mystery science

Grades K-5
Mini-Lesson: “How do monarch butterflies know where to migrate?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Jay! Check out this road sign in Canada. It says, wishing the monarchs a safe migration. It’s kind of funny to see a message for butterflies on a highway. After all, it's not like you'll see monarchs speeding by in cars. But at the start of every fall, millions of monarchs do travel south. That's what animal migration is. It's when animals travel from one area to another. A lot of animal migrations happen when the seasons change. The orange areas on this map show where many monarchs start out. In the fall and winter, these places get colder. And monarchs can't survive there, so they travel south to where it's warmer, all the way here to forests farther south in Mexico. The trees there end up covered in monarchs. Just look at them all. They'll stay huddled together throughout the winter. Someone named Brynn is curious about this migration. Let's give Brynn a call now.

[Video Call]

- Hi, Jay.
- Hi, Brynn.
- I have a question for you. How do monarch butterflies know where to migrate?
- That's a great question.

For a monarch traveling from Canada to Mexico, the trip can take nearly three thousand miles.

That's one tiny monarch traveling thousands of miles. And see how small that area is where the monarchs spend the winter? Yet somehow, monarchs starting from here and here and here all managed to find their way to the same forest. You've probably had to find your way before too, like maybe finding a new classroom at the start of the school year. Think about how you did that. What could you do to find your way to a new place?

VIDEO 2

Sometimes when you're finding the way to a new place, you can check a map like this. Other times, you might ask someone who has been there before to give you directions or have them show you the way. That's really helpful. You might think that monarchs can do something similar. Maybe monarchs who have been to Mexico before can show new monarchs the way. But monarchs don't have that kind of help. That's one of the amazing things about this migration. All of these monarchs are flying to Mexico for the very first time. That's because monarchs only migrate once. That's right, just once. So even though these forests are filled with monarchs every winter, it's not the same monarchs that come back. At the end of winter, these monarchs in Mexico will start to travel north. But instead of going all the way back to where they started, they stop when they get to places where milkweed is growing. That's the only plant where monarchs will lay their eggs. Now, most of these monarchs are done with their travels. And soon, sadly, they'll die. But their eggs will hatch into more monarchs. These caterpillars are the children of the monarchs that spent the winter in Mexico. You can call them the next generation. That's a group of living things all born around the same time. When this generation grows up to be butterflies, they'll travel farther north looking for milkweed plants where they can lay their eggs. They live for just a few months, but their eggs will hatch to be the next generation of monarchs. And that generation repeats what their parents did. They grow up, travel a bit farther

to find milkweed, and lay their eggs. They live for a few months and spend their entire lives in the north. But guess what? Their eggs will hatch and repeat those steps again, grow up, travel to find milkweed, lay eggs. So to back up, we've gone from the monarchs that spent the winter in Mexico to their children who grow up here and their grandchildren who grow up here and their great grandchildren who grow up here and finally, their great great grandchildren, the newest generation that will hatch here. We're back to Canada. Remember how we started there? This entire migration from north to south and back again takes place each year, but each generation of monarchs lives for just part of the journey. As summer comes to an end in the north, the newest generation grows up. Some people call this the super generation because these monarchs are the ones who will make the super long journey south to live there through the winter. And long after these monarchs are gone, new monarchs will arrive the next winter to forests they've never visited before and will never visit again. How amazing is that? So if monarchs only migrate once and new monarchs can't follow older ones, how do monarchs know where to go? Are they born with some kind of map in their brains? Scientists are still trying to answer these questions. One big thing they've discovered is that monarchs use the sun to find their way. When a monarch sees that the sun is shining over here on a fall morning, it knows to fly this direction. But the sun can only get monarchs part of the way. A monarch starting here and a monarch starting here follow different paths to Mexico. Yet somehow, they both make it to the same forest, and so do millions of others. How monarchs do that is something we haven't figured out yet. So in summary, the migration of monarchs each year takes place over the lives of several generations. Super generations make the long trip south and start the trip back. Then other generations finish that trip to complete the migration north. That means in Canada, you could say goodbye to the monarch in the fall and say hello to its great-great-great-grandchild in the summer. Scientists have discovered that the sun helps monarchs find the right direction to

go, But it's still a mystery how millions of new monarchs find their way to the same forest, winter after winter. That's all for this week's question. Thanks, Brynn, for asking it.