WHO MAKES CHOCOLATE?
Monkeys, Midges, Maggots, and More

Pages 4-5

Think of your favorite deserts. Chocolate chip cookies. Chocolate ice cream. Moist, fudgy brownies. What makes all these foods so delicious? Chocolate.

Chocolate is a mixture of many ingredients, but the most important one is the cocoa bean. We couldn't make chocolate without cocoa beans.

Pages 6-7

Main text: And cocoa beans are only found inside cocoa pods.

Sidebar: Cocoa beans are seeds. Like all seeds, they form inside a fruit. Cocoa pods are the fruits of the cocoa tree. They look like small, lumpy footballs. Inside each pod, white, gooey pulp surrounds thirty to forty cocoa beans. It takes seeds from ten to twelve cocoa pods to make a pound of chocolate.

We couldn't make chocolate without cocoa pods with cocoa beans inside.

Pages 8-9

Main text: Cocoa pods can't form without cocoa flowers . . .

Sidebar: A cocoa pod forms in the same way as other kinds of fruits. When a bit of powdery pollen from one cocoa flower lands on another cocoa flower, a tiny tube opens up. Sperm cells inside the pollen travel down the tube. They fuse with material deep inside the flower, and a fruit begins to grow.

We couldn't make chocolate without the cocoa flowers that produce cocoa pods.

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Pages 10-11

Main text: . . . and midges.

Sidebar: Before a female midge can lay her eggs, she needs a hearty meal of rich, nutritious cocoa pollen. To find food, the midge crawls deep inside a cocoa blossom. As she climbs out, powdery pollen dusts her body. When she lands on another cocoa flower, some of the pollen falls off. The cocoa tree needs pollen to form pods with seeds inside.

We couldn't make chocolate without midges that carry pollen from one cocoa flower to another.

Pages 12-13

Main text: Cocoa flowers can't bloom without cocoa leaves . . .

Sidebar: A plant needs a lot of energy to make flowers. You get your energy from food. So does a plant. A plant makes its own food inside its leaves. As a plant's leaves soak up sunlight, they make sugar. The sugar gives a plant all the energy it needs to live and grow and make beautiful flowers.

We couldn't make chocolate without cocoa leaves that make food for the cocoa tree.

Pages 14-15

Main text: . . . and maggots.

Sidebar: Dozens of leaf-cutter ants race up a cocoa tree and begin carving up its tender, new leaves. Female coffin flies land on some of the ants' heads and lay eggs. When the tiny maggots hatch, they burrow into the ants' heads and eat their brains.

We couldn't make chocolate without the maggots that attack ants.

Pages 16-17

Main text: Cocoa leaves can't survive without cocoa roots . . .

Sidebar: A plant needs more than food to survive. It also needs water and minerals. A plant's roots absorb, or take in, water and minerals from the soil.

We couldn't make chocolate without cocoa roots that supply cocoa leaves with water and minerals.

Pages 18-19

Main text: . . . and fungi.

Sidebar: The minerals in soil come from the bodies of dead plants and animals. Fungi living in the soil break down the dead bodies and release the minerals. Fungi absorb some of the minerals, but the rest remain in the soil. They can be taken up by the roots of plants.

We couldn't make chocolate without fungi that releases minerals into the soil.

Pages 20-21

Main text: Cocoa roots can't grow without and cocoa stems . . .

Sidebar: A plant's stems give it support. They also transport food, minerals, and water. A cocoa tree has thick central stem made of wood. It is called a trunk. Smaller woody stems are called branches. The tree's smallest stems are soft and green. They connect leaves to branches.

We couldn't make chocolate without cocoa stems that transport food, minerals, and water.

Pages 22-23

Main text: . . . and lizards.

Sidebar: Leafhoppers punch holes in a cocoa tree's soft, green stems and slurp the sugary juices. But a hungry anolis lizard is never far away. It skitters along tree branches, catching leafhoppers and other insects as it goes.

We couldn't make chocolate without the lizards that patrol cocoa stems.

Pages 24-25

Main text: Cocoa leaves, roots, and stems can only grow from cocoa seeds . . .

Sidebar: When a cocoa seed lands in just the right place, its hard shell cracks open. A tiny root pushes down into the soil. Then a slender shoot stretches up toward the sun. As time passes, the cocoa tree continues to grow. When it is about five years old, it begins producing flowers and fruit. Some cocoa trees live up to sixty years.

We couldn't make chocolate without the cocoa seeds that grow into new cocoa trees.

Pages 26-27

Main text: . . . spread by monkeys.

Sidebar: Just minutes after sunrise, the leaves above a cocoa tree quiver then shake. Suddenly, three monkeys drop down. Each animal yanks a pod off the tree, gnaws a hole in it, and pulls out the sticky insides. As the monkeys swing through the trees, they suck on the lemony-lime pulp and spit out the seeds.

We couldn't make chocolate without monkeys and other animals—including humans—that pull seeds out of the pods and scatter them on the ground.

Pages 28-29

Monkeys and midges, lizards and fungi all depend on the tropical rainforests where they live. But these special woodlands are in trouble.

In the last 30 years, more than 40 percent of the world's tropical rainforests have been destroyed. People have cut down the trees and sold the wood. They have burned the land so they can raise farm animals. As the forests disappear, so do the plants and animals that live there.

One hundred acres of rainforest are lost every minute. At that rate, tropical forests will be completely gone in 50 years. There are many important reasons to save tropical rainforests. One of them is to protect the future of cocoa trees . . .

. . . because we couldn't make chocolate without cocoa beans.

Pages 30-31

Growing Cocoa

Cocoa trees grow naturally in tropical rainforests throughout Central and South America. But the chocolate we eat today comes from cocoa farms located in tropical areas around the world.

In the past, farmers planted cocoa trees in neat rows with clean, open spaces between them. But fewer than five of every one hundred cocoa flowers produced fruit. Recent research has shown that when cocoa trees grow in places that are more like natural rainforests, they produce more pods. Why? Because the midges that spread cocoa pollen survive best in shady, humid rainforests where thick, damp leaf litter carpets the ground.

Growing cocoa in a more natural setting also helps rainforest animals. Insects and other small animals can spend their whole lives in cocoa groves. Larger animals can all find food and shelter in cocoa groves as they travel from one patch of rainforest to another. Monkeys, bats, squirrels, and rats remove cocoa seeds from their pods and scatter them on the ground. Without these animals, the seeds wouldn't be able to sprout and grow into new cocoa trees.

Like all living things, cocoa trees are part of a circle of life that includes many different creatures. So the next time you dive into a bowl of chocolate ice cream or take a bite of a brownie, think of all the animals that make your delicious dessert possible.

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Glossary, list of related titles, maybe a recipe?