

National Geographic Educator Certification Lesson Plan

Your Name: Cristina Veresan

Lesson/Activity Title: Motivate for Monarchs!

Recommended Grade(s): 5-8

Time Needed – Preparation: 15 minutes

Time Needed – Execution: 2-3 class periods (based on 50 minute classes)

Standards:

Next Generation Science Standards (NGSS)—

- MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

Common Core State Standards in ELA/Literacy—

- RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- WHST.6-8.1 Write arguments to support claims with clear reasons and relevant evidence.

Objectives:

By the end of this lesson, students will be able to:

- Explain the human causes of monarch butterfly population decline and suggest solutions
- Summarize scientific text by constructing an And-But-Therefore (ABT) statement
- Write a letter about butterfly conservation that uses evidence to persuade the recipient

Materials and Preparation Needed:

No advance teacher preparation is required other than obtaining hard or digital copies of the article, the Background Research Recording sheet, the National Geographic Kids persuasive letter guide, and the Persuasive Letter Rubric. Students will need computers to research and type their letters.

If an introduction or review of monarch butterfly basics is needed, consider using the National Geographic Education lesson *Monarch Butterfly Life Cycle and Migration* (linked in Resources).

Directions:

1. Engage students with the photos and video clip from the 2018 National Geographic article “We’re losing monarchs fast—here’s why” by Carrie Arnold (linked in Resources).
2. Students read the article individually or as a class. Part A of the Background Research Recording sheet (included) contains a list of guiding questions about the article. These questions can be utilized in cooperative structures, class discussions or written responses.
3. Introduce the summarizing strategy of an And-But-Therefore (ABT) statement. The ABT Statement, developed by science communicator/filmmaker Randy Olson, is designed to transform scientific text into narrative structure. It begins with two factual clauses linked by an “and.” A “but” follows with a clause that introduces conflict, and then a “therefore” follows with a clause that brings a sense of resolution.
4. Students construct ABT statements on the article’s central idea in their own words. Students can record them in Part B of the Background Research Recording sheet. If time allows, the ABT statements can be shared and refined. Have students use these statements as the basis for their persuasive letter writing.
5. Challenge students to write a persuasive letter to an administrator about growing native milkweed and nectar plants on campus to aid in monarch butterfly conservation.

6. As part of their letter preparation, students will need to research local monarch butterfly ecology including native species of milkweed host plants and nectar plants. They can capture this information in Part C of the Background Research Recording sheet.
7. As a class, review the persuasive letter guide “How to Write a Letter That Gets Results” by National Geographic Kids (linked in Resources) and the Persuasive Letter Rubric (included), so students better understand how to craft successful letters.
8. Students draft letters.
9. Organize a process of self and/or peer assessment using the Persuasive Letter Rubric.
10. Students complete final drafts of their letters.
11. Keep a copy of each letter to assess and then facilitate sending the original letters to recipients.

Vocabulary: Butterfly Host/Nectar Plants, Native Species, Migration, Climate Change, Conservation

Scales and Perspectives, Human and Natural World Connections:

This lesson allows students to examine the world through different scales, as monarch butterfly populations are found in communities across the country and their threats range from local habitat loss to global climate change. Multiple perspectives are incorporated into this lesson: Ecological (native species, co-evolution, parasitic disease), Spatial (migration), and Cultural/Political (climate change causes and solutions). This lesson addresses the intersection of the human and natural worlds—specifically how the human impacts of climate change and habitat loss affect monarch butterfly ecology.

Learning Framework Connections:

This lesson most strongly aligns with Our Changing Planet (Knowledge) Communication (Skills) and Empowerment (Attitudes) in the National Geographic Learning Framework. For Our Changing Planet, students investigate the impacts of climate change on species of plant and wildlife. The persuasive letter-writing portion of the lesson strengthens Communication skills while fostering Empowerment as students use their knowledge for monarch butterfly conservation activism.

Assessment:

The Persuasive Letter Rubric can be used for self, peer, and teacher assessment.

Opportunities for Modifications and Extensions:

- Invite expert guests (in person or via Skype) into your classroom such as a National Geographic Explorer, a research scientist, or a master gardener from the community.
- Share the powerful story of Tim Wong and his California Pipevine Swallowtail repopulation project in San Francisco as an example of one individual making a big impact on butterfly conservation (<https://www.vox.com/2016/7/6/12098122/california-pipevine-swallowtail-butterfly-population>).
- Enrich student learning by growing milkweed and planting a native flower garden yourselves! In this case, the persuasive letter could be to a school administrator requesting space for the butterfly garden or to a local organization requesting donations. Helpful National Wildlife Federation Garden for Wildlife resources can be found at <https://www.nwf.org/Garden-For-Wildlife/About.aspx>.
- Encourage your students to get involved with citizen science by collecting and/or analyzing real monarch butterfly data through projects at Monarch Watch (<https://www.monarchwatch.org>) and/or Monarch Joint Venture (<https://monarchjointventure.org>).

National Geographic Resources:

“We’re losing monarchs fast—here’s why” 2018 National Geographic article by Carrie Arnold:

<https://www.nationalgeographic.com/animals/2018/12/monarch-butterflies-risk-extinction-climate-change/>

How to Write a Letter That Gets Results from National Geographic Kids:

https://kids.nationalgeographic.com/content/dam/kids/photos/articles/Homework%20Help/letter_writing.pdf

Monarch Butterfly Life Cycle and Migration Lesson Plan from National Geographic Education:

<https://www.nationalgeographic.org/activity/monarch-butterfly-life-cycle-and-migration/>

Monarch Butterfly from National Geographic Kids:

<https://kids.nationalgeographic.com/animals/monarch-butterfly/#monarch-butterfly-grass.jpg>

Additional Resources:

And-But-Therefore (ABT) Statements—

TEDMED talk by Randy Olsen (**NOTE—due to language, this is for *teacher reference* not classroom use**):

[youtube.com/watch?v=ERB7ITvabA4](https://www.youtube.com/watch?v=ERB7ITvabA4)

Monarch Butterfly Host and Nectar Plants—

Monarch Joint Venture reference of native milkweeds by US region:

<https://monarchjointventure.org/images/uploads/documents/MilkweedFactSheetFINAL.pdf>

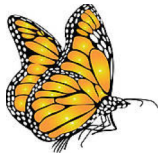
Xerces Society for Invertebrate Conservation monarch nectar plant reference by US region:

<http://xerces.org/monarch-nectar-plants/>

Monarch Butterfly Conservation—

North American Pollinator Protection Campaign printable “Protecting the Monarchs” brochure:

<https://www.pollinator.org/PDFs/NAPPC.Monarch.broch.ver8.pdf>



MOTIVATE FOR MONARCHS

Persuasive Letter Rubric

Criteria	Score	Comment(s)
Specific recipient that is in a position to help	_____/5	
Professional format including Address, Date, Salutation, and Complimentary Closing/Signature	_____/5	
Introductory Paragraph that catches the recipient's attention and establishes a clear, compelling purpose for writing	_____/20	
Multiple Body Paragraphs that provide evidence to persuade the recipient (ex: statistics, facts, expert recommendations)	_____/30	
Accurate knowledge of monarch butterfly ecology (native host plants, native nectar plants, distribution, etc.)	_____/20	
Closing Paragraph that re-states the purpose for writing and makes a specific request	_____/20	
TOTAL SCORE	_____/100	



MOTIVATE FOR MONARCHS

Background Research Recording

A. Article Guided Questions

After reading “We’re losing monarchs fast—here’s why” by Carrie Arnold (*National Geographic*, Dec. 2018), you need to be able to answer the following questions:

1. What did the data from the 2018 Western Monarch Thanksgiving Count indicate about the butterfly’s population size?
2. How does climate change affect milkweed toxicity?
3. How does climate change affect monarch butterfly parasitic disease?
4. What are the two main contributors to milkweed loss?
5. Why is it important to plant *native* milkweed in order to help monarchs?
6. How have monarch butterfly wing sizes changed over the past century and what might this mean for monarchs?
7. What are three ways *you* can help monarch butterfly conservation?

B. And-But-Therefore (ABT) Statement

Construct an ABT statement in your own words that summarizes the article’s central idea:

AND _____

BUT _____

THEREFORE _____

C. Monarch Butterfly Ecology

Conduct research, record your findings in your own words, and make sure to list your sources:

1. What are a few species of monarch host plant (milkweed) native to this area?

Source(s): _____

2. What are a few species of monarch nectar plants native to this area? Be sure to note any adaptations that make the nectar plant specifically attractive to butterflies.

Source(s): _____

3. How do monarch butterflies use our area as habitat? What season are they here? Where do they go the rest of the year?

Source(s): _____

4. Use the space below for any additional research you think would be helpful in writing your letter (ex: recent population estimates, regional threats, local conservation initiatives, etc.) Add additional page(s) if necessary.

Source(s): _____