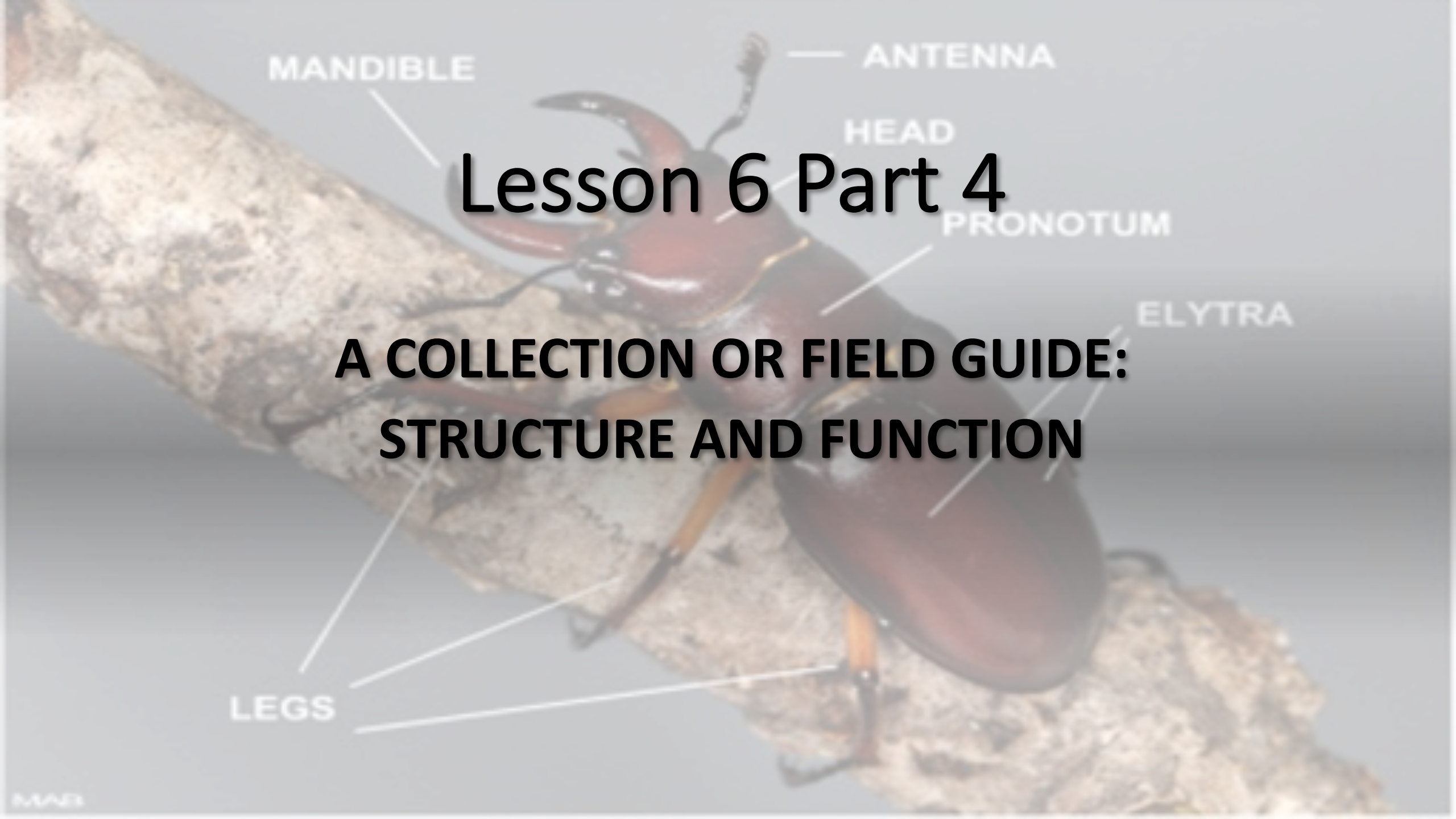


Lesson 6 Part 4

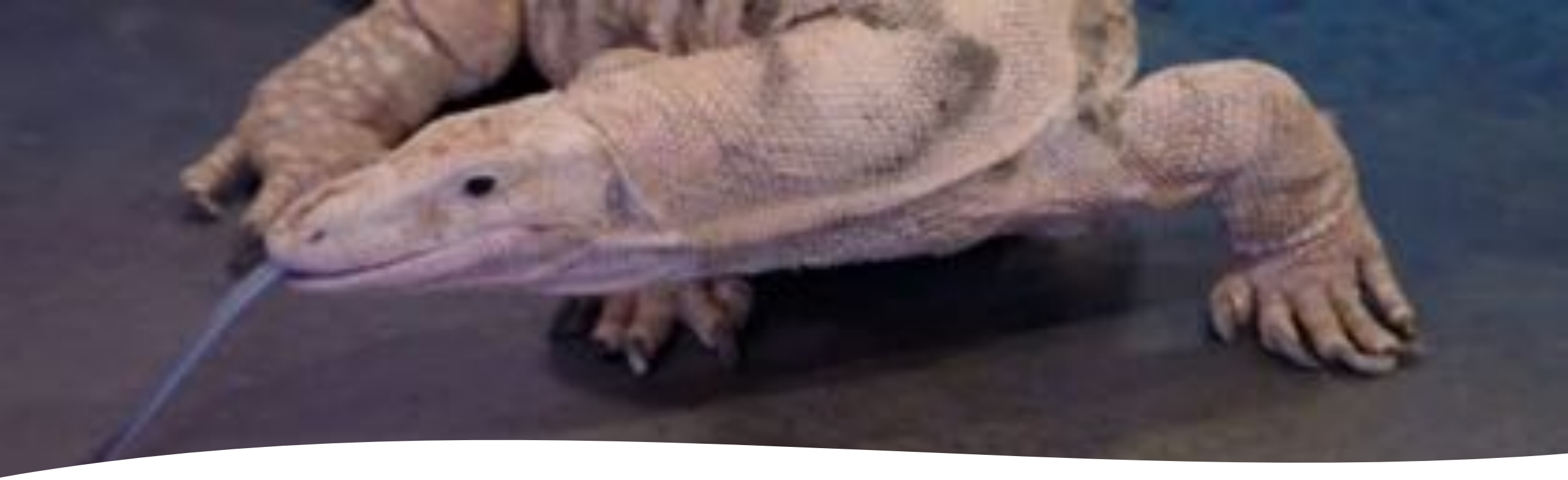
A COLLECTION OR FIELD GUIDE: STRUCTURE AND FUNCTION

Structure and Function

- A *structure* is anything made up of parts. Plants and animals have many structures that help them survive. Some structures are internal, like the lungs, brain, or heart. Other structures are external, like skin, eyes, and claws. Some structures are unique, like the long neck of a giraffe. Other structures are more common, like a heart.

Structure and Function

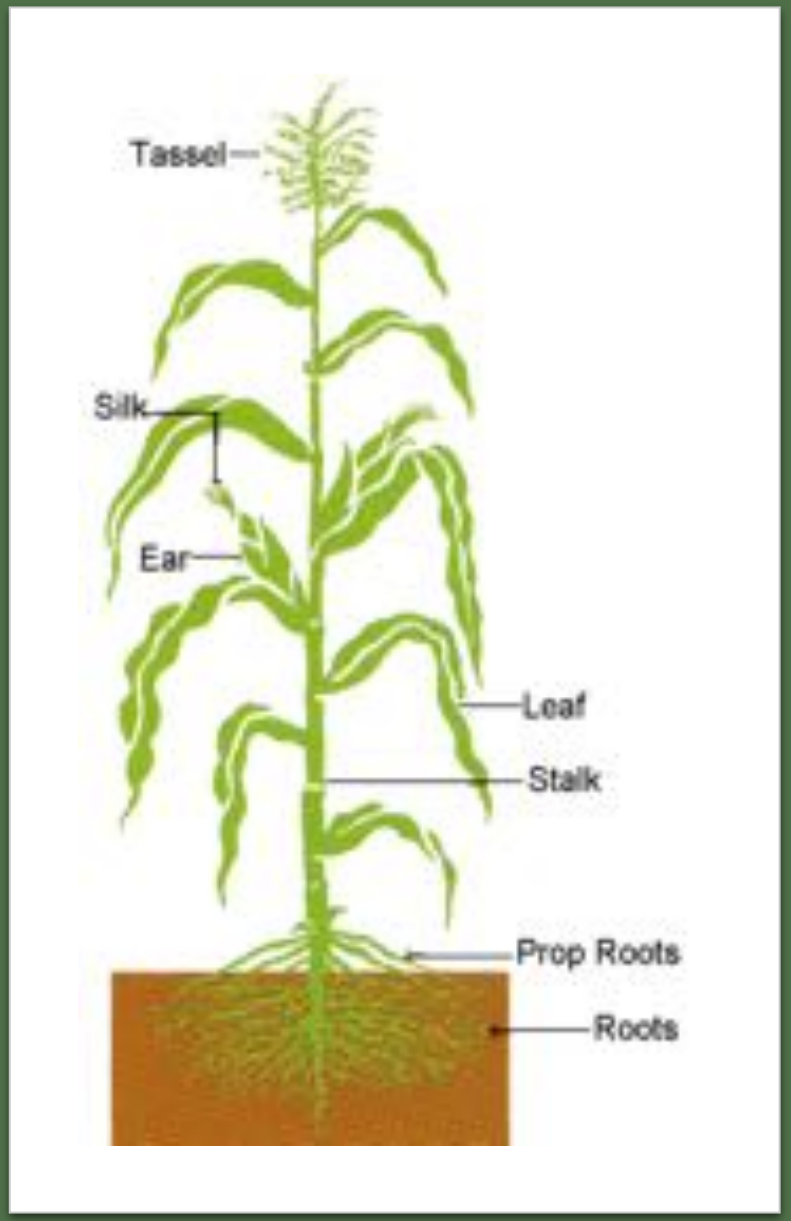
- An object's shape and structure relate directly to how it functions. We can observe structures and features, and attempt to explain how they work.
- An organism's structure can be observed to determine how its shape, composition, and relationships among its parts allow it to function.
- Therefore natural structures can be analyzed to determine how they function.
- The functions and properties of organisms can be inferred (could it be…) from their overall structure, and the way their components are shaped.



Structures in Animals

From https://www.generationgenius.com/structure-and-function-of-living-things/

- All animals have structures that help them survive in their environment. Some structures help animals find food, like the amazing eyesight of an eagle. Other animals have camouflage to help them hide from predators. Some structures are very unique to certain animals, like the water monitor lizard's long, forked tongue. They use it to smell and find food.
- One special structure that insects have is their hard outer skeleton, called an *exoskeleton*. Exoskeletons are like wearing armor. It protects insects from predators and keeps insects from drying out. Exoskeletons can also have special structures on them, like the horns on some beetles that are used to compete with other beetles for mates.



Structure and Function in Plants

- Plants have different parts, like roots, stems, leaves, flowers, and fruit. These structures help them survive.
- Some plants have really long roots that help the plant gather water from deep below the surface of the ground.
- Other plants have flowers that are the perfect shape for insects to pollinate.
- Plants that live in really dry areas have special leaves. The spines on a cactus help protect it from animals that might try to eat the cactus in order to get the water stored inside.

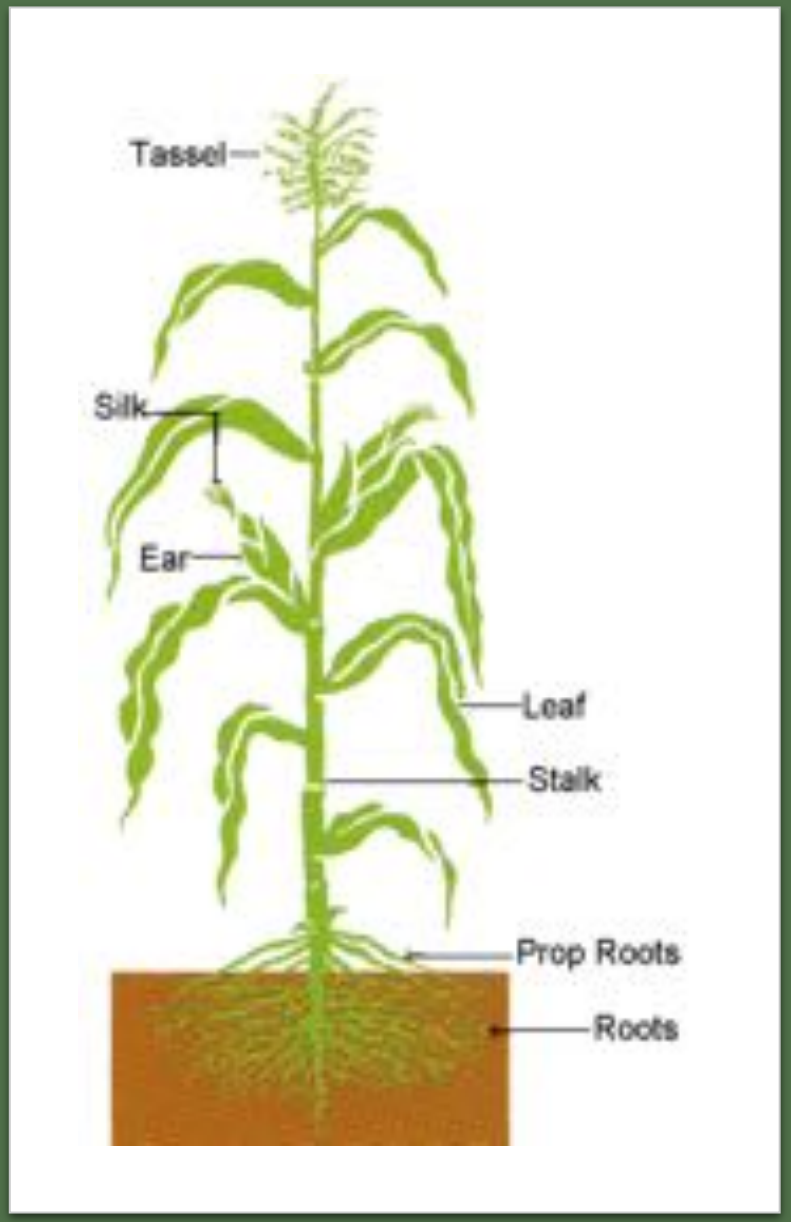
How to Study Structures and Functions

Ask yourself these questions when you are doing an observation:

- What is it like?
- How does it work?
- How is this similar to, or different from others you have seen?
- What are some possible explanations for how the differences in structure impact how they work?
- How might this structure function to help the organism survive in its environment?

Examples of **Structures and Functions**

- **Parts of a plant**
  - **Roots**
  - **Leaves**
  - **Stems**
  - **Bark**
  - **Fruit**
- **Parts of an insect**
  - **Head, thorax, abdomen**
  - **Book lungs**
  - **Chitin**
  - **Compound eyes**
- **Parts of an animal**
  - **Fur**
  - **Feathers**
  - **Special adaptations to survive its environment**
    - **Long ears**
    - **Good eyesight**
    - **Ability to hibernate**
    - **claws**



Your Turn

1. Make a field guide of your chosen subject that shows **Structures and Functions.**
2. Include three to five similar things in your field guide.
3. Record observations with words, pictures, and numbers, paying attention to similarities and differences and evidence of **Structures and Functions**

Remember to begin with your metadata

Date, Day, Time

Location, habitat

Weather

Temperature

Wind

% Cloud cover

Plan Your Page

Heading first, then title

Create enough space to show all 3 to 5 subjects

Include ABC's, 123's and drawing/sketch/diagram for each subject

Use the next page for your reflection questions/paragraph

When you finish, remember to add this journaling project to your Table of Contents.

Could it Be…

For each "I wonder", Write one or two hypotheses by completing the sentence frame:

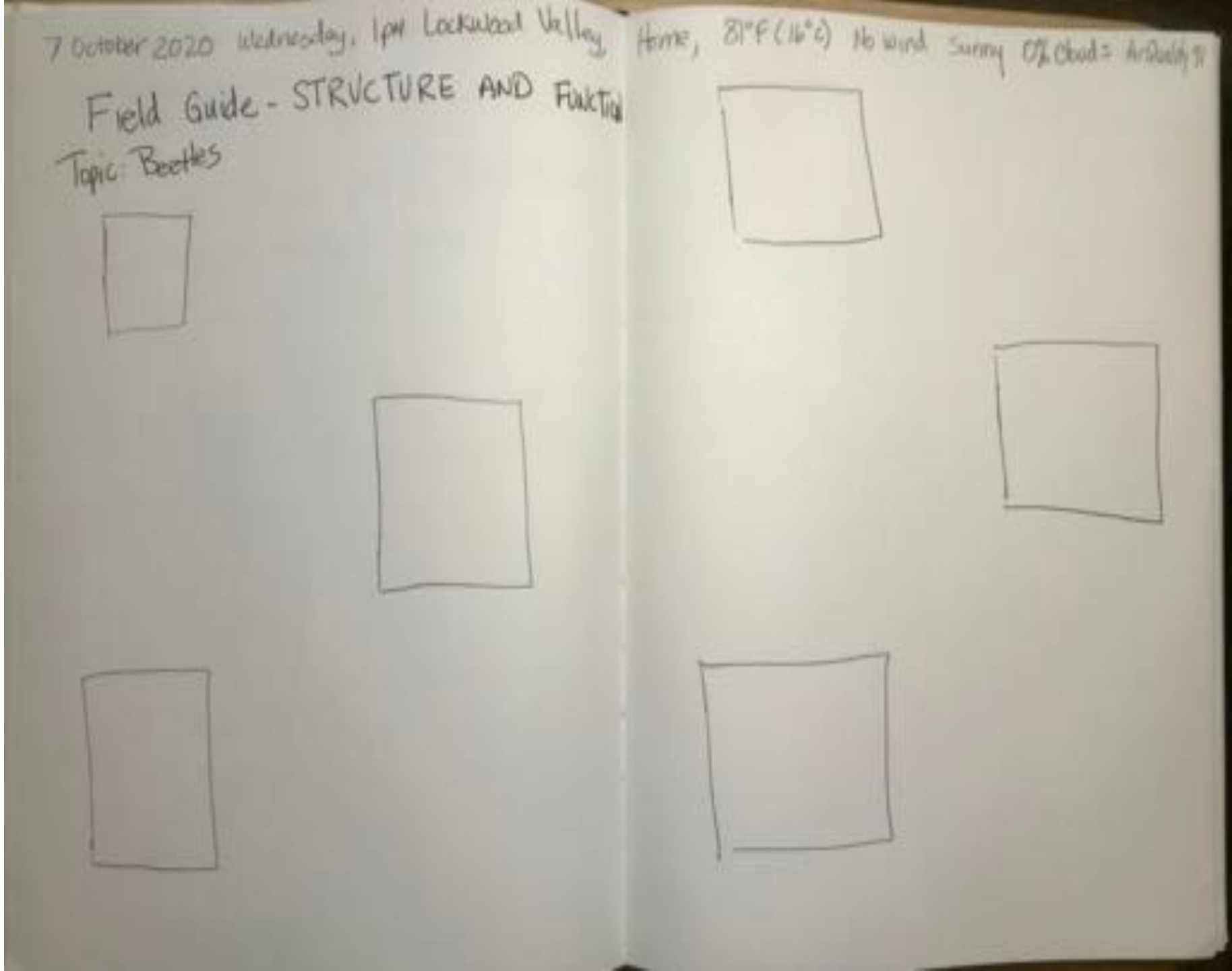
"Could it be…"

Include the things you've already learned from previous lessons to get the most out of your journaling experience.

- COMPARE AND CONTRAST
- ZOOM IN/ZOOM OUT
- PATTERNS
- CAUSE AND EFFECT
- SYSTEMS AND SYSTEM MODELS
- STRUCTURE AND FUNCTION
  - As you write "I notice…" and "I wonder…" include statements and questions about the **structure** of your subject and the **functions** of those structures.

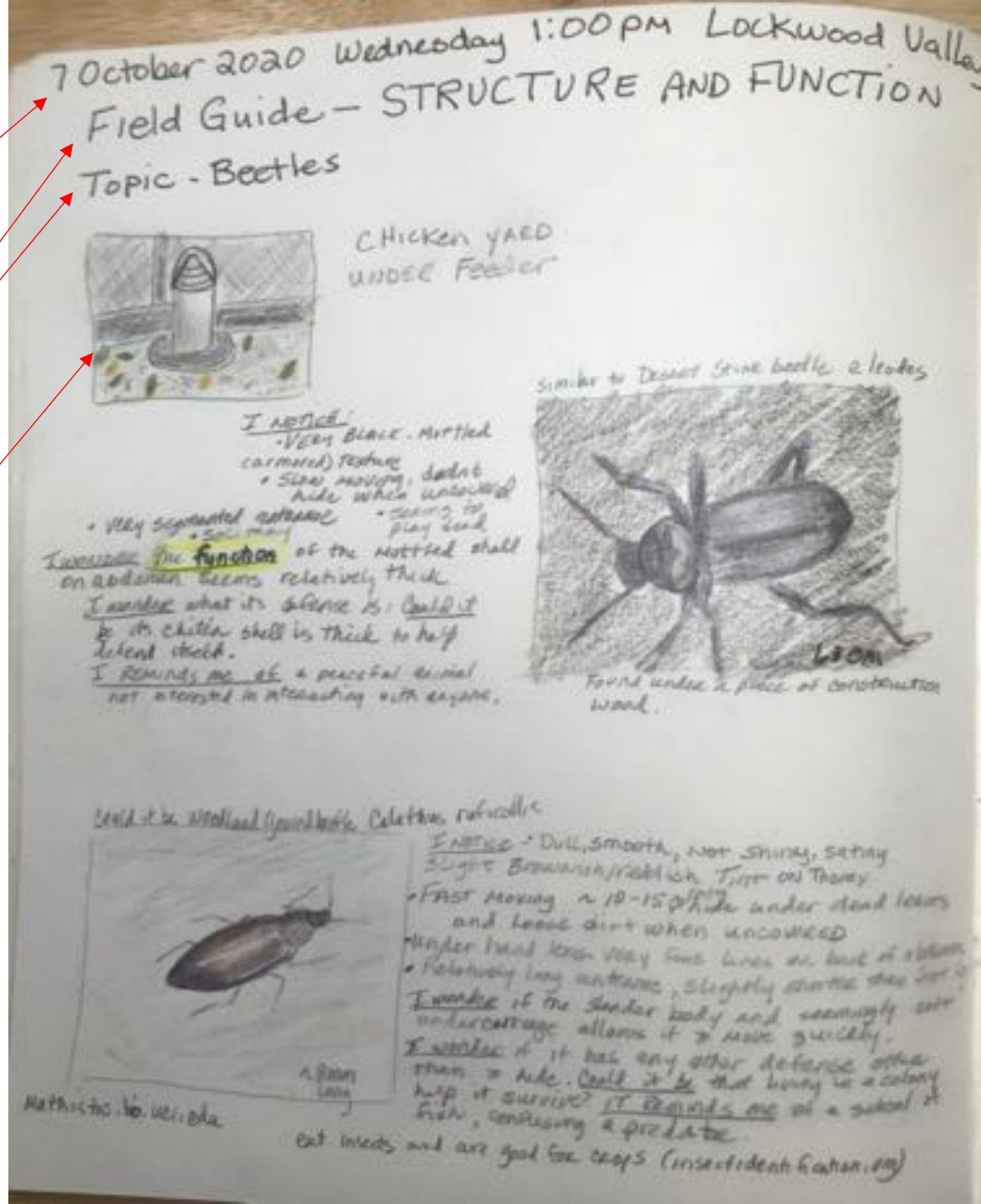
Planning Ahead

Plan your layout the way you want it.



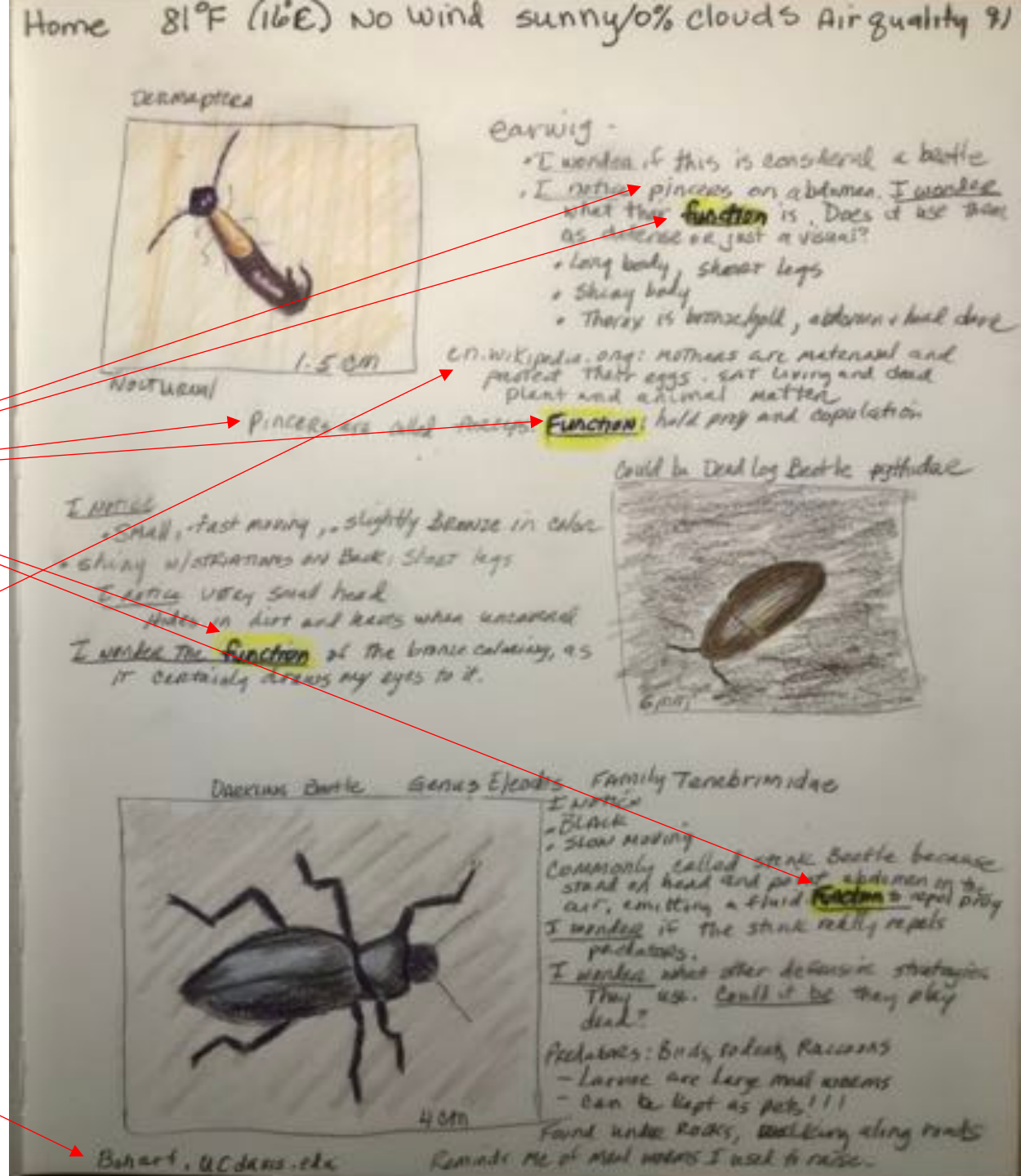
Notice:

- ☑ Metadata
- ☑ Title and Topic
- ☑ Mini Landscape where some of the beetles were found

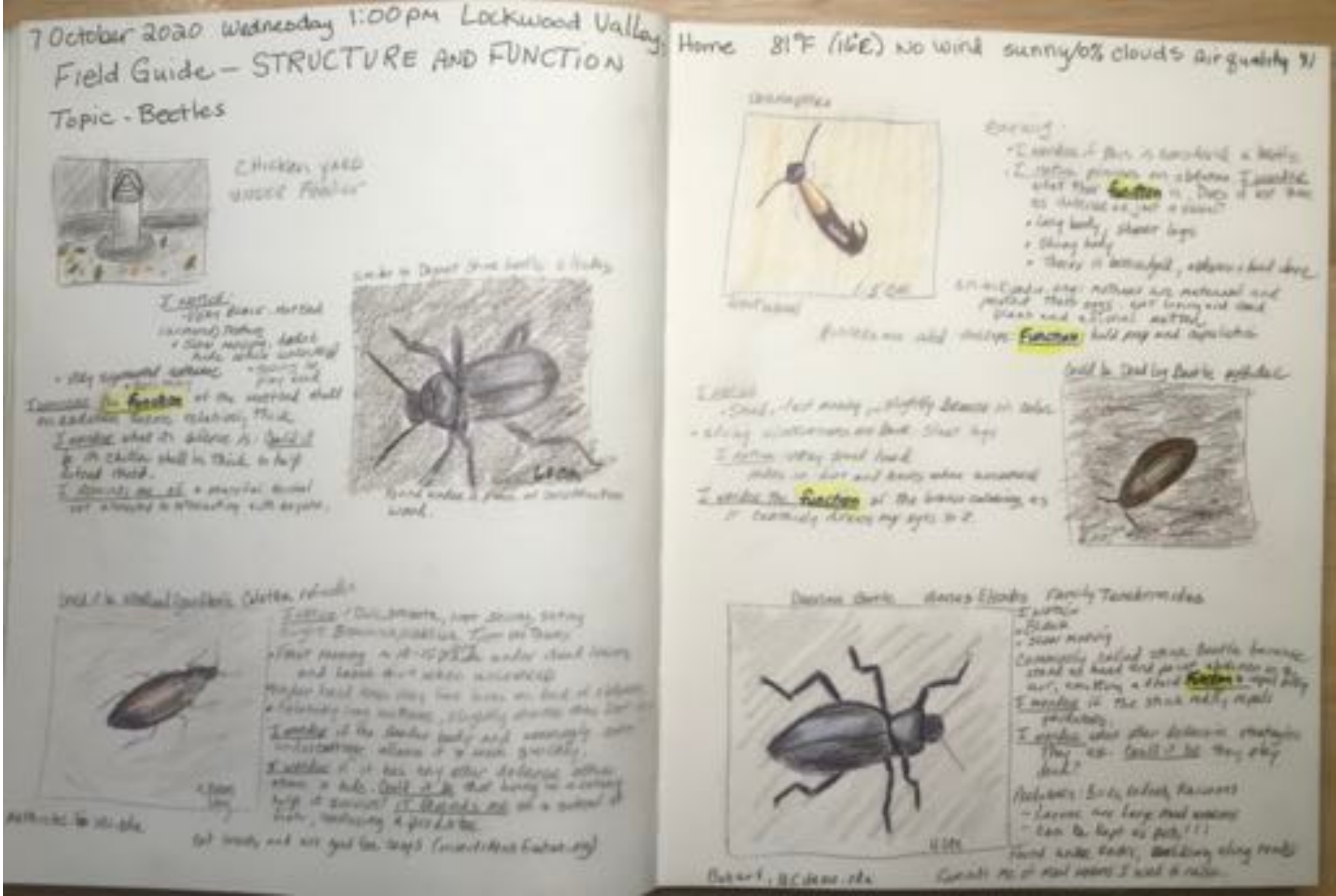


I mention the **structures** and possible **functions**

Research sources included.



Because I planned out the page, it looks balanced and complete.



Now do your own field guide. Focus on STRUCTURE AND FUNCTION

Take about 1 hour to work on all your studies, about 15-20 minutes each.

Come back and do your reflection questions on your next page.

REFLECTION

Question/Answer	Answer	Topic Sentence	Closing Sentence
Question/Answer form (Put as many words from the question into your answer.)	Answer all questions, then put them in an order that makes sense for a paragraph.	Begin with a topic sentence (“I created a field guide focusing on STRUCTURE AND FUNCTION.”)	End with a closing sentence (“It was fun to hypothesize about the FUNCTION of STRUCTURES of my subjects.”)

REFLECTION QUESTIONS

- What are the different structures you found?
- Are any structures shared by several or all your subjects? Is the function the same for each subject?
- Pick one of these common structures and discuss how that structure is different or similar in each of your field guide subjects.
- How might those different structures function differently?
- What other differences do you see from one subject to another?
- How might they lead to different functions?

BYE FOR NOW.

THANKS FOR JOINING ME.

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