

### Butterflies Unit Lesson 3: The Monarch's Majestic Migration

**OVERVIEW** – Students will discuss the migration of thousands of miles that monarch butterflies take to over-wintering sites and how thermal air drafts aid them in their long flights.

**OBJECTIVES** – Students will demonstrate the extreme energy it takes to flap wings for so many miles. Students will determine the relationship between the butterflies that visit Natural Bridges State Park each year. Students will outline the life history of several generations of butterflies.

**VOCABULARY** – migration, thermals, generation

**MATERIALS** – PowerPoint Presentation, pencils and paper for question writing

**TIME REQUIRED** – 15-20 minutes

Engage		
Teacher says/does	Probing Questions	Student Answers
<p>Show radar image. (Butterflies Lesson 3 Slide 2)</p> <p><i>Take a look at this radar image from the states of Missouri, Kansas, and Oklahoma in September of 2014.</i></p> <p><i>Let's share some of your ideas with the class.</i></p>	<p><i>What do you think this image is showing? Turn to your neighbor and brainstorm some ideas.</i></p> <p><i>Where have you seen pictures like this before?</i></p>	<p>A storm, tornado, etc.</p> <p>On TV, the weather station, the weather person/meteorologist shows them on the news, etc.</p>
<p><i>Let's watch this video to find out!</i></p> <p>Follow link in PowerPoint to show video. (Butterflies Lesson 3 Slide 2)</p> <p><a href="http://www.weather.com/news/butterflies-fill-radar-missouri-20140924">http://www.weather.com/news/butterflies-fill-radar-missouri-20140924</a></p>	<p><i>What surprised you about this video?</i></p> <p><i>Do you think there were a lot or just a few butterflies flying over Missouri? Why?</i></p> <p><i>Why do you think the shape of radar image was changing?</i></p>	<p>Answers will vary</p> <p>A lot because the radar picked them up even though butterflies are very small.</p> <p>Answers will vary, but try to lead students to the idea that the shape of the flock was changing</p>

<p><i>Today we are going to learn about the amazing migration that monarch butterflies take during their lives. As we could see, there are thousands and thousands of butterflies that make the migration together.</i></p>	<p><i>What do you think it would be like to see all of the monarchs flying overhead like that?</i></p> <p><i>Have any of you ever seen a flock of monarchs in California before?</i></p>	
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<b>Explore</b>		
<b>Teacher says/does</b>	<b>Probing Questions</b>	<b>Student Answers</b>
<p><i>When monarchs fly they can flap their wings between 300 and 720 times per minute.</i></p> <p><i>Let's pretend to be monarch butterflies. Spread out your arms and count how many times you can flap them in one minute while I time you. Ready? Go!</i></p>	<p><i>How many times were you able to flap your wings?</i></p>	<p>Students flap arms.</p> <p>Answers will vary.</p>
<p>Show image of map on PowerPoint. (Butterflies Lesson 3 Slide 3)</p> <p><i>The monarch butterflies that travel from the Rocky Mountains to overwintering sites in California and Mexico travel up to 3,000 miles.</i></p>	<p><i>Do you think you could flap your wings like that for 3,000 miles? Why or why not?</i></p>	<p>No, it would be too tiring.</p>
	<p><i>Turn to your neighbor and come up with some ways that you could save energy while flying 3,000 miles.</i></p> <p><i>Can you think of other animals or objects that fly?</i></p> <p><i>Are their wings always flapping?</i></p>	<p>Answers will vary.</p>

<b>Explain</b>		
<b>Teacher says/does</b>	<b>Probing Questions</b>	<b>Student Answers</b>

<p>Show image of hot air balloon. (Butterflies Lesson 3 Slide 4)</p> <p><i>3,000 miles is very far to travel, so monarch butterflies use warm air to glide as they travel.</i></p> <p><i>Hot air balloons don't have wings, but they are able to glide through the air.</i></p> <p><i>Do you see the fire in the basket of the hot air balloon? It heats up the air in the balloon. Hot air helps make things float. Butterflies use warm air and winds called thermals to help them glide through the air on their journeys.</i></p>	<p><i>Have you ever been on a hot air balloon ride?</i></p> <p><i>Turn to your neighbor to see if you brainstorm how hot air balloons glide in the air.</i></p> <p><i>What ideas did you share with your neighbors?</i></p>	<p>Yes, no</p> <p>Answers will vary.</p>
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<b>Elaborate</b>		
<b>Teacher says/does</b>	<b>Probing Questions</b>	<b>Student Answers</b>
<p><i>Most monarch butterflies only live about 6 weeks once they reach adulthood. The exceptions are the butterflies that migrate to warmer climates during the winter.</i></p> <p><i>The butterflies you might see during a winter visit to a California state park one year are actually much older relatives of the ones you will see the following year.</i></p>	<p><i>Work with your group to determine how the butterflies relate to the ones the next year.</i></p> <p><i>What is a generation?</i></p> <p><i>If five generations of butterflies will be born in the warm summer months before migration, are</i></p>	<p>A level within a family</p> <p>Great, great, great grandparents</p>

<p>Show PowerPoint Monarch Family Slide (Butterflies Lesson 3 Slide 5) and explain:</p> <p><i>The butterflies you see are actually the great, great grandparents of the butterflies that will return the next year.</i></p>	<p><i>butterflies that return the children, grandchildren, brothers, sisters? How do they relate?</i></p>	
<p>Show map of California State Parks that have butterfly overwintering sites. (Butterflies Lesson 3 Slide 6)</p> <p><i>Look at this map of some of the state parks where we see monarchs overwintering. California State Parks works to protect monarch habitats while they are saving their energy to fly back to the Rocky Mountains.</i></p>	<p><i>Have you ever visited these parks?</i></p> <p><i>Have you seen monarchs?</i></p>	

<b>Evaluate</b>		
<b>Teacher says/does</b>	<b>Probing Questions</b>	<b>Student Answers</b>
<p><i>Work with your neighbor to write some questions you still have about the monarch butterfly. You might be able to ask your question to the State Park Interpreter when we do our videoconference!</i></p>	<p><i>Does anyone want to share their questions?</i></p>	