

Response of Plants and Animals to Changing Climate

Objective: To investigate ecological responses to climate change

Introduction: The effects of climate change can be diverse. The monitoring of certain plants and animals may help us to understand the effect on ecology, especially on sensitive plants and animals. The purpose of this lesson is to introduce students to temperature change as an indicator of climate change and to the monitoring of animal and plant species in response to changing temperatures.

Curriculum Connections:

Unit 2: 1f ; 3a,b,c , e

Unit 3: 1a-e;

Homework/Extension: 2a, c-e,g; 3-5

Supplies / Materials:

- Student journals / blank paper
- A copy of the spring temperature chart printed copies and/or projected for the class (found under **resources** in this lesson)
- Chart paper for brainstorming and unanswered questions list
- Writing utensils
- Access to Nature Watch website



SCIENCE FOCUS

Lesson Subject

Experiential Science 10

Topic

Units 2 and 3

Location

Classroom

Length

100+ mins (optional activities included)



Hook: Have students look at the spring temperature chart (found under **resources**) and facilitate a classroom brainstorming session and discussion about what types of information they can gather about temperature change. Give your students time to ask questions they may have about the chart, temperature and the data recorded. If you are unable to answer a question, create a list of ponderings and research them later as a class. Ask your students how they think other weather parameters would fluctuate with temperature trends.

Intro Activity: Have students brainstorm what rising spring temperatures mean for the North in general and for their community in particular (flooding, change in ice, pack change in growing season, change in animal/plant communities, change of lifestyle)

Main Activities:

1. Let students know that the focus will be on plant and animal responses to change in climate. Introduce the work of Plantwatch and Frogwatch:

The purpose of Plant and Frog Watch is to collect data across Canada about species that are sensitive to environmental changes. Plants chosen bloom in response to temperature and frogs/toads are animals that are particularly sensitive to environmental parameters. (This has been adapted from resources 2 and 3).

2. Discuss data collection techniques – Data is collected for these projects using citizen science (voluntary submissions by general citizens). What are the benefits and limitations of using this type of science?
 - a. Discuss specific data collection for plant watch (recording bloom times) – what are some of the benefits and limitations? What could be other options (photography of plants)?
 - b. Discuss specific data collection for frog watch (listen for auditory calls) – what are some of the benefits and limitations? Are there other possible data collection methods (e.g. visual sightings, trapping)?
3. Look at Plantwatch data for NWT found under resource number 2. Currently there are limited observations – can we deduce anything from these observations? Compare with data from the Yukon or Alberta. Are there any trends?
4. Have students assess data from Frogwatch for the NWT found under **resource** number 3. What does this (limited) data set tell us about NWT frogs? What else would they want to know and how might they research this? Compare with data from the Yukon or Alberta. Are there any trends?
5. Review/introduce the concept of ecosystems, habitat and population changes. What factors do the students believe are influencing Northern flora and fauna that may not

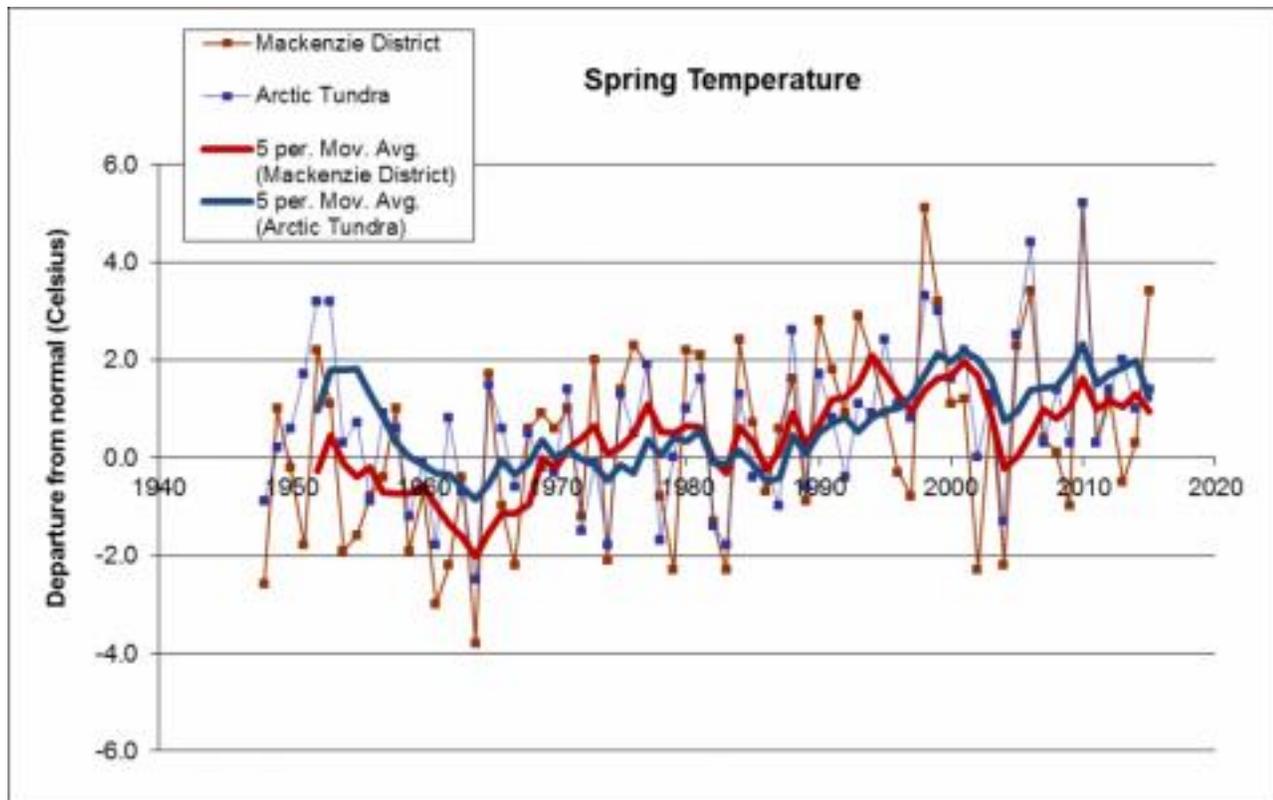
influence (or to the same extent) those in neighboring provinces? Can we come up with a hypothesis about changes in NWT populations based on the data we looked at in

Conclusion / Review: What is the value of observations and data in helping us monitor our ecosystem health in response to changing weather/climate? What is good data? How much do we need? How can we contribute?

Homework: Have students research a specific plant or animal via Plant/Frogwatch, including its recognition and habitat. Consider further research into habitat, ecology and population trends.

Resources:

1. Spring temperature chart – taken from: <http://www.enr.gov.nt.ca/state-environment/31-trends-observed-seasonal-weather-compared-normal>



2. Plant Watch: <https://www.naturewatch.ca/plantwatch/>

3. Frog watch: <https://www.naturewatch.ca/frogwatch/northwest-territories/>

https://www.naturewatch.ca/wp-content/biguploads/senior_guide_712.pdf

Extension Activities:

1. Have students make observations and submit to Frog/Plant Watch
2. Look into further activities at:
http://www.nwt-species-at-risk.ca/sites/default/files/northern_leopard_frog_nwt_status_report_dec_2013_final2_0.pdf