

# Honeybees

by ReadWorks



Have you ever seen a honeybee? If so, you may have kept your distance. Many people are scared of their stingers! But honeybees are not scary pests. In fact, they are actually very important insects.

If you've seen a honeybee, think about where you saw it. You may have seen it by some flowers. Honeybees go from flower to flower. They collect nectar and pollen from the flowers for food. They can use this to make honey to eat. This is the honey that people eat, too!

But honeybees aren't just important because of the honey they make. They're important because of how they help plants. When they go from flower to flower, they move the pollen from flower to flower, too. This is called pollination. This is what lets plants grow new seeds! And those new seeds can grow into new plants. So without honeybees, a lot of plants

couldn't exist. Apples, nuts, and berries are just some of the plants that need honeybees to help them make new seeds. About 100 important crops in the U.S.A. depend on bees!

Many people are worried because a lot of honeybees have been dying. Some people think the chemicals used on farms may be hurting them. Honeybees are also being hurt by diseases that we don't understand well yet. But people are working to find ways to save the bees. How would you like to help the bees?

## What Is Pollination?



What is your favorite fruit to eat? That fruit exists because of a very special process. That process is called pollination. Pollination makes it possible for plants to make new seeds. It affects all plants with flowers.

Pollination depends on something called pollen. You may have heard of pollen before. Many people sneeze and get stuffy noses in the springtime because of it. But pollen is an important part of how new seeds and plants grow. For new seeds to grow, pollen has to be moved. It has to move from one part of a flower to another part of a flower. Usually, it gets moved to a different flower. This process is called pollination. It can happen in different ways.

Sometimes, pollen gets moved by the wind. For example, corn has light and dusty pollen. It can get blown long distances. When its pollen lands on the right part of another corn plant, it allows new corn to grow.

Other times, pollen gets moved by animals or insects. These animals or insects are called pollinators. Bees are one example of a pollinator. They come to a flower to get its nectar or pollen. The pollen sticks to the bees. Then, when the bees fly to another flower, the pollen moves with them. It gets dropped off at the other flower!

Moving pollen may seem like a simple thing, but it's very important. Without pollination, we wouldn't have many of the fruits, vegetables, and plants we have today.

## All Kinds of Pollinators



Robert Zingg

*Lemurs are just one of many kinds of pollinators.*

Plants need pollination! Pollination is when pollen from a plant's flower gets moved to a certain part of another flower. This movement of pollen has to happen for a plant to grow new seeds. And new seeds are needed for new plants to grow. So without pollination, plants would be in big trouble!

Luckily, different plants have different ways of making sure their pollen moves. Some plants let lots of pollen out into the air. That way, the wind can move the pollen to other flowers. But most plants do not depend on the wind to spread their pollen. Instead, they depend on insects and animals.

Lots of insects and animals can help pollinate plants. You may know of

some of them. Bees are known for pollinating flowers. So are butterflies, beetles, and other bugs. Hummingbirds and bats also are big helpers in this way. But there are other pollinators that you may not know about! Here are some interesting animals that help pollinate plants:

## **Honey Possums**

These mammals pollinate flowers from plants like eucalyptus. The honey possum's tail and feet help it hang from tree branches. That way it can reach the tree's flowers more easily!

## **Lizards**

Some kinds of lizards are also pollinators. One kind of lizard that pollinates flowers is the Noronha skink. As this lizard sips up nectar from a certain tree's flowers, pollen sticks to its scales. So when the lizard goes to another flower, it moves the pollen.

## **Lemurs**

Lemurs are some of the world's biggest pollinators. Black lemurs eat the nectar and pollen of a plant called the traveller's palm. When they stick their paws or snouts into the flower to get the nectar, pollen can get stuck to them. Then, when they go to the next flower, the pollen goes with them!



## Hummingbirds: Small and Special



Kelly Hunt/Photos by MK

Hummingbirds are very special for many reasons. For one, they are very, very small. The smallest kind of hummingbird weighs less than 2 grams. That's less than half the weight of a sheet of paper!

Hummingbirds are also special for the way they fly. They are the only birds that can hover. That means they can stay in one place while flying. Plus, they can fly backwards and even upside down!

All of that flying is supported by a hummingbird's wings. These birds normally beat their wings up to 70 times per second. They can beat their wings much faster when they dive quickly.

How does a hummingbird get all the energy it needs to beat its wings and fly? It gets energy from the food it eats! Hummingbirds get a lot of their food

from flowers. They drink nectar from flowers using their long, thin beaks and tube-like tongues.

When hummingbirds get their food from a flower, they also help the flower. How? By pollinating it! When hummingbirds put their beak into a tube-like flower, some of the flower's pollen can get on them. Then, when they go to sip nectar from another flower, they move the pollen to that new flower. If the pollen lands in the right place in the flower, the plant will grow new seeds. So hummingbirds help lots of plants survive and grow. These birds are truly special!



## Monarch Butterflies



Have you ever seen a butterfly with orange, white, and black markings? That may have been a monarch butterfly! Monarch butterflies are beautiful. They are also important.

Monarch butterflies often can be found near flowers. They feed on the nectar those flowers make. While they go from flower to flower eating nectar, they also pollinate the flowers. Because of this, those flowers can grow new seeds. Then those seeds can grow into new plants! So monarch butterflies are important pollinators.

Many monarch butterflies live in the United States and Canada. But they make a very special trip in the winter. The butterflies that are born late in the summer travel to Mexico and Southern California. That trip can be up to 3,000 miles long! That's a far way to go for an insect. The butterflies make this trip to get away from the cold weather. They go to the same forests

every year. Some scientists say that up to a billion butterflies go to the mountain forests of Mexico each year!

The number of monarch butterflies has gone down a lot over the past twenty years. Problems in their environment can make it hard for them to survive. For example, there has been a loss of milkweed plants. Those are the plants that monarch butterflies lay eggs on. Cities and farms have gotten rid of a lot of milkweed. Hot, dry weather has hurt milkweed, too. All of this hurts the monarch butterflies.

The forests of Mexico where butterflies go for the winter have also been shrinking. People have cut down parts of the forest. Changing weather has hurt the forest as well. This puts the butterflies at risk.

## How Bats Help Out



*Bats*

Have you ever seen a bat before? Bats are the only mammals that can fly. They are nocturnal animals. That means they are awake at night. They do their hunting and feeding after the sun has gone down.

Different kinds of bats eat different things. Some of them eat mostly insects. Others eat mostly fruit. And some eat pollen, nectar, and other parts of flowering plants. All of these kinds of bats are very important. Why?

Bats that eat insects help keep the number of bugs under control. Some of them eat mosquitoes, the nasty pests that feast on blood and spread disease. Because they eat so many bugs, they are great for farming. They eat the bugs that would otherwise eat farmers' crops!

Bats that eat fruit can help spread seeds. Inside a fruit are the seeds of the tree or plant that grew the fruit. When a bat eats the fruit, it does not digest

the seed. Instead, the seed leaves the bat as part of its waste. This can happen far away from the tree or plant where the bat first found the fruit. There, a new tree or plant can grow!

Bats that eat different parts of flowering plants are helpful pollinators. As they go from flower to flower, they move the plant's pollen to different flowers. This makes it possible for the plants to grow new seeds! More than 500 different kinds of plants need bats to pollinate their flowers. They include some kinds of cocoa, bananas, and mangos.

So if you see a bat, remember how much they help out!

# My Bean Plant

by Rachelle Kreisman



My grandfather loves to grow plants. He raises vegetables and fruits, and he takes great care of all of them. Last week, Grandpa gave me some green bean seeds. Now I can grow my own green bean plant.

I brought my seeds home and showed my mom. She helped me get my green bean project ready. First, we put some soil in a pot. Then we planted a few seeds. I remembered that Grandpa told me that plants depend on water and sunlight to grow. So I put the pot in a sunny spot by the window,

and I added some water.

I checked on my plant every day. When the soil felt dry, I added more water. Today, I saw a tiny stem. The plant is growing! Over the next few weeks, more stems and leaves will grow. Then flowers will grow, too.

What am I most excited about? I cannot wait to eat the beans! I think they will taste even better because I grew them myself.



# How Do Seeds Grow?

by ReadWorks



Many plants start out as small seeds. How does a seed grow?

First, a seed falls or is put into dirt. Water and the sun's light might help the seed to start growing.

Soon, the seed breaks open. Roots start to grow down into the dirt. Then a shoot pushes up through the dirt. The stem and leaves pop out next.

Soon, the little plant will be grown-up.



# Wind Helps Plants Grow

by Linda Ruggieri



Credit: Alex Valavanis, CC BY-SA 2.0

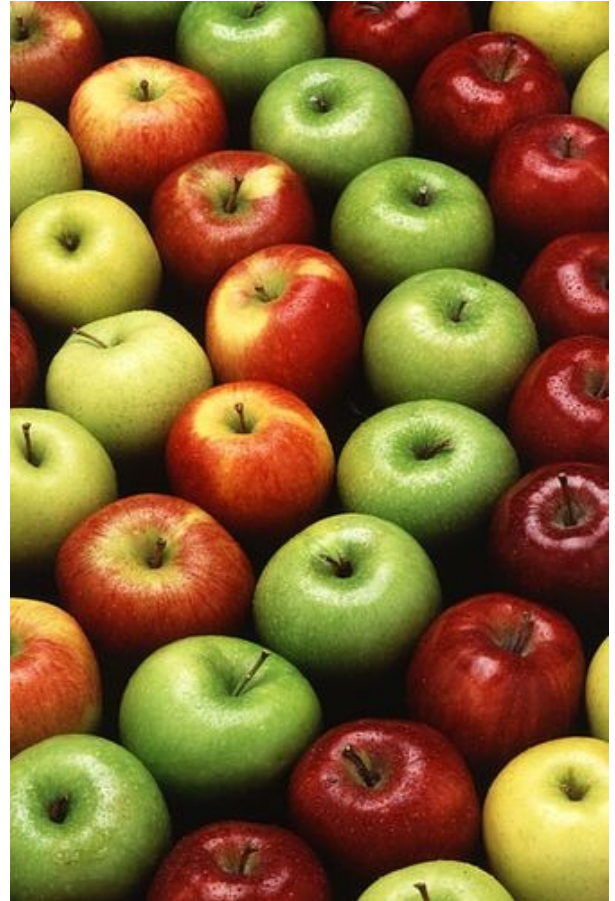
Wind is air that moves. When air moves, it blows things from one place to another.

Wind blows seeds around. That allows new plants to grow. Think about the dandelion flower. Have you ever seen one that has turned white? Inside it are seeds. When wind blows on a white dandelion, its seeds float away.

Some of those seeds will fall on the ground. Soon, something will change in the place where the wind blew the seeds. New dandelion plants will grow there!

# A Man Who Liked Apples

by ReadWorks



Meet a man who helped apples grow. He lived long ago. His name was John Chapman.

He liked to grow apples. He gave people apple seeds and small apple trees. Soon apple trees grew across the country.

Some people say he wore a tin pot on his head. They say he used it to collect berries to eat. Soon people called him Johnny Appleseed. That was a good name for a man who liked apples.

# Pumpkin Time!

## From Seed to Pumpkin

### This is how pumpkins grow.

Fall is here. It's time to pick pumpkins. Read the steps to learn the life cycle of a pumpkin.

## (1) Seed



Kate Eisemann for Weekly Reader

Pumpkins begin as seeds. The seeds are planted in the ground in May and June.

## (2) Sprout

After about 10 days, a **sprout** grows. A sprout is a tiny plant.

## (3) Vine



Sharon Meredith/Shutterstock

The sprout grows into a **vine**. A vine is a long stem. It can grow more than 20 feet long!

## (4) Blossom



Arlete Shaeffer/Weekly Reader

Soon, yellow flowers called **blossoms** grow. At the bottom of some blossoms is a tiny pumpkin.

## (5) Young Pumpkin



John Kaprielian/Photo Researchers, Inc.



Tiny green pumpkins start to grow. They grow bigger and bigger.

## (6) Full-Grown Pumpkin



Mark Edward Atkinson/Photo Library

By October, it's time to pick big, orange pumpkins. The seeds inside can be used to grow more pumpkins.

# Fruits Have Seeds

by Linda Ruggieri



Fruits grow in different ways. Apples grow on trees. Grapes grow on vines. Blueberries grow on bushes.

All fruits have something special. Do you know what that is? Seeds! Some fruits have one seed. Others have many seeds.

A peach has one seed. A coconut has one seed too. A pumpkin has many small seeds. A strawberry has many tiny seeds. They are on the outside of the fruit.

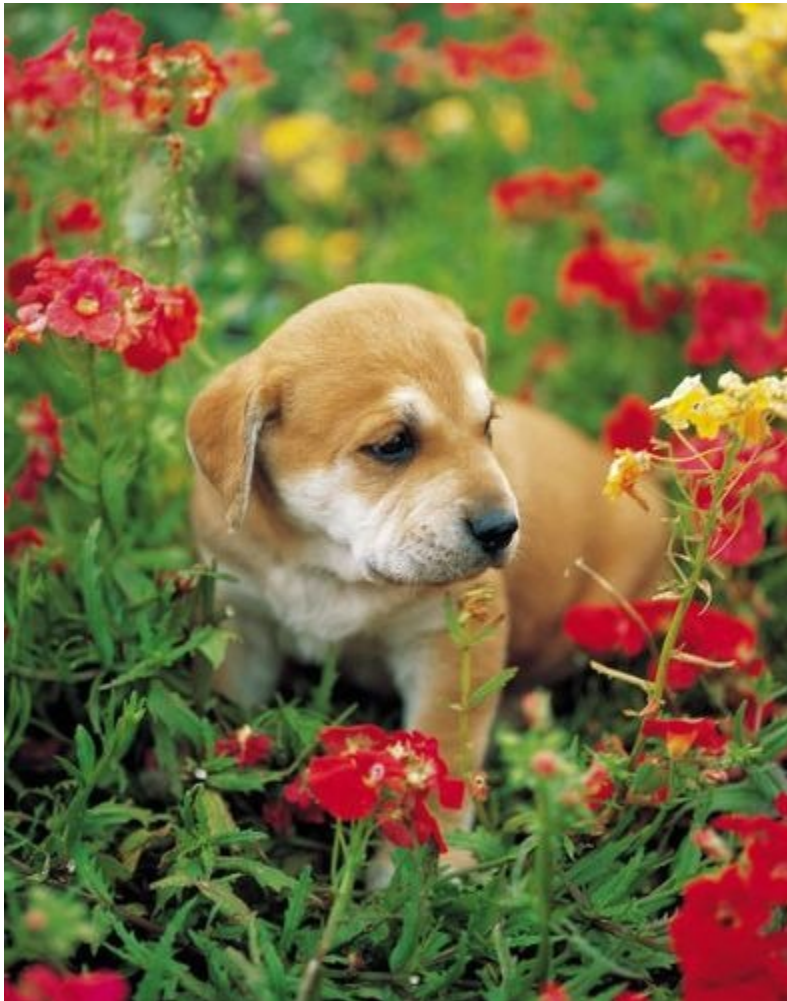
Seeds are important because they can grow into new plants.

What happens when seeds fall to the ground? Plants grow. Those plants will have stems, leaves, flowers, fruits-and more seeds.



# Moka the Little Golden Dog

by Jesse Kohn



Moka is a little golden dog that speaks English. No one seems to know but me. My job is to feed Moka and take her for walks when her family goes away on vacation. I've asked them about Moka before. I've said, "Are you aware, Mr. and Mrs. Quimpy, that your little golden dog speaks English?"

Mr. and Mrs. Quimpy laugh and tell me to have a nice weekend and not to give little Moka too much to eat. Then they leave for their vacation.

Moka comes bouncing down the stairs, wagging her little golden tail and

barking with joy.

"Moka!" I shout. "Would you like me to scratch behind your ears?"

"Forevermore!" she yaps.

"Would you like me to rub your little golden belly?"

"Forevermore! Forevermore!"

'Forevermore' is the only word I've ever heard Moka say. When I have felt lonely, I have asked her, "How long do you think you will love me?"

"Forevermore!" she yaps.

When I have felt tired, I've told her, "It is so difficult being a writer. How much longer do you think I should keep trying?"

"Forevermore! Forevermore!"

Although Moka only ever says that one word, she always says just what I need to hear.

Mr. and Mrs. Quimpy have a very special granddaughter named Samantha. One day, while her grandma and grandpa were getting ready to leave, Samantha asked me, "Hey Jesse, did you know that the little golden dog speaks English?"

"You mean Moka talks to you, too?" I asked, overjoyed to finally find someone else who knew.

"But she only ever says one word," said Samantha. "She says, 'Nevermore.'"

"Nevermore?" I asked.

"Yes," said Samantha. "I ask her, 'Will I be afraid of the dark tonight?' And Moka yaps, 'Nevermore!' I say, 'Do you think I'll get too nervous to raise my hand and answer the questions in class tomorrow?' And Moka yaps, 'Nevermore! Nevermore!' It's so strange, Jesse. But even though Moka only ever says one word, she always says just what I need to hear."

Just then, Moka came bouncing down the stairs, wagging her little, golden tail and barking with joy.

"Hey Moka," said Samantha and I at the same time, "how do you always tell us just what we need to hear?"

Moka looked at Samantha and me for a long time. "I don't know," she said at last. "I just tell the truth."

## Singing Without Instruments



U.S. Air Force

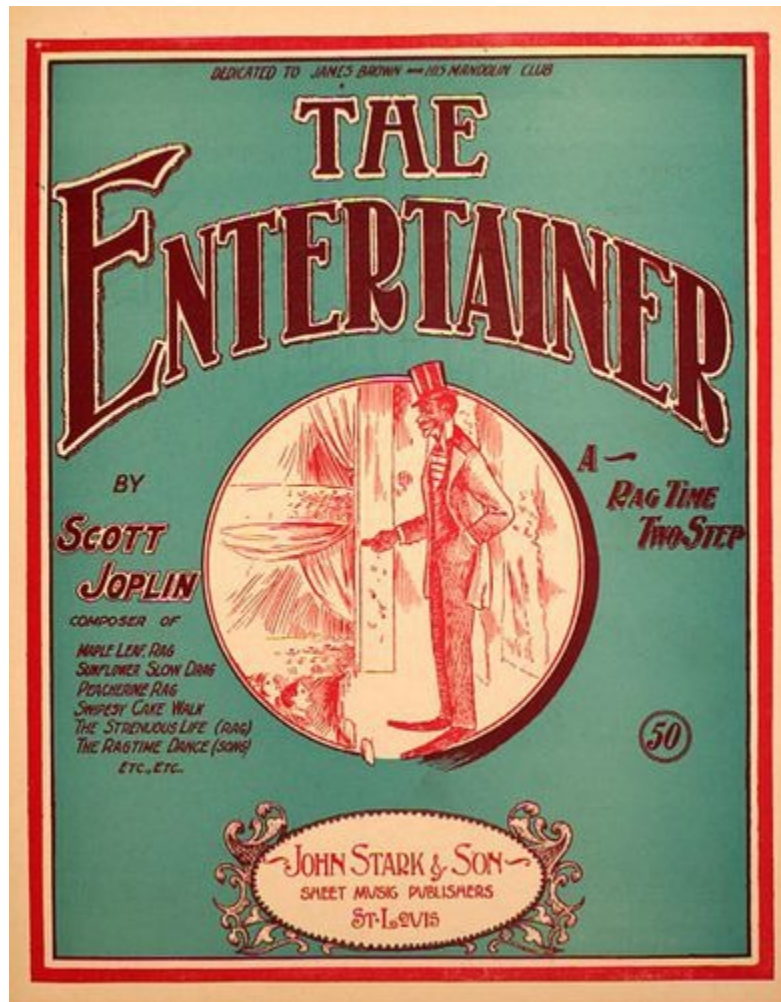
Have you ever heard a chorus sing without instruments playing in the background? If so, then you have heard a cappella music.

A cappella music is music that is sung without any background music. The words "a cappella" mean "in the church style" in Italian. That's because a cappella music was sung in churches hundreds of years ago. Choruses still sometimes sing a cappella in churches today. But today, this kind of music is sung in many places. And it is sung in many ways.

One kind of a cappella music people sing today is called barbershop. This is often sung by a group of four people. This group is called a quartet. Each person in the group sings a different part. One person sings the main tune of the song. The others sing different tunes that go well with the main tune. The four parts come together. They form beautiful harmonies!

When people listen to barbershop, they can tell that there are no instruments. But with some styles of a cappella, it can be harder to tell! Some a cappella groups today try to sound like instruments. They often have someone singing the words to the song. The rest of the group may try to sound like guitars, pianos, or even trumpets. These groups may even have someone who makes drum noises. And they do all this with just their voices!

# Ragtime, an American Style of Music



Music has always been played in America. For a long time, most of the styles played in America were ones that had started in Europe. But after a while, that started to change.

One of the first American styles of music started to become popular at the very end of the 1800s. The style was called ragtime. It came from communities of black musicians. The new style put together parts of their music with parts of music from Europe.

Ragtime is played on the piano. In ragtime music, the main tune does not



always follow a steady beat. Instead, it is syncopated. That means the tune might have notes at times when you wouldn't expect there to be a note. Or the tune might have breaks when you'd expect there to be a note. The background parts, though, follow a steady beat. So all in all, the music feels bouncy and exciting!

Ragtime was very popular for about twenty years. Then, another American style of music became more popular. That style was jazz. Ragtime didn't go away, though. It's still known today. In fact, you may have heard a famous ragtime song called "The Entertainer" on a hot summer day. Many icecream trucks play this song as they go down the street!



# Making Music with Electronics



Music is made with lots of different kinds of instruments. If you turn on a radio, you can hear some of those instruments. You may hear pianos, drums, and more. You may also hear music that was made with computers! This kind of music is called electronic music. Electronic music is music that is made with electronic machines.

Today, this kind of music is common. Computers are often used in music. They are able to create sounds that sound like other instruments. And they are also able to create noises that don't sound like any other instruments! This opens up people's choices when they are making music. With computers, people don't need to stick to the instruments that they have in front of them.

Synthesizers are also electronic instruments. These are used in a lot of

music today. Like computers, they give people a lot of control over the kinds of sounds they can make in their music. Many of them can be played like keyboards. They let people change the sound of the keyboard in a lot of ways. People can make it sound loud and harsh. Or they can make it sound smooth and soft. They can make a steady note get loud, then soft, then loud again. Or they can make it waver between other notes!

So the next time you turn on the radio, listen closely. Is that a piano you hear? Or is that a computer or a synthesizer?

## Experimenting with Music



When people think of music, they may think of lots of things. They may think of a piano playing a smooth song. They may think of a song on the radio with a strong beat. They may think of a band playing a march. But not many people think of silence!

A man named John Cage did, though. He was an American composer who lived in the 1900s. He wrote experimental music. The pieces he wrote played around with the way people thought of music. One of his most famous pieces was called 4'33" (four minutes, thirty-three seconds). It was a song made of silence! The song was first performed by a man giving a piano concert. He closed the lid of the piano at the beginning of the song. He sat for four minutes and thirty-three seconds without playing one note!

John Cage also experimented with music in other ways. He wrote some pieces for something he called "prepared piano." A regular piano has

strings. When a player plays a piano's keys, a small hammer hits the strings. This is how it makes sound. John Cage put screws, bolts, rubber, and other things in between the strings of a piano. Then he played the piano's keys. This changed the way the piano sounded.

John Cage's experiments with music changed the way lots of people thought about music.

## Imagine an Opera



*This picture shows a scene from an opera.*

Imagine you are sitting in a theater. The curtain on the stage goes up. Music starts to play. A drama is acted out on the stage, with music playing the whole time. People sing and act out the story. When the show ends, the crowd claps as the singers bow.

You just imagined seeing an opera! An opera is a drama, or play, that is completely set to music. The music has pieces that are sung through and parts that are just played by instruments. It is performed by singers who act out the play.

Operas can be funny or serious. But they almost always are very emotional! The music helps convey the emotion to the people watching an opera.

In an opera, the singers are very important. The people who play the main roles must be very good singers. A lot of the time, the main female character

in an opera is played by a soprano. A soprano is someone who can sing very high. The main male character in an opera is often played by a tenor. A tenor sings lower than a soprano, but higher than some other male singers.

Different kinds of music have been used in operas. Many operas have classical music and singing. But people have also written operas with jazz music. Some operas even use rock music! What kind of opera would you most like to hear?



## Jazz Music



Jazz music was one of the first American styles of music. It first started being played in the early 1900s. It was first played by African American musicians in the city of New Orleans. Jazz music grew out of ragtime, blues, and other kinds of music.

So, what does it sound like? It's hard to give an answer that fits all jazz music. But there are some things found in jazz that are not often found in other kinds of music.

One thing that sets jazz apart is that it often has improvisation. Improvisation is when musicians make their parts up on the spot. Sometimes in a jazz song, there is a section where someone can improvise a solo. The rest of the musicians play quietly in the background. Then, they trade. Someone else can then improvise their part.

Jazz also can have a syncopated beat. A syncopated beat is a beat that doesn't fall exactly where you think it will. Some beats feel a bit longer. Others feel a bit shorter. This can make some jazz music have a swingy feeling.

Jazz musicians also have a certain way of playing. They bring their own style to the music. So do jazz singers. For example, they may scoop up to hit notes, or play around with the melody.

Jazz is a very special type of music. Listen to a jazz song. What do you hear that makes it special?

# The Harmonica

by ReadWorks



Lola's brother is in a band. They practice in the garage every day after school. They make so much noise that Lola can't do her homework. She bangs on the garage door. She shouts, "Be quiet!" But they don't even hear her. Lola can't stand it anymore. She needs to go for a walk.

The woods behind Lola's house are peaceful. Just a hundred feet from her house, her brother's noise fades away. There is a little stream just behind her backyard. On weekends, she and her friends make paper boats to race in the stream. They like to pretend they are pirates, racing on the sea. Next to the stream, she sees a squirrel eating a nut.

"Hello Mr. Squirrel!" she says. The squirrel is scared, and runs away.

Lola hears a bird singing. It sounds like a happy bird. She wonders what kind of bird it is. It is red, with a fuzzy head. Maybe it's a robin? She will have to remember to look it up in the encyclopedia when she gets home. Lola tries to sing along with the bird. She doesn't know the words to his song.

Something shiny beside the stream catches Lola's eye. She jumps over the

stream and picks it up. It is a thin rectangular box made of metal. There are holes on its sides. Something is printed on the metal. It is so dirty that she can't make it out. She wipes the grime off with her sleeve. It says, "Old-Fashioned Blues Harmonica." Lola has heard her brother's friends talk about harmonicas. They are a very simple musical instrument. Anyone can play a song on a harmonica, even without a band.

Lola rinses the harmonica off in the stream. With the dirt gone, it looks as good as new. She dries it on her sleeve. Lola puts the instrument to her mouth and blows. It makes a high-pitched, whistling noise. She moves her mouth and blows again. Now the sound is deeper. She covers the back of it with her hand. Now when she blows, it sounds different. She blows harder and softer. She moves her hands and her mouth. Pretty soon, she is playing a song. It may not sound as good as the bird's but the robin doesn't seem to mind.

That night, Lola shows the harmonica to her brother.

"Cool!" he says. "My music teacher taught me how to play the harmonica a little. Do you want me to show you?"

"Sure!" says Lola.

The next time her brother has band practice, Lola plays along. Now that she has an instrument of her own, the noise doesn't sound so bad.