

MONARCHS: METAMORPHOSIS, MIGRATION, MIMICRY AND MORE THIRD-FIFTH

Life Science TEKS

Third Grade: 3.9A, 3.9B, 3.9C, 3.10B, 3.10C

Fourth Grade: 4.9A, 4.9B, 4.10A, 4.10B, 4.10C

Fifth Grade: 5.9A, 5.9B, 5.9C, 5.9D, 5.10A, 5.10B, 5.10C

Life Science Vocabulary

adaptation, adult, carnivore, chrysalis, communities, complete metamorphosis, consumer, ecosystem, egg, environment, food chain, food web, herbivore, incomplete metamorphosis, inherited, insects, larva, learned, life cycle, migration, mimicry, molt, nymph, omnivore, organisms, perish, population, producer, pupa, thrive

Pre-Show Activity

Pre-Show Lesson: Complete and Incomplete Metamorphosis

Post this question on the board: "Do all insects experience the same life cycle?"

Materials: 4 pictures of each organism: frog, beetle, butterfly, grasshopper, dragonfly and mosquito, information about the life cycle of each organism- this can be Internet resources or books, 1 copy of the metamorphosis cards per 2 students

Procedure:

1. As students walk in, give them a card with a picture or word on it - frog, beetle, butterfly, grasshopper, dragonfly, and mosquito. Students will sit with others who have them same card as them. Each group will research the life cycle of their organism and create a poster to present to the class. The poster should identify each stage and tell the characteristics of the organism at that stage. They will need to tell if their organism goes through complete or incomplete metamorphosis, and explain their reasoning.

2. Show a video of complete metamorphosis and also a video of incomplete metamorphosis. The Discovery Education site has many videos on this, or you can try TeacherTube.

Another option is to read a book which explains both types of metamorphosis. A wonderful book which shows many examples of both life cycles is called, *Insect Metamorphosis: From Egg to Adult* by Ron and Nancy Goor.

3. Give students a set of metamorphosis characteristic cards and have them create a Venn diagram comparing complete and incomplete metamorphosis. Students will work in pairs to complete this. (Appendix A-1)

Tell students to create their Venn diagram, but not to glue it down until you check it.

4. To conclude have kids explain on a piece of paper the difference between complete and incomplete metamorphosis.

Post-Show Enrichment Activities

Activity One: Monarch Obituary

Students will write an obituary for a butterfly that died. They will describe the life of the butterfly using what they learned from the HMNS presentation. A description of an obituary and ideas of possible information to include are listed below. Students need to use everything they learned about butterflies to create the obituary.

An obituary is a description of an individual's life. It may contain several paragraphs. This is typically the type of obituary that is used in funeral programs, prayer cards and funeral keepsakes. It may include the following information:

- Date of birth, place of birth
- Date of death, place of death
- Circumstances of death (How did they die?)
- Description of major life changes (life cycle stages)
- Major life accomplishments (escaping predators, migration, etc.)
- Names and relations of family members
- Awards/Recognitions received

A picture should be included with the obituary. The goal is to honour the memory of the deceased butterfly.

Caution: A recent death may cause a student to have difficulty with this activity. If this is a concern for you, students may write a biography for their butterfly.

Activity Two: Monarch Migration

Find a video highlighting monarch migration on Discovery Education or TeacherTube.

Give students a blank map of North America with latitude lines on it. Students will map the migration of the monarch butterfly using the latitude chart (Appendix A-2) and migration map (Appendix A-3). Put the corresponding date at each line of latitude.

Enrichment: Students can calculate the miles traveled per day.

The Monarch Watch website also has a Monarch tagging program in which your students can participate in tagging monarchs and charting their travels.

Activity Three: Observing Metamorphosis

To teach metamorphosis, you can use mealworms. Students keep a journal in which they record observations of the mealworms and larvae as they go through their stages over about a month of time. During this time, students make careful observations of each stage. They will do informal testing with the mealworms- Do they prefer light or dark? Do they prefer one type of food or another? Do they prefer a wet surface or a dry one? Etc. The class will debrief after each observation, sharing any new insights.

Activity Four: Mimicry

Mimicry is an adaptation that animals have to protect them from predators or to hide from prey.

Discuss examples of mimicry from the HMNS presentation.

Viceroy looks like Monarch
Bright red/yellow is a warning color
Caterpillar that looks like bird poop
Butterfly with owl eyes on its wings

Create a T chart with your examples. (Appendix A-4)

Types of mimicry are:
Imitating a behavior
Imitating a body part
Imitating a body design pattern/colors
Imitating a sound
Imitating a nonliving object
Imitating a smell

Working with a partner, students will choose one type of mimicry. They will create an imaginary animal that uses this type of mimicry and explain its benefit.

Activity Five: Camouflage

Give each student a picture of a butterfly to color. (Appendix A-5) Tell them that they are going to color their butterfly and try to hide it somewhere in this room. It has to land on a flat surface and cannot be hidden under or inside anything. Predators are going to try to find your butterfly. Think about where you want your butterfly to land, and how you might color it to help it hide from predators.

When students have finished coloring their butterflies, send one group out (the birds), and have the others tape their butterfly against the wall somewhere. Predict with students which butterflies they think will get captured first and why. Have the birds come in and eat as many butterflies as they can in 30 seconds. Debrief with the kids. What could they do to better camouflage their butterflies? Repeat with another group as predators. You may want to give the kids time to color the back of their butterfly to see if they can improve their butterfly's chance of survival.

Appendix

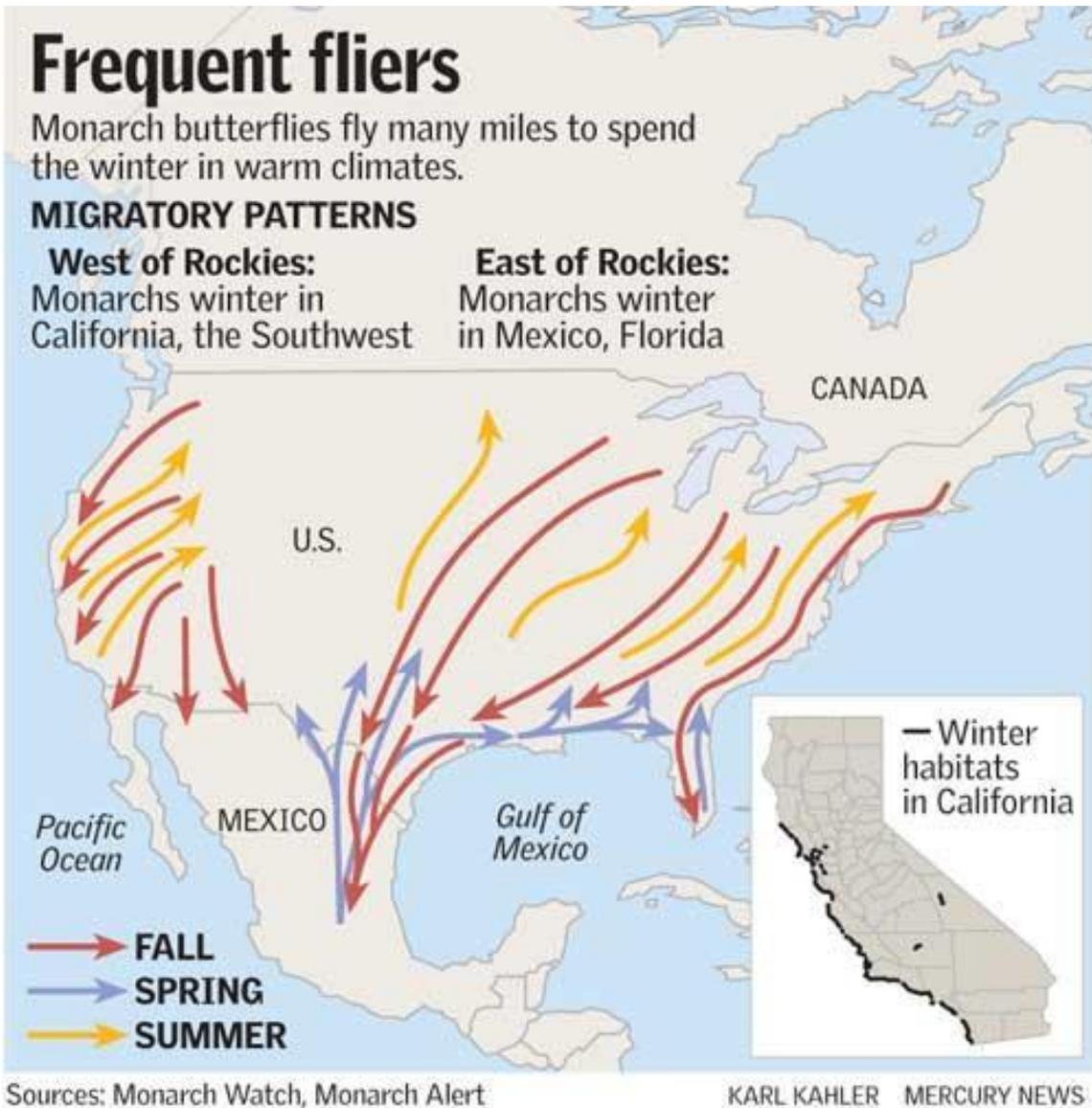
A-1

Metamorphosis Characteristic Cards

It starts with an egg.	It has an adult stage.	It has a total of 3 stages.	The adult lays the eggs.
It has a larva stage.	It may lay eggs in water.	It has a total of 4 stages.	It has a nymph stage.
It has a pupa stage.	It may lay eggs on land.	The adult looks like the stage before it.	The cycle repeats itself.
The adult may have wings.	There is usually a dormant stage.	There is usually a miniature adult stage.	It has a stage that molts.

Latitude	Midpoint	Peak in monarch abundance
49	26 August	18-30 August
47	1 September	24 August -5 September
45	6 September	29 August - 10 September
43	11 September	3 - 15 September
41	16 September	8 - 20 September
39	22 September	14-26 September
37	27 September	19 September - 1 October
35	2 October	24 September - 6 October
33	7 October	29 September - 11 October
31	12 October	4-16 October
29	18 October	10-22 October
27	23 October	15-27 October
25	28 October	20 October - 1 November
23	4 November	27 October -8 November
21	11 November	3-15 November
19.4*	18 November	10-22 November

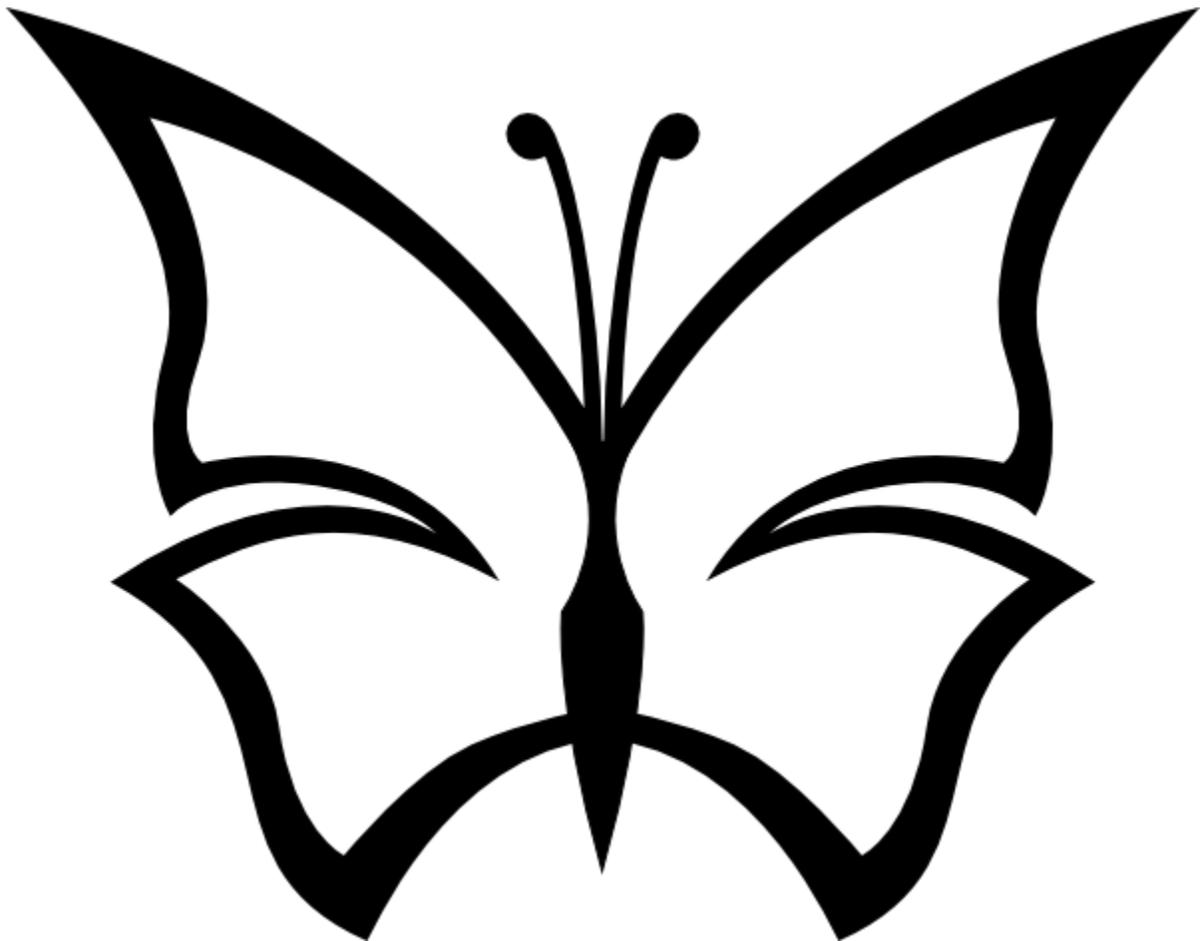
Source: MonarchWatch.com



A-4

Mimic	Model

A-5



Graphics Source: blackwhiteclipart.blogspot.com