

Grade 4 Unit 3 Week 2- Observing Nature

Citizen Science Project: eBird

Benchmark Lesson	NGSS/ Garden Connection	Sense making (takeaways)
<p>Lesson 1- Build knowledge and Integrate Ideas</p> <p>Lesson 2- Review week 1 strategies</p> <p>Lesson 3- Extended Read 1 “Being in and Seeing Nature: Writings of John Burroughs”</p>	<p>-Mesmerizing Migration</p> <p>-Decide on a bird to focus on</p>	<p>Ss should have a bird to focus their research on by week 2. Ss should also be thinking about the role of citizen scientists submitting data.</p> <p><i>Teacher focus: Guiding discussion around the patterns that Ss notice in the video to help them understand migration but also linking back to the role that the citizen scientist plays within research. Linking back to the Ss</i></p>
<p>*Lesson 4- Analyze a Guiding Research Question*</p> <p>Lesson 5- Extended Read 1 “Being in and Seeing Nature:”</p> <p>Lesson 6- Identifying Genre Features: Poetry</p>	<p>-Scientific sketching</p>	<p>Ss may have been realizing how difficult observing moving can be. Practicing scientific sketching will help them to focus on specific features of plants and animals. Scientific sketches that include captions by the Ss will encourage them to think critically.</p> <p><i>Teacher focus: Encourage Ss to write questions and noticings within their scientific sketch. Connecting back to John Muir’s journal</i></p>
<p>*Lesson 7- Evaluate Print Sources*</p> <p>Lesson 8- Close Reading: Analyzing Figurative Language</p> <p>Lesson 9-Word Study</p>	<p>-Take pictures of feathers dropped by birds, using Feather Atlas to identify</p> <p>-Data submission based on “Nature Walks” or observations</p> <p>Possible Reader’s Workshop: Identifying UFOs- print images of unknown flying objects for Ss to ID</p> <p>Continue research</p>	<p>Ss will consider structure and function while analyzing feathers and trying to identify bird it came from. Ss might also enlist other websites such as eBird and Allaboutbirds</p> <p><i>Teacher focus: Begin to challenge students to think about what changes they might want to make to the campus based on their research.</i></p>

<p>*Lesson 10- Evaluate Online Sources* Lesson 11- Close Reading: Determine and Clarify Meaning of an Idiom Lesson 12- Word Study</p>	<p>-Nature walk and submit data -Scientific sketch on bird feather</p>	<p>Ss need to see their data being represented in the science community (via eBird). At the same time, it is important to emphasize the quality of the data. Scientific sketch of feather will challenge students to provide more details of what they are observing. <i>Teacher focus: When evaluating online sources, emphasize the importance of who created the source and what information the source provides.</i></p>
<p>*Lesson 13- Use keywords to search for relevant sources* Lesson 14- Integrate Information from Two Text Lesson 15- Take Notes on Index Cards</p>	<p>-View Great Migration, paired with Claim, Evidence, Reasoning chart -Nature walk, collecting data through observations</p>	<p>Ss will be making observations and submit data to eBird. Ss can also consider birds at the global level when viewing Great Migration and how so many birds can live in one space. <i>Teacher focus: Continue focusing on structure and function concept, revisiting as Nature walks takes place. Guide discussion about the birds that may be in the area but not visit our campus.</i></p>

Week Two Lessons 1-3

Lesson 1- Build Knowledge and Integrate Ideas

SL4.1a-d, SL4.2, SL4.6

- Based on this week's texts, write down new ideas and questions you have about the essential question?
- What new content knowledge and insights did you learn from last week's readings?
- How do these ideas affect your thinking about the Essential Question?

Lesson 2- Review week 1 Strategies to Unlock Texts

SL 4.1a-d, SL4.2, SL4.6

- Review web on strategies used, identify one to build on

Lesson 3- Extended Read 1- "Being in and Seeing Nature: The Writing of John Burroughs"

- Pg. 12-15 Identify Key Details and Determine the Main Idea, Part 1
- Model Key Detail and Main Idea Chart on first two pages
- Poem on Page 13 is a stretch to read at the same time as the introduction of his biography. NOTE- should be taught on a separate day

Connections to NGSS/Citizen Science Project

Analyzing and Interpreting Data

Before or after the lesson: After your next Nature Walk, collect student observations and submit data to eBird.

After spending time outside, observing and engaging with the ecosystem of their campus, students will have begun to recognize that they do not see the same birds all of the time. At this point, there may or may not be patterns to your data sets. Exploring how data is submitted to projects like eBird and thinking about why ornithologists need data from citizen scientists can be a good way to begin to deepen their understanding of the [system](#) that students are engaging with.

Phenomena are not always images, videos or observable events in the moment. Phenomena can also be sets of data that help us understand a system or event. Introduce new Phenomena: Project [Mesmerizing Migration](#) without explanation. Give students time to reflect in their notebook of what they notice or wonder about the animated data set. Explain that this is a way that hundreds of thousands of bird observations have been represented in a visual format. This format collects data sets from all over North and South America and allows us to see patterns that alone we might not be able to see.

- Either project, or ask students to head to eBird.org.
- Click on Explore Hotspots, then search for your local area by typing in Woodland, CA in the Location search bar.

- Give students time to explore the data sets, keeping note of any Notice/Wonders that they have.

Sense-Making- Take-aways from class discussion:

- Developing a focus for research is it beneficial. Think about the bird you selected- why is it at our school, what is your focus as you research? What is your own question you want answered?
- Why do researchers need citizen scientists to submit data? How does it help us understand the bigger picture when it comes to our local area, our continent, our world?
- Is there a pattern as to when specific birds are seen? Students may begin to notice that different birds are observed at different times of day and locations, but as they look at the data sets for the area it becomes evident that there are patterns as to when certain species are there and when they are not (migratory patterns). If the project is continued over time, migratory patterns will become evident in the on campus data sets.
- Why are there some birds seen in some areas and not in others?

Possible Reader's Workshop Stations:

- Reflection Question- why do you think researchers need citizen science data?
- Look at eBird. Choose another location that would have a habitat much different than your school's campus. What differences do you notice? What are the similarities?
- Explore the [structure and function of birds in different areas](https://projectbeak.org/structure-and-function-of-birds-in-different-areas) using projectbeak.org.
- Narrow down to specific bird they will research for the project. Begin researching the bird you have selected.

Community and Citizen Science Core Activity:

- Contribute data

Key Youth Practice:

- Take ownership of quality data

Key Educator Practice:

- Position youth as people who do science

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills

Week Two Lessons 4-6

Lesson 4- Analyze a Guiding Research Question

W4.7, SL4.1a-d

Model- Imagine that you have been asked to write an informative essay about what different animals do in the spring. One of your guidings questions is: What do kinglets do in the spring? Read and take notes from two or more sources to answer this question.

Chart:

What is the main topic of my research?

What information will I need to find?

What decisions will I need to make about my research?

What am I asked to present based on my research?

Lesson 5- Extended Read 1- “Being in and Seeing Nature: The Writing of John Burroughs” Pg. 16-19

- Model Read to Find Key Details on Page 15 * Online and printed TEs are different on page numbers. (T- chart from lesson 3)
- Students annotate key details and Burroughs’ feelings about nature in online edition but the printed TE says you are rereading to analyze his literary techniques

Lesson 6- Identify Genre Features: Poetry

- RL4.5, RL4.10, SL4.1a-d
- Close reading looking at genre features and literary techniques
- Features of Poetry Web and a Genre Features Chart (Rhyme, Rhythm and Meter defined)

Connections to NGSS/Citizen Science Project

As students go on “nature walks”, they may find that making observations is difficult because the subject of their observation has the ability to fly away. Sketching is an important skill for scientists to have. [Scientific sketching](#) is more than a simple doodle. They are accurate, big, colored, detailed, and explained. This activity will help students create detailed sketches quickly by focusing on the parts that make up an animal’s body. Encourage students to include captions for any feature that stands out to them and any noticings and wonderings.

-Have students fold their paper in half.

-Using a pencil divide the top half of the paper into fourths. The top half will be where the detailed sketching will occur. Explain that each section will be space to focus on one part of the animal that the student wants to “zoom in” on, as if they were a camera. Beak, feet, body shape and size are some things students might focus on if the animal were a bird.

-The bottom portion of the paper is where the student will combine the four sections into a scientific sketch of the entire animal.

-Display the image of the butterfly. Explain to students that this butterfly will fly away in approximately 15 seconds.

-Have students sketch in the individual boxes first. Focusing on different notable parts of the butterfly

-Repeat with Black Phoebe image, fading the image away after 15 seconds

After scientifically sketching, discuss what students “zoomed in” on for the four sections. Connect to how those structures benefit the Black Phoebe in the wild. Have students consider what information those structures gives us about this bird and how it survives.

Sense-Making- Take-aways from class discussion:

- Scientific sketching can be done in real time outside of the classroom.
- In order for observations to be considered data, our observations need to be as accurate and detailed as possible. Being accurate and detailed takes practice.

Possible Reader’s Workshop Stations:

- Scientific sketching of different animals at a station using the same protocol from the whole class lesson. Students will make connections about how the structure helps the animal survive.

Community and Citizen Science Core Activity:

- Make Meaning

Key Youth Practice:

- Engage with complex social ecological systems

Key Educator Practice:

- Frame the work globally and locally

Youth Learning//Environmental Science Agency:

- Self-identify as expert

Week Two Lessons 7-9

Lesson 7- Evaluate Print Sources

W4.7-9b, SL4.1a-d, L4.1h

1. Does the cover my topic?
2. Is the author an expert on the topic?
3. Is the book up-to-date on the topic?
4. Does the book have helpful tools for finding the information I need?

Lesson 8- Close Reading: Analyzing Figurative Language

RL4.4, W4.10, SL4.1a-d, L4.5

How does the description add to your understanding of the text? (does not mention personification but could be called out)

Lesson 9- Word Study

RF4.3a, SL4.1a-d

Connections to NGSS/Citizen Science Project

Identifying birds that are less common can be a challenge. It is important to both acknowledge this and support students as they build the skills necessary to tackle this challenge. That is why “Attending to the Unexpected” is a key educator practice. In any true inquiry project there will

be unexpected outcomes, events, etc. Thinking about how you will handle those unexpected situations is part of the [Nature of Science](#).

Students recognize, after making observations over time, that there may be birds that come to the campus when they are not around. One of the observations many students will make is that they often find feathers of birds they have not yet identified. If feathers are found on campus, students can use databases such as [Feather Atlas](#) to help them identify which bird may have dropped the feather. Taking photos of feathers where they are found next to a ruler for scale will allow you to build up a collection of feathers found on campus without concerns for safety or regulations. Note: Feather Collection [Safety](#) and [Regulations](#)

It can be helpful to provide [sentence frames](#) to help them develop their claims as they try to identify the feather.

Sense-Making- Take-aways from class discussion:

- Data submission. Submit data a second time. Discuss with students what patterns they may have noticed. What birds may be in the area but not visiting the campus? Have them discuss using the [Claim/Evidence/Reasoning](#) format orally, reminding them to cite evidence based on the structure/function observations they have made.
- Challenge the students to begin thinking about what changes they feel might need to be made on campus based on what they have observed.

Possible Reader's Workshop Stations:

- Identifying UFOs. Print images of unknown birds. Have students use their bird identification skills and websites like allaboutbirds.org to help them identify UFOs.
- Continue to identify feathers using Feather Atlas with collected photos or “user friendly” feathers.
- Continue research on bird of their choice.

Community and Citizen Science Core Activity:

- Develop expertise
- Contribute Data

Key Youth Practice:

- Take ownership of quality data

Key Educator Practice:

- Attend to the unexpected

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills
- Self-identify as expert

Week Two Lessons 10-12

Lesson 10- Evaluate Online Sources

W4.6-4.9b, SL4.1a-d

Imagine that you have been asked to write an informative essay about what different animals do in the spring. One of your guiding questions is: What do kinglets do in the spring? Read and take notes from two or more sources to answer this question.

Who created the source? Are they experts in the topic?

Does the source provide facts or does it offer opinions?

Can I find information in the source that will help me answer my research question?

Lesson 11- Close Reading: Determine and Clarify the Meaning of Idioms

RI.4.4, W.4.10, SL.4.1a-d, L.4.4a, L.4.5b

-Idioms chart

Lesson 12- Word Study

Connections to NGSS/Citizen Science Project

[Close, Closer, Closest](#). By this point, students have been making their own observations of their campus, recording drawings, notes, etc. in their notebook, using their observations to support claims and analyzed their data in relationship to the submissions of others. It is important to reinforce the fact that their observations are evidence for claims they will make. Have students review the lesson on feather identification. They should select one feather that they want to focus on drawing in more detail. Using the Close, Closer, Closest format, have students spend time reflecting on the structures of the feather, size, shape, color, etc. and how those sets of data can support their claim as they determine which bird the feather came from.

Sense-Making- Take-aways from class discussion:

- Data submission. Submit data a third time. Discuss with students what patterns they may have noticed. What birds may be in the area but not visiting the campus? Reinforce the use of the [Claim/Evidence/Reasoning](#) format orally, reminding them to cite evidence based on the structure/function observations they have made.
- Challenge the students to begin thinking about what changes they feel might need to be made on campus based on what they have observed. Use evidence to explain their reasoning.

Possible Reader's Workshop Stations:

- Continue to identify UFOs or unknown feathers.
- Continue research on bird of their choice.
- Reflection- what changes do you feel should be made to our campus to support the plants and animals that share it? What is your evidence? Reasoning?

Community and Citizen Science Core Activity:

- Develop expertise

Key Youth Practice:

- Take ownership of quality data

Key Educator Practice:

- Attend to the unexpected

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills
- Self-identify as expert

Week Two Lessons 13-15

Lesson 13- Use keywords to search for relevant sources.

W4.7-8, SI4.1a-d

1. Search on the main topic of your research question.
2. Focus your research by adding more key
3. Try different variations on your original key words to broaden your search

Lesson 14- Integrate Information from Two Texts

RL4.6, RI4.1, RI4.9, W4.9b, SL4.1a-d

- Compare and contrast (T-chart) “A Bird’s Free Lunch” and “Being in and Seeing Nature”
- Write a summary of how Burroughs felt about nature.

Lesson 15- Take Notes on Index Cards

W4.7-8, SL4.1a-d

- Take notes using index cards.
- What how or why questions can help guide your note taking?

Connections to NGSS/Citizen Science Project

Replay [Great Migration](#) video from day one. Pose the question- How can so many different birds live in one space?

[Claim, Evidence, Reasoning](#) Print out the CER chart for students. Have them work independently in their notebook to reflect on the first three questions:

What have you observed about birds and their beaks?

What is a question(s) you still have about your observations?

How can so many different birds live in one space?

Remind them of the sentence frames already shared when working with CER orally. After they have had a chance to reflect on their own in their notebook, have them work in groups of two or three to discuss their thoughts using a [Discussion Diamond](#) or other dialogue protocol such as [Say Something](#). Using dialogue protocols and [sentence frames](#) can support equity in discussions as you ask students to share their ideas.

Sense-Making- Take-aways from class discussion:

- Data submission. Submit data a fourth time. Discuss with students what patterns they may have noticed. What birds may be in the area but not visiting the campus?

- What points were made during your discussion that surprised you? What were your big take-aways from your discussions? Come to a class consensus based on the evidence. Record.

Possible Reader's Workshop Stations:

- Continue to identify UFOs or unknown feathers.
- Continue research on bird of their choice.
- Reflection- sketch in your notebook what changes do you feel should be made to our campus to support the plants and animals that share it? What is your evidence? Reasoning?
- Look at new eBird data that was submitted by class or other citizen scientists

Community and Citizen Science Core Activity:

- Develop expertise

Key Youth Practice:

- Engage with complex social ecological systems

Key Educator Practice:

- Frame the work globally and locally

Youth Learning//Environmental Science Agency:

- Develop science content and practice skills
- Self-identify as expert