As a result, each spring, monarchs will leave their wintering **habitats** in southern areas, such as California and Mexico, and they will migrate northward in search of milkweed.

▼ **Milkweed is poisonous to humans but essential to the monarch butterfly.**



CAREERS

What Is a Lepidopterist?

A lepidopterist is a scientist who studies butterflies and moths. Most lepidopterists have studied biology, focusing on insects and the environment. Often lepidopterists work in the field, meaning they spend lengthy periods of time outdoors observing butterflies or moths. They may be studying the way butterflies interact or how changes in the environment affect stages in the life cycle. Sometimes a lepidopterist identifies a new species.

There are lepidopterists around the world. Many lepidopterists in North America are trying to better understand the decline in the monarch butterfly population in order to help these unique organisms.



▲ **This lepidopterist is breeding caterpillars at a butterfly center in Cambodia.**