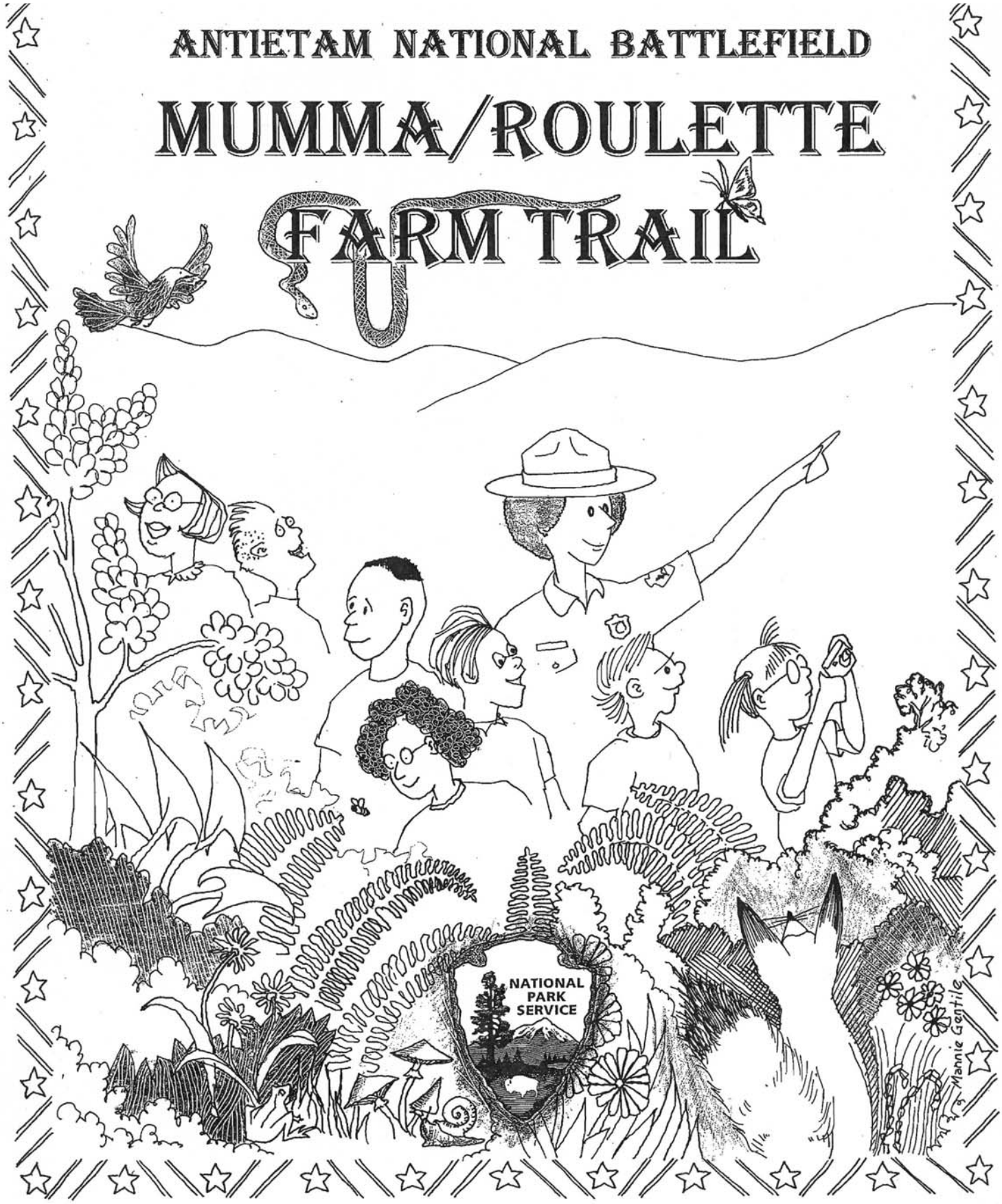
Antietam National Battlefield

National Park Service
U.S. Department of the Interior



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Welcome

This trail guide and teacher's packet is designed as a resource for educators who wish to introduce their students to both natural resource and social studies education. The discussion questions and activities encourage problem-solving and decision-making skills about the natural and manmade environment using the theme "Change over Time."

The trail guide and activities in this packet can be used both in the classroom and on-site at Antietam National Battlefield. This packet ties in with state and national curriculum standards for environmental education and social studies.

Age: Grades 5-8

Subject Areas: Social Studies, Science, Environmental Education

Duration: One hour to One and One Half Hours

Trail Length: .8 miles

Group Size: Groups of 30 or less

Setting: Outdoors

National Curriculum Links: National Center for History in the Schools, US 5-12 Standards, Era 5 Civil War and Reconstruction (1850-1877), Standard 2: The course and character of the Civil War and its effects on the American people, http://nchs.ucla.edu/standards/us-standards5-12.html and **Contents of Historical Thinking Standards for Grades 5-12,** Standard 1: Chronological Thinking, Standard 2 : Historical Comprehension, and Standard 3 : Historical Analysis and Interpretation, http://nchs.ucla.edu/standards/thinking5-12_toc.html. **North American Association for Environmental Education, Learner Guidelines, Excellence in Environmental Education Guidelines for Learning, Grades 5-8.** Strand 1–Questioning, Analysis and Interpretation Skills, Strand 2–Knowledge of Environmental Processes and Systems, Strand 3–Skills for Understanding and Addressing Environmental Issues, Strand 4–Personal and Civic Responsibility. http://naaee.org/npeee/learnerguidelines/8th.pdf.

Instructions for Teachers

This guide is designed to help you navigate the trail with your students. There are ten stops on the trail. This trail is a loop that begins and ends at the Mumma Farm Education Center. You will see numbered trail stops and arrow signs to help guide you. This teacher's guide has additional instructions in italics to help you find your way.

Reminders to students: ***Please stay on the trail at all times. Watch out for groundhog holes and other tripping hazards, poison ivy, stinging nettles, and low hanging branches. You may encounter wild animals. Please do not touch, hurt, or tease them.*** If you are quiet and use your eyes and ears, you have a better chance of seeing many different animals and plants from hawks and deer to wildflowers and mushrooms. **Remember: Take only pictures and leave only footprints!**

The trail is .8 miles long. Using this guide, the trail will take about an hour to hike. Don't feel obligated to include all of the activities and discussion questions in this trail guide. Feel free to pick and choose activities and discussion questions depending on your teaching goals and the interests of your students. Some of the additional activities and discussion questions in the guide can be used pre- and post-visit in the classroom.

The trail works best with groups of 30 or less at a time. If you have a large group, please divide them into several smaller groups with at least one adult chaperone or teacher per group. Please let the rangers at the Education Center know when you are leaving and when you will return. Please make sure your group follows the rules of the trail for their safety and for the preservation of the park.

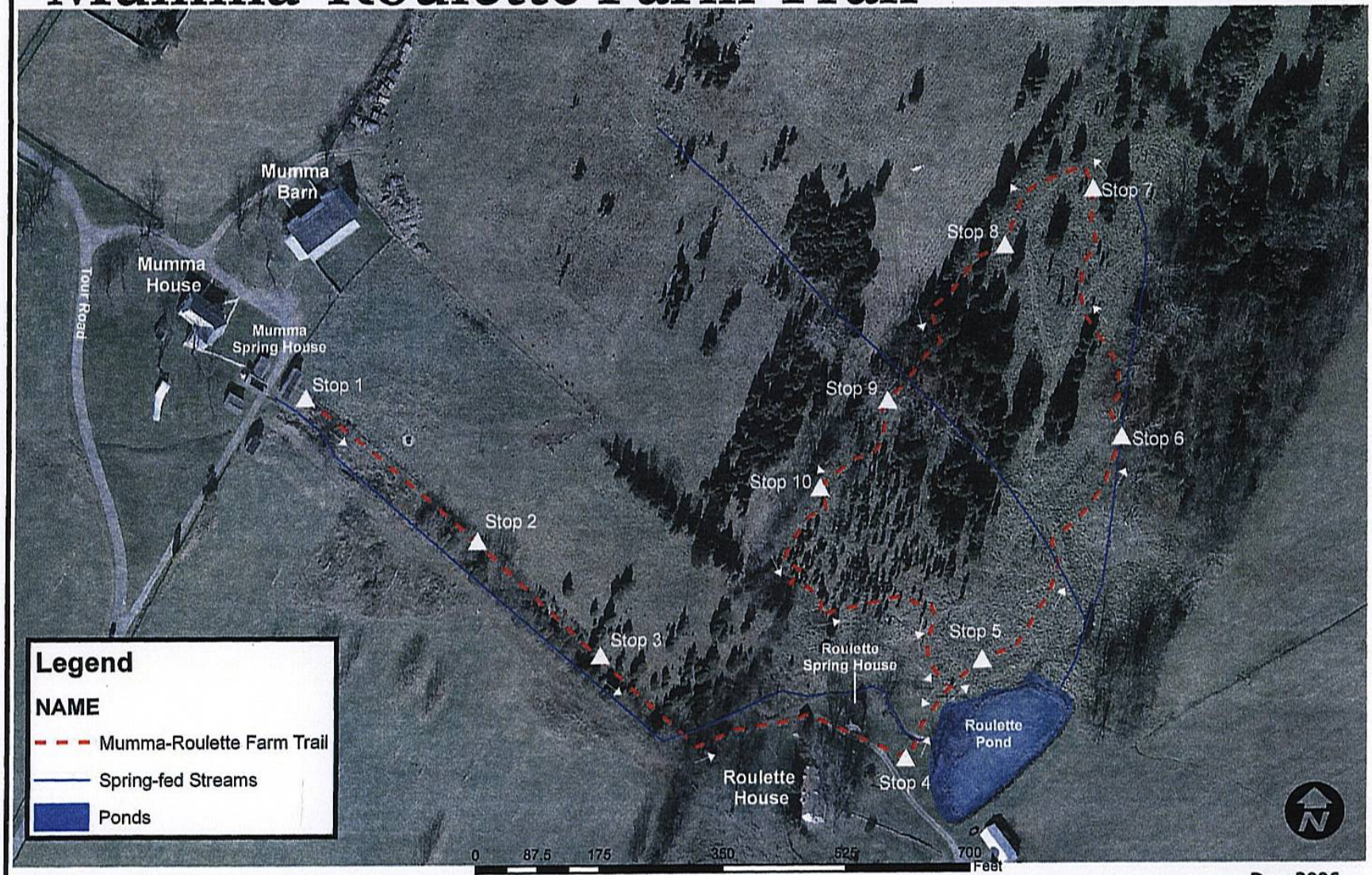
While hiking the trail, you can have your students complete the "Nature Hunt" worksheet. A copy is included at the end of this packet. Please have students bring their own pencils for this activity.

Antietam National Battlefield
Maryland

National Park Service
U.S. Department of the Interior

Mumma-Roulette Farm Trail

Total Distance: .8 Mile



Produced by D. Cohen ANTI NRM/GIS

1:2,224 1 inch equals 185 feet

Dec. 2006

FILE: Mumma-Roulette Farm Trail.mxd

Introduction

Antietam is one of the best preserved National Battlefields in the country. The land is still farmed. The buildings remain largely unchanged. Plants and wild animals have a place to live without intrusion from development. As you hike the trail today, think about how the battle on September 17, 1862 affected the people and the land. Think about how people have changed the land and/or helped preserve it over time. These people include the soldiers who fought here, farmers, park rangers, and people like you who visit the battlefield. There are also non- human factors that impact the battlefield including weather, plants, animals, and water. Look for signs of change and as you hike the trail today. What remains unaffected by time, nature, and people? Think about how your visit to the battlefield will impact the natural and cultural resources in the park.

Discussion

- The mission of the National Park Service is to preserve and protect our nation's natural and cultural resources for the education and enjoyment of future generations. Why do you think Antietam was made a National Park?
- Humans have a big impact on the environment. There is a federal law prohibiting people from removing anything (living or non- living) from a National Park (except trash of course). Why do you think Congress passed this law?

Stop #1 The Mumma Farm

Samuel and Elizabeth Mumma and their 13 children (several of the oldest children were by Samuel's first wife, Barbara, who died in 1833) were forced to leave their home two days before the battle. **(Teachers: Show students the photograph on p. 9 of Samuel and Elizabeth Mumma).** They left with the clothes on their back and little else. They took refuge in a church a few miles north of the battlefield. Approximately two hours into the battle, several Confederate soldiers burned the house, the barn, and most of the buildings on the farm. After the battle, the Mummas moved into a relative's house for the winter. In the spring of 1863, the Mumma House was rebuilt with help from the community. **(Teachers: Show the students the photo on p. 10 of the Mumma Farm after it was burned).**

The only original building is the stone spring house behind you. The spring house functioned as a refrigerator for the Mumma family in the days before electricity. The cool water running through the building would keep food such as eggs, milk, and cheese fresh and prevent spoilage. The large fireplace in the spring house was probably used as a summer kitchen. This spring was also important to the American Indians who lived in this valley long before European Settlers. Archaeological work near the spring has turned up artifacts from these native peoples suggesting this was an area they visited frequently probably for water and also for the game that would use the spring as a water source.

The Mummas were members of the Dunker Church (German Baptist Brethren). The Dunkers did not believe in violence or slavery. The Mumma Cemetery is part of the Mumma Farm. (The cemetery is north-west of the Mumma Farm surrounded by a stone wall).

The large white Pennsylvania bank barn was rebuilt probably around the same time as the farmhouse. The lower level was used for livestock and the upper level was open loft space with three bays. This space would have been used for storage of hay and grain. The Mummas lost everything during the battle; they were never repaid because the damage was caused by the Confederates. In 1906, one of the Confederate soldiers who burned down the Mumma House wrote a letter to the Postmaster in Sharpsburg asking what had become of the family. The Postmaster at the time was Samuel Mumma, Jr., who had been a young man when his family's farm was burned. He wrote back to the man and said that the family had lost everything, but that he knew the man was just following orders.

Teachers: Show the students the handouts of primary documents on pp. 11-13 (letters and claim records for the Mummas) concerning this event.

Discussion

- As you hike the trail today, study the terrain (the landscape). Imagine you are one of the soldiers who fought at Antietam. Discuss what elements of the terrain would affect you and how?

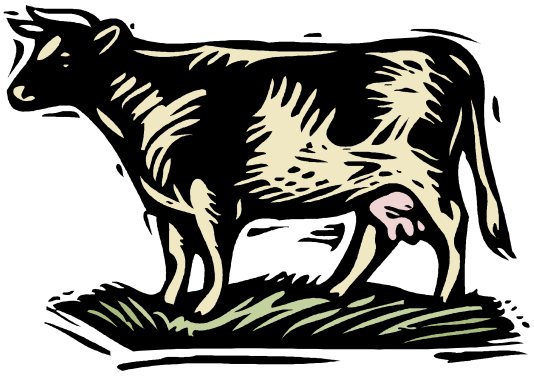
- How did all of the activities of the Mumma Family in their dooryard, house, and on their farm affect the land? How are their farming practices different and/or similar to modern farming practices? How was their use of the land different from the American Indian's use of the land? How is the way the Mummas used their yard different than the way modern Americans use theirs?

Additional Activities

Teachers: Have one of your students read these excerpts on 19th century farming activities to the group.

"The 1860 agricultural census of Washington County portrays prewar Sharpsburg as a district of prime land, crops, and animal husbandry *(the raising of livestock)*, typically wheat, Indian corn, hay, rye oats and Irish potatoes were the crops raised. Individual farms produced hundreds of pounds of butter, as well as some wool and honey. Many farms maintained wood lots to provide lumber, cord wood and fence posts. Apple orchards were common and the fruit, wine and jams produced were used by the farm household or sold locally." *Historic Structures Report- Samuel Mumma House, 1999.*

The Mummas listed two gardens destroyed on their claims forms. Gardens were used to grow food, herbs, spices, and in some cases medicines. The Mummas planted a large vegetable garden and a smaller "parlor garden" near their house, this was called a "dooryard." This fenced in area was where "…hogs were butchered, grains were winnowed *(a way for farmers to process grain)*, wagons were repaired, pumpkins were heaped, oxen and horses shod, wood was chopped, and where every kind of agricultural project needed to be done close to home was performed." *Historic Structures Report- Samuel Mumma House, 1999.*



Samuel and Elizabeth Mumma

A DETAILED EVALUATION OF BATTLE DAMAGE TO THE MUMMA FARM IS FOUND IN CLAIM No. 334 CONGRESSIONAL CASE SUBMITTED BY SAMUEL MUMMA, JR., EXECUTORS OF SAMUEL MUMMA DECEASED VS. THE UNITED STATES FILED MAY 29, 1885, IN THE COURT OF CLAIMS:

ONE HOUSE DESTROYED BY FIRE	2000.00
ONE BARN " "	1250.00
ONE SPRING HOUSE AND HOG PEN	100.00
STOCK TAKEN	460.00
GRAIN OF DIFFERENT KINDS	537.25
HOUSEHOLD FUNITURE AND CLOTHING	422.23
FARMING IMPLEMENTS WAGON ____?	457.00
FENCE DESTROYED	590.00
HAY "	480.00
LAND DAMAGED BY TRAVELING & BURIAL	150.00
FIFTEEN CORDS WOOD	37.00
TOTAL	$7472.18

Soldier Details Role in Burning the Mumma Farm

New Bern, N.C.
March 19, 1906

Postmaster
Sharpsburg, Md.

Dear Sir:

Please be so kind as to give me the correct name of the man who owned or lived in the brick house that was burned at the Battle of Antietam or Battle of Sharpsburg, being called by both names.

I belonged to the 3rd North Carolina infantry, Colonel William L. Derassette, Ripley's Brigade, D. H. Hill's Division.

This house stood immediately in our front as the battle was being commenced and at times was in the enemy's lines. General Ripley, to prevent its occupation by sharpshooters and protect his officers from being picked off, ordered it burned. A volunteer call was made as to who would go and do it. Five or six privates from Company A volunteered and I took charge of them, being at that time, Sergeant Major of the Regiment. After firing the house we all got back to our lines, myself being the only one hurt. Ripley ordered me to carry orders down to his line to 44th and 48th Georgia Regiments to come up and take a rail fence in their front. He was shot soon after I left him. I carried the orders down to the Georgia troops and being weak from the loss of blood, went off the field by an old Church and on to our hospital. Then a women, young and beautiful and blackhaired, helped to bandage my arm. I have often wondered if she was any of the family and where they went when caught between the lines of battle. I wish to write up the particulars of the event truthfully and there are some particulars about the family I would like to have.

On the next campaign, Gettysburg, by the command to which I belonged, we assisted to capture General Milroy at Winchester, Virginia, and I had to lay up for repairs and did not get any further.

My brother, now deceased, said that he saw the old gentleman, or thought he talked with the owner of the house burned, and said that he hoped the next time they fought, they would get out of his cornfields, as he gathered no corn or crops that year.

Hoping to hear from you with a line of particulars as to where the family went that morning September 17th, 1862,

I am,

Yours respectfully and truly,
James F. Clark,
Late Sergeant Major
3rd North Carolina Regiment

Response to Soldier's Letter

Sharpsburg, Maryland
March 22, 1906

Mr. James F. Clark
New Bern, N. C.

Dear Sir:

In reply to your letter of March 19th asking for some information concerning the burning of the brick house on September 17th, 1862, I will say that the house referred to was owned by my father, Samuel Mumma, Sr.

The house, a large brick colonial one, near the Dunkard Church, was burned at the Battle of Antietam.

My father was told that the family had better get away, so we left on Monday afternoon the 15th, took nothing with .us as they were cannonading then and we were afraid that there would be a battle at once. Some clothing was gotten together and the silverware was packed in a basket ready **to** take, but in our haste to get away, all was left behind.

Father and mother and the younger children left in the two-horse carry-all (the older children walking as there was a large family) going about 4 miles and then we camped in a large church called the Manor Church, where many others also congregated.

On Tuesday evening a friend and I came back to the house, thinking to get some clothing but found that everything of value had been taken. I then started for Sharpsburg and at the ridge on the field above our house, where the line had formed, General D. H. Hill and some other officers had me brought to them, and questioned me as to whether I was a member of that family. They then asked me about different roads to the Antietam Creek. I gave them a correct statement although I was a Union boy. After we left, my older brother Daniel came back to the house and went to bed. Towards morning some officers knocked at the door and Daniel being young also, was afraid to open the door and jumped out the back window, leaving it up and spent the remainder of the night in the upper room of a stone building that was once used by slaves. The next day he went to Sharpsburg. That morning the house and barn were burned but we were told that General Richardson's Battery (a Union General) had shelled the house and barn and burned them.

Our family then went to a friends house until spring. In the spring of 1863 we rebuilt our house and had just moved in a few weeks before the army went to Gettysburg.

As they were passing through to Gettysburg, an officer approached me and asked me if I knew who had burned that house. I told him that I did not. Then he told me that he and eight other men were detailed by General Ripley to burn the house and that he had picked up a chunk of fire from where they had been cooking and had put it in an open window on to a bed. He told me the color of the quilt and the shape of the bedstead.

We lost crops, fencing and everything, all amounting from $8000.00 to $10,000.00 and were never recompensed as the Government claimed it was damaged by being right in the heart of the battle.

As well as I can remember, the hospital you spoke of must have been at the home of one Harry Reel, southwest of the old Dunkard Church. He had a daughter with black hair. She is now dead and the rest of the family have moved west. That was the nearest hospital that I knew of.

As to your burning our house, we know that in doing so, you were carrying out orders. Enclosed find a few souvenir postals of the battle. Hoping that these will point will help you in your work, I am,

Sincerely,
Samuel Mumma, Jr.,
Postmaster, Sharpsburg, Md.

Stop #2 Riparian Area

This area of the trail is a **riparian restoration area**. ***Please: It is very important to stay on the trail in this area to help protect this fragile resource.*** A riparian restoration area is a **naturalized** place*(an area that has been artificially established and now grows and reproduces on its own as if it were native)* that helps prevent erosion and where the roots of plants are allowed to filter **runoff** *(water that does not soak into the ground but runs into the nearest body of water)* before reaching a stream or body of water. Runoff can be caused by erosion, oversaturated ground, compressed ground, loss of vegetation, etc. Runoff washes away topsoil and can pollute water downstream. The riparian area extends thirty feet on either side of the stream.

Discussion

- What happens when riparian areas are destroyed by development, cutting of trees near streams and creeks, and unwise farming practices?
- Can you see any examples of erosion around you?

Additional Activities

- Use the Tree Finder, scat guide, and animal track identification booklet to help you.
- If you can not identify the animal by its scat, you may be able to identify it as a **carnivore** *(meat eater)* or **herbivore** *(plant eater)*. Can you see evidence in the droppings of what the animals ate?
- If you cannot identify the animal by its track, you might be able to identify it as a diagonal walker, pacer, bounder, or galloper:

Diagonal walkers such as dogs, cats, and hoofed animals move their limbs on opposite sides of the body at the same time.

Pacers such as bears, raccoons, skunks, beavers, porcupines, and muskrats are wide- bodied animals that move both limbs on one side of the body at the same time.

Bounders such as mink and weasels have long bodies with short legs. Both front feet land and then the back legs are brought up between the front feet.

Gallopers such as rabbits and rodents move by pushing off with their back feet, hitting the ground with their front feet, and bringing their back feet all the way through past their front feet.

Stop #3 Soil Formation

(***Teachers: Show students the soil profile diagram on p. 16)***.

Soil is a thin layer on the earth's surface in which plants grow. It is the storehouse for nutrients and minerals which plants and animals need to live. Soil is formed by the continuous breakdown of rock and decay of living organisms over the course of time. In the **eastern deciduous** forest*(deciduous trees lose their leaves in autumn or at the end of the growing season*, which is characterized by moderate temperatures with distinct seasonal changes and evenly distributed rainfall throughout the year, it takes about 150 years to form just one inch of soil. Because it takes so long to produce, soil is generally considered a non- renewable resource.

The roots of the grasses, smaller plants, and leaf litter all help to hold soil in place in the field. The soil in the field is looser, making it easier for water to soak into the ground. The soil on the trail is compacted because of the people walking on it. The water can't be absorbed as easily and therefore runs off the trail causing erosion. Notice that the rangers have planted native grasses along the riparian area to help with erosion and to restore the landscape. Farmers who lease the fields from the park help prevent erosion by using a technique called no- till farming. No- till farming pushes seeds into the ground without plowing. This helps reduce erosion due to the mulch left from previous crops. No- till farming also helps conserve soil moisture and is a good habitat for worms.

As you walk along the trail, you will see examples of transition zones. Here, there is a change from pasture to hedgerows. Hedgerows are wooded areas along fields. Hedgerows help reduce wind erosion and provide a place for wildlife such as insects, birds, rabbits, squirrels, and deer.

Discussion

- How does the speed of soil production for this area compare with another area such as a forest or a mountain top? Brainstorm reasons why the trail erodes faster than the pasture.
- What kind of human intervention is needed to maintain a field or pasture?
- If people no longer interacted with this field, how would it change? How fast would it change?
- Which plants would be the first to appear?
- Why are worms important to the soil, especially for growing crops?

Teachers: Follow the trail to the bottom of the hill. Cross the small bridge. This is the backyard of the Roulette Farm. Follow the faint driveway trace around to the left of the outbuildings. A nice place to stop is in the shade next to the old stone building.

Soil Profile

Topsoil

Composed of humus (partially decomposed plant and animal matter), minerals, roots, and living organisms such as worms and insects

Subsoil

Contains materials leached from Topsoil, clay, minerals, and very Little organic material.

Parent Material

Contains layers of weathered bed-Rock and some material leached from upper layers

Bedrock

Layers of solid rock

Stop #4 The Roulette Farm

William and Margaret Roulette lived at this farm with their five children during the battle. The Roulettes did not own slaves, but the household also included Nancy Camel, age 40, a freed slave who is listed in the 1860 census as a black servant, as well as a young African-American man William, age 15, listed as a farm hand. **(Teachers: Show the students the pictures on p. 19 of William Roulette and Nancy Camel).**

Maryland was a divided state, bordered by Union Pennsylvania and Confederate Virginia. Men from Maryland fought for both sides. The institution of slavery was practiced in Maryland. In fact several families on the battlefield owned slaves. The Battle of Antietam directly resulted in President Lincoln's issuance of the preliminary Emancipation Proclamation. But, the Emancipation Proclamation only freed slaves in states rebelling against the Union. Enslaved people in Maryland would not be freed until the Maryland State Constitution was rewritten in 1864 to abolish slavery.

(Teachers: Show the group the photograph of the Roulette House on p. 20 and the list of losses from the Roulette Ledger on p. 21). Have one of your students read aloud the eyewitness account of the Roulette house damages, by Chaplain Stevens of the 14th Connecticut:

"Bullets pierced it on the day of battle, and one huge shell tore through the west side, a little above the floor, and going through the parlor in an upward course passed through the ceiling and a wall beyond and fell harmless amid a heap of rubbish it had created, where we saw it many times that day. During the battle the rooms were stripped of their furnishings and the floors were covered with the blood and dirt and litter of a field hospital; yet when the writer was there two weeks later, on a trip to see our wounded in the hospital…, he found it cleansed, repainted and refurnished, and Mrs. Roulette, a charming woman, presiding at a beautifully and bountifully spread table, with her husband and all her bright little ones safely and cozily about her."

Discussion

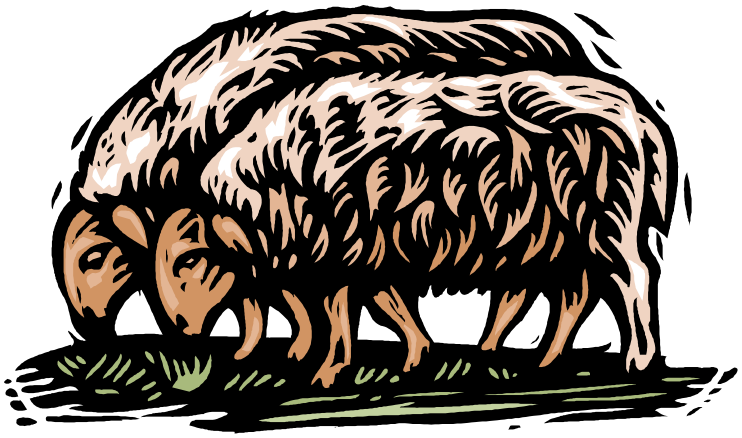
- Look closely at the historic photograph of the Roulette Farm. What still remains the same today? What has changed? The General Management Plan for Antietam Battlefield is to restore the landscape to the 1862 appearance. This means that historic woodlots and orchards have been replanted by school groups and volunteers and original buildings and stone walls are preserved. What evidence can you see on the Roulette Farm of restoration? What if anything would you do to help restore this farm if you were the park superintendent?
- Discuss the reasons for President Lincoln's issuance of the Emancipation Proclamation and its outcomes.
- Have the students discuss how they would feel if they were one of the Mumma or Roulette family members or one of the soldiers who was in the Roulette Farm Hospital. What do you think was done with the bodies of the soldiers who died here? (Hint: Ask a

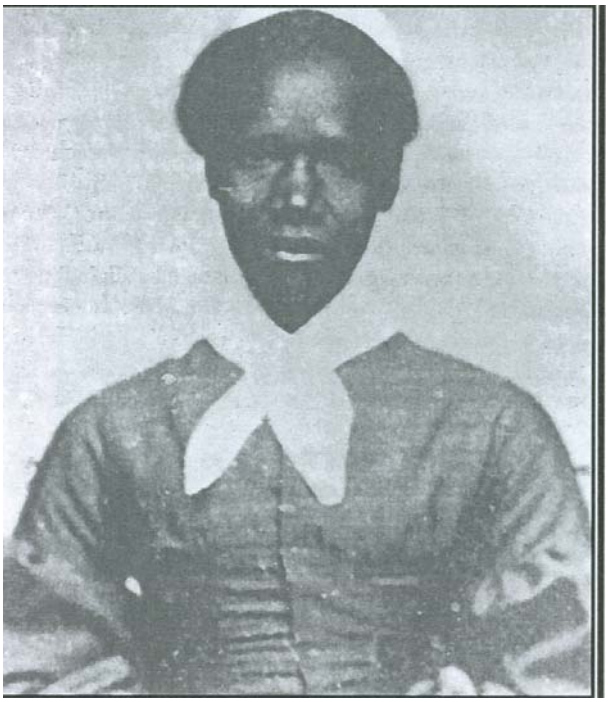
ranger for a National Cemetery brochure, this will explain how the bodies were first buried in the farmers' fields for several years and then re-interred in the surrounding cemeteries, including the National Cemetery).

Additional Activities

- After the battle the Roulette Farm served as a hospital for the wounded soldiers. (**Teachers: Read the students the letter on p. 22 from Private J.O. Smith of the 13th New Jersey).**
- Stop near the small bridge over the stream. Have the students look for animal signs and brainstorm the different organisms that would make up the ecosystem in the stream and pond.

Teachers: Have your students cross the small wooden bridge. Follow the trail as it forks to the right.





Nancy Camel

William Roulette

Losses claimed by the Roulette family as a result of the Battle of Antietam

Amt Brought forward		$ 829.75
	for 1 Wagon line	2.00
"	5 Bushels Sweet Potatoes at $1.25 per Bus.	6.25
"	4 Dozen Cabbage at $0.75 per Doz.	3.00
"	2 Bushels Onions at $1.50 per Bus.	3.00
"	1 Bee Hive with Bees	8.00
"	1 Wagon load of Pumpkins	6.00
"	Roads through fields and trampling plowed fields so that they must be plowed over	100.00
"	1 pair Saddle Bags	2.00
"	Rebuilding Worm fencing	40.00
"	350 pounds Bacon at $0.16 per pound	56.00
"	300 pounds Lard at $0.10 per pound	30.00
"	200 pounds Sugar at $0.12 1/2 per pound	25.00
"	30 pounds Crushed Sugar at $0.15 per pound	4.50
"	5 sacks at $2.00 per sack	10.00
"	11 Barrels Vinegar at $7.00 per barrel	77.00
"	15 pounds Butter at $0.20 per pound	3.00
"	8 Gallons Mollasses at $0.75 per pound	6.00
"	6 Crocks Apple Butter at $1.00 per crock	6.00
"	12 Crocks Preserves at $1.25 per crock	15.00
"	350 Chickens at $0.15 a piece	52.50
"	25 Ducks at $0.25 a piece	6.25
"	1 Watch	10.00
"	1 barrel Cucumber Pickles	8.00
"	8 Turkeys at $0.50 a piece	4.00
"	1 Bushel Dried Apples	1.50
"	1 Bushel Dried Cherries	2.00
"	6 Gallons Blackberry wine at $2.00 per gallon	12.00
		$1328.75

A Letter from Private J.O. Smith of the 13th New Jersey

After the battle, the Roulette Farm served as a hospital and over 700 dead from the Bloody Lane area were buried on the property.

"A strong, sturdy- looking Reb was coming laboriously on with a Yank of no small proportions perched on his shoulders. Wonderingly I joined the group surrounding and accompanying them at every step, and then I learned why all this especial demonstration; why the Union soldiers cheered and again cheered this Confederate soldier, not because of the fact alone that he had brought into the hospital a sorely wounded Federal soldier, who must have died from hemorrhage had he been left on the field, but from the fact, that was palpable at a glance, that the Confederate too was wounded. He was totally blind; a Yankee bullet had passed directly across and destroyed both eyes, and the light for him had gone out forever. But on he marched, with his brother in misery perched on his sturdy shoulders. He would accept no assistance until his partner announced to him that they had reached their goal - the field hospital. It appears that they lay close together on the field, and after the roar of battle had been succeeded by that painfully intense silence that hangs over a hard- contested battlefield; where the issue is yet in doubt, and where a single rifle shot on the skirmish line falls on your ear like the crack of a thousand cannon. The groans of the wounded Yank reached the alert ears of his sightless Confederate neighbor, who called to him, asking him the nature and extent of his wounds. On learning the serious nature of them, he said: "Now, Yank, I can't see, or I'd get out of here mighty lively. Some darned Yank has shot away my eyes, but I feel as strong otherwise as ever. If you think you can get on my back and do the seeing, I will do the walking, and we'll sail into some hospital where we can both receive surgical treatment." This programme had been followed and with complete success.

We assisted the Yank to alight from his Rebel war- horse, and you can rest assured that loud and imperative call was made for the surgeons to give not only the Yank, but his noble Confederate partner, immediate and careful attention.

J. 0. Smith (13th New Jersey)
(Roulette Farm Field Hospital)

Stop #5 Elements of an Ecosystem

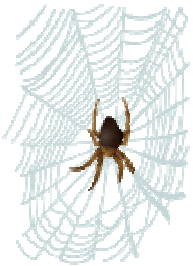
As you walk the trail, you will see an eastern deciduous forest ecosystem. An **ecosystem** is a collection of plants and animals that interact with each other and their environment. An ecosystem may be as small as a pool of water which forms after a rainstorm, or it may be as vast as an ocean, but it is defined by the specific plants and animals which live there.

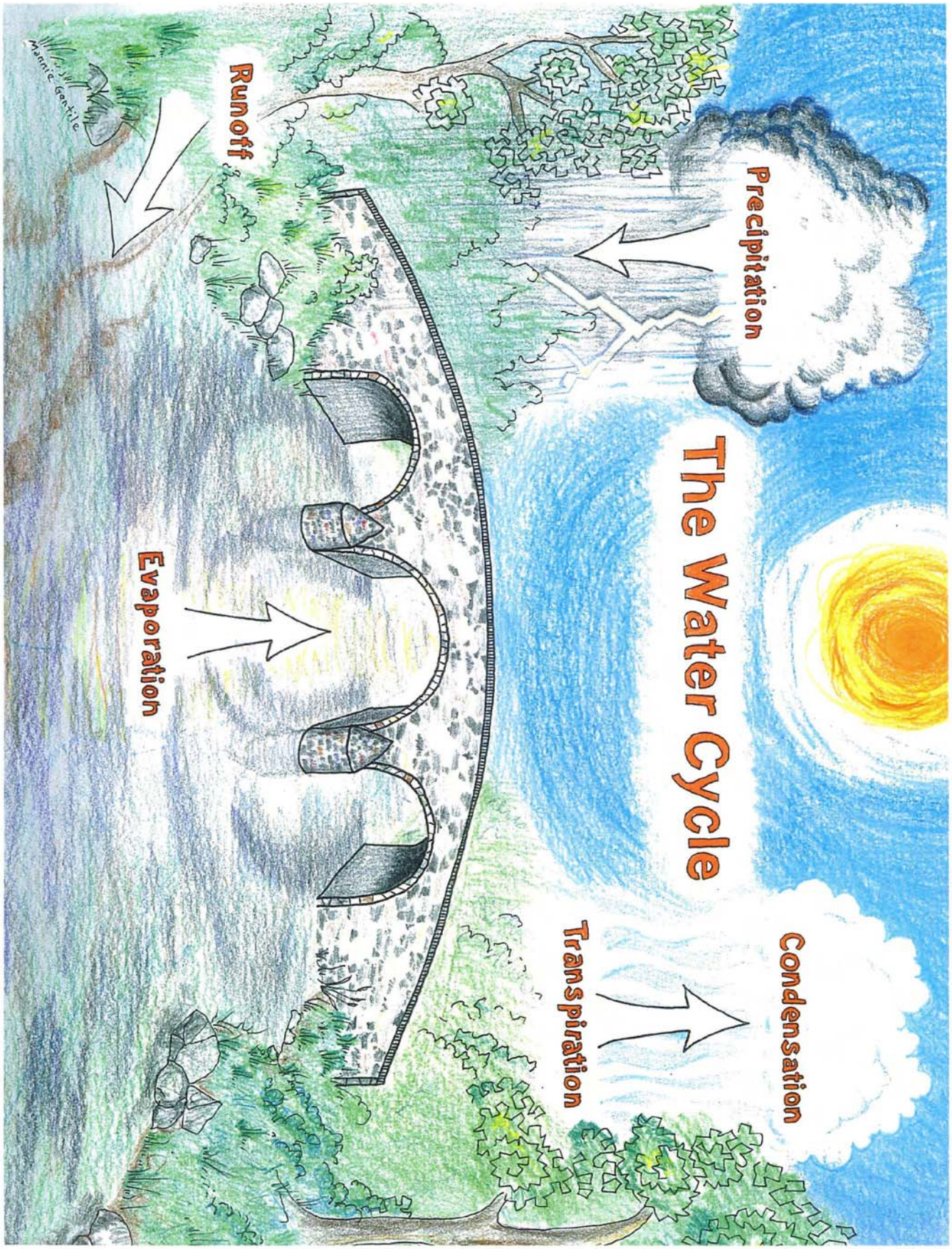
The **eastern deciduous forest ecosystem** is characterized by moderate temperatures with distinct seasonal changes and evenly distributed rainfall throughout the year. Most of the trees in a deciduous forest lose their leaves in the fall. This is a way for them to conserve water over the winter. All trees, but especially deciduous ones, are important elements of the water cycle because they release their water back into the atmosphere. The average maple tree releases several hundred gallons of water per day. In the water cycle the sun evaporates water from lakes and streams, while trees **transpire** *(when plants lose water vapor through their stomata which are little holes in their leaves)* water into the atmosphere. This water condenses and falls as rain. **(Teachers: Show your students the Water Cycle Diagram on p. 24).**

Along this trail, you will see many examples of the kinds of plants and animals which make up this **community** *(all the plants and animals that live together in a habitat and are connected by food chains or other relationships*). You will see many of the ecological processes which enable this ecosystem to thrive. Look for signs of animals and insects as you hike the trail. Signs include animals and insect tracks and trails, markings or physical evidence such as territory marks, scat (droppings), body parts, sounds and smells, and homes such as nests and burrows. Look at how the landscape has changed due to farming and other activities by humans. You will see that land is kept from reverting to forest by planting crops, mowing, and grazing by livestock.

Discussion

- Compare the eastern deciduous forest ecosystem with that of a wetter or drier climate.
- Brainstorm all of the ways that trees help the environment and people.
- Compare **deciduous** *(a plant that loses its leaves in the autumn)* and **coniferous** *(a plant that is usually evergreen, has needles or scales, and is cone- bearing)* trees.
- Discuss the **adaptations** *(ways that animals better fit into their environment or change to survive)* of plants and animals in various ecosystems.
- Discuss various ecosystems as you walk along the trail.
- Brainstorm ways that you can help conserve water.




Condensation
Transpiration
The Water Cycle
Precipitation
Runoff
Evaporation
Mannie Gentile

Stop #6 Witness Tree

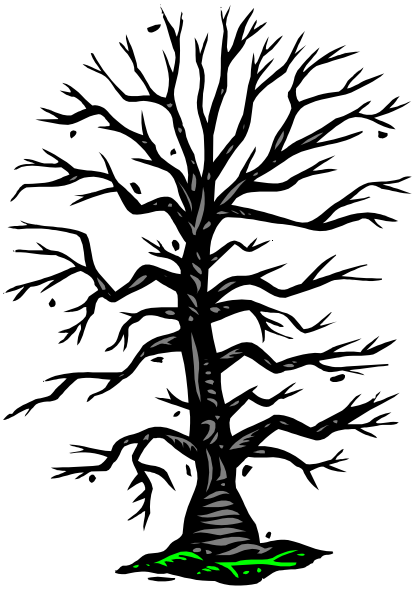
This huge tree (use the tree finder to identify it) is very old and is most likely a witness to the battle; it would have been much smaller in 1862. This tree gets its water from an underground water source that is very close to the surface is this area. This is one reason why the trees are so large in this spot.

You can see the line of sycamores (which often grow along streams and rivers) that run towards a small stream below the Roulette Farm. This stream is part of the watershed for Antietam Creek which is part of the larger Potomac River watershed which runs into the Chesapeake Bay. A watershed is the area of land that drains into a particular body of water. Even areas far away from the bay are part of the Chesapeake Bay Watershed. It is our responsibility to make sure that nothing harmful is put into the water as it affects people, plants, and animals hundreds of miles downstream.

Additional Activities

- This is a good place to have your students practice using the tree identification guides.

Teachers: This is a good place for a "Magic Moment" activity. Have the students sit in their "own" place, away from other students, and spend 10 minutes in total silence. Have them "tune in" to the sounds, sights and smells. They can record their thoughts on the worksheets, draw, or just witness in those 10 minutes. After the 10 minutes of silence, have them share their experiences with the group.



Stop #7 Recycling within the Ecosystem

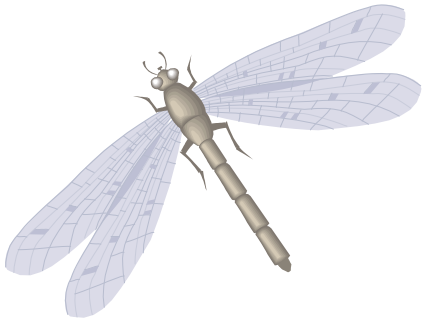
All ecosystems contain three broad categories of organisms: Producers, Consumers and Decomposers. All green plants are producers—they take light energy from the sun and minerals from the soil and convert them into food for other organisms. All animals are consumers—they eat the food provided by the producers. Decomposers are organisms such as bacteria and fungi that break down dead organisms into the basic minerals that green plants (the producers) need. In this way, everything you see in this ecosystem is constantly changing and is recycled. This is called the food chain. *(Two or more food chains that are linked together a called a food web).* **(Teachers: Show your students the Food Chain Diagram on p. 27).**

Think of producers, consumers, and decomposers present in this forest ecosystem. As you walk along the trail, look for and list as many examples of producers, consumers, and decomposers as you can find. You will see that in many areas along the trail, the park rangers have intentionally left brush piles, downed logs, and dead trees alone. These areas provide food and shelter for many animals including woodpeckers, rabbits, insects, and grouse. Can you see examples of how the animals, plants, and fungi have changed their environment?

Animals can also be categorized as **predator** or **prey**. A predator is an animal that depends on or eats other animals for food. A prey is the animal that becomes food for other animals.

Discussion

- Why are plants considered producers?
- In any environment, would you find more producers or consumers?
- Where to plants get their energy from?



The Food Chain

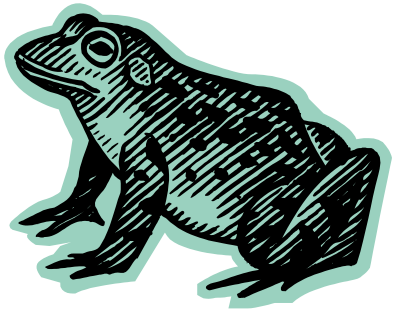
Stop #8 Patterns of Succession

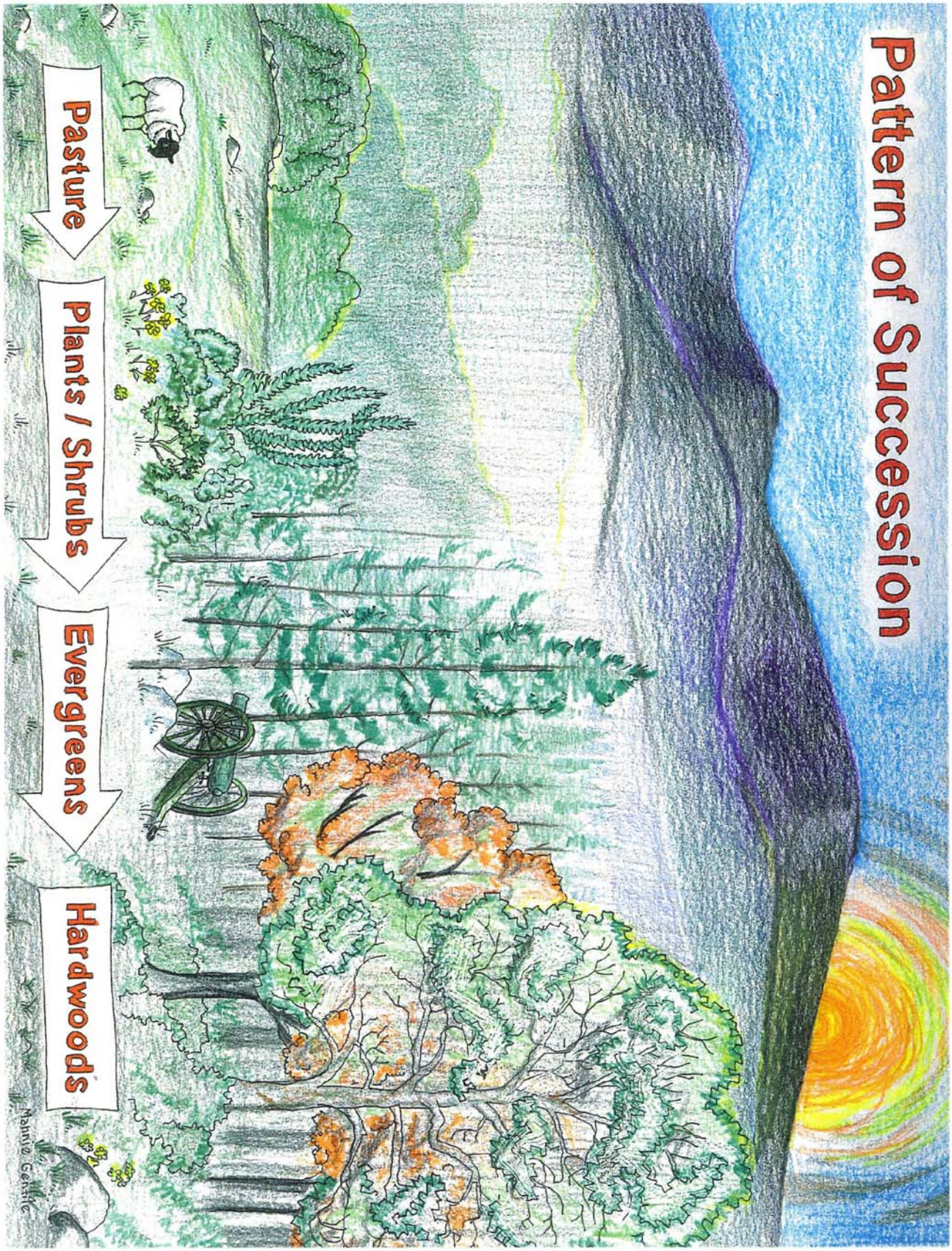
As the trail moves through the pasture, you will notice a change in the environment and vegetation. This is another example of a transition zone. This area contains several plant communities which represent different stages of a process called **ecological succession**. **(Teachers: Show your students the Succession Diagram on p. 29).** In this process, different types of plants replace each other over the course of time until a stable or climax vegetation is reached. In the eastern deciduous forest, the typical pattern of succession goes from small plants to shrubs, followed by evergreens and finally hardwood trees such as beech, hickory, oak, and maple. As you look around you can actually see these different layers and zones of vegetation. Examples are the Eastern Red Cedars that are taking over the pasture and the large trees in the low lying area to your left.

Other factors that affect the ecosystem and patterns of succession are non-native plants and animals. Many species of plants and animals have been accidentally or intentionally introduced to the environment over the years. Usually these plants and animals do little or no harm, but sometimes, with no natural predators or **competitors** *(competitors are other organisms that compete for the same food, resources, or space)*, they can become invasive. They can displace native trees, birds, plants, and animals. Often times these non-native species don't provide the food that a native species would or consume the food that a native bird or animal needs. Sometimes they will replace a species' niche or place in the environment. Examples of plants and animals that are non- native and have become invasive or harmful are Japanese Beetles, non- native honeysuckle, Tree of Heaven (ailanthus), bullfrogs (which eat just about everything including our own native amphibians), starlings, and the fungus that causes Dutch Elm Disease. Have you seen examples of non- native species on your hike today?

Discussion

- Discuss why the different zones of vegetation have different needs such as moisture and amount of light.
- Consider how competition affects the zones, i.e. What are the *limiting factors (an environmental factor that limits growth, abundance, or distribution of a population of organisms in an ecosystem)* of an acre of grassland going into forest land?




Pattern of Succession
Pasture
Plants / Shrubs
Evergreens
Hardwoods
Mahnie Gemic

Stop #9 Decomposition, Nutrient Cycling, and Food Chain

A fallen tree plays an important role in an ecosystem. **(Teachers: Show your students the Decomposition Diagram on p. 31).** As the tree decays, the minerals and nutrients it contains are broken down and returned to the soil. This process is known as **decomposition**. It is accomplished over long periods of time (sometimes several hundred years) by the combined actions of several organisms such as mosses, lichens, fungi, insects, and bacteria. Decomposition is also aided by wind, rain, changes of the seasons, and animals such as woodpeckers. In this way, all elements of the environment participate in the decomposition process.

This tree trunk is an example of **nutrient cycling** *(The processes by which nutrients are transferred from one organism to another in the ecosystem),* and the return of organic matter to the soil. Fungi, bacteria and various insects such as termites commonly live in dead stumps, as well as living trees, and eventually decompose them to the basic building blocks of soil formation. If you look carefully you may see termites at work hollowing out the base of this tree.

Discussion

- Look for evidence of decomposition in fallen trees and limbs. Are these agents of decomposition plant, animal, or fungi? Will the kinds of decomposers working on a log change during different seasons? Why?
- What natural predator would prey on a termite? Why termites can live in both dead and live trees.
- What do you think would happen if there were no decomposers in the environment?

Additional Activities

- Construct a food web (two or more food chains that are linked together form a food web). Possible organisms to use that are found at Antietam Battlefield include: Opossums, raccoons, red foxes, red-tailed hawks, chipmunks, field mice, black rat snake, white tailed deer, ladybugs, praying mantises, grasshoppers, moths, oak trees, corn, grasses, blackberries, apple trees, clover, and morel mushrooms.

Decomposition

Animals, bacteria, weather, insects, and fungi help break down the tree stump and return nutrients and minerals to the soil

Stop #10 Stone Wall and Rock Formations

- Look at the stone wall along the field. This wall was here during the battle. How do you think that wall was made? (Hint: look at all the rocks in the fields; the farmers would want them out of the way for plowing). What uses has that rock wall had over time? Could the soldiers have used it for cover if needed? Would it keep livestock out of crop land? What uses does it have today? What animals do you think make it their home?
- As you hike down the trail, you will also see rock formations that are characteristic of this area of Maryland. Look at how the rocks have been weathered and changed over time. This can be caused by things like the freeze-thaw cycle, tree roots growing into the stone, and acid rain. Can you see evidence of the rocks breaking down and turning into soil?

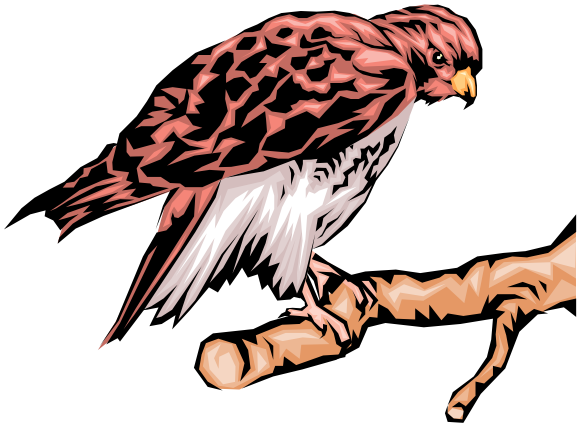
Teachers: This trail will now loop back to the Roulette Farm. Retrace your steps back to the Mumma Farm to finish the activity.

Conclusion

Congratulations!!! You have completed the trail. **Remember: This battlefield belongs to you, just like all National Parks.** It is YOUR responsibility to help the park rangers preserve and protect Antietam National Battlefield. The natural resources in the park, the events that happened on the battlefield, and your visit to the park today all affect the landscape and environment. By visiting the park, you now know how important your actions and the actions of others are to the park and to the environment. Your visit has helped to remember the people that were here and important events that took place many years ago. When you get home, make sure you tell your friends and family about the battlefield and its unique place in both history and the ecosystem. If you can do your part to preserve and protect Antietam National Battlefield, you will make sure your children and grandchildren enjoy the park many years from now just like you did today.

Discussion

- Before you leave, take this time to discuss the changes you have seen on the trail to the landscape. What types of things can you do to change the environment for the better, for the worse, or not change it at all? How have the students helped preserve the battlefield today?
- What do you think should be done with the battlefield? Should it be restored to what it looked like in 1862? Should we leave it like it is? Should we let people build houses and stores near the park? Should we not let people in and reserve the park for the wildlife?



Glossary

Adaptations- Ways that animals better fit into their environment or change to survive.

Carnivore- A meat eater.

Community- All the plants and animals that live together in a habitat and are connected by food chains or other relationships.

Coniferous- A plant that is usually evergreen, has needles or scales, and is cone-bearing.

Consumers- Are all animals; they eat the food provided by the producers.

Deciduous- A plant that loses its leaves in the autumn or at the end of the growing season.

Decomposers- Organisms such as bacteria and fungi that break down dead organisms into the basic minerals that green plants (the producers) need.

Decomposition- This process is which a plant or animal dies and the minerals and nutrients it contains are broken down and returned to the soil.

Eastern Deciduous Forest- An area characterized by moderate temperatures with distinct seasonal changes and evenly distributed rainfall throughout the year.

Ecosystem- A collection of plants and animals that interact with each other and their environment.

Food Chain- The order in which energy passes from one living thing to another.

Food Web- Two or more food chains that are linked together.

Habitat- The place where an animal or plant lives.

Hedgerows - Wooded areas along fields that help reduce wind erosion and provide a place for wildlife such as insects, birds, rabbits, squirrels, and deer.

Herbivore- A plant eater.

Limiting Factors- An environmental factor that limits growth, abundance, or distribution of a population of organisms in an ecosystem.

Naturalized- An area that has been artificially established and now grows and reproduces on its own as if it were native.

Omnivore- Organisms that eat both plants and animals.

Predator- An animal that depends on or eats other animals for food.

Prey- Animals that be comes food for other animals.

Producers- Green plants that take light energy from the sun and minerals from the soil and convert them into food for other organisms.

Riparian Restoration Area- A naturalized place that helps prevent erosion and where the roots of plants are allowed to filter runoff.

Runoff - Water that does not soak into the ground but runs into the nearest body of water.

Soil- The thin layer on the earth's surface in which plants grow.

Succession- A process where plants replace each other until climax vegetation is reached.

Transition Zone- An area where there is a change in the environment and vegetation.

Transpiration- When plants lose water vapor through their stomata which are small holes in their leaves.

Water Cycle- The transference or water from land to air to land.

Watershed- An area of land that drains into a particular body of water.

Nature Hunt Worksheet

Use all of your senses to find as many items as possible on the list below. **Please do not touch or take anything for your safety and the safety of the wildlife.** Feel free to use the identification guides the ranger or your teacher has brought along to help you.

_____Seed dropped by a tree or animal or scattered by the wind. 1 point *Bonus: Give yourself 2 points if the seed was found in scat.

_____Spider web. 2 points *Bonus: Are there insects in it? 2 points

_____Five pointed leaf. 1 point *Bonus: What type of tree did it come from? 5 points

_____Bluebird. 5 points

_____Animal that utilizes camouflage or mimicking. 4 points

_____Bird or squirrel nest. 3 points

_____Stinging nettles. 1 point **Watch out! Don't touch them!** Stinging nettles have heart- shaped leaves with large teeth around the edge. Their stems and leaf veins are covered in small hairs.

_____Animal burrow. 2 points *Bonus: What type of animal do you think made the burrow? 2 points

_____Animal tracks. 2 points *Bonus: Can you identify them? 5 points

_____Red winged blackbird. 3 points

_____Wildflower. 1 point *Bonus: Can you identify it? 5 points

_____Animal scat. 2 points *Bonus: What animal did it come from? 5 points

_____Butterfly. 3 points *Bonus: A butterfly cocoon. 5 points

_____Woodpecker hole. 5 points *Bonus: Can you hear or see the woodpecker? 2 points

_____Hawk. 10 points *Bonus: A bald eagle. 20 points

_____Animal bone. 5 points *Bonus: Does it have chew or wear marks on it? 10 points

_____Vulture. 2 points *Bonus: Are they eating a dead animal? 5 points

_____Feather. 5 points

_____Worm. 2 points *Bonus: A worm hole. 2 points

_____Evergreen tree. 2 points *Bonus: Can you identify the tree? 5 points

_____Mushrooms or fungi. 3 points

_____Tadpole. 3 points

_____Nonnative species. 3 points *Bonus: Where did it come from and is it invasive/harmful? 5 points

_____Leaf with teeth. 1 point Bonus: What is it? 5 points

_____White tailed deer. 5 points *Bonus: Award yourself one point for each point on the antler.

_____Rodent. 1 point for a squirrel, 2 for a chipmunk, 3 for a wood rat, 10 for a beaver, 5 for a vole

_____Lightning bug. 2 points

_____Fox. 5 points for a red fox, 10 points for a silver or grey fox.

_____**Total: Tally up your points.**