A Volcano in your Backyard!

You can use monarchs to teach about many things! Stone Mountain Memorial Association (SMMA) uses the monarch butterfly to help students apply their knowledge in other contexts and to different disciplines. The activities relate a grade-level specific GPS to monarch life, habitat or migration. Use this lesson as a post-trip activity following your 5th Grade Stone Mountain Geology field trip.

GPS correlation: S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes.

Preparation:

Read the background information. Print the worksheet, or make an overhead or display on your Interactive white board. Make copies for each student or for pairs of students.

Background Information:

Students should be aware that constructive and destructive forces occur all over the world and, sometimes, people are affected. In this lesson, we examine constructive forces as a volcano grows, as well as destructive forces and human interaction as the lava field spreads.

Monarch butterflies migrate to the Transvolcanic Mountains of central Mexico to overwinter. Monarchs spend the winter clustered in oyamel fir trees in the mountains 10,000 feet above sea level. This area has many inactive cinder cones. The youngest one is called Paricutin. It was 'born' or began erupting in 1943 in a local farmer's, Dionisio Pulido, cornfield. It eventually destroyed 5 small villages and the surrounding forest.

Pulido and a few villagers had always seen a small fissure, or opening, in the field that gave off smoke and rumblings. After weeks of rumblings and earthquakes in the area, the fissure gave off an enormous amount of smoke, ash and steam on February 20, 1943. Within weeks, three towns were covered with lava and solidified lava rock (tephra). Within a few months, San Juan was covered. Today, you can visit the lava field near the old site of the town of San Juan. The church steeple and altar still remain standing above the lava field.

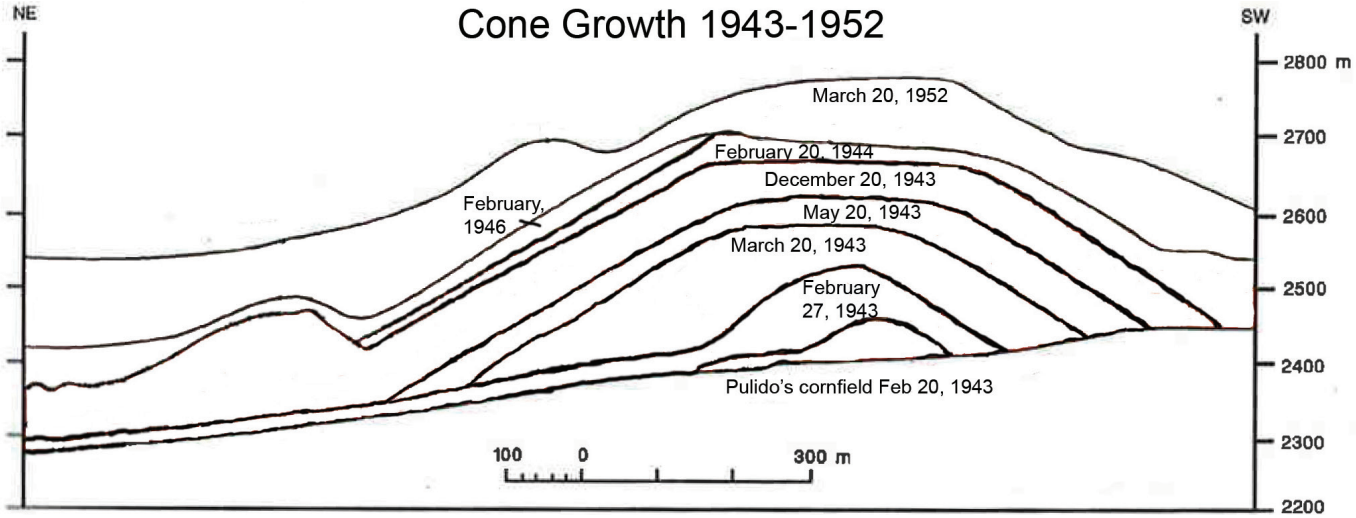
The volcano continued erupting and growing for nine years. Both Mexican and American geologists spent that entire time monitoring the destructive and constructive forces at work when a volcano erupts. View a short animation of the eruption at http://volcano.oregonstate.edu/vwdocs/volc_tour/mex/paricutin_evolution.html.

Activity:

Read the background information to students. Read them the essential question so they understand the focus of the lesson. Hand out worksheets.

Essential question:
What constructive and destructive forces occur in other areas, such as Mexico?

Eruption of Volcan Paricutin, 1943 –1952



Constructive or Destructive?

1. Color each layer carefully.

2. Does this show constructive forces or destructive forces?
Why? (write answer on back)

3. How many meters did the volcano center grow in the 9 years it erupted?

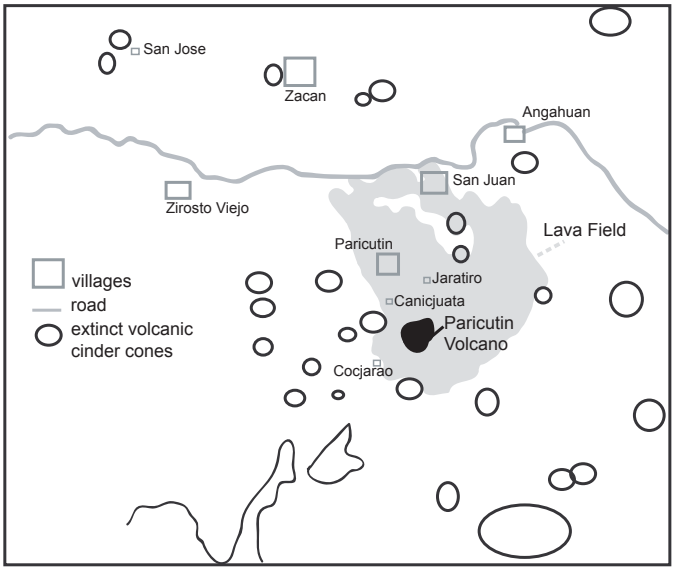
Constructive or Destructive?

1. Locate and color in the squares for all 9 villages.

2. Circle the lava field from the volcano's eruption.

3. Which 5 villages were covered by lava during the eruption of Volcano Paricutin?

4. Does this show constructive forces or destructive forces?
Why? (write answer on back)



1. Color each layer carefully.
Students should color 8 layers.

2. Does this show constructive forces or destructive forces?
Why? (write answer on back)
Constructive because the volcano is building up layer upon layer.

3. How many meters did the volcano center grow in the nine years it erupted?
Top: about 2750, bottom: about 2400. The center grew 350 meters.

1. Locate and color in the squares for all 9 villages.

2. Circle the lava field from the volcano's eruption.

3. Which 5 villages were covered by lava during the eruption of Volcano Paricutin?
Paricutin, San Juan, Canicjuata, Cocjarao, Jaratiro

4. Does this show constructive forces or destructive forces?
Why? (write answer on back)
Destructive because village and forest were covered or destroyed by the volcano and lava flow.