mystery science

Grades K-5
Mini-Lesson + Activity: “Why do bears hibernate?”

VIDEO TRANSCRIPT

MINI-LESSON VIDEO 1

Hi, it's Doug! This looks like just a hole in a tree trunk, right? But, watch carefully. Do you see that there? Inside that tree trunk is a bear waking up from its winter hibernation. This is a video taken from cameras set up last spring by park rangers at Glacier National Park, in Montana. Now, I would have assumed that when a bear wakes up from hibernation, it just wakes up and walks off. Nope! Turns out, they're really groggy. It takes them a while to feel totally awake. You can see this one just doesn't look ready. Apparently, it can take a bear a few weeks to fully wake up from its winter hibernation. Someone named Anthony has a question about hibernation. Let's give them a call now.

[Video Call]

- Hi, Doug!

- Hi, Anthony!

- I have a question for you. Why do bears hibernate?

- Oh, that's a great question.

In books and stories, you might have heard about bears that live in cold, snowy places, sleeping through the entire winter. The idea of hibernating, it's kind of weird when you think about it. I mean, people living in cold, snowy places don't hibernate. And there are plenty of animals that are out during wintertime, too. They don't seem to hibernate. You can still see birds, sometimes

squirrels, deer. So why is that? Why do bears hibernate in the winter but these other animals don't? Before I say anything more, what ideas do you have?

MINI-LESSON VIDEO 2

Have a look at these animals that don't hibernate in winter, and pay attention to the kinds of things they eat. Like this cardinal, or this squirrel. You see that? Notice that they're eating things like seeds and nuts, either that they've stored up from earlier in the year, or that people have put in feeders for them. In wintertime, there's definitely not as much food around for these animals as there would be in summertime. But there are still enough things like seeds and nuts that are around or in the case of deer, enough twigs, stems and dried grasses for them to keep their bodies going through the winter. Now, let's have a look at bears. No, not when they're hibernating, but earlier in the year to see what they eat. Things like grass, insect larvae, mmm delicious! Fish, berries—many of the foods that bears eat aren't foods that are available anymore once it gets to be cold and snowy in wintertime. Some bears do eat acorns and hazelnuts which are available in winter but there's just not enough of these around to keep an entire bear fed through the winter. And it's not just bears that hibernate, too. Other animals that depend on foods that aren't available in wintertime also tend to hibernate. Animals like skunks—they hibernate. And groundhogs. They normally eat grass which isn't available in winter. Bats hibernate too. These are just a few examples of animals other than bears that also hibernate in winter. So, hibernation seems to be a way that some animals deal with there being not enough of their food available in the wintertime. But, how exactly does this work? Like, are animals that are hibernating really asleep all winter? I mean, it's one thing to sleep in for a couple of hours one day, but imagine to sleep for weeks or months. Don't they get hungry? Well, hibernation seems to work a little differently depending on the animal. But scientists have found

out that in general, hibernation isn't exactly the same thing as sleep. In fact, it can be helpful to think of hibernation less like sleep, and more like an animal being able to put its body on pause—like a pause button. Animals that go into hibernation in winter have bodies that are able to slow down. Their heartbeat slows down. Their breathing slows down. Their bodies wind up needing less of everything then they would normally need—less oxygen, less water, less food. How do their bodies do this? Well, so far most of this is still a mystery. We're only just beginning to figure some of it out. There's lots we don't yet understand. But keep in mind, even though a bear hibernating is a bit like putting its body on pause, it doesn't mean a bear's body stops completely. Its body still has needs. It may not need to eat while it hibernates, but its body still uses nutrients stored up from before it went into hibernation. Scientists think this is probably why bears eat as much as they can and get so big in late summer and fall before winter comes. A lot of scientists find the idea of hibernation super interesting and important, not just because it's fun to know, but because think about it—just imagine if we could figure out how to put our own bodies on pause. That would give us the ability to pause someone who's sick or injured and get them to the doctor in time. Or maybe even the ability to one day pause ourselves, wait a few hundred years and get un-paused, having traveled through time. So, in summary, bears hibernate as a way to deal with not having enough food in winter. Hibernation looks like sleeping, but in some ways, it's more like an animal being able to put its body on pause. That's all for this week's question. Thanks, Anthony, for asking it. Now, after this video's done playing, my friends and I here at Mystery Science created a special card game where you'll pretend to be bears searching for food as you get ready for hibernation. I hope you'll try it. Have fun and stay curious!

ACTIVITY: GRADES K-2

ACTIVITY INTRODUCTION VIDEO

In today's activity, you're going to play a card game called, Get Ready to Hibernate. You and a partner will pretend to be bears searching for food as they get ready for their winter hibernation. You'll lay out cards in front of you and try to find foods that match. When you find a match, your bear gets to eat that food. Now one of the reasons bears are able to find so much food before they hibernate is because they're really good at remembering the places where they found food in the past. So in the game your memory will help you find food. The more card locations you can remember, the more food you'll be able to gather for your bear. As you play the game you'll also think about which kinds of foods might be best for your bear to find before they hibernate. I'll show you how to get started, step by step.

ACTIVITY STEP 1

Find a partner. Decide who will be Black Bear and who will be Brown Bear. If you're working alone, that's okay too. Take about 15 seconds to decide. When you're done with this step, click the arrow on the right.

ACTIVITY STEP 2a

Bears need to eat lots of food before they hibernate. Take a look at this bear's teeth, claws, and tongue. Discuss.

ACTIVITY STEP 2b

Here's what we noticed. We noticed that bears have teeth that are similar to ours. Some are flat and some are sharp. They use the sharp teeth for eating meat, like fish. And they use the flat teeth for grinding up other types of food, like berries and nuts. They also have long, sharp claws which they use to tear open logs and they have really long tongues that they use to catch small bugs that they find in the logs. Basically, bears eat lots of different kinds of food. They're what scientists call omnivores.

ACTIVITY STEP 3

Go ahead and get your hibernation supplies. Each pair of students needs a set of bear food, scissors, and either a basic or advanced Get Ready to Hibernate sheet.

ACTIVITY STEP 4

First, you'll need to prepare your playing pieces. Brown Bear: cut along the center line of the bear food cards. Black Bear: cut along the center line of the Hibernation sheet.

ACTIVITY STEP 5

Now you'll prepare your bear food. Brown Bear: keep one-half of the food cards and give the other half to your partner. Then, both of you cut along all the dotted lines.

ACTIVITY STEP 6

Your bear food is almost ready. Black Bear: turn all the cards so that they're face down and then mix them up like this. Brown Bear: lay the cards out on the table in between you and your partner. Start with four cards across. Then keep adding rows of four until all your cards are on the table. It'll look like this when you're done.

ACTIVITY STEP 7

All right, it's almost time to play the first round of the game, so get ready! Place your get ready to hibernate bears next to your cards. Your goal is to fill your bear's stomach with as much food as possible so that your bear will be ready to hibernate. In the next few steps, we'll walk you through how to play the game.

ACTIVITY STEP 8

Okay, let's walk through the first turn together so you know how to play the game. Black Bear: you'll go first. Choose one card and turn it over, looking at the food shown on the card. Then, turn over a second card. If the second card matches the first card, then your bear gets to eat this food. You'll take the two cards and put them in your bear's stomach. But if the second card isn't a match, your bear doesn't get any food. You'll turn both cards back over so that they're face down again. Either way, your turn is over and it's now your partner's turn.

ACTIVITY STEP 9

Brown Bear: now it's your turn. Choose a card and turn it over. You want to find a match. So try to remember what foods you've already seen, then choose your next card. If it's a match, put the food in your bear's stomach. If it's not a match, turn the cards back over. Your turn is over.

ACTIVITY STEP 10

All right, now that you know how the game is played, go ahead and play the rest of round one. Remember, your goal is to get as much food as you can. The round is over when all the food cards are in the bears' stomachs. When you're done playing round one, go to the next step to figure out who won.

ACTIVITY STEP 11

Now it's time to see who won the first round of the game. Count the number of food cards in your bear's stomach. Whoever has the most cards wins this round. Circle the winner of round one on your worksheet. If the game is a tie, then you both win.

ACTIVITY STEP 12a

Before they hibernate, bears need to eat a lot of food. Discuss.

ACTIVITY STEP 12b

Here's what we think. If you've eaten a blueberry, you know it's so tiny. It's not very much food, so we don't think eating a blueberry is the same as eating a whole fish, but bears do eat

blueberries. They just eat a lot of blueberries. In order to get the same amount of energy they would get from eating one fish, a bear would have to eat 6,000 blueberries, and guess what, they do! Black bears can eat up to 30,000 berries a day.

ACTIVITY STEP 13

If you're playing the basic game, play another round the same way you did before. Have fun and stay curious!

ACTIVITY: GRADES 3-5

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ACTIVITY STEP 13

If you're playing the basic game, play another round the same way you did before. If you're playing the advanced game, go to the next step to hear your new challenge.

ACTIVITY STEP 14

To add an extra challenge to the game, each food card will be worth a certain number of energy points. The number of points tells you how much energy a bear stores up for winter when it eats that food. Looking at all of your food cards, discuss.

ACTIVITY STEP 15

We think fish are probably worth the most points. A bear can store up a lot of energy from eating one fish. We think berries are probably worth the fewest points. There's not a lot of energy in

just a few berries. We also think that nuts and bugs have more energy than berries, but not as much as fish. Based on this, we gave each food card an energy point value. Write these numbers in the top right box of your bear food cards.

ACTIVITY STEP 16

All right, let's get ready to play another round of the game. Black Bear: turn all the cards face down and mix them up again. Brown Bear: lay the cards out on the table. In round two, your goal is to get as many energy points as possible. At the end of the round, you'll add up how many points your bear has. Okay, go ahead and play round two.

ACTIVITY STEP 17

Once all the cards are in the bear's stomachs the round is over. To see who won add up all the energy points in your bear's stomach. You can use the back of your sheet to show your work. Then, compare your final number with your partner's final number to see which bear got the most points.

ACTIVITY STEP 18

Even if your bear didn't win the round, it still might have enough stored energy to hibernate. Your bear needs at least 60 points to hibernate. Did your bear find enough food? Circle your answer on the worksheet. If your bear didn't find enough food this round, that's okay. In the wild, a bear would keep looking for food until it found enough.

ACTIVITY STEP 19

If you have time, you can keep playing this game. Now that you know how to play, you can also teach a friend and tell them what you've learned about bears, what they eat, and how they get ready to hibernate. Have fun and stay curious!