

Weather, Climate, and Adaptations

Grade 3

Come and learn about the adaptations that plants and animals have that allow them to survive.

Overview of Unit:

- Pre-assessment
- Weather and Climate
- Adapting to weather and climate
- Biomes
- Biomes and Adaptations
- Plant Adaptation Experiment
- Plant Research
- Field Trip
 - Field drawing
 - Plant tour
 - Piñon pine study
- Share research online
- Climate change experiment
- Post-assessment
- Glossary

Students will know:

- Related vocabulary
- The primary five biomes
- The way that the environment impacts animal survival
- The difference between weather and climate
- How to apply knowledge of relationships between organisms and their environment
- A large amount about a specific plant

Students will be able to:

- Create a mini glossary
- Read nonfiction text and respond
- Follow the scientific method
- Support ideas with evidence
- Apply research to the real world
- Learn directly from nature through making careful observations
- Share information with peers
- Use drawing to record data or information
- Complete a chart
- Conduct a field study

Links to Standards

- Common Core
 - ELA
 - CCSS.ELA-Literacy.RI.3.1
 - CCSS.ELA-Literacy.RI.3.2
 - CCSS.ELA-Literacy.RI.3.3
 - CCSS.ELA-Literacy.RI.3.4
 - CCSS.ELA-Literacy.RI.3.5
 - CCSS.ELA-Literacy.RI.3.10
 - CCSS.ELA-Literacy.W.3.2
 - CCSS.ELA-Literacy.W.3.7
 - CCSS.ELA-Literacy.W.3.8
 - CCSS.ELA-Literacy.W.3.10
 - CCSS.ELA-Literacy.SL.3.1
 - CCSS.ELA-Literacy.SL.3.4
 - CCSS.ELA-Literacy.L.3.6
 - Math
 - CCSS.Math-Content.3.NF.A.1
- Next Generations Science Standards
 - Coming soon...
- NM Science Standards
 - Strand I, Standard I, Grade 3, Benchmark 1, #3, #4
 - Strand I, Standard I, Grade 3, Benchmark 2, #1, #2
 - Strand I, Standard I, Grade 3, Benchmark 3, #1, #2, #3
 - Strand 2, Standard 2, Grade 3, Benchmark 2, #1
 - Strand 2, Standard 3, Grade 3, Benchmark 2, #4

Lesson Plans:

- Pre-assessment
 - *Purpose:*
 - Assess what students already know about the topic
 - Ask students to support their thinking with evidence
 - *Time:*
 - 15 minutes

- Weather or climate?
 - *Purpose:*
 - Demonstrate the difference between weather and climate
 - Use a model to explain a complex concept
 - *Time:*
 - 40 minutes
 - *Intended Structure:*

- Anticipatory set
 - Ask students what the weather is today
 - Ask students what the climate is in Santa Fe (or your city)
 - Tell them we will be exploring the difference between weather and climate
 - Activity
 - Give each group a bag of m&ms or beads with the colors:
 - Red, orange, yellow, green, blue, light brown, dark brown
 - Explain that the m&ms represent different types of weather
 - Look at the chart
 - Have everyone draw one m&m
 - What colors do they have? Have them look at the chart and say that if they get any color it means that they have the weather that correlates with the color (E.g. red=partly cloudy and 50° F)
 - Have them write the weather next to the 1st date, 1981
 - Have them draw a second m&m and record the weather for 1982
 - Repeat until all the dates have weather recorded
 - When this is done, have them look at the 30 m&ms they drew and sort them into piles by color
 - Which color appeared the most often?
 - This is the climate for the 30 years on March 1st
 - Closing
 - Review that weather is what happens on an individual day, and climate is the average weather over 30 years
 - Have the students answer the last question on their own

- Preparing for Weather and Climate
 - *Purpose*
 - Understand how both weather and climate can impact people and our choices in different ways
 - Look at short term versus long term
 - *Time*
 - 20 minutes
 - *Intended structure*
 - Anticipatory set
 - Review difference between weather and climate
 - Ask students how they would describe the weather today
 - Ask students how they would describe the climate in Santa Fe
 - Activity (Well suited for homework)
 - Have students fill out page 4 alone or in small groups
 - Closing

- Have students share what they would do with the class
 - Ask them why they made the decisions that they did

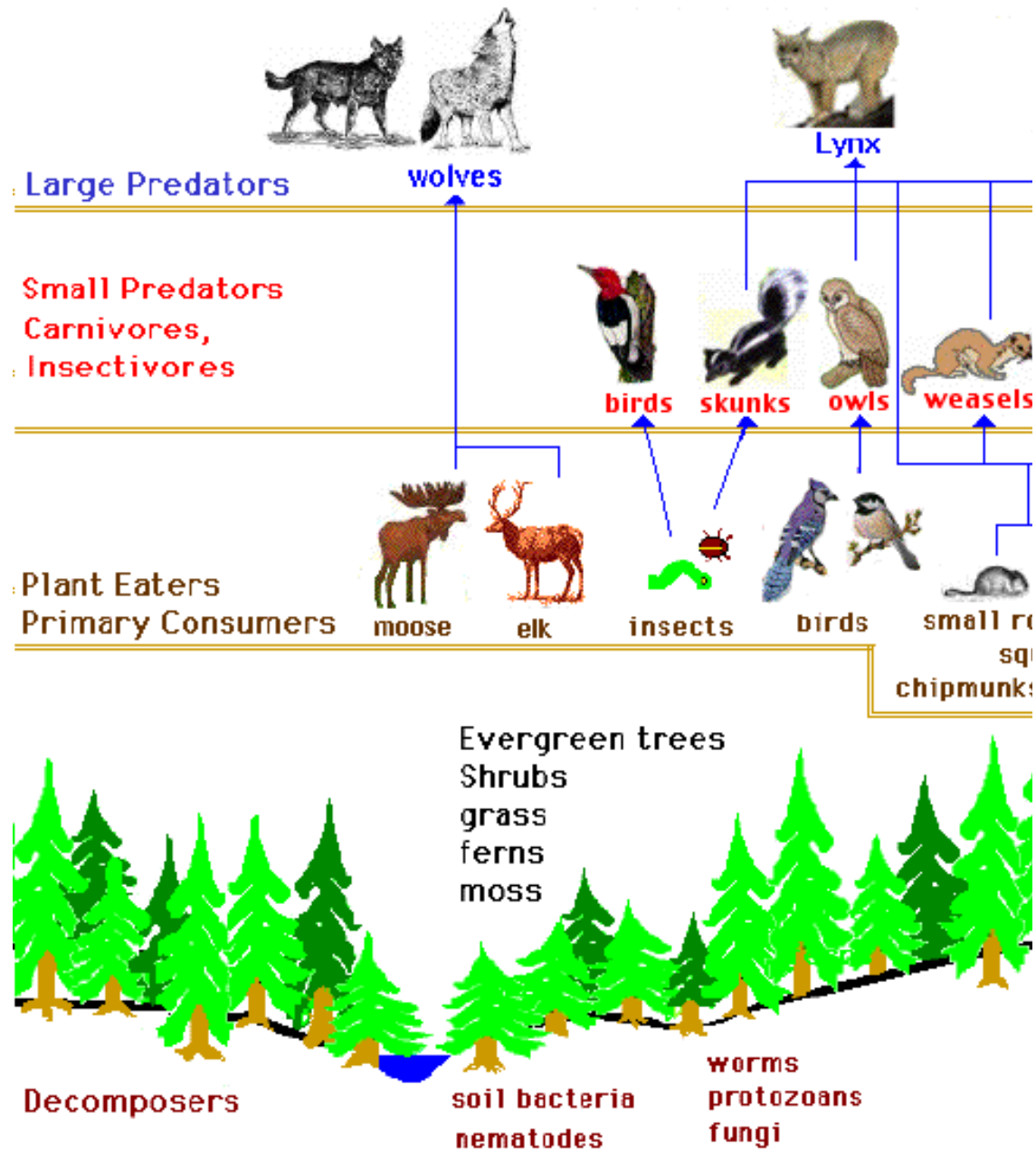
- Biomes Reading and Biomes and Adaptations
 - *Purpose*
 - Learn about the primary biomes on Earth
 - Consider what adaptations living organisms have that allow these organisms to survive
 - *Time*
 - Two 30 minute lessons
 - *Intended Structure*
 - Anticipatory set
 - Introduce the term biome
 - Look at what students think “bio” means
 - Where else do they see this term?
 - Explain bio means life
 - Biomes are anywhere that life exists on Earth
 - Ask students to take 30 seconds to look at the Biomes reading page
 - What do they think it is going to be about?
 - What do they specifically see that makes them say that?
 - Activity
 - Students should read the paragraphs on page 5
 - Look at some biome/animal or plant pairings
 - After they finish this they should complete the drawings on page 6
 - These will reinforce the connection between biomes and adaptations
 - Closing
 - Share student drawings and ideas about adaptations in the different biomes

- Plant Adaptation Experiment
 - *Purpose*
 - Conduct a scientific experiment, comparing different soils
 - Applying knowledge about adaptations to the real world
 - *Time*
 - 45 minutes – planting
 - Recording results, checking regularly for 2-3 weeks
 - 30 minutes – conclusion
 - *Materials*
 - 2 small pots or yogurt cups per group
 - Sand, from playground or arroyo
 - Potting soil

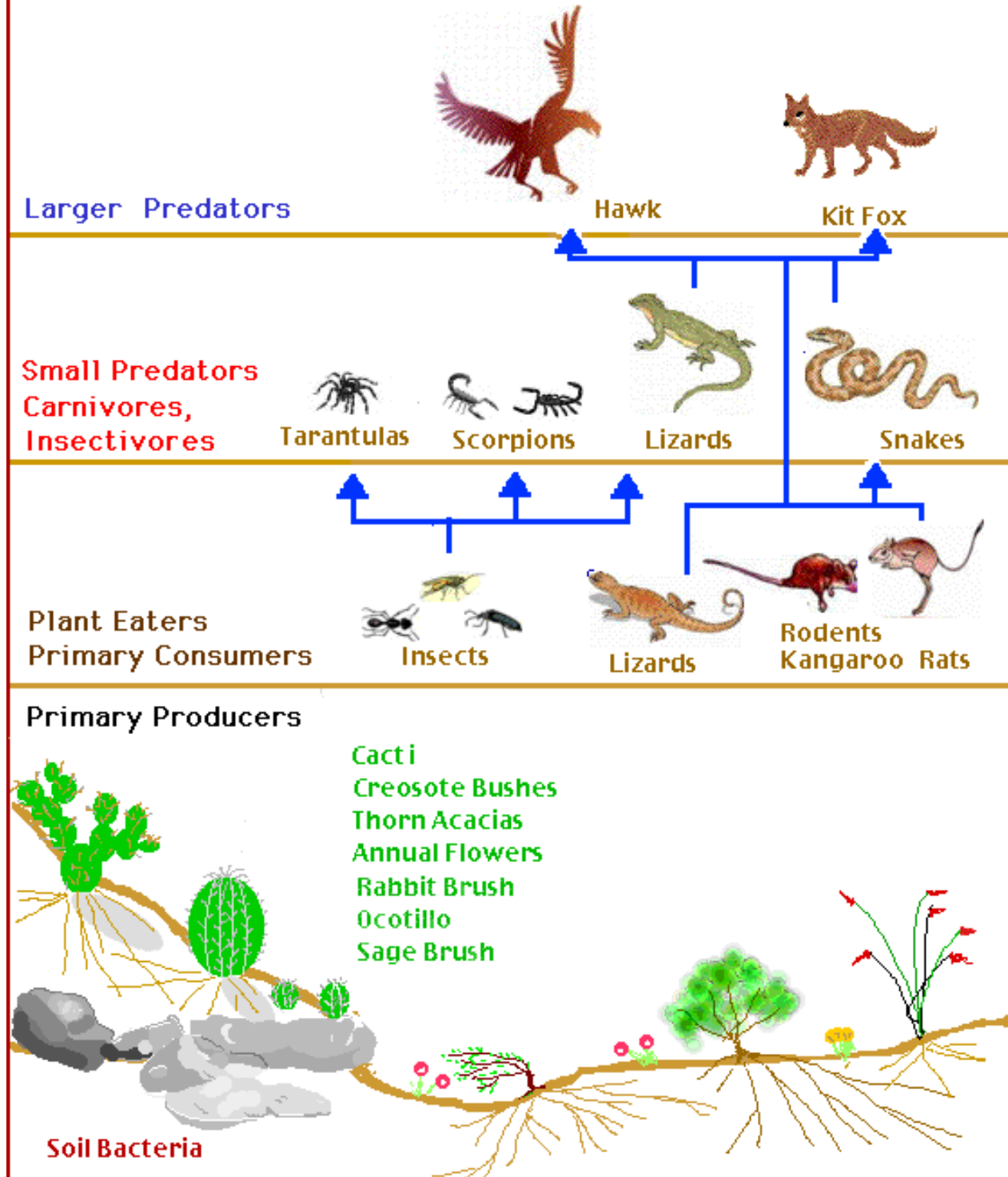
- 6 radish seeds per group
 - Water
 - Rulers
 - Microscopes or magnifying glasses
- *Intended Structure*
 - Anticipatory set
 - Discuss the scientific process
 - Question
 - Hypothesis
 - Procedure
 - Results
 - Conclusion
 - Discuss what a variable is
 - Present the question
 - Have students make a hypothesis
 - Activity
 - Look at the seeds under magnification
 - Plant the radishes, following the instructions
 - Record results at regular intervals
 - Closing
 - Complete conclusion after waiting 5 days after the first radishes sprout
 - *Note:* Keep the radish sprouts for an experiment after the visit to the Botanical Garden
 - Extension
 - Have students graph the data, meets CCSS.Math-Content.3.B.3
- Botanical Garden Plant Research
 - *Purpose*
 - Conduct research to become an expert on a topic
 - Use research in an authentic setting
 - *Time*
 - Three 45 minute sessions, assuming reading at grade level
 - *Intended Structure*
 - Anticipatory set
 - Tell students about the Botanical Garden tour
 - They will be giving each other tours of the garden, focusing on the plants
 - Let the students choose their own plant, if possible
 - Activity
 - Have students conduct research on their plants, using the provided research as well as sources of your choosing
 - Closing
 - Have them practice giving the tour as homework

- Field Trip
 - Structure of Field Trip
 - 15 minutes – Begin as a group
 - 90 minutes – Rotate through 3 Activities
 - 15 minutes – Closing activity as a group
 - Time for teacher and class to explore
 - Rotations in the Botanical Garden
 - Field Drawing
 - Student led tour of the garden
 - Piñon Pine Die-Off Study
- Changing the Climate Experiment
 - *Purpose*
 - Conduct an experiment exploring the impact of precipitation change on plants
 - *Time*
 - 40 minutes – Day 1
 - 1-2 weeks of data collecting
 - 30 minutes – Conclusion
 - *Intended structure*
 - Anticipatory set
 - Discuss what makes climate:
 - Temperature
 - Precipitation
 - Remind students of scientific process and how to test just one burial
 - Have students brainstorm how to test this
 - Activity
 - Have students conduct the experiment
 - Sort the healthy radishes into three groups of equal sizes with the same soil
 - Closing
 - Complete conclusion independently
 - Share what was learned
 - Eat the last radishes alone or in a salad
- Final Assessment
 - *Purpose*
 - Asses what students learned
 - *Time*
 - 20 minutes
 - *Intended structure*
 - Have students take the assessment independently

A Food Web in the Coniferous Forest Biome



A Food Web in the Desert Biome



A Food Chain in the Tropical Rain Forest Biome

Larger Predators



Jaguar



Snakes

Small Predators, Carnivores, Insectivores



Reptiles



Amphibians



Bats



Insects



Birds

Primary Consumers



Small Mammals



Insects



Parrots



Parrots



Monkeys



Bats

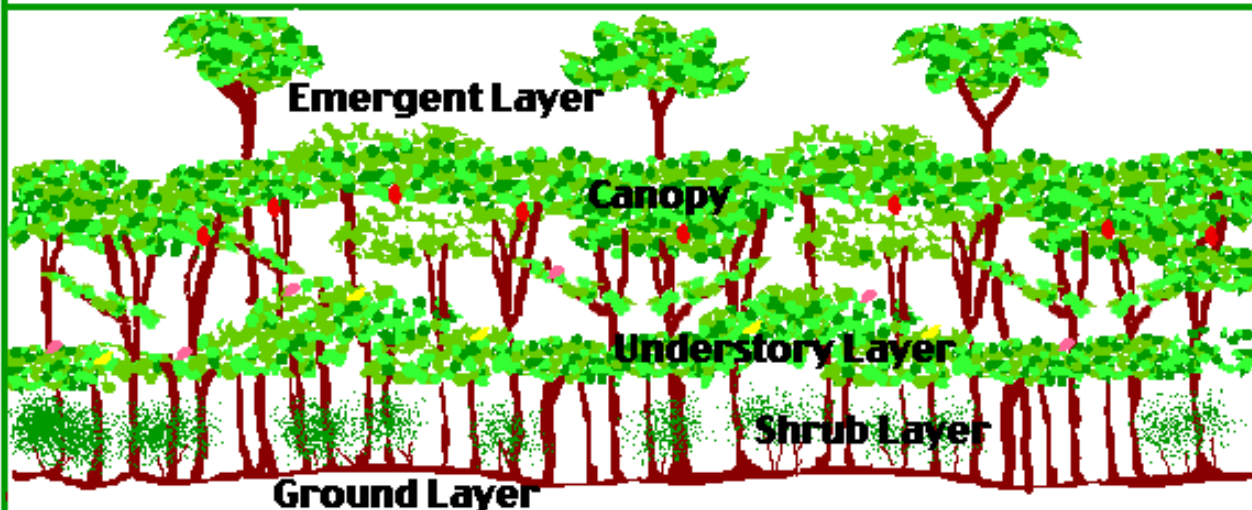


Bats

Primary Producers

Canopy level trees
Understory trees

Vines Epiphytes
Many flowering plants



Bacteria, protozoans, fungi, detritivores rapidly digest all dead matter.
Roots spread out just under the ground surface to capture nutrients.