

# Google Earth Lesson Plan on Monarch Migration

Justine Delaine & Kitty Hess

## Science Standard:

### 2.1 Structure and Function: Living and non-living things vary throughout the natural world.

Benchmark 2.1L.1 Compare and contrast characteristics and behaviors of plants and animals and the environment where they live.

## Objectives:

### Content objective #1:

Students will be able to define monarch migration as traveling long distances to move to warmer weather. They will understand that migration occurs in the southern direction to Mexico in the fall and northern direction to the United States in the spring.

**Content objective #2:** Students will be able to demonstrate their knowledge of the southern migration of the monarch butterfly by creating a Google Earth tour including 8 stops on their route.

### Language objective:

Students will watch a video on monarch migration and then complete a Google Earth tour showing the southern migration from Oregon to Mexico while stopping along the way for overwintering in the Eucalyptus trees, laying eggs, and replenishing nutritional energy.

## Materials:

### Teacher:

- Map of North America.
- Computer and document camera
- Google Earth application
- Poster paper for listing of key features
- Websites:

The first two will be used at introduction.

<http://www.youtube.com/watch?v=MWT51807cyM> (4 minutes, good overview)

### Student:

- Computer(1 per 2 students).
- Handout with a list of coordinates to search for and place-mark on their tour:
  1. McCornack elementary (N44 2 17, W123 8 38)

2. Ardenwood historic farm, Fremont California (N37 33 27, W122 2 55)
3. Light house field state beach, Santa Cruz, Ca. (N36 57 12, W122 1 44)
4. Monarch butterfly sanctuary, Pacific Grove, Ca. (N36 37 34, W121 55 47)
5. Andrew Molera State park, Big Sur, Ca. (N36 17 1, W121 51 12)
6. North Beach Camp ground, Pismo Beach, Ca.(N35 7 45, W120 37 58)
7. Presidio Park, San Diego, Ca. (N32 45 31, W117 11 35)
8. Monarch Butterfly Biosphere reserve, Mexico(N19 35 46, W100 15 50)

**Vocabulary:** Migration, nectar, overwintering, place-mark, search, and tour.

**Assessment:** Students will have all 8 stops labeled and place-marked with a 1-2 sentence description. Students will use the vocabulary: overwintering, laying eggs, nectar, and migrating in their descriptions.

**Previous knowledge:** General knowledge of Google earth, how to create a place-mark, edit description, record a tour and save searches to my places.

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## Lesson

### Beginning:

1. Students gather at the rug area.
2. Introduce topic with prompt: **Turn to a neighbor and tell them what you think migration means.** Have one student share with the class. If you had an answer similar put your sign language **S** in the air. Okay hands down, if you have a different answer put a **D** in the air.
3. Have someone with a different answer share their ideas.
4. Explain that yes **migration is to move from one place to another.** Some animals migrate like butterflies for certain reasons. Can you think of any other animals that migrate? (birds)
5. Turn to a neighbor and tell them an animals that migrates and why.
6. Yes birds migrate, and why do they migrate? They migrate during the winter by moving south to warmer weather.
7. We are going to watch a movie clip about a certain type of butterfly that migrates.
8. This is one of the types of butterflies we learned about, it is called a monarch.
9. Monarch butterflies migrate from the north to the south. (**Hold up a map to model from north to south.**)
10. They migrate in this direction South during the Fall when it's getting cold up here in the north. Then when it's spring they migrate back up to the North. Why do you think they migrate back north in the spring? (Because it's now warmer in the north.)

### Middle:

1. Tell them they are going to watch a short movie clip about the monarch migration. **In the movie you will hear some familiar words: nectar, predator, migration, and milkweed.** You will also hear some words to pay close attention to like **Over-wintering.** Pay attention to what the butterflies do to survive the cold winter.
2. Go to the website: <http://www.youtube.com/watch?v=MWT51807cyM>
3. After the movie, ask them to turn to a neighbor and share one thing they learned.
4. Then have one person share. Then ask the class what do the butterflies do to survive the cold winter? (They gather on Eucalyptus groves and huddle together and sleep (hibernate).
5. Have students review their knowledge of Google Earth. With the document camera on so students can watch activity on the computer, have student volunteers come up to show each one of the examples; searching, adding place-marks, and creating a tour on Google Earth.
6. The teacher will model creating a tour and inserting descriptions as well as zooming in and out to create movement at the stops. Students will be shown how to record a tour.
7. Check for Understanding: Have students provide the steps they will take to create a tour while the teacher writes this list on poster board. This list should include key features and steps to take (place-mark, editing the description, and record a tour). This will serve as a reference guide to help students on their way to creating a tour.
8. Ask students which direction the monarchs will be flying in the Winter. Explain that they will now get a chance to create a tour mapping the southern migration of the monarch butterfly.
9. After reviewing the behaviors of monarch migration (overwintering in San Diego, laying eggs in Mexico, drinking water and nectar to survive the trip) students will then be given a list of the names and latitudinal and longitudinal coordinates of 8 locations to find and use to create their tour.
10. Students will write a brief description of each location with reason for stopping there that relates to the migration behaviors previously learned. Students refer to the vocabulary list for

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help writing descriptions.

11. Model an example description with the help of the class in creating it.
12. Have them brainstorm a list of ideas for important information they should include on their tour.
13. Students will have paper and pencils at their computer stations with their partners. They will write down their descriptions first so the teacher can check spelling before they type them in.
14. While students are working the teacher will walk around and monitor their use helping as needed.
15. The advanced students who finish early will have the option of creating a new tour by choosing from a list of sites to use on their tour.

## End:

1. When students are done have three teams share their tours to compare the different descriptions and styles of zooming and moving of angles they used at their 8 stops.
2. **Review monarch migration, how far do they travel and why? What do they do to survive? (Hibernate by clustering together on the branches of trees, and drink a lot of nectar to store up fat for the long journey.)**

## **Differentiating the lesson:**

For tactile learners have a globe available with stickers for them to place on landmarks to represent the migration movement on the map.

Low level comprehension students can be partnered with high level students. Students who need more stimulation and hands on can have the job of being on the computer.