NAME

SCHOOL

DATE

FIELD JOURNAL

TABLE OF CONTENTS

MY EDUCATOR

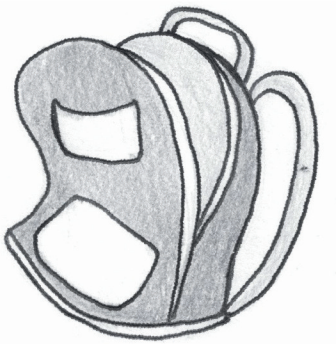
MY CHAPERONE

BE PREPARED!

BACKPACK CHECKLIST

Have the following items with you every morning:

- ☐ Backpack with room for lunch
- ☐ Water bottle filled with water
- ☐ Rain gear and appropriate weather layers
- ☐ Sun protection, including sunscreen and hat
- ☐ Field journal along with pen or pencil
- ☐ Bandana (crumb catcher)
- ☐ Medication (inhalers and EpiPens)
- ☐ Empty bladder (go to the bathroom)
- ☐ Positive Mental Attitude
- ☐ _____



WHAT IS A FIELD JOURNAL?

A field journal is any kind of notebook used to write or draw your observations of the natural world—the field. This field journal is for you to use during your program with NatureBridge. It's one way to save your memories. All kinds of people, including scientists and artists, use field journals to learn more about nature. When you return home, you can create your own and use it to help you get to know the outdoors better in your own community.

GROUP AGREEMENT

The Big Picture

- Be Safe (Which includes being a good steward of yourself, each other, and this place)
- Learn Something (You are at school while you are with us!)
- Have Fun (Meet new people, enjoy the National Park)
- Respect means to take care of

Taking Care of the Environment and This Place

- Plants: This is their home! Be kind to them and don't pick living plants.
- Animals: Some we can interact with, some we need to leave alone. Always ask a NatureBridge staff person first. No matter what, never feed a wild animal or try to scare it on purpose.
- Buildings: They are very special and historic- over 80 years old. Take care of them like you would take care of your home. Everyone will be taking turns to help take care of buildings and keep them clean.
- Food: No food anywhere except in the dining hall! If you have food in your cabin or your bags it will attract mice and other animals. Bring extra food to us so we can store it and give it back when you leave.

Taking Care of Others

- Always use the BUDDY SYSTEM, including at night going to the bathroom.
- Only go in your own cabin; stay out of other cabins.
- Only go in your own cabin loop, unless accompanied by an adult.
- You will all be trying new things this week, which is hard sometimes. Take care of each other!
- Quiet hours are: 9:30 p.m. to 7 a.m.

Taking Care of Yourself

- Eat, Drink, Sleep, Use the Bathroom!
- An adult must know where you are at all times, and you must have a buddy at all times.
- Stay in sight of adults, buildings, and cabin; boundary is forest edge.
- Hydrate yourself; you can fill up water bottles at the bathrooms or at the coolers at the Dining Hall.
- Ask your NatureBridge educator if you would like some sunscreen.
- You will have some free time each day at 4pm to play games, read, relax, etc

This week, I agree to take care of.....

LEAVE NO TRACE: SEVEN PRINCIPLES

leave no trace™
CENTER FOR OUTDOOR ETHICS

An excellent motto for minimizing your impact is "Take only pictures, leave only footprints." Below are the Leave No Trace Seven Principles, which can be found in greater detail at *lnt.org*

Plan ahead and prepare

Wear and pack appropriate gear and know the area you are traveling in.

Travel and camp on durable surfaces

Protect wild animals and plants by staying on the trail and camping in designated areas.

Dispose of waste properly

Pack out everything you bring and help take out any trash you find.

Leave what you find

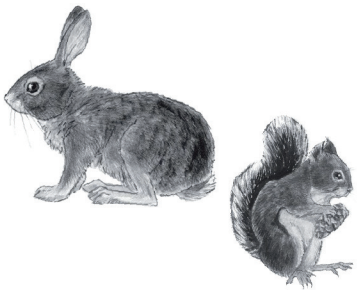
Allow others to enjoy the same rocks, twigs, feathers, and artifacts you discovered.

Minimize campfire impacts

Use established fire rings and know the restrictions for collecting wood.

Respect wildlife

Observe wildlife from a distance and never allow wild animals to access your food.

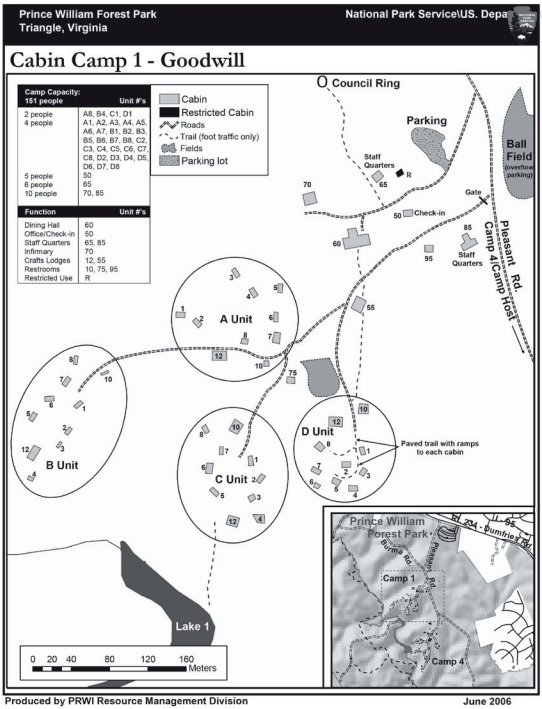


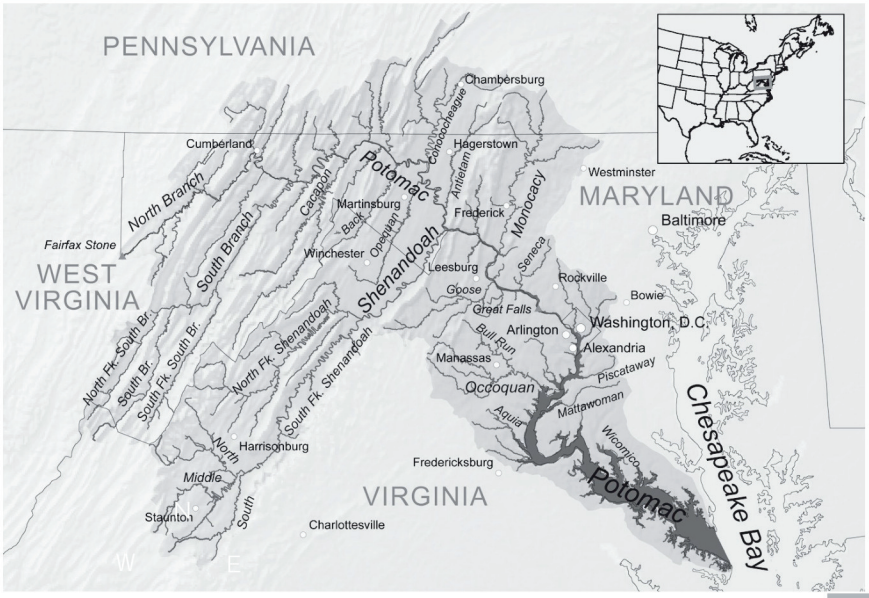
Be considerate of other visitors

Respect other visitors and protect the quality of their experience.

The Leave No Trace Seven Principles have been reprinted with the permission of the Leave No Trace Center for Outdoor Ethics. For more information, visit: lnt.org

WHERE AM I NOW?

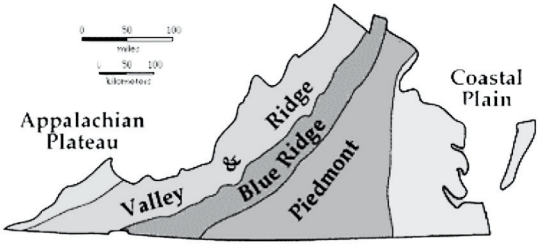




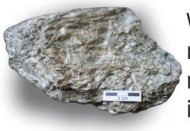
Prince William Forest Park

The Piedmont and Coastal Plains meet within the Prince William Forest and are separated by the fall line which runs along Quantico Creek. A fall line is where the land transitions from hard bedrock to softer sediments. The fall line spans from where rivers begin to grow steeper to where they reach sea level. In Richmond, the fall line is seven miles wide.

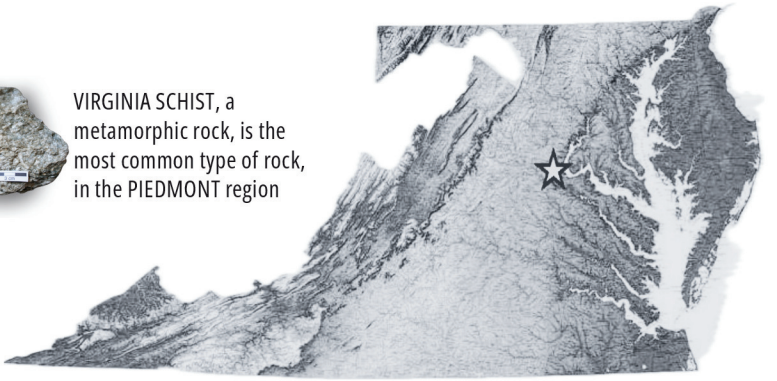
Virginia Physiographic Provinces



Valley and Ridge | Blue Ridge | Piedmont | Coastal Plain



VIRGINIA SCHIST, a metamorphic rock, is the most common type of rock, in the PIEDMONT region

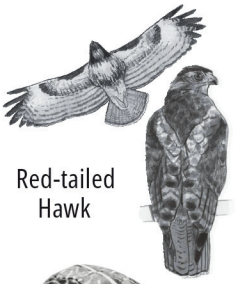


What value does the piedmont provide to ecosystems and biodiversity? How have humans benefited from this?

What changes do you expect to see around the fall line?

FIELD GUIDE: ANIMALS

(Not to scale)



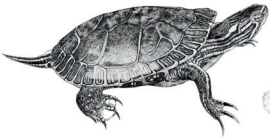
Red-tailed Hawk

Bald Eagle

Black Vulture

Pileated Woodpecker

Box Turtle

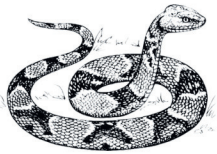


Painted Turtle

Red Fox

Grey Squirrel

Northern water snake



Copperhead Snake

Fence Lizard

Five-lined Skink

Salamander

Pickerel Frog

Leopard Frog

Green Frog

American Robin

Swallow-tail butterfly

Wolf spider

Ticks

Fish

DICHOTOMOUS KEY: TREE ID

1. Evergreen (* Go to 2)
1. Deciduous (7)

2. Needles (3)
2. Leaves (5)

3. Two or more needles in a bundle (4)
3. Single, flat ½" needles; cones ¾" long; bark deeply furrowed = **Eastern Hemlock** (*Tsaga conadensis)*

4. Three needles per bundle, yellow-green color and stiff; cones 2-3" = **Pitch Pine** (*Pinus rigida)*
4. Five needles per bundle, soft look, white stripe down the length of needle; 4-6"= **White Pine** (*Pinus strobus)*

5. Thick leaves; 1-3" (6)
5. Thick leaves; 4-6", dark green above/pale green color; dark thick twigs = **Rosebay Rhododendron** *(Rhododendron maximum)*

6. Leathery leaves with smooth edges; slender reddish-brown twigs = **Mountain Laurel** (*Kalmia latifolia)*
6. Thick leaves with spines; red berries; thick brown twigs = **American Holly** *(Ilex opaca)*

7. Opposite branching (8)
7. Alternate branching (9)

8. Leaves oval shaped with smooth edges, 3-6"; white showy flowers; red fruit; bark-dark brown in squares = **Flowering Dogwood** *(Cornus florida)*
8. Leaves three-lobed with serrated edges; fruit-double samara; smooth grey bark; ruby-red blossoms in spring = **Maple** *(Acer)*

9. Simple leaves (10)
9. Compound leaves with 5-7 leaflets; green nut; stout twigs; deeply furrowed bark = **Hickory** *(Carya)*

10. Leaf 1-8" (11)
10. Leaf more than 8", with ear-like lobes at base, bright green color; smooth grey bark = **Fraser Magnolia** *(Magnolia fraseri)*

11. Leaf lobed (12)
11. Leaf not lobed (14)

12. 1-4 lobes (13)
12. More than 4 lobes; fruit acorn; grey bark with scaled furrows = **Oak** (*Quercus*)

13. 4 lobes, dark green above/light green below; grey furrowed bark ; greenish-yellow blossoms stand upright = **Tulip Poplar** (*Liriodendron tulipifera)*
13. 1-3 lobes; three leaf shapes; aromatic; cinnamon red bark = **Sassafras** (*Sassafras albidum*)

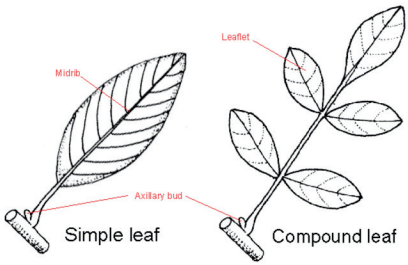
14. Greyish bark (15)
14. Dark shiny red/brown; elongated lenticels; fruit-purple drupe = **Black Cherry** *(Prunus serrotina)*

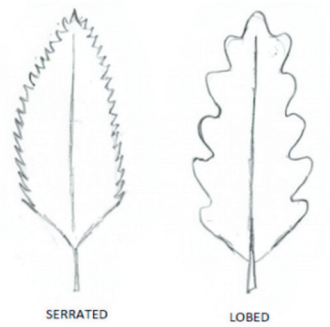
15. Leaves 3-5" long, papery smooth on both sides; small, drooping, yellowish-green blooms; keeps some leaves during winter = **American Beech** *(Fagus grandifolia)*

DICHOTOMOUS KEY: TREE ID FEATURES

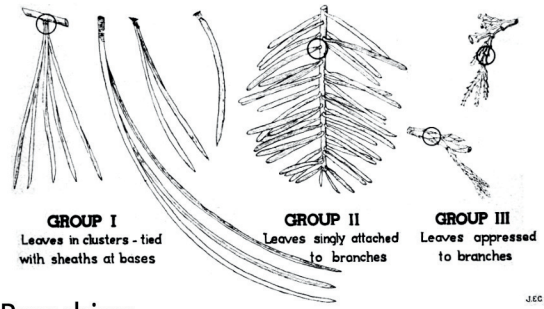
Identification features: Common characterisistcs used to ID trees

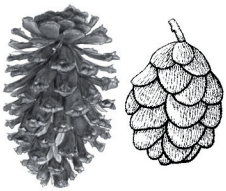
Leaves: Deciduous (hardwood)





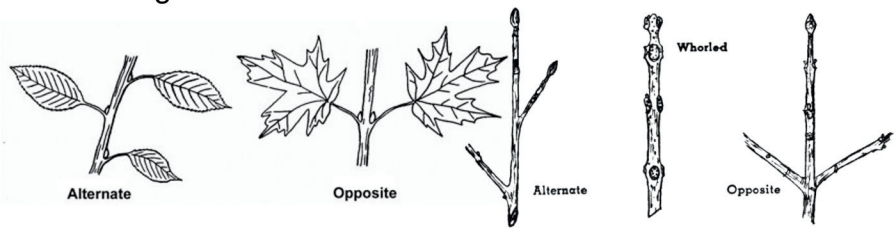
Needles: Evergreen Conifers (softwood)



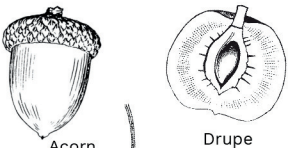


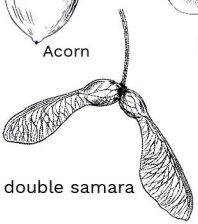
Cones

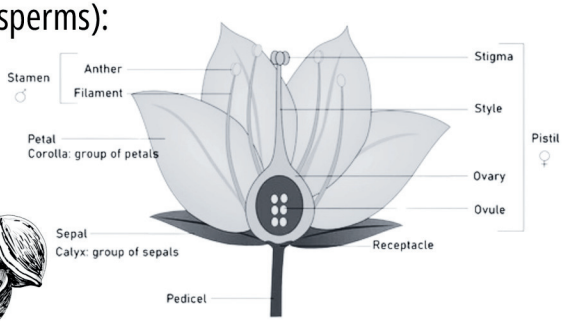
Branching:



Fruit & Flowers (Angiosperms):

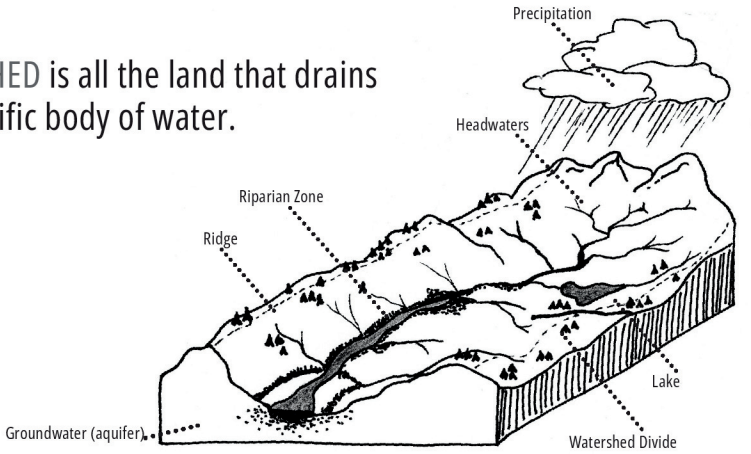




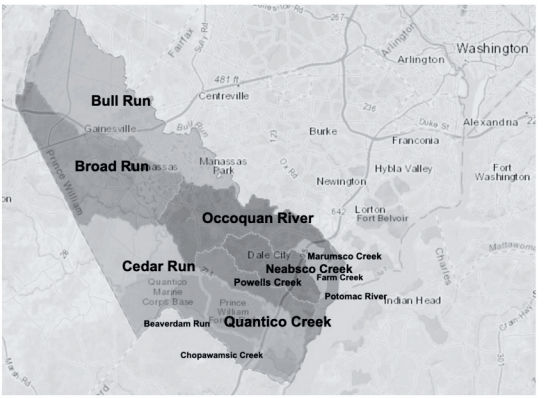


WHAT IS A WATERSHED?

A WATERSHED is all the land that drains into a specific body of water.

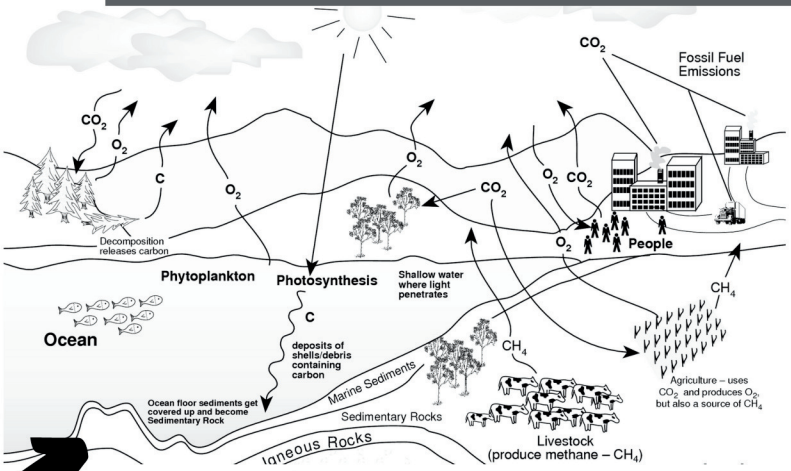


Prince William County Watershed



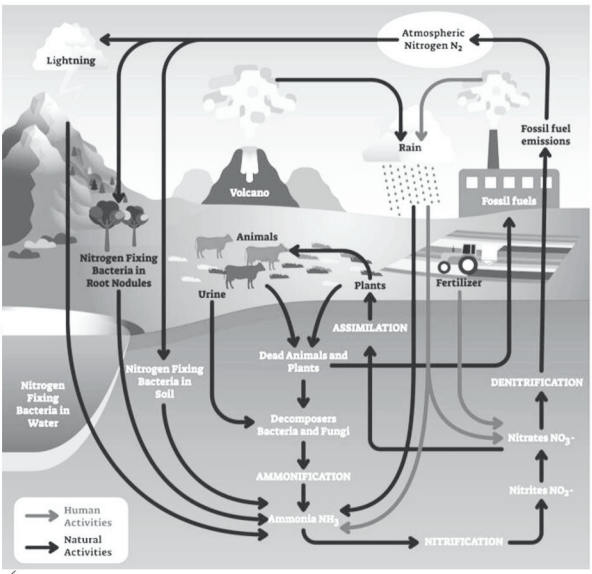
What impacts do humans have on their watershed?

NUTRIENT CYCLES:

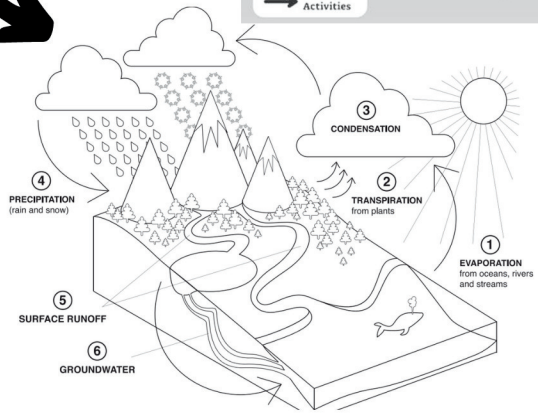


CARBON CYCLE

NITROGEN CYCLE



WATER CYCLE



NUTRIENT CYCLING: the process of cycling biotic & abiotic matter back to simple components that can be reused by producers, usually plants

CREEK SURVEY

What do you observe about the creek ecosystem?

How might you test the overall health of Quantico Creek?

What is an **indicator species**?

CLASS 1: Animals intolerant of pollution


Mayfly nymph


Most Caddisflies

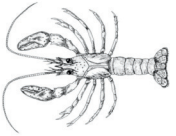

Stonefly nymph


Water Penny


Gilled-Snail

CLASS 2: Animals tolerant of a little pollution

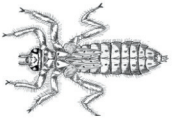

Dobbsonfly Larvae

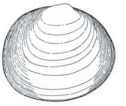

Crayfish


Amphipod (scud)


Cranefly larva


Damselfly nymph


Dragonfly nymph


Freshwater Clam


Net-spinning Caddisfly nympth

CLASS 3: Animals tolerant of pollution


Leach


Mosquito larva


Blackfly larva


Midge larva


Aquatic Worms



Lunged Snail

MY NOTES & SKETCHES

MY NOTES AND SKETCHES

MY NOTES & SKETCHES

MY NOTES AND SKETCHES

EXPLORATION:

I notice:

I wonder:

It reminds me of:

ABIOTIC AND BIOTIC FACTORS:

All **Ecosystems** are made up of **Abiotic** and **Biotic Factors**. These factors interact with each other and changes to one can influence the other. Understanding how these factors work together can teach you about the health of the ecosystem as a whole.

Definition of Abiotic:

Definition of Biotic:

Examples of Abiotic Factors:	Examples of Biotic Factors:

Give an example of an Abiotic and Biotic Factor interacting with each other.

Cultural: How do humans impact the interaction between Abiotic and Biotic Factors?

CLAIM, EVIDENCE, REASONING

Question: (Must be answerable with the scientific evidence and materials available to us here and now. "*Does ..... affect the ..... of .....?")*
Evidence: (Summarize/Describe the available evidence, or the data that you have collected.)
Reasoning: (What do we know about the world that links claim and evidence? Why is the evidence useful and sufficient? Define things; describe concepts.)
Claim: (Answer the question; what do you think? This is your Hypothesis. "*..... affects the ..... because.....*")
Rebuttal: (What alternative claims exist? Why is your claim better? How confident are you? What limitations/questions do you still have?)

EXPERIMENT OVERVIEW:

Question:

Hypothesis:

Independent Variable(s):
(the cause; what I change)

Dependent Variable(s):
(the reaction; what I measure)

All scientific experiments have a **Control Variable:** a factor that is kept constant throughout an experiment to ensure other variables don't impact the results.
Does your experiment have Control Variables? If so, what are they?

Materials:
(what will you use to measure your results?)

Location(s):
(Where will you perform your experiment?)

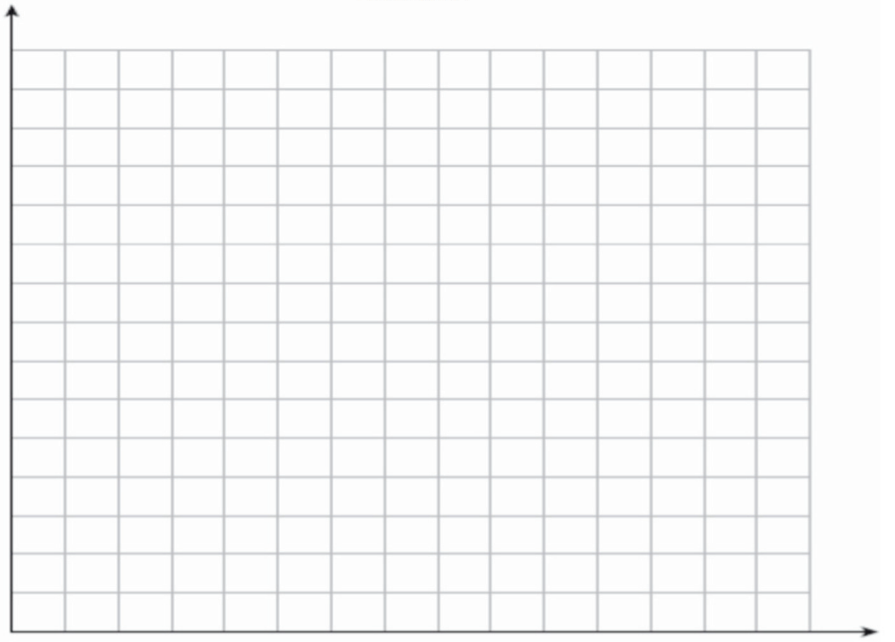
Quantifying Observations:
What units of scale are we using?

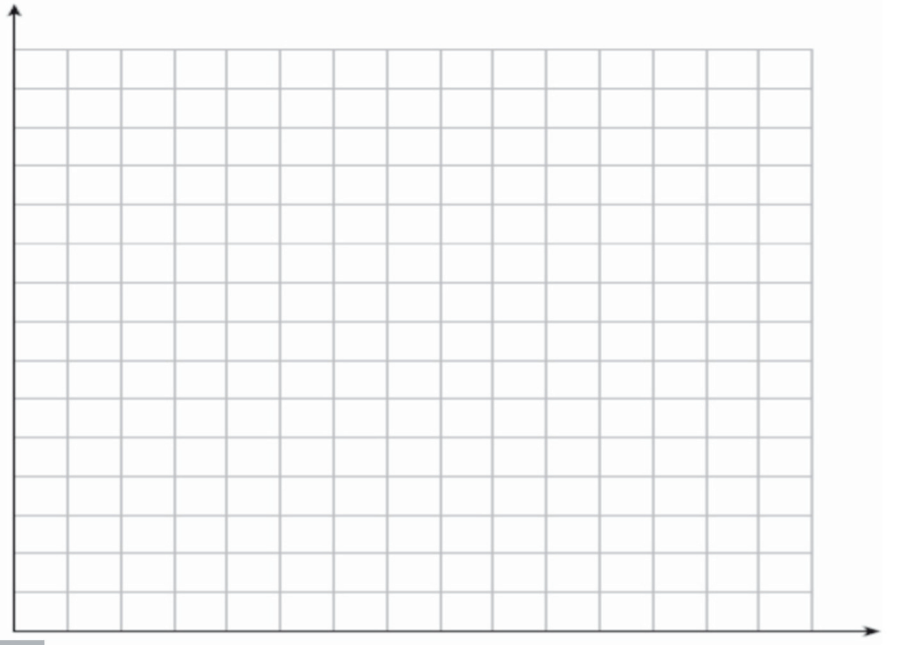
Do you need to invent a scale or tool to measure with?

EXPERIMENT DESIGN:

DATA COLLECTION

Date and Time:
Location:
Weather:





DATA COLLECTION

Question:_____ **Date:**_____

Hypothesis:_____

Observation Site	Site Description	Variable 1:	Variable 2:	Variable 3:

DATA ANALYSIS AND CONCLUSIONS

What story does your data tell? i.e. what relationships do you observe (how might one variable be related to the other)?

Were there variables you were unable to control (confounding variables) that might affect your results?

In conclusion, our data suggest:

Evidence to support these claims: i.e. is there an observed pattern or trend?

-
-
-
-

Why is this important?

What new questions came to mind in analyzing your results?

HOW CAN I MAKE A DIFFERENCE?

Individuals, communities, and environments are interconnected; you can make a difference in your daily life by protecting the balance between the three!

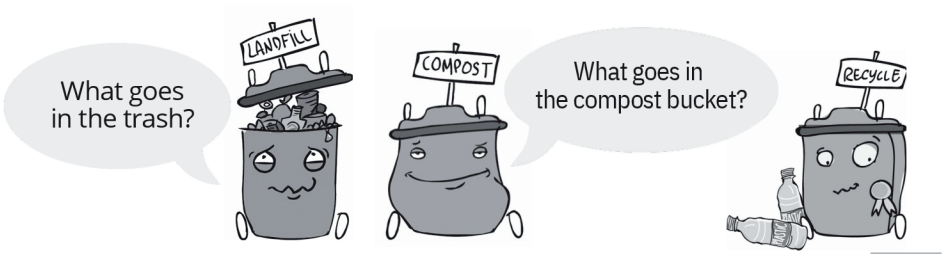
Every action counts.

Below are types of actions you can take, what are specific examples to your life?

Conserve Resources and Energy
(Rethink! Refuse! Reduce! Reuse! Recycle! Rot!)

Respect the Environment

Learn and Share What You Learn



HOW CAN I MAKE A DIFFERENCE?

CLIMATE ACTION:

“

When I return home I will...

”

REFLECTION: DAY 1

Today I enjoyed when we.....

This week, I will support my team by.....

This week, I will support myself by.....

During my NatureBridge trip, I'm looking forward to.....

REFLECTION

Other Notes or Drawings from the field

REFLECTION: DAY 2

Today I enjoyed when we.....

Something I learned about myself is.....

I am a scientist because.....

My niche in my community is.....

REFLECTION

Other Notes or Drawings from the field

VOCABULARY

Abiotic: anything that is not alive or never was alive (such as air and water)

Adaptation: a physical trait or behavior that helps an organism survive

Biodiversity: the variety of different living things in a particular environment

Biomonitoring: the study of an ecosystem's overall health by surveying for the presence of organisms

Biotic: anything that is or once was alive (such as animals and dead leaves)

Carbon: a common element that often bonds with other elements such as hydrogen and oxygen and is present in all living things

Carnivore: an animal that eats mostly meat

Climate Change: changes in long-term weather patterns (climate) due to many factors

Consumer: an organism that needs to eat other organisms and can't produce its own food

Decomposer: an organism that consumes dead or decaying material, breaks it down, and returns the organic nutrients to the environment

Ecology: the study of the natural environment and of the relationships of organisms to one another and their surroundings

Ecosystem: all the interconnected parts, physical and biological, of a particular area

Erosion: the carrying away of land or soil by wind, water, or ice

Food Web: a way of representing various paths of energy moving through an ecosystem through the consumption of food

Geology: a science that deals with the history of the Earth, especially as recorded in rocks

Habitat: the place where an organism lives, which provides what it needs to survive

Herbivore: an animal that eats mostly plants

Invasive: a non-native species whose introduction causes environmental harm

Invertebrate: an animal without a backbone

Life Zone: a region characterized by specific plants and animals

Macroinvertebrate: an invertebrate that can be seen without any extra magnification

Migration: the patterned movement of organisms to follow food sources or better weather conditions

Native: organisms that originated in the district or habitat in which they live

Niche: the role of an organism in its community

Omnivore: an animal that eats both plants and animals

Phenology: the study of repeating life cycle events of organisms

Population: the individuals of a certain species living in a certain area

Producer: an organism that makes its own food (such as plants)

Riparian: relating to or living on the edge of a waterway (such as a stream or lake)

Stewardship: the careful and responsible management of something entrusted to one's care

Succession: a change in an ecosystem as organisms, especially plants, respond to and modify their environment

Symbiosis: an interdependent relationship between species

Vertebrate: an animal with a backbone

Watershed: all the land that drains into a specific body of water

Weather: the condition of the atmosphere due to wind, temperature, clouds, precipitation, and barometric pressure

STAY CONNECTED WITH NATURE

NatureBridge is a proud partner of the National Park Service

Field guide images by the following:
- Dr. Ayana Elizabeth Johnson • Joseph Kinyon
- NatureBridge staff, including Ingrid Apter, Rachel Loud, Anjanette Garcia, and Estrella Risinger

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