NatureBridge®

NAME

SCHOOL

DATE

FIELD JOURNAL

PRINCE WILLIAM FOREST PARK

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Founded in 1971, NatureBridge provides environmental field science education for students in the world's best classrooms—our national parks. Through residential education programs, NatureBridge connects students to the wonder and science of nature and inspires the stewards of tomorrow.

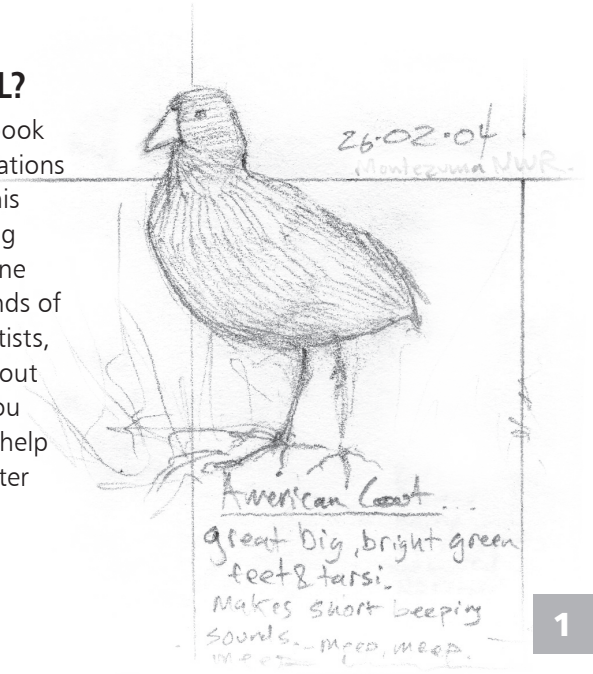
As the largest residential education partner of the National Park Service, NatureBridge serves more than 30,000 students each year and offers programs in six national parks: Yosemite National Park, Golden Gate National Recreation Area, Olympic National Park, Santa Monica Mountains National Recreation Area, Channel Islands National Park, and Prince William Forest Park. NatureBridge also offers professional development opportunities for teachers and family and youth programs.

WELCOME TO OUR CLASSROOM!

NatureBridge environmental science programs in Prince William Forest Park take place in the largest green space in the Washington, D.C. metropolitan area. Located just 30 miles outside the nation's capital, Prince William Forest Park contains over 700 plant species, more than 100 bird species, and 38 species of mammals. The layered history of the Park includes its creation by the Civilian Conservation Corps during the Great Depression and its use as a communications training center for the Office of Strategic Services during WWII.

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 stay 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.



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 warm clothes
- ☐ Sun protection, including sunscreen and hat
- ☐ Field journal along with pen or pencil
- ☐ Bandanna (crumb catcher)
- ☐ Medication (including inhalers and EpiPens)
- ☐ Empty bladder (go to the bathroom)
- ☐ Positive Mental Attitude

DAILY SCHEDULE

7 a.m.	Wake up, get ready for the day
7:15/8 a.m.	Breakfast
9 a.m. – 4 p.m.	Instructional day/hike (lunch on trail)
4–5/6 p.m.	Recreation time
5/6 p.m.	Dinner
7:15–8:15 p.m.	Evening program
8:30 p.m.	Get ready for bed
9:30 p.m.	Quiet hours begin

LEAVE NO TRACE SEVEN PRINCIPLES

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

leave no trace™
CENTER FOR OUTDOOR ETHICS

1 **Plan ahead and prepare**
Wear and pack appropriate gear and know the area you are traveling in.

2 **Travel and camp on durable surfaces**
Protect wild animals and plants by staying on the trail and camping in designated areas.

3 **Dispose of waste properly**
Pack out everything you bring and help take out any trash you find.

4 **Leave what you find**
Allow others to enjoy the same rocks, twigs, feathers, and artifacts you discovered.

5 **Minimize campfire impacts**
Use established fire rings and know the restrictions for collecting wood.

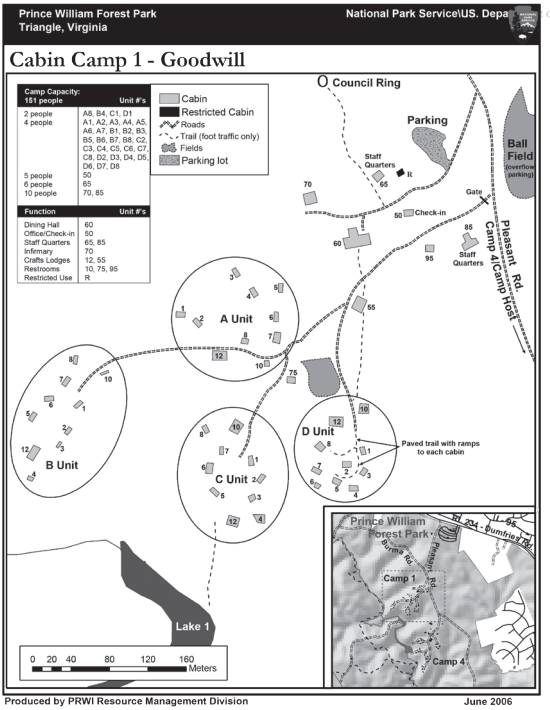
6 **Respect wildlife**
Observe wildlife from a distance and never allow wild animals to access your food.

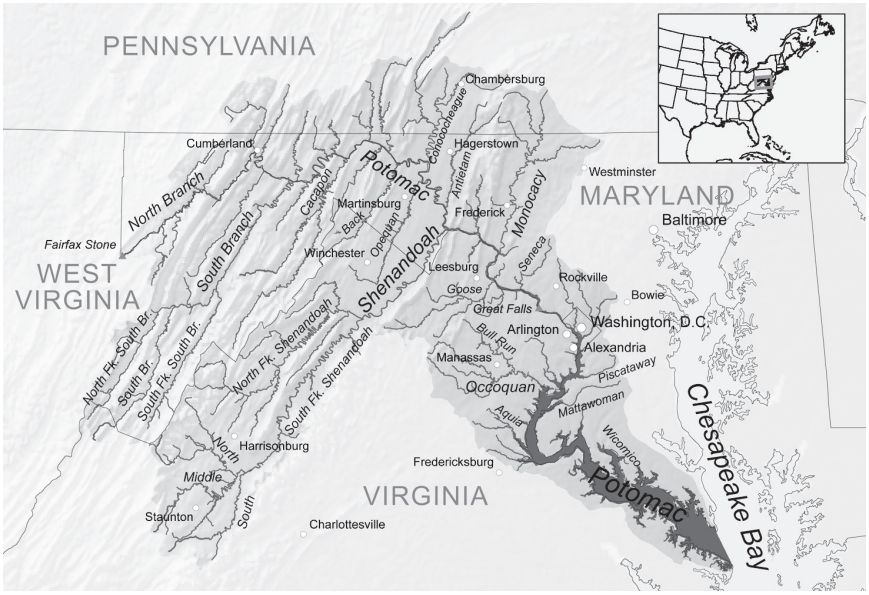
7 **Be considerate of other visitors**
Respect other visitors and protect the quality of their experience.

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?





SCIENTIFIC INQUIRY

Observation & Prior Knowledge
What do you know already?
What do you notice?

Research Question
What do you want to find out?
What do you wonder?

Hypothesis
Turn your question into an educated guess.
("I predict that...")

Materials & Methods
What will you use?
What steps will you take to carry out your experiment?

Data Collection
Do your experiment.
Gather information (data).

Results & Analysis
What did you find out?
Was your hypothesis accepted or rejected?

Conclusion
Have you answered your question?
What have you learned?
What further questions do you now have?

Presentation
Share your results with others.
Do they give you new ideas?

CREEK SURVEY

What do you observe about the creek ecosystem?

How might you test the overall health of the creek?

What questions do you have about this habitat?

How might you go about answering your questions?

CLASS 1: Animals intolerant of pollution

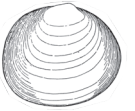

Mayfly nymph


Caddisfly nymph


Stonefly nymph

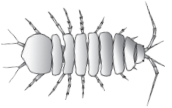

Net-spinning Caddisfly nymph


Water Penny


Freshwater Clam

CLASS 2: Animals tolerant of a little pollution


Amphipod (scud)


Aquatic Isopod

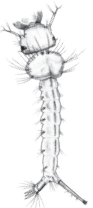

Damselfly nymph


Dragonfly nymph

CLASS 3: Animals tolerant of pollution


Midge larva


Cranefly larva


Mosquito larva


Blackfly larva


Rat-tailed Maggot

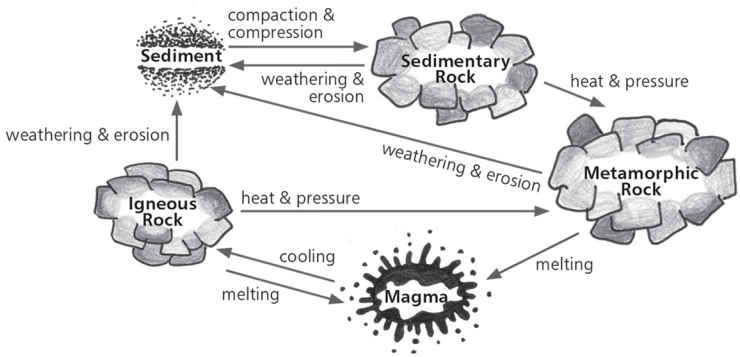

Aquatic Earthworm

Scientists who study rocks, or **GEOLOGISTS**, recognize three major groups of rocks.

1. **Igneous rocks** form when hot, liquid rock, or magma, cools. When this magma slowly cools underground, it forms intrusive igneous rock. Magma that quickly cools aboveground becomes extrusive igneous rock.

2. **Sedimentary rocks** result when various weathering processes break down other types of rocks into particles, or sediment, or when once-living organisms accumulate. With the help of time and external pressures, these sediments get compacted into sedimentary rock.

3. **Metamorphic rocks** are created through the metamorphosis, or change, of other types of rocks. This normally happens deep underground where heat, pressure, and chemical activity can actually alter the minerals inside rocks.



ROCK CYCLE

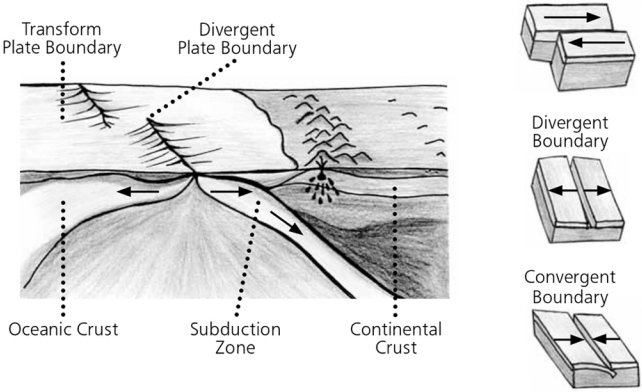
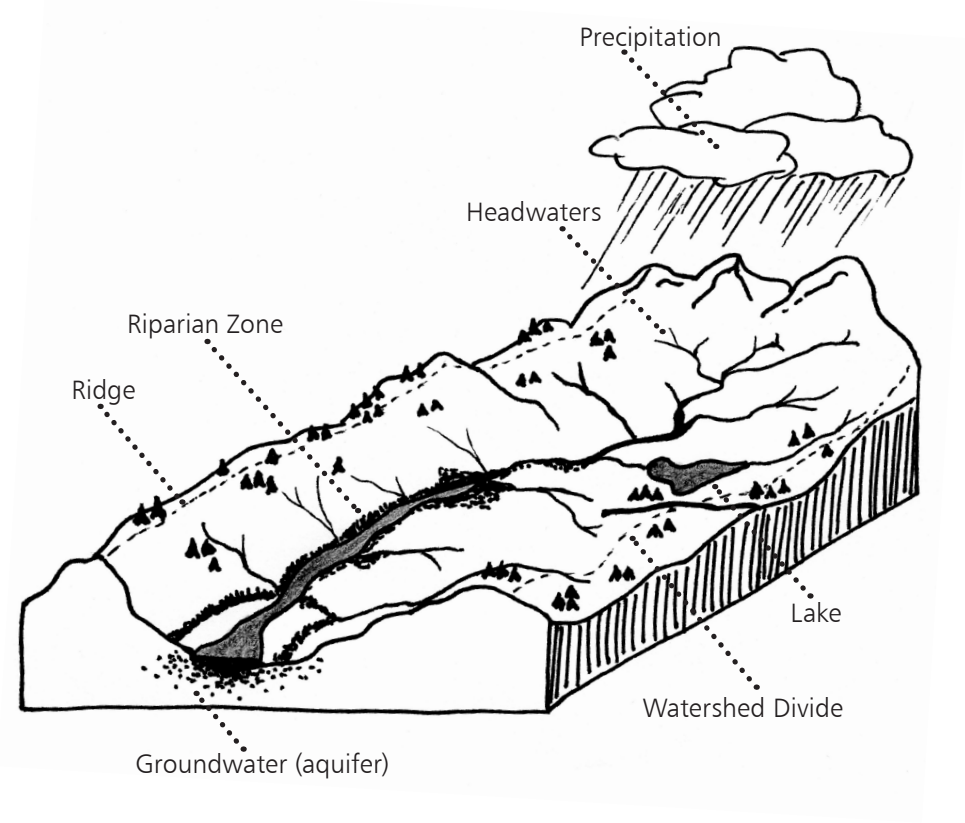


PLATE TECTONICS

WHAT IS A WATERSHED?

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



What impacts do humans have on their watershed?

MY NOTES & SKETCHES

WHAT I CAN DO TO 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 a few ideas of actions you can take.

Conserve Resources and Energy (Reduce! Reuse! Recycle!)

1. Recycle your plastic, aluminum, glass, batteries, paper, and cardboard products.
2. Turn off lights and appliances when they are not in use.
3. Walk, ride a bike, carpool, or take public transportation.
4. Use cloth bags for groceries and reusable containers for food.
5. Turn off the faucet and take shorter showers.

Respect the Environment

1. Follow the Leave No Trace Seven Principles.
2. Plant native trees and plants.
3. Start your own garden and compost pile.
4. Pick up trash around your school or home.
5. Buy local and seasonal food when possible.

Learn and Share

1. Spend your free time outside hiking, biking, and going to the beach.
2. Learn about the plants and animals in your area.
3. Visit national and state parks.
4. Get involved with local organizations and community projects.
5. Share your knowledge and resources with others.

“When I return home I will”

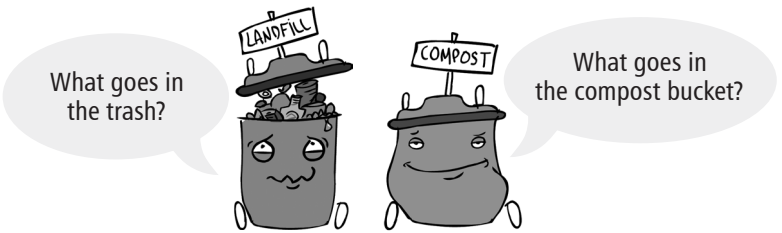
GARBOLOGY

Garbology is the **STUDY OF WASTE**—what's in our trash and where does it go? Find out more at **garbology.org**

FOOD WASTE

POUNDS (lbs.)

MEAL



What's the difference between climate and weather? Weather describes the conditions of the atmosphere over a short period of time such as days, weeks, or months, and climate is how the atmosphere "behaves" over relatively long periods of time, such as decades or centuries.

My Weather Observations & Predictions

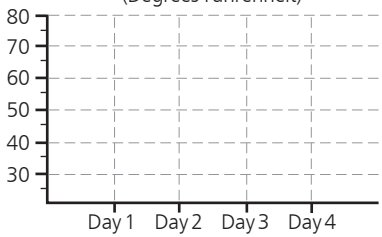
DAY 1

DAY 2

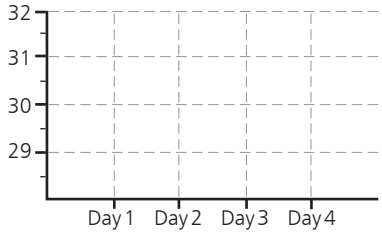
DAY 3

DAY 4

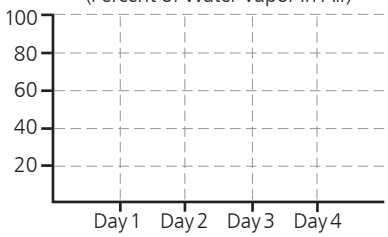
TEMPERATURE
(Degrees Fahrenheit)



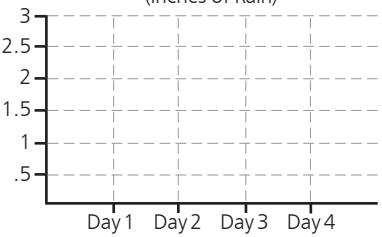
BAROMETRIC PRESSURE
(Air Pressure in Inches)



HUMIDITY
(Percent of Water Vapor in Air)



PRECIPITATION
(Inches of Rain)



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

Biologist: a scientist who studies living things

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

Carnivore: an animal that eats mostly meat—a secondary consumer

Climate: how the atmosphere "behaves" over relatively long periods of time, such as decades or centuries. Climate determines the major physical challenges an organism must adapt to, including temperature, moisture, and seasonal patterns

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

Community: a collection of organisms that live together in the same place

Compost: a mixture of mostly decayed plant matter used for fertilizing and planting

Consumer: an organism that needs to eat other organisms and cannot 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 the relationships of organisms to one another and their surroundings

Ecosystem: all the interconnected parts, abiotic, biotic, and cultural, 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 plants—a primary consumer

Igneous: rocks that form when hot, liquid rock cools

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

Invertebrate: an animal without a backbone

Macroinvertebrate: an invertebrate that can be seen with the naked eye, without magnification

Magma: hot, liquid rock

Metamorphic: rocks that were once one type of rock but have changed to another type from extreme heat, pressure, or chemicals

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

Niche: the role of an organism in its community

Nutrient cycling: the process of cycling living and nonliving matter back to simple components that can be reused by producers, usually plants

Omnivore: an animal that eats both plants and animals

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

Producer: an organism that produces its own food with the help of sunlight, typically plants

Riparian: relating to the area around a natural watercourse such as a river, stream, or lake

Scat: animal droppings

Sedminetary: rocks that form when rocks are broken down into smaller pieces, or sediment. They can also form by the accumulation of once-living organisms. With a lot of time and pressure, sediments form a rock

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

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

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

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of the National Park Service

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LEARNING ADVENTURES

Visit us online at naturebridge.org/sfrc to learn more about NatureBridge summer programs in Shenandoah National park.

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