

Hike the trails. Look for wildlife.



Red-headed Woodpecker
Photo: Marty Brazeau

Enjoy nature at Broad Creek!

**Broad
Creek**

Memorial Scout Reservation



Have fun as you earn the
Broad Creek naturalist patch.

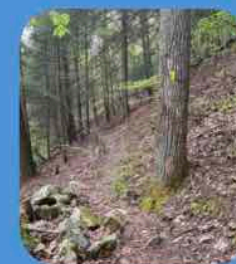
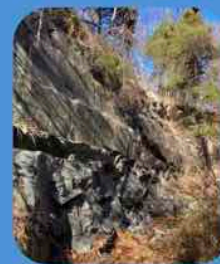
Naturalist Guide



Explore the camp's forests and aquatic environments.



Learn about the ecology of the Saffran Pond Nature and The Hemlocks.



Hike to the historic Serpentine Quarry.



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For additional nature programming resources, visit:

<https://broadcreekscouting.org/programs/conservation>

You can contact the Council Conservation Committee at:

conservation@baltimorebsa.org

Check it out!

The resources on the website will assist you in presenting a fun-filled, hands-on, nature-themed programming by providing downloadable PDF documents, such as a stream study lesson and campfire songs, skits, nature quotations, a bird story to tell, copies of the bird bingo game printout (in a larger size to be placed on a clipboard), and the macroinvertebrate key to use during your stream study.



Scout Naturalist Guide: Introduction

Have fun learning about the animals, plants, ecology, and history of Broad Creek!

Ernest Thompson Seton, one of the founders of Scouting USA, spent his life outside studying nature. This guide will invite everyone to emulate Seton by interfacing with the natural world while visiting camp during weekends, preferably in the Spring and Fall, when the leaves are out, wildlife is more abundant, and temperatures are comfortable.

You can use this guide to enjoy all of Broad Creek's natural heritage on your own (with a buddy, of course!) or your unit can use this guide to plan and present hands-on nature-themed activities—and earn recognition with a patch.

When you see a heron catching a fish or discover the fascinating history of the Serpentine Quarry, you will truly appreciate the beauty and wonder of the outdoors.

This guide was written by Marty Brazeau and Chris Castillo, Baltimore Area Council Conservation Committee members.

Permission was kindly granted to use many of naturalist Bill Hubbick's photographs and illustrations in this publication. His images have green borders.

Images courtesy of the National Scouting Museum at Philmont Scout Ranch, through a generous donation by Julia M. Seton and Family, are indicated by "NSM Seton illus."

Marty Brazeau's images have black borders.

Chris Castillo's images have brown borders.



NSM Seton illus.



This page is currently under construction. We appreciate your patience and understanding as we improve.

Conservation Service at Broad Creek

Conservation Committee

Conservation Events

The Conservation Committee hosts a conservation service project at Broad Creek on the third Saturday (usually) of the month from 9:00 am until noon. This is the perfect opportunity for Scouts to earn the conservation service hours they need for the Life rank.

Please register at this link so that a project can be planned based on the number attending:

+ Conservation Service Registration [hyperlink]

Attendees should wear sturdy footwear, clothing appropriate for working outside, and bring work gloves and a water bottle. One adult or parent from each unit with Scouts attending conservation service should attend as well to assist with supervision.

Contact conservation@baltimorebsa.org with any questions.

Subscribe

November 15, 2025
Conservation Service Projects November Service Project Camp Saffran, Whiteford, MD, Maryland
December 13, 2025
Conservation Service Projects Jingle Bell Beaver Day Camp Saffran, Whiteford, MD, Maryland
February 24, 2026
Conservation Committee Meeting Zoom Meeting, Baltimore, Maryland

Scout Naturalist Patch Requirements



- Check boxes to show that the requirement has been completed.
- Obtain adult leader's signature verifying completion.
- Bring to Broad Creek Trading Post to receive the patch.

Requirements:

- ☐ 1. Read how you can be like the famous naturalist Ernest Thompson Seton. *See pages 6-9*
 - ☐ 2. Hike the Saffran Pond Nature Trail using the printed guide or the video. *See pages 10-27*
 - ☐ 3. Hike the Serpentine Quarry Trail to learn historical and natural history information highlighted in this guide. *See pages 30-44*
 4. Complete at least two of the five activities (A-E):
 - ☐ A. Spend 90 minutes **birdwatching** around Lake Straus. Identify the birds you saw by completing the BIRDO bingo game. *See pages 45-48*
 - ☐ B. Hike the **Hemlocks Trail** to learn about efforts to protect the trees. *See pages 50-60*
 - ☐ C. Participate in a **solo experience** for at least 45 minutes. (This can be done while hiking the Serpentine Quarry and/or Hemlocks.). During the solo:
 1. Write a journal entry of at least 50 words and sketch several plants or animals that you observed. *See pages 61-62*
 2. Compose a cinquain. *See page 63 for a template*
- See page 64 for group solo instructions.*



Requirements that can be done as a den, patrol, pack, troop, or crew:

Campfire activities and leader instructions and printouts for the stream study can be downloaded from:
<https://broadcreekscouting.org/programs/conservation>

- ☐ D. Participate in a **nature-themed campfire** that includes:
 - 1) Prop bag dramas for each patrol or den
 - 2) Nature-related songs
 - 3) Nature story (told or read)
 - 4) Three naturalist quotations
- ☐ E. Participate in a **macroinvertebrate sampling stream study** to determine the health of Deep Run, a tributary to Broad Creek, the Susquehanna River, and the Chesapeake Bay. Fill out the "Recording Form for the Citizen Monitoring Biotic Index." At end of the study, place all organisms collected back in the stream.

After completing requirements, as an individual, patrol, or unit, discuss highlights of what was learned about the camp's plants, animals, and ecology with an adult Scout leader. Share how you can be more like naturalist Ernest Thompson Seton while a Scout in the outdoors.

Adult leader signature: _____

Take this signed booklet to the Broad Creek Trading Post to receive your Scout Naturalist patch.



Optional BioBlitz Just for Fun:

Fill in circles next to illustrations of plants and animals seen that are featured in this guide that you find while hiking. Bring the guide with you each time you visit camp to continue finding animals and plants!



Leaders' Guide (for youth leaders too): Ten Tips for Presenting a Nature-Themed Weekend at Broad Creek

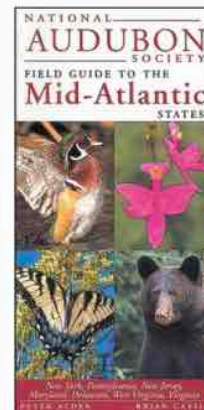
1. Plan the weekend and reserve campsite ahead of time.
2. Best times are May, June, September, and October when nature is more active.
3. Come up to camp with the leadership for a full day before the weekend to preview the Nature, Quarry, and Hemlock trails. Be sure to read the guide and watch the nature trail video at home.
4. If you lead your Scouts on the hikes, two or more leaders can take turns sharing information at each stop. Descriptions of animals, plants, and ecology in the guides can be assigned to each leader and marked with a highlighter in the guide. Leaders can then review assigned content before the weekend that will enable them to paraphrase the nature information instead of reading to Scouts from the guide word for word.
5. A Saffran Nature Trail PowerPoint is available to download for use while leading the nature hike. The guide can be found at:
<https://broadcreekscouting.org/programs/conservation>



This group of Scouts and adults trained to be Scout Naturalists during a weekend in May 2024. They enjoyed all the nature activities outlined in this guide. They appear in the Saffran Nature Pond Nature Trail video.



6. Keep groups on each trail small, perhaps no more than 12 in each group. For example, have half your group hike the quarry trail and the other half hike the nature trail in the morning then switch in the afternoon.
7. Set the tone for the hikes and review ground rules:
 - a. Review the objectives for each hike to see wildlife and plants and learn about the Camp's history and ecology.
 - b. Take only pictures, leave only footprints.
 - c. Rather than picking a leaf to show Scouts during a hike, bring everyone close to the leaf. Have the group form a semicircle so everyone can see you and the subject. Make sure everyone is attentive and can hear you.
 - d. During the solo, put the cell phones away...unless a bird flies in, then take it out to take a picture.
8. Consider adding a lively competition into the weekend. A frisbee golf game that can be played after hiking the nature trail to review what was learned is available at:
<https://broadcreekscouting.org/programs/conservation>
9. Beforehand, review information about the nature-filled weekend. For units presenting a nature and ecology themed campfire, have Scouts plan their prop ecology-themed skits during a unit meeting.
10. Assign someone to create a nature weekend PowerPoint or video to share at the next Court of Honor.

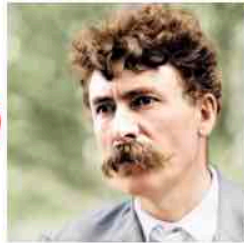


Recommendation:

Purchase at least one copy of the *National Audubon Society Field Guide to the Mid-Atlantic States*. Scouts will then be able to identify and learn about most of the common plants and animals found at Broad Creek.



Learn about the naturalist
Ernest Thompson Seton
and consider 7 things you
might do to be a naturalist
leader like he was.

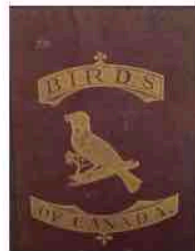


Portrait of Ernest Thompson Seton
August 14, 1860 – October 23, 1946

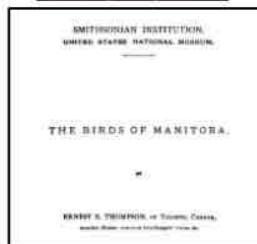
Ernest Thompson Seton, Scouting America's first Chief Scout, was an English-born Canadian-American artist, naturalist, writer, and outdoor educator. He conducted wildlife studies in North America and kept a detailed journal with notes and sketches about what he saw. He turned his notes into stories and articles that became wildly popular.

1. Like Seton, you can keep a journal of your outdoor experiences or record information digitally using phone apps such as eBird to record birds seen. Things Seton recorded included the date, location description, weather, wildlife he saw, and how the wildlife behaved.

When Ernest was 12 years old, he learned that a new book, *Birds of Canada* by Dr. A.M. Ross, was available. He thought it would hold answers to questions he had about the birds he watched so carefully. But it cost a dollar – a dollar he didn't have. His father would not give him any money for it because he forbade Ernest to have anything dealing with nature.



Ernest raised the money by selling his rabbits, marbles, and dime novels. He also made and sold insect cages. He bought the bird book and found it lacking in detail and accuracy. He scribbled notes in it, correcting and adding detail, and more species. Before the end of the century, he had published the book *Birds of Manitoba*.



2. You can also purchase printed and phone app field guides to help identify and learn about animals, birds, and plants in the outdoors.

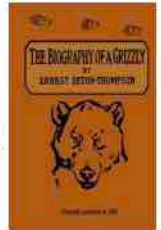
Young Seton built a ramshackle dwelling he called "Glenyan" where he spent many hours pretending to be a primitive warrior from days gone by, exploring the woods, and watching birds.

Glenyan as illustrated by Seton



3. You can explore natural areas near your home.
Attend summer camp to earn environmental merit badges.

In 1897, Seton was hired by *Recreation Magazine* to examine and record the condition of Yellowstone National Park's large animal population. Seton reported about the dwindling buffalo population and the dangers of the popular tourist spectacle of feeding bears from the restaurant garbage bins. It was these bear experiences that spawned the stories of "Johnny Bear" and "Biography of a Grizzly".



4. Yellowstone is now a haven for animals that were once in danger of extinction to include wolves and bison. You can visit State and National Parks and attend programs and hikes led by staff naturalists to learn about each park's natural and cultural history. You can also share your experiences on social media or, perhaps on your own natural history YouTube channel.

Seton camping and sharing his Native American lore with boy members of the Woodcraft Indians in 1910.



Seton created a youth group called the Woodcraft Indians in 1902 to show youth how to camp and learn about the natural world. Their handbook was *The Birch Bark Roll of the Woodcraft Indians*. Lord Robert Baden-Powell was strongly influenced by Seton and borrowed many of Seton's ideas for his 1908 book *Scouting for Boys*.

4. Like Seton, you can also be a naturalist leader as you help Scouts learn about animals and plants and the ecology of different habitats during weekend and high adventure summer experiences.



In 1907, Seton and Edward Preble of the US Biological Survey canoed 2,000-miles across northern Canada to map the route and study the caribou herds. He used a good compass for mapping. His maps were used until the 1950s and are still considered extremely accurate. Seton's book *Arctic Prairies* describes his trip.

Ernest Thompson Seton and Edward Alexander Preble leaving Athabaska Landing, May 17, 1907.
United States Public Domain Photo



6. Use your map and compass with other Scouts during orienteering programs at Broad Creek Scout Camp. **You can also participate in the hands-on outdoor programs described below.**

Broad Creek Hiker Patch:

Hike the 9-mile Broad Creek Trail and the 5.6-mile Lake Straus Trail. Answer 25 trailside questions on a fill in the blank form on the camp map. Perform 2 hours of trail work to earn the patch. The trail is best earned over two weekends.



Philmont Roving Outdoor Conservation School:

This 21-day ROCS treks uses adventure and expedition behavior to foster a unique relationship between each participant and Philmont. You will enjoy hands-on learning in its forests, rivers, alpine meadows and mountaintops. You will also perform conservation work in addition to learning about plants, animals, and ecology from an enthusiastic staff.



Distinguished Conservation Award:

The Distinguished Conservation Service Award can be earned by Scouts BSA youth, Venturers, and Sea Scouts who plan and lead two significant conservation service projects of comparable scale and scope as an Eagle/Summit/Quartermaster project and complete other requirements.



Seton was a talented artist, earning the highest honor at the Ontario School of Art when he was 19. Then he went to London, where he won a seven-year scholarship to the Royal Academy of Art, but he got sick only months after he enrolled. He returned to Toronto deathly ill. Ten years later, he went to Paris to finish his art studies. Seton's artwork can be seen in his books and his paintings are on display at Philmont.

7. You can draw and film wildlife as you visit wild places. You can also find mentors at local nature centers of the Maryland Natural History Society.



Young birders with spotting scopes at Assateague Island.

You can also join young birders in a group called the **Young Maryland Ornithological Society**. (YMOS) Members participate in the annual **World Series of Birding** at Cape May, New Jersey.

In 1910 Seton led the organizing committee for the Boy Scouts of America, now called Scouting America. He compiled the first handbook using *The Birch Bark Roll* and Baden Powell's *Scouting for Boys*. Seton disliked the para-military aspects of Scouting, and some key Scouting leaders disapproved of Seton's Native American focus. His position was dissolved at the annual meeting in 1915, and he resigned at the end of the year. He revived Woodcraft not as a youth organization, but as a coeducational organization serving all ages, THE WOODCRAFT LEAGUE OF AMERICA.

The **Ernest Thompson Seton Institute** website contains a wealth of information about Seton:
<https://etsetoninstitute.org>



Saffran Pond

Self-Guiding Nature Trail

Learn how the pond area has changed from a farm field to a forest since 1948.



It was fun hiking the nature trail!
If you are quiet enough you may spot a cool bird.

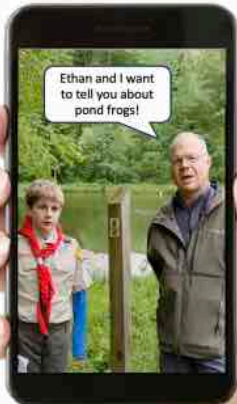
The trail begins in front of the nature lodge. Stop at each numbered post and read the corresponding descriptions describing the plants, animals, and ecology of Broad Creek.

Follow white tree blazes to find your way from post 3 to post 5.



Scan the QR code below to view the nature trail video on your mobile device. Scout Naturalists appear in the video. Consider downloading the video before you come to camp!

You can also find the video online:
<https://broadcreekscouting.org/programs/conservation>

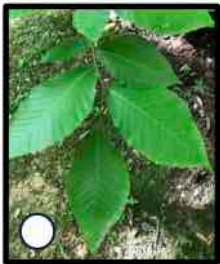
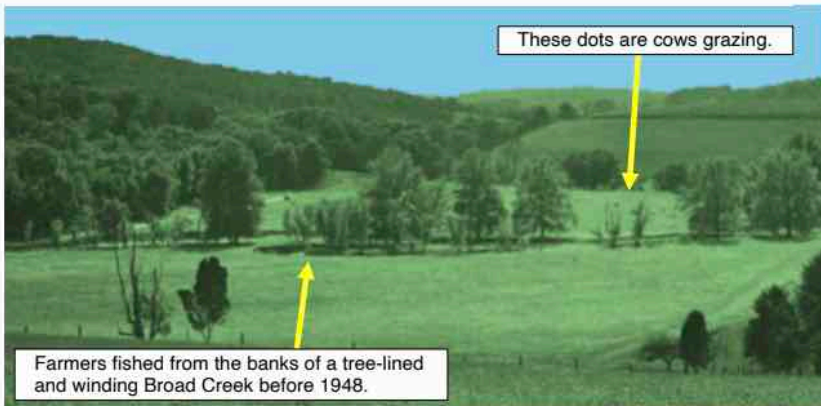


Nature Trail Map



Post 1: You are a Time traveler:

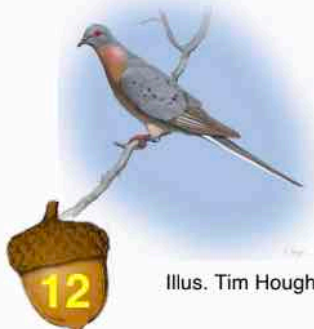
It is 1945! You are walking downhill to Broad Creek before a dam blocked the creek to form Lake Strauss. What animal would you have encountered then? Answer: cows! Below is a photo of the valley before the creek was dammed. Many farmers in the area sold their land to form the Scout camp. The nature trail area that you are about to hike was once the Terrel Family Farm. The family left their farm when the area became a Scout camp in 1948. Hike the trail to learn how the area has changed from a farm to a forest through the last 75 or more years.



Beech leaves



Beechnut



Illus. Tim Hough

Post 2. American Beech

Look up and you will notice maple trees branches above this beech tree. The beeches' lower branches spread out to gather the sun's rays in this shady part of the forest. Over many years, this beech may grow taller than the surrounding maples. The beechnut is a small, triangular fruit and serves as food for birds and other wildlife. The nuts were a favorite food of the Passenger Pigeon, a bird that numbered in the millions, that is now extinct due to overhunting and habitat loss. Lumber from beech trees is used for cheap furniture, tool handles, low-grade lumber, pulp, and fuel.



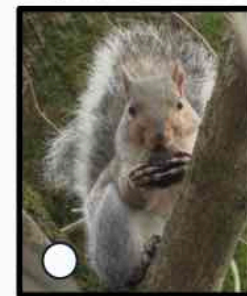
cedar tree



Cedar Waxwing



hickory leaf and nuts
image: Southern Native Trees



Gray squirrel chewing on a walnut to get the nutmeat.

Post 3. Eastern Red Cedar

Cedar is a slow growing conifer "pioneer," one of the first trees to grow in full sunlight when this area was a field. Why are the lower branches of this tree dying? Over time, as the soil improves, faster growing trees "move in" to overtake this cedar, reducing the sunlight it needs to thrive.

Cedars are indirectly planted by Cedar Waxwings. Flocks of birds feed on cedar berries. The fruit is digested, and the seeds are in the bird's droppings. The rot-resistant wood is used to make fence posts. Mothproof closets and chests are made from cedar wood. Cedar shavings make hamster cages smell better.

Post 4. Mockernut Hickory

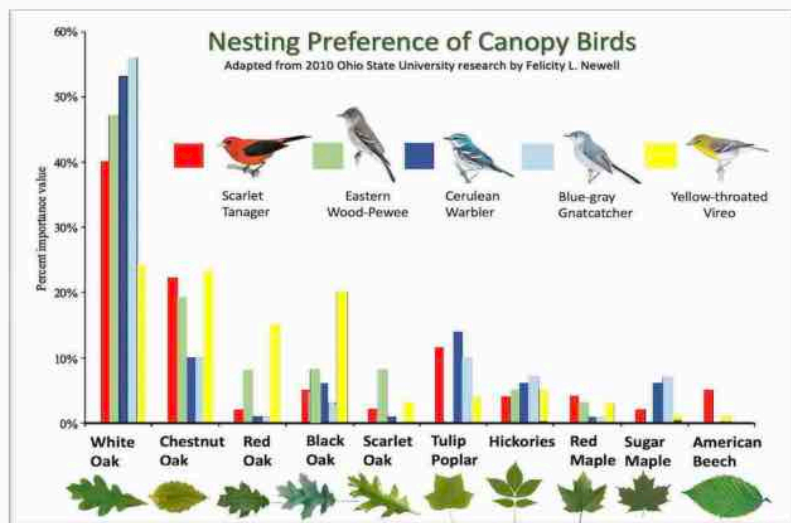
Hickory trees are part of the mature forest community, along with oaks and beeches. Notice the bark is tight and deeply furrowed and the leaves are fragrant. The name "mockernut" comes from the fruit (nut) of the tree, which has a thick husk that is hard to open and contains little or no meat.

The wood, which is heavy and hard, is used for tool handles, lumber, pulp, charcoal, and for smoking meat. Squirrels eat the nuts and sometimes bury them for later consumption. If they forget where the nut is buried and if there is enough sunlight and good soil, a tree may grow.





Post 5. Birds at Forest Levels
Bright red Scarlet Tanagers and Yellow-throated Vireos feed on caterpillars and nest high up in oaks. Canopy birds are less likely to be preyed upon by ground predators.



The chart shows why oaks, especially our state tree the white oak, need to be planted to help tanagers and other birds thrive.



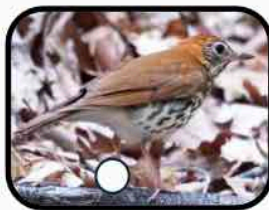
Eastern Phoebe

Birds, at mid-forest levels (or the understory), are often camouflaged in leafy green. Flycatchers swoop down to swallow insects in mid-air. The phoebe wags its tail and nests under eaves and bridges.



Acadian Flycatcher

Brown backed and spotted birds are camouflaged with dead leaves and dirt as they kick the leaves for invertebrates. It is wonderful to wake up in the morning listening to the flute-like song of a Wood Thrush.



Wood Thrush

Post 6. White Oak (Now a stump)

It is the state tree of Maryland. Deer fatten up on its sweet, low tannic acid acorns. The wood is used to make barrels, durable furniture, and flooring.

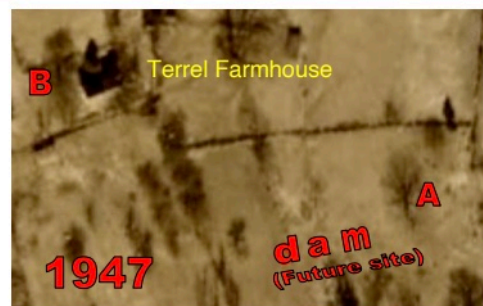


white oak leaves

Mike Huneke, Scouter and forester, says: "Not sure what killed the white oak, but we are losing a lot of oaks from oak decline. It is thought to be brought about by the wet summer we had in 2018 which enabled root rot fungi to get established in certain areas. This led to the loss of fine roots, which caused mortality as the trees did not have the capacity for sufficient water uptake during subsequent drier years." In April of 2025, the dead oak had its limbs removed for safety.



A future nest site for a Red-headed Woodpecker!



This 1947 aerial photo of the Terrel Farm shows what many years of forest growth can do. The red letters on the photo show:

A. The big oak at the SE corner of the pond. Once cows grazed underneath it. You are beside the tree's remains.
B. The hemlock next to the stone cistern, all that is left of the Terrell farm. You will visit the tree at nature trail stop 13.



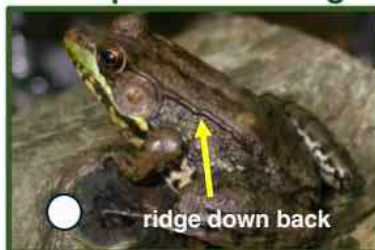
Post 7. Nature Pond Frogs

Frogs are amphibians that leap with smooth skin. Tadpoles eat algae and protozoans with scraping mouthparts. Bullfrogs use long sticky tongues to ambush and swallow, bugs, mice, small reptiles, amphibians, and birds!

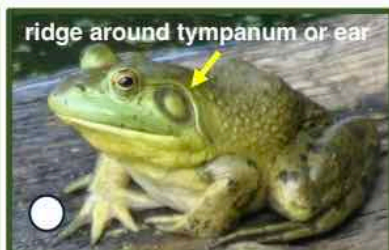
See if you can find a frog before the Great Blue Heron gulps one down. Herons also swallow fish, snakes and ducklings. NSEM Seton illus.



Compare Pond Frogs



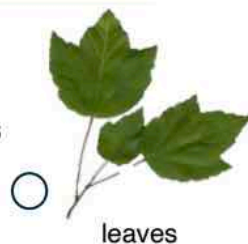
Green Frog Sound: loose banjo string: "bannt, bannt"



Bullfrog Sound: loud bull-like "Jug-o-rum!"

Post 8. Red Maple

Around the bridge is a grove of red maples that flower early before leaves unfold. The wind spreads its pollen. "Helicopter" seeds form after pollination. In shady areas, the seeds sprout and grow slowly. If a tree falls, and light streams down, maples will grow quickly. **Year-round red!** spring - flowers, summer - leaf stems, autumn - leaves, and winter - buds. It takes 70 gallons of red maple sap to make a gallon of syrup. (sugar maple: 35 gallons!) Red maple wood, as well as other maples, is used for hardwood flooring in homes and bowling alleys.



leaves



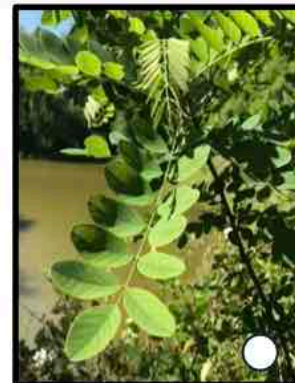
"Helicopter seeds" or samaras



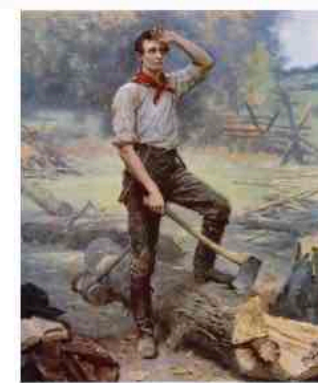
Next stop: Look for the arrow sign uphill in the field. You will enter the side trail and visit stops 9 and 10 and then return to the field to go uphill to stop 11.

Post 9. Black Locust and Ecological Succession

If not mowed, this field, over time, will revert to forest. In **ecological succession**, plants and animals that occupy an area also change. The soil becomes more fertile as the area changes from a field to forest. The sun-loving black locust, behind the post, has nitrogen-fixing root nodules. This tree is a pioneer, enriching the soil for trees that will replace it. Abraham Lincoln split rails and posts for fences from the hard and rot-resistant locust wood.



Black Locust leaves



Abraham Lincoln, rail splitter
Public Domain Illustration, 1909

Camp Snakes



Northern Water Snake: Lake Strauss swimmer. image by Badjoby



Ring-necked Snake: Secretive small snake. image by Jim Avitalle



Garter Snake: This snake emits a foul musky odor when held
image by Mark Wilson



Black Rat Snake: This snake is an excellent climber and a constrictor.
image by Patrick Coin





pawpaw leaves, fruit, and flowers

Post 10. Pawpaw tree and Zebra Swallowtail.

The tree behind the post is a pawpaw tree. The flowers bloom in early spring, usually before the new leaves appear, smell like rotting flesh and hence the flowers are pollinated by flies. The fruits are also eaten by opossum, squirrels, and foxes.

Zebra Swallowtail Butterfly caterpillars feed on pawpaw leaves. The tree is becoming more common at Broad Creek because deer prefer to avoid browsing on the plant. However, the Maryland state insect, the Baltimore Checkerspot, is becoming rare because deer feed on the checkerspot caterpillar's host plants. Turtlehead is one such host plant now rare due to deer overgrazing.



Ernest Thompson Seton sketch of Turtlehead.
NSM Seton illus.



Zebra Swallowtail



Baltimore Checkerspot

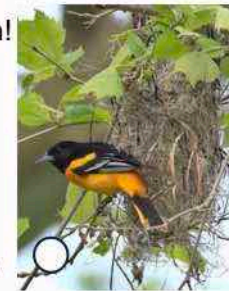


Post 11. Black Walnut

The wood is hard and durable and is used to make veneers, cabinets, and gunstocks. Squirrels and mice eat the nuts. Deer feed on twigs. A yellow-brown dye can be made from the nut's husks. Just try cracking this hard edible nut open!



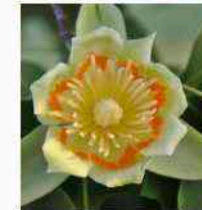
walnut leaves and un-ripe nuts in husks.
public domain image



Baltimore Oriole
at the nest
image Andrew Weitzel



tulip tree trunk



tulip tree flower
image: Amada44



wind-blown tulip
tree seeds
Hubbick image



Dugout Illustration, by Theodor de Bry, 1590



tulip tree leaves



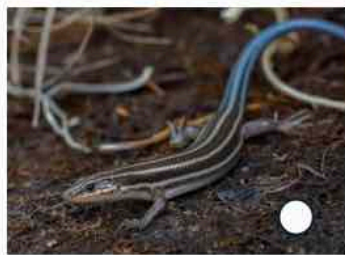


Post 13. Eastern Hemlock (*Tsuga canadensis*)
Years ago, hemlocks were felled and de-barked for leather tanning. Nowadays, we use chemicals. This beautiful tree grows in shaded groves near water. Hike below the dam to a beautiful 60-acre hemlock grove, to find out how volunteers protected the trees infested by the introduced insect called the hemlock woolly adelgid.

Favorite Reptiles and Amphibians at Camp



Box Turtle: Land based. Hinged plastron to close its shell. image by USFWS



Five-lined Skink: can detach tail when grabbed. Tail will regrow. image by Will Brown



Snapping Turtle: female buries 25-80 eggs for incubation. Turtle snappy on land but hides in water.



American Toad: Warts have bufotoxin, wash hands after handling. image by Brian Gratwicke



Respect and protect wildlife. Please leave them in their natural habitat. Observe from a distance but do not touch.



multi-flora rose



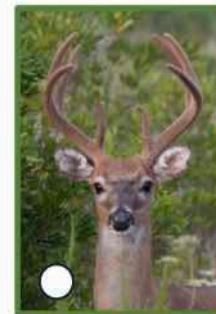
Japanese barberry

Post 14. Invasive Species

This “sticker bush” called **multi-flora rose** is an invasive and hard to control plant originally from Japan and China. Japanese barberry, introduced as an ornamental plant, grows 3 to 6 feet high and may eventually cover camp’s hillsides! Removing invasive plants enables native plants to thrive.

Post 15. White-tailed Deer

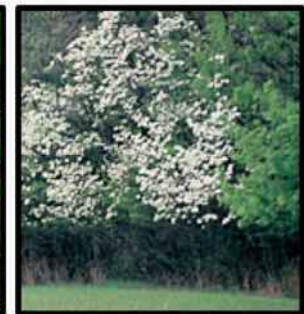
Deer are herbivores, browsing on twigs, acorns, leaves, flowers, and fungi. They are crepuscular: active at dawn and dusk. Mountain lions and wolves that control deer populations have been exterminated in Maryland, so deer are eating up many native plants and leaving behind undesirable thorny bushes like multi-flora rose.



Buck showing velvet on antlers.



Deer rub

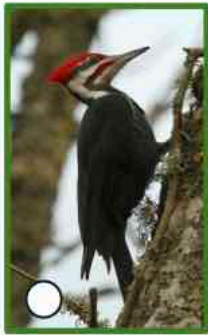


Browse line: deer strip vegetation up to 5 feet!

A browse line indicates deer populations are high. Deer eat most acorns that fall to the ground, preventing the oak forest from regenerating. Oak trees are being planted all over the camp in tubes to prevent deer damage.

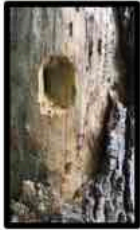
Weekday hunting, when Scouts are not in attendance, has reduced deer populations. Bucks rub their antlers on small trees to remove velvet and mark their territory. An old rub, partially healed, is near this post.





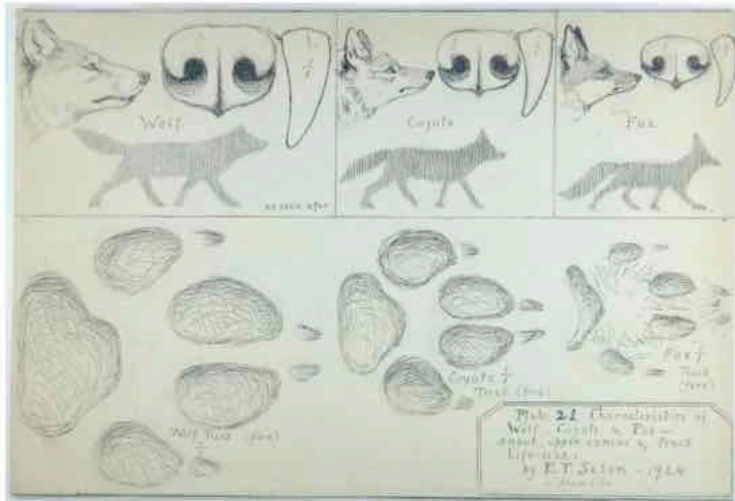
Post 16. Pine Snag Holes

Squared holes indicate a Pileated Woodpecker has drilled into this dead pine to feed on carpenter ants. Woodpeckers excavate cavities for nesting. The abandoned cavities are homes for owls, bluebirds, wood ducks, chickadees, tree swallows, and flying squirrels.



Courtesy of Washington Dept. of Wildlife,
Drawing by Jennifer Rees

Above is an illustration of the Pileated Woodpecker's tongue retracted (left) and extended (right). The exceptionally long tongue wraps around the skull and is anchored at the base of the bill. The tip of the tongue is barbed to help extract insects from holes, and the tongue is coated with sticky saliva.



Wolves have been extirpated from Maryland. However, you may see and find the tracks of foxes and coyotes in our state. E. T. Seton's detailed sketches help you compare the three.
NSM Seton illus.



Post 17. Eastern White Pine

During colonial times, this tree was called "mast pine" and made into masts to hold up the sails of British Royal Navy ships. The British prohibited colonists from felling the trees, leading to the *Pine Tree Riot* in 1772. Colonists felled the pines, anyway, contributing to the American Revolution.



Eastern White Pine
image, New York Public



British Man-o-War Ship
image, Robert Cleveley



Identify this pine by counting
5 needles in a bundle

Years ago, at Broad Creek, white pines trees were planted in rows to form plantations. An area of one single species is called a monoculture and has little wildlife. At Broad Creek, over the years, some of the pines in plantations have died from overcrowding, lack of sunlight, and disease. Other trees have colonized the openings, leading to a more diverse forest that attracts a variety of wildlife.



Lake Straus Today: In 1972, during Hurricane Agnes, the dam overflowed by 7 feet. Massive amounts of silt entered the lake making it unsuitable for swimming. The Scout Council soon after built swimming pools in Camps Saffran and Spencer in 1974, and Camp Oest in 1975.

Scouts swam in the lake before the flood. This picture shows the lake before the dam bridge was constructed sometime in the early 1960s.



The arrows point to wetland areas from silt entering the lake. The lake habitat is now more diverse and a great place to observe wildlife.



Post 18. Fish lurking in the pond

The fish species illustrated below live in the pond. All three feast on earthworms and the larvae of different insects, including dragonfly nymphs. The smallmouth bass also eats smaller sunfish and bluegills. These fish generally swim and hide among debris or in the oxygen-rich cooler water under overhanging branches.



Images by Maryland DNR



Post 19. Dragonflies & Damselflies

have an elongated abdomen and a short thorax with a round rotating head. These mosquito killers skim over the water surface catching soft-bodied insects. Before they emerge from the water as adults, dragonflies and damselfly nymphs creep in the pond mud catching insects and small fish.

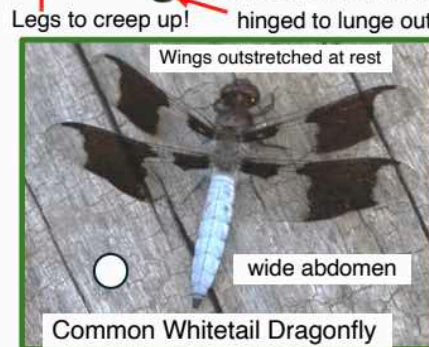
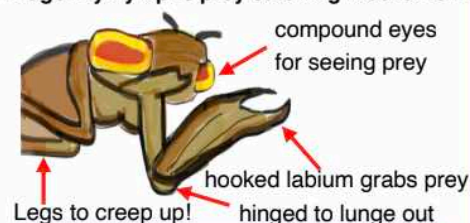


Dragonfly Nymph Damselfly Nymph

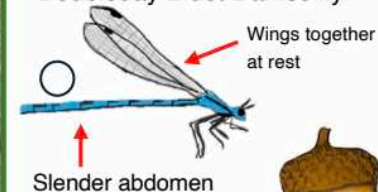
A nymph crawls from the water to emerge from its exoskeleton. The wings inflate. It soon flies to capture bugs aloft as a dragonfly.

Images by Doug Collicutt

Dragonfly nymphs prey catching mechanism!



Doubleday Bluet Damselfly





ECOLOGICAL SUCCESSION: An everchanging natural community.....from Field to Forest



Wilderness Etiquette

Plan an entire morning or afternoon to hike, especially if you plan on hiking both the Quarry and Hemlock's trails.

Johny Bear's request as drawn by E T Seton
NSM Seton illus.
NSM Seton illus



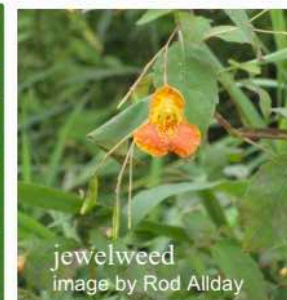
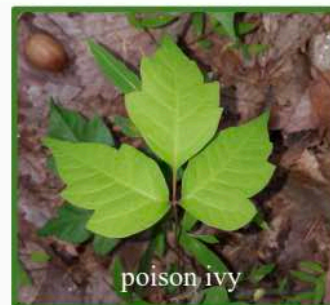
Always practice good outdoor ethics by following the seven principles of Leave No Trace.

1. **Plan ahead and prepare:** Bring your 10 essentials when you head out on the trail, including plenty of water, maps, and sturdy hiking boots.
2. **Travel and camp on durable surfaces:** Stick to established trails.
3. **Dispose of waste properly:** Pack out all trash, food scraps, and other waste.
4. **Leave what you find:** Preserve natural objects and cultural artifacts. In other words: (Take only pictures, leave only footprints.)
5. **Minimize campfire impacts:** Bring a lightweight backpacking stove if you're planning to cook lunch on the trail. No fires permitted in the Hemlocks.
6. **Respect wildlife:** Avoid disturbing wildlife. To see wildlife, walk quietly and be observant. Keep a safe distance. Use binoculars.
7. **Be considerate of others:** Keep noise to a minimum and yield to other hikers.



Avoid these three!

Avoid **poison ivy**. If you believe you contacted the plant: rub the stem and leaf of jewelweed on areas of contact to prevent you from getting the itch. Please use the plant sparingly to prevent localized plant extinction!



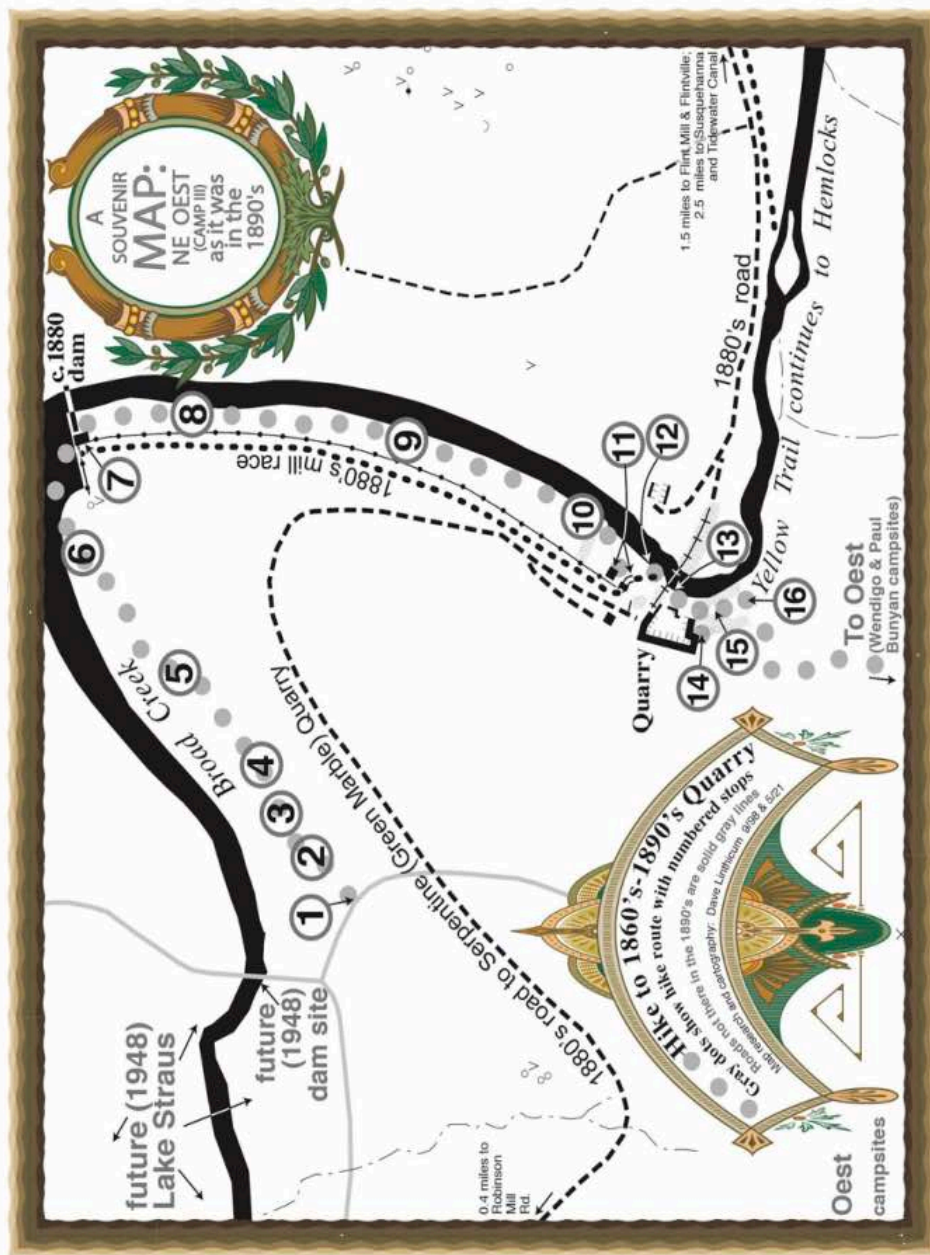
Wear long pants when hiking in the Quarry and Hemlocks. Repellent and check for **ticks**.



NSM Seton illus.

Venomous **copperhead snakes** are possible. Watch where you step, especially in rocky areas.





Quarry Hike

1. The Yellow Trail leaves the road 85 yards uphill from the flat road junction at the bottom of the hill near the dam bridge. Look for the sign shown here. Follow the yellow blazes as you hike the trail.



2. There is a grove of young **pawpaw trees**, described on Saffron pond nature trail, 50 feet past the trailhead. Deer avoid eating pawpaw, hence the large number of young trees near the trail.

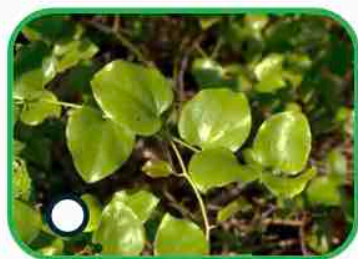


Cedar tree and **cedar skeleton**. photos taken in November

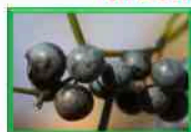
You will notice many **Eastern red cedar** trees as you hike along the trail. The hillsides on both sides of the creek were a pasture owned by farmer Paul McNabb. In 1946 he sold 340 acres of his property to the Scouts for \$25,000. In his deed, it required that the Scouts allow him to log cedar trees for the next year. Hundreds of the 1946-47 stumps of this rot resistant tree are still present. You will also find dead cedar "skeletons." The trees need plenty of light and succumb when surrounding trees rob the sunlight.



3. You will find much **greenbrier** along the trail. Looking uphill you will see sparse trees opening out into a large clearing called a **serpentine barren**. Greenbrier is characteristic of "serpentine soil" which is high in magnesium and chromium. The soil formed from the weathering of **serpentine** which you'll find in the quarry. Soldier's Delight in Owings Mills is another serpentine barren with similar plants.



Greenbrier



Gray catbirds, named for their catlike call, often nest in the dense cover of greenbrier and feed on its berries.



Catbird



Soapstone



Serpentinite

4. There's a short 15-foot stretch where the yellow trail jigs mostly straight up hill getting close to the clearing. You'll find **soapstone** along the ground. Soapstone is a form of schist with a high talc content. It is often soft enough to scratch with your fingernail. Soapstone is related geologically to the serpentinite that you'll find in the quarry. Talc is a byproduct of the weathering of serpentine minerals through a process known as steatization.



Bowl carved by native Americans from soapstone; a number were found in the 1950s at a 3,500-year-old native quarry site on camp property.



Image: Virginia Department of Historic Resources



Witch hazel

5. As we begin to head downhill on the Yellow Trail we see **witch hazel** tree on the left. Yellow flowers in September! Popping black seeds later. Witch hazel oil, distilled from twigs, is a remedy sold in drug stores, astringent lotion for skin irritations. Look for green witches' hat-toothlike projections on the leaves called galls that contain many squirming larvae of a fly insect called a leaf gall aphid.

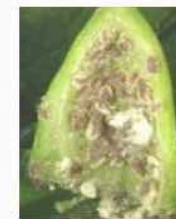


image: John Cooper



Witch hazel flower

image: Eric M.



Larvae inside gall

image: J. R. Baker

6. Heading further downhill ... directly across from Deep Run, you'll find a right turn blaze painted on an **American hornbeam** tree. This tree has bark that looks like corded muscle and the wood is very hard, hence the nicknames "ironwood" and "musclewood". The nutlets are consumed by foxes and game birds.



Right turn blaze

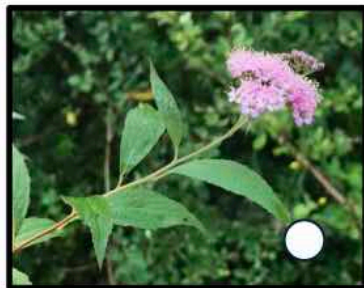


Leaves and nutlets of American hornbeam

image: Nova Agnieszka Kwiecień



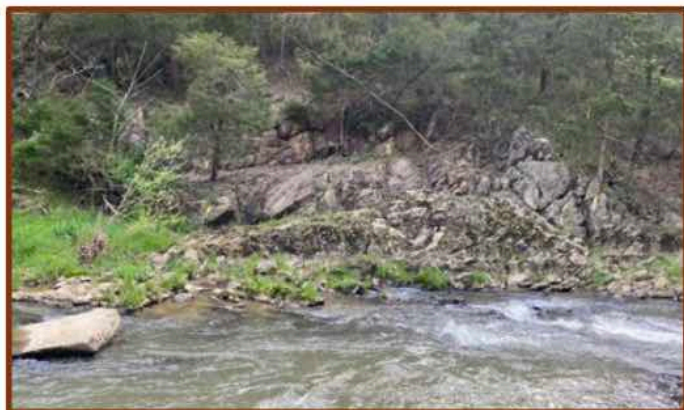
As you hike from now on you'll find lots of **Japanese Spirea**, an ornamental shrub that was first introduced from Asia around 1875. It is now a Broad Creek invasive that needs to be cut back often because it forms dense stands which displace native vegetation.



7. As you turn the corner, you'll see a pre-1890s 8-foot-high **old stonework** which is the buttress for an old dam. After you step over some stones you will see Broad Creek running to our left, we can look back up hill and see the stonework more clearly. The water diverted from Broad Creek by this dam flowed into a mill race on the side of the trail away from the river.



Look out into Broad Creek to see remnants of stones laid horizontally as a foundation for the dam as it crossed the creek. On the far bank, there is a large outcropping of rock which would have provided an anchoring point for the other side of the dam. View shown below.

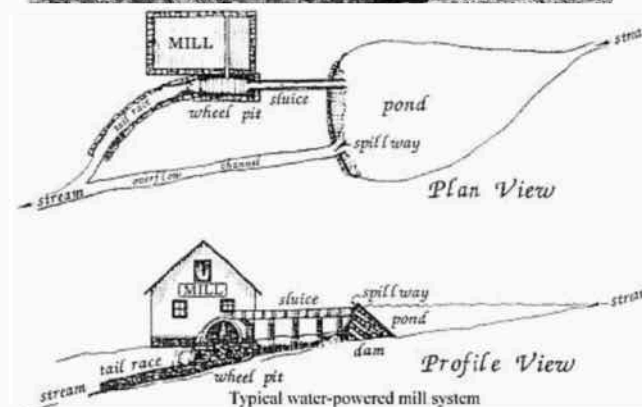


8. About 50 yards south of the old dam, you'll find an exposed rock wall, pictured above, on the right side of the trail. This is the old millrace. The dam diverted water from Broad Creek into the **millrace**, channeling it in a concentrated stream toward the quarry. Near the quarry a water wheel transformed the kinetic energy of the flowing water into mechanical power used for cutting and polishing operations at the quarry.

Before electricity, water wheels, like the mill shown in the image below, were used to turn cogs and gears to turn grindstones to mill corn and wheat.



Public Domain Image:
Detroit Publishing Co.,
Old Mill with Waterwheel,
(Between 1900 and
1915) Library of
Congress

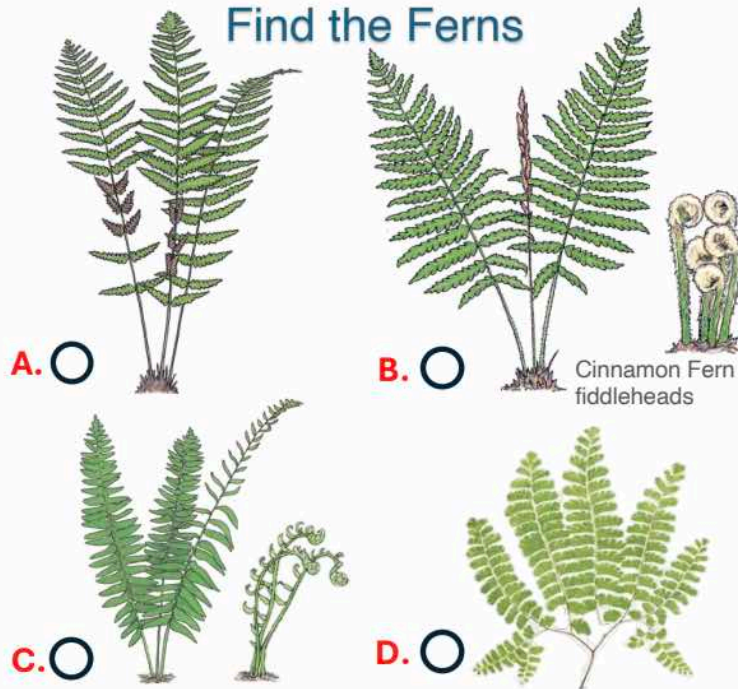


Along the stream you may find piles of freshwater clam shells and these tracks. What animal visited the stream to feast?
Answer found on page 27.



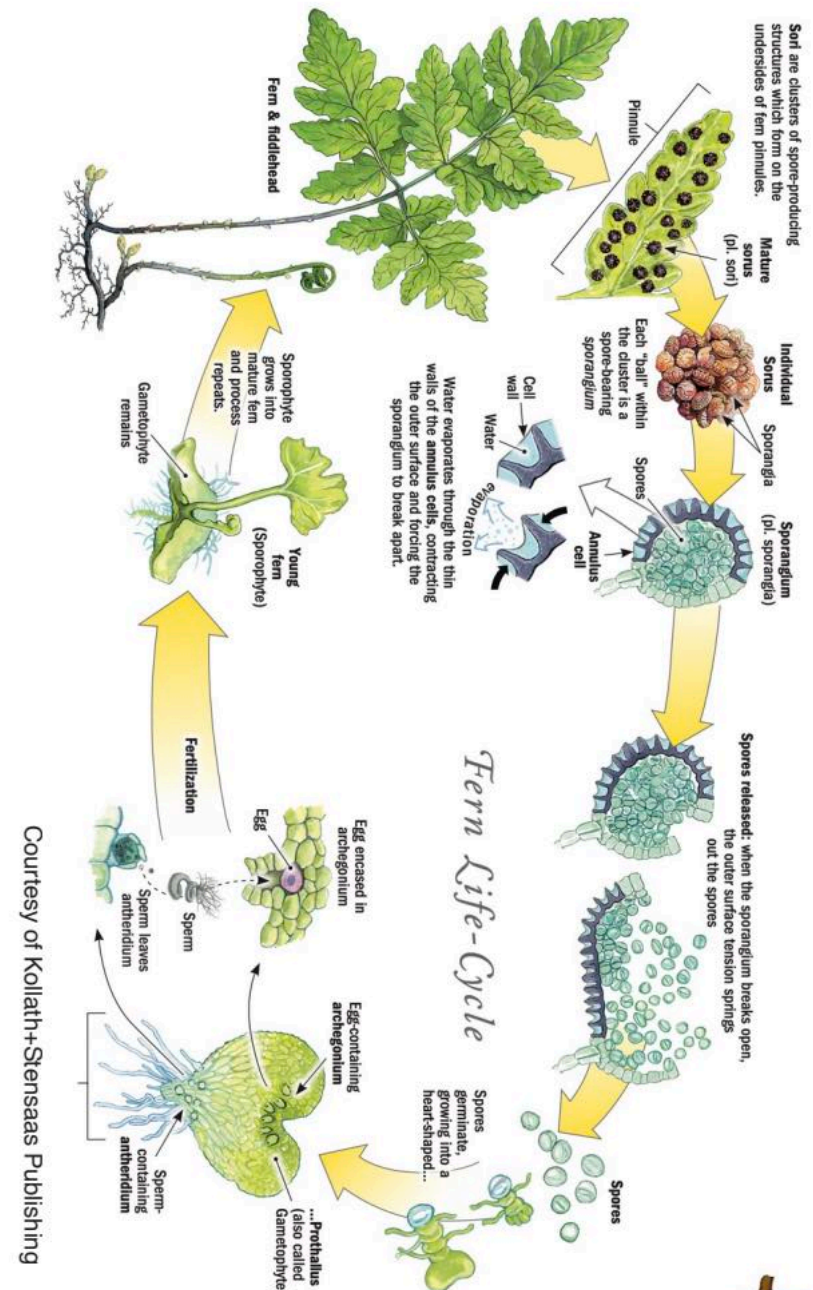
Image: Gerry Thomasen

Find the Ferns



Drawings courtesy: Space pour la vie

9. As you hike along, you will find these ferns trailside.
- A. Interrupted fern** has spore containing structures halfway up the frond.
 - B. Cinnamon fern** has a club like spore structure resembling the spice. Young sprouting fiddlehead shown.
 - Both **A** and **B** are tall ferns that like to keep their feet wet!
 - C. Christmas fern** is evergreen and named for its Christmas stocking shaped leaflets. Grows in hilly and well drained soils.
 - D. Maidenhair fern** is delicate & found in shady glades. "Maidenhair" due to the dark, wiry stems looking like human hair.



Courtesy of Koliath+Stensaa Publishing



10. You'll know you're getting close to the quarry when we see a **large field strewn with boulders**. These were pulled out of the quarry. The millrace is behind them; farther uphill there is a road that was used to bring equipment into the quarry and most likely rock out of the quarry. This road is still visible cutting across the middle of Camp Oest 150 years after it was built.



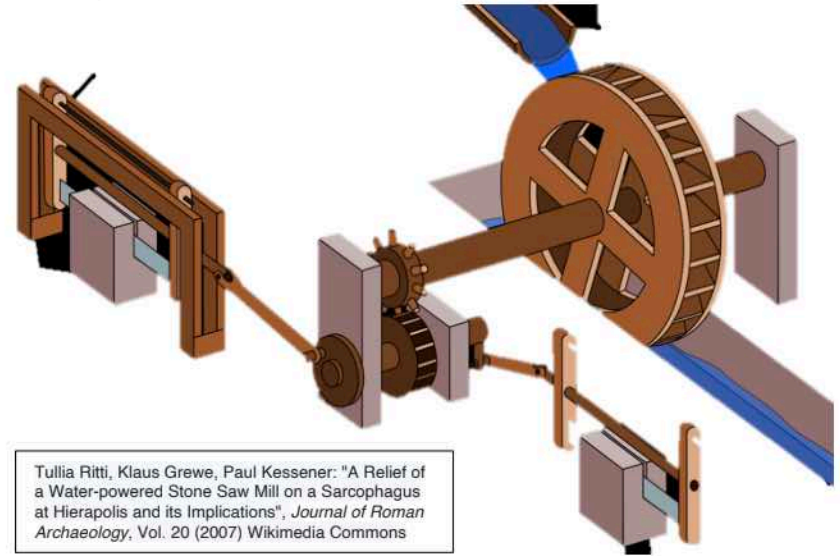
11. Just past these boulders we look back into the woods on the right and we can see **two sets of nine large bolts** sticking up from the ground. These were likely used to anchor sawing or polishing machinery for the quarry.



Just past the bolts in the woods, if you look carefully, you can see the **vertical stone walls of the wheel pit** at the end of the mill race. A water wheel here used the energy of the moving water to power mechanical equipment that cut and polished the stone.



Water flowed down the millrace towards the water wheel which turned a crank needed to cut serpentine rock. The illustration below shows a schematic of a 3rd-century Roman mill that is considered the earliest known machine to use a crank and connecting rod. The quarry used waterpower in the same fashion.



Tullia Ritti, Klaus Grewe, Paul Kessener: "A Relief of a Water-powered Stone Saw Mill on a Sarcophagus at Hierapolis and its Implications", *Journal of Roman Archaeology*, Vol. 20 (2007) Wikimedia Commons

12. On the left you'll see a small root stock with several pieces of **cut and polished serpentine** underneath it. You are getting close to the quarry. Machines on the site cut and polished the rock as it was pulled out of the quarry, so that only the best material was shipped out. Remember the fourth principle of **Leave No Trace: Leave What You Find**. Please leave the serpentine for later visitors to examine.

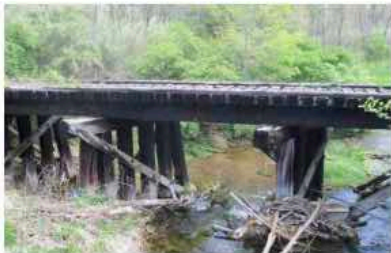


13. As you scramble up rocks in front of the quarry, notice serpentine minerals clearly visible in the texture of some of the exposed rock faces. Looking across Broad Creek, it may be difficult to see through the foliage, but there is a large pile of **talus**, rock that was excavated from the quarry and not of sufficient quality to market and dumped and left as waste.



Rock showing green serpentine minerals.

Near this spot, there was a train trestle that crossed Broad Creek. A short railway ran from this rock pile to a similar rock pile on the far bank, both serving like bridge abutments; pieces of rail have been found near here.



A train trestle with small scale trains hauling serpentine across Broad Creek may have looked like this one.

Wikimedia Commons

Scramble over the rocks on the trail to see into the quarry. Although it now looks overgrown, 150 years ago this was an active operation. Especially near the quarry, watch out for copperheads. They like to bask on the rocks during sunny summer days.

Exercise caution! The rocks can be slick and are easily overgrown by stiltgrass in the summer.



14. As we look into the quarry, we see a long flat face at the back punctuated by horizontal lines of **drill holes**. These holes were drilled to insert black powder and, perhaps in the quarry's latter years, dynamite, so that large chunks of rock could be blasted out from the face. Rock quarried from Broad Creek can be found on the lobby floor of the **Empire State Building** in New York and the **Supreme Court Building** in Washington, DC..



drill hole in serpentine

Serpentine rock here was called “green marble”, although it is very different chemically from real marble. Real marble is made of metamorphosed calcium carbonate, and it is typically white or light-colored in appearance. Serpentine, on the other hand, is typically dark green, possibly with some lighter patches, and made from metamorphosed magnesium-silicate minerals.

15. By the Broad Creek Hiker Q 17 marker, we see several examples of **bore holes** that were drilled into rock which was subsequently excavated from the quarry. The Green Stone Quarry Road continues along the opposite side of the creek and is still visible running parallel to Broad Creek. Polished serpentine removed the quarry was hauled out on this road to the Susquehanna & Tidewater Canal two miles downstream.



Here's what you'll find in the quarry...



The quarry rock face is behind trees that have grown in the area since the quarry was abandoned more than a 150 years ago. Once bare rocks have been slowly invaded by plants forming in a process called primary succession.

Orange lichen grows on the serpentine cliff face. Bird droppings enable the lichen to colonize rock. Lichens have fungi on the outside layer that protect photosynthetic algae between on the inside layer. Lichens will decay to help form soil for moss and ferns to colonize.



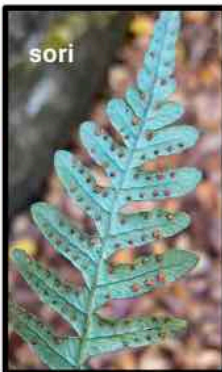
Soft to the touch, **Fern moss** grows on a thin soil layer over rock formed from decomposing lichens. It likes to grow in shady areas.



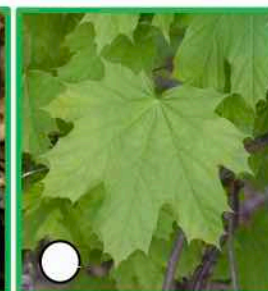
Common polypody ferns specialize on growing among rocks. Name derived from

Greek words:
Poly: many
podium: feet

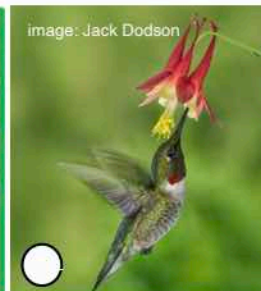
Under the fronds you will find round sori: collection of capsules that release spores.



Big-leaved **skunk cabbage** is indicative of very moist soils. Named for the skunk smelling leaves.



The trees you'll find are mostly **Norway maple**, an invasive species introduced from Europe.



Springtime red **columbine** flowers attract nectar-sipping **Ruby-throated Hummingbirds**.

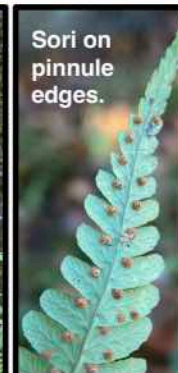


Orange jewelweed flowers appear in late summer also attract hummingbirds. Seed dispersal: seeds pop out when you touch the seedpods!



Red Efts are often found on moist ground. It is the second stage of the Eastern newt that hatched in water from egg into a gilled larva. Orange colored efts will live on land 1 to 3 years and then change into green gill-less adult form back to the water to lay eggs.

Marginal Wood Fern, scientific name: *Dryopteris marginalis*, is an evergreen fern of shaded crevices of rocky ledges. Its genus **Dryopteris** is from the Greek **dryas** meaning oak and **pteris** meaning fern because this family of ferns dwells in oak woodlands. Species **marginalis** refers to the sori found on the margins of the pinnule underside as shown to the right.



16. Just past the clearing, the quarry bluff comes to an end. Just a short way past the last talus, you'll see a double orange blaze turning to the right and then orange blazes heading back up the hill. This will take you back into Camp Oest near Wendigo campsite and onto the road that passes between John Henry and Paul Bunyan campsites.

You can also return to camp by retracing your steps on the yellow trail back towards the dam. Scouts can space themselves along the trail to participate in a solo experience.

Continue along the yellow trail along the creek to hike to the Hemlocks.



Polished serpentine post inside the church.

A picture of the Grace Memorial Episcopal Church, in Darlington, MD. Built in 1876. It is the largest building constructed of Serpentine from the Broad Creek quarry. Image courtesy Grace Memorial Episcopal church.



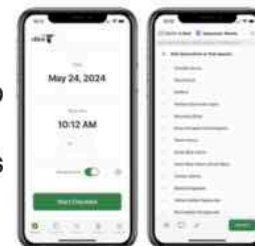
Birdo: Lake Strauss Bird Spotting Game

Fill in the boxes on the game board on the next two pages for birds seen to get BIRDO. (Just like Bingo) Also, fill in the circles next to the birds observed and featured on page 48 and on pages throughout this book. List birds not shown on a separate sheet of paper.

Spend at least 90 minutes or more birding. You can split the time into an early morning jaunt and late afternoon stroll to spot birds.

Optional but fun: Share your bird sightings and contribute to citizen science by using the **eBird** phone app to create an online bird list.

Buy or borrow from the library an unabridged field guide to identify birds not featured here. Use the **Merlin** app to identify birds by sound.



eBird checklist



Bird Fill-in Box Key:

☐ : common bird ☐ : uncommon bird ☐ : seldom seen bird

1. Turkey Vulture: Feeds on carrion. Red head and holds wings held in a V position. (dihedral)	2. Black Vulture: Black head, tail shorter than Turkey Vulture. Whitish primary wing feathers.	3. Red-tailed Hawk: Often seen high in sky soaring on thermals. Feeds in open areas on rodents, birds, and snakes.	4. Red-shouldered Hawk: Red on belly, thin tail bands, white windows on wing feathers. Hunts in floodplains: Broad Creek!	5. Broad-winged Hawk: Often seen high in sky. 2 thick tail bands easily seen. Gives high pitched whistle: Kee-eee!
6. Bald Eagle: Nests at camp high in trees. White head and tail. Hunts with sharp talons. Often grabs fish from ospreys while flying.	7. Osprey: Nests near water. Dives talon first on water surface to catch fish. Look for bend or crook in wing.	8. Belted Kingfisher: Hovers above water and dives beak first to capture fish. Tunnels into riverbanks for nesting.	9. Red-winged Blackbird: Cattail marsh nester. Near nest? It may swoop down & peck at your head! Females brown colored.	10. Eastern Kingbird: Territorial flycatcher known to chase eagles! White tail tips. One tough tyrant!
11. Common Loon: November-April. Dives for fish from surface. Captures with rapier beak. Nests on Northern lakes.	12. Pied-billed Grebe: Diving bird with rounded bill. Call used in movie soundtracks. Can sink so only head appears.	13. Cormorant (Double-crested): Dives from surface to catch fish with hooked beak. Spreads its wings to dry after fishing.	Swallows: capture bugs with beak aerially. 14: Rough-winged: brown throat 15: Bank: throat stripe or band	Swallows: 16. Barn: Mud nests plastered under eaves. Forked tail. 17. Tree: Nests in tree holes & nest boxes. Blue back and white belly.
18. Green Heron: Sits motionless on branches near shallow water to feed with its dagger bill on fish and frogs.	19. Great Blue Heron: Wades & lunges at prey with beak. Feeds on fish, ducklings, frogs, and small mammals. Croak sound.	20. Snowy Egret: Smaller than Great Egret. It has yellow feet or "slippers" and a black rapier beak.	21. Great Egret: Captures fish while wading in water with yellow beak. Herons and egrets are arboreal colonial nesters.	22. Hooded Merganser: Diving duck with a slender serrated bill to capture aquatic insects, fish, and crayfish. Nov-March
23. Mallard: Tips down into water to feed on aquatic plants. Take to the air on a dime unlike diving ducks that need to taxi on the water.	24. Wood Duck: Skittish duck. Tree cavity nester. Ducklings jump out of nest to water below!	25. Canada Geese: Large flocks seen in winter. Lays many eggs. Goslings are eaten by snapping turtles and herons.	26. Killdeer: Calls out name in 2-syllable shrill call. Lays eggs on gravel. Broken wing act to distract predators from nest.	Sandpipers: 27: Yellowlegs- 2 species: Lesser & Greater 28: Spotted-Bobs tail, black tip to bill. Seen along creek too.

B I R D O



Date of observation: _____

Temperature: _____ circle: windy sunny cloudy

Beginning time _____ Ending time _____

Beginning time _____ Ending time _____



46



47

Birds in Broad Creek campsites, woods, and fields:



***Indigo Bunting**
Tops of trees, loudly singing all day.



***White-eyed Vireo:**
In the sticker bushes sound: "chip-a-weo-chip"



American Goldfinch:
Flies like a roller coaster. sound: "per-chick-o-ree"



***Yellow-billed Cuckoo**
Feeds on tent caterpillars. sound: increasingly faster ping pong ball bouncing



Carolina Chickadee
Feeds on insect eggs and larvae during winter. sound: chick-a-dee-dee



Tufted Titmouse
found with chickadees. sound: pee-ter, pee-ter



Tree Trunks:
Woodpeckers:
A. Downy
B. Hairy
C. Red-bellied
D. Flicker

White-breasted Nuthatch

Red-breasted Nuthatch



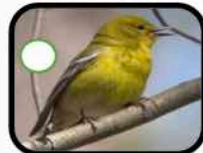
***Common Yellowthroat**
Mask wearing brush bird. sound: "witchety, witchety..."



***Ovenbird:** Ground bird, nest with side entrance. Rising: teacher, teacher,....



Carolina Wren
sound: "tweetalow, tweetalow, tweet!"

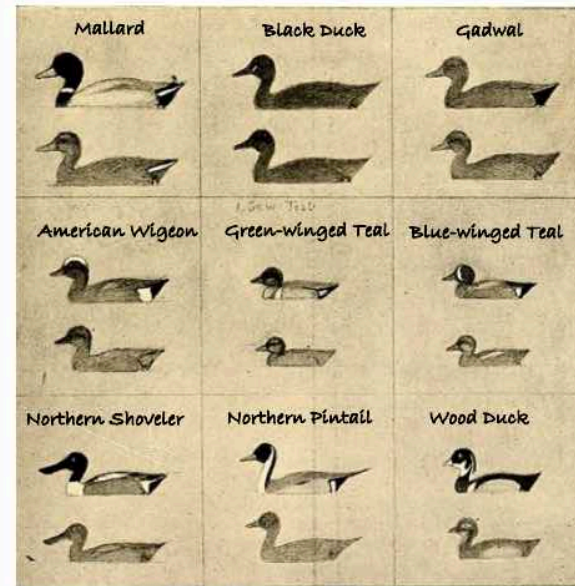


Pine Warbler
Nests in white pines clear liquid trill

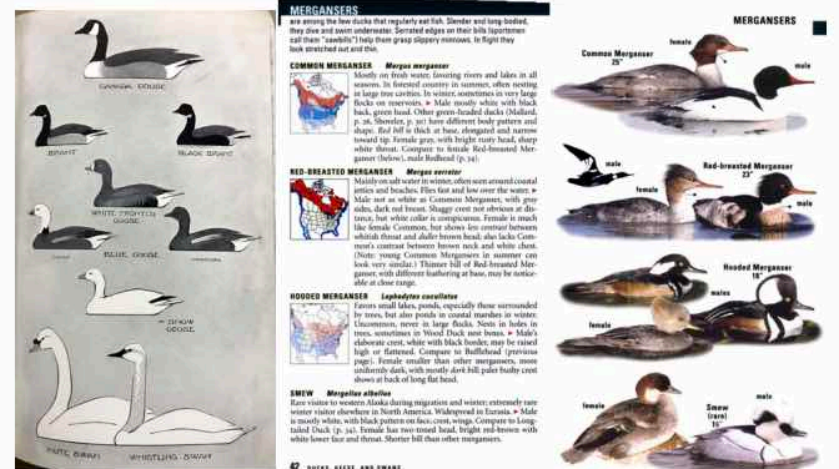


Eastern Towhee
Ground bird sound: Drink your tea!

* Birds do not winter in Maryland



Common river ducks by Seton from his book Two Little Savages (1903) His sketches inspired Roger Tory Peterson to write the first easy to use bird field guide in 1934. You could use Seton's drawing to identify Lake Strauss ducks. However, best to use a modern bird field guide like the one shown below that includes range maps. NSEM illus.

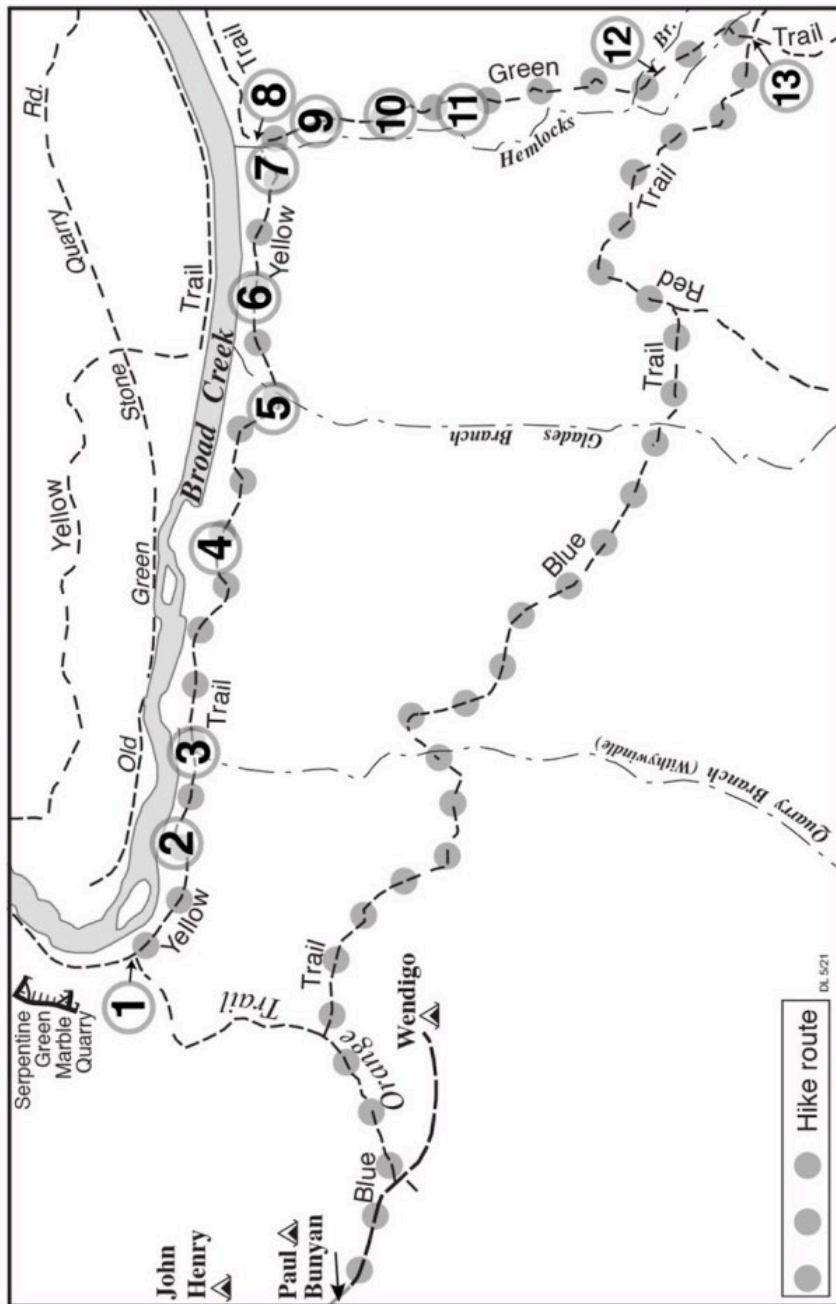


Page from Peterson field guide circa 1934

A page from a field guide authored by famous birder Ken Kaufman.



HIKE TO THE HEMLOCKS



Hemlocks Hike

1. We begin the Hemlocks Hike where the Yellow and Orange Trails meet after passing the quarry on the Yellow Trail. You can also get there from Camp Oest by following the Orange Trail downhill from the road between John Henry and Paul Bunyan campsites that leads to Wendigo campsite.

The hemlocks are a special portion of camp with a unique ecology. Along the yellow trail, we already see evidence of **Eastern Hemlock** trees. The first hemlocks are smaller ones, mostly to the left of the trail, and we see tiny hemlock cones, less than an inch long and scattered along the trail.



Image: Jim Syle, North Carolina Forest Service
Hemlock cones ripening



Trail to the Hemlocks



2. Heading downhill, you'll find **mountain laurel**, the state flower of Pennsylvania. This tall shrub has gnarled bark with leathery green leaves. It grows so thick that travel through a grove of mountain laurel is almost impossible. In early June, its pinkish white flowers bloom.



Look closely at the mountain laurel flowers. The stamens (male part of the flower carrying pollen on anthers) are nestled in depressions of the petal. The stamens fling up like a catapult when touched by a bee or human with a stick. This enables the pollen, found on anthers, to spread to other flowers on the bodies of bees and other insects insuring pollination resulting in seed dispersing fruit.

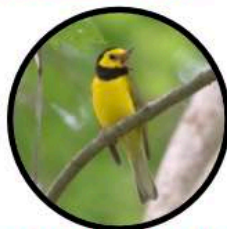
Warblers to see if you are observant, quiet, and lucky!



Kentucky Warbler
sound a loud, penetrating, rich tur-dle, tur-dle, tur-dle, tur-dle



Worm-eating Warbler
Breed on hillsides covered in mountain laurel. sound: fast dry, insect-like trill.



Hooded Warbler
Shy warbler. Song: clear ringing weeta- weeta-weet-tee-o



3. As we cross the first stream, we see a mixture of low-grade **schist** and chunks of **milky quartz**, all of which indicate a subtle change in the underlying geology. The rocks that were metamorphosed to form the schist had a more silicate content than the rocks that were metamorphosed to form the serpentinite. The chunks of quartz are likely from a hydrothermal vein of molten magma that seeped through the schist and then cooled.



Schist



Milky quartz

4. You can tell you are getting closer to the hemlocks because the ground starts to open a little bit, and we start to see low hanging branches with many short, flat, needle-like leaves. These are hemlock needles. On the underside of each hemlock needle are two white lines.



Hemlock branch





We also see a sign that advises “no open fires and no camping.” This is because the Hemlocks is designated as a natural area, and the risk of wildfire and ecological damage is greater in this part of camp.

Just past the sign the trail turns sharply uphill. Watch out, because it looks like there is an old trail tread that goes straight along the side of the creek, but this becomes impassible in about one hundred feet. Follow the trail uphill and then back down toward the second stream crossing.

5. A clearing in front of the second stream crossing is a good place to sit and observe nature or have a picnic lunch. Just make sure to pack out all your trash and be careful of any crumbs that fall on the forest floor.



If you are quiet, very observant, and lucky, you may see a **Louisiana waterthrush** feeding on aquatic insects captured while wading in a stream that empties into Broad Creek.

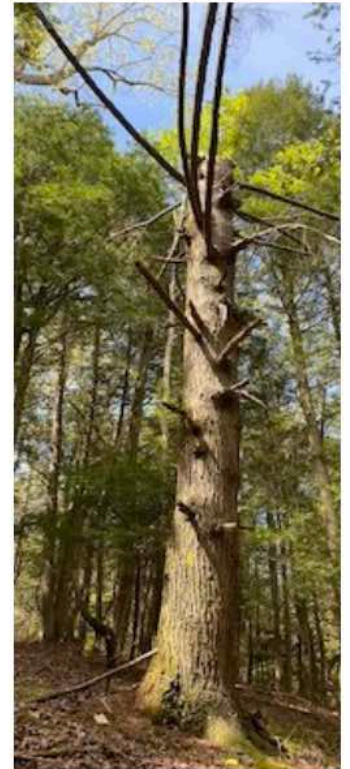
6. About 100 yards past the second stream crossing, look out for another place where the Yellow Trail forks. It looks like the trail will continue straight heading down toward the creek, but the trail properly heads uphill toward a large, standing dead hemlock tree.



7. As we begin to descend, we see a large hemlock whose crown has fallen. We notice that this is but one of many trees that has died in this stand, but we are still very lucky that so many of our hemlock trees are left.

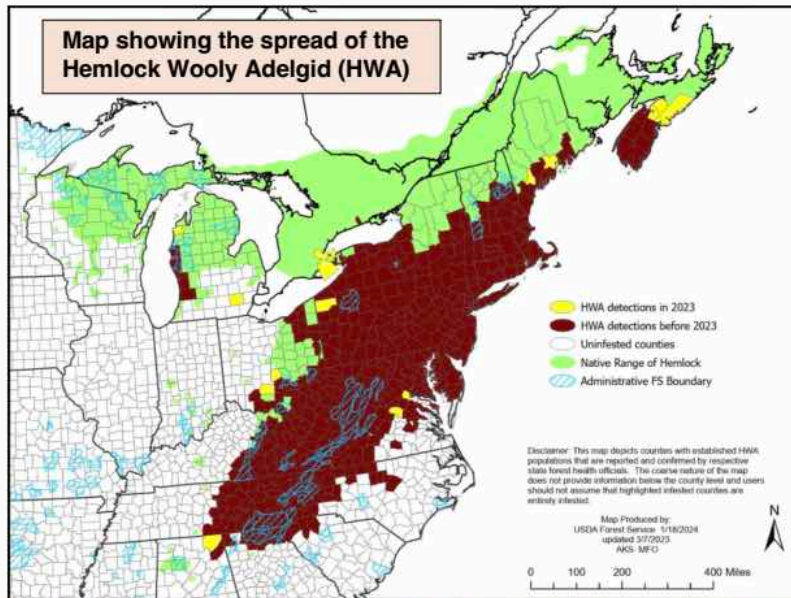
Since the mid-1960s, there has been an infestation of the woolly adelgid has invaded hemlock stands up and down the East Coast. Most of the hemlocks in Shenandoah and the Great Smoky Mountains were killed. The woolly adelgid attach themselves at the base of the needles and draw moisture out of the tree, killing the needles.

Since hemlocks do not regrow their needles, if enough needles die, the tree eventually dies, too.



The **hemlock woolly adelgid**, is a tiny aphid-like insect that covers itself with a waxy wool.





Hemlock trees killed by the hemlock woolly adelgid in Great Smoky Mountains National Park. Image courtesy of the city of Gatlinburg



8. Looking up the main valley's Green Trail we do see that many trees, many large trees even, have fallen. But we also see many young trees, especially right next to the creek, that have begun to grow.

The large patches of sunlight have been opened by large trees falling. This provides an opportunity for non-hemlock tree species and other plants to grow that are not ordinarily found in a mature hemlock forest.



9. You may notice there are some trees with a metal tag stapled to their trunks. If you look near the base of these trees, you should find a small metal device set into the roots. This is a port where pesticide was injected directly into the tree's roots.



From about May 2005 until 2017, and in 2025 the entire hemlock stand was treated with pesticide to help control the woolly adelgid. Trees that were within 50 feet of running water were treated with injections directly into the roots, and all the other trees were treated with injection into the soil around the trees.

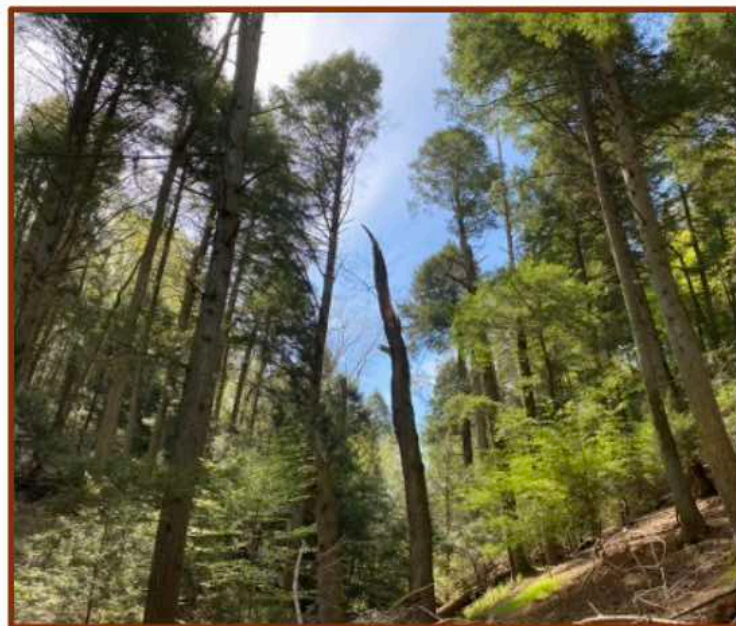


Chris Castillo injecting insecticide into hemlock root area.

10. About 200 yards up the trail, you'll see a very large tree with a large root stock that has fallen across the stream to the right and broken apart. This used to be the largest hemlock tree in the state of Maryland. It was 136 feet tall and about 315 years old when it fell in May or June 2019.



11. When you hike to the top of the main valley, you will see the stream splits in several directions. Look back down the valley, and from here you will notice that there are several hardwood trees that are growing interspersed with the hemlocks.



Every large and medium-sized hemlock tree in this area was treated with pesticide at least three times. It was a time-intensive and labor-intensive process, but thanks to many volunteers, we have saved the hemlocks.

We have not had to do treatments as frequently in recent years because a natural predator of the woolly adelgid, the **laricobius beetle**, was introduced into the stand. The laricobius have kept the woolly adelgid population largely under control. Between the Conservation Committee's efforts and the laricobius beetles, the stand is now healthy enough to maintain itself with minimal human intervention.



Laricobius beetle, a biological control agent, consuming eggs of hemlock woolly adelgid.

Image: Robbie Flowers, US Forest Service



12. Japanese Stiltgrass is one of the biggest challenges currently facing our hiking trails around the property. It is an invasive species that was brought to the US as packing material inside shipping crates. It grows very densely, up to knee-high, during the summer, and can impede travel. Then in the fall, the dead grasses pose a fire risk.



Japanese Stiltgrass

Stiltgrass in this area has been treated with herbicide, but it will take several years of herbicide treatment until the seed bank is exhausted. It is worth the effort to control the stiltgrass, however, since the absence of stiltgrass provides an opportunity for native plants to re-establish themselves.

Back to camp! (See map on page 50.) Just across a small stream (or dry gully, depending on the season), turn right at a large rock and follow the red blazes back toward Camp Oest. Turn right onto the Blue Trail where it splits from the red, just before descending a steep hill. The Blue Trail will cross two streams and then join the Orange Trail at the top of the next hill. Turn left onto the Blue/Orange Trail and follow it past Wendigo campsite to the road leading to between John Henry and Paul Bunyan campsites. Follow the road down a steep hill and over the bridge back to Camp Safran.



You can keep a nature journal to..

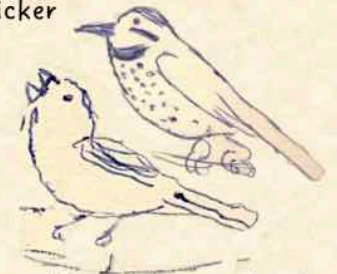
- Help you focus on nature around you.
- Trigger a memory when you read your journal in later years.
- Record your thoughts, feelings, and experiences outdoors.
- Record your encounters with the natural world.
- Artistically express nature through your drawings and poetry.
- Provide notes on an animal's behavior or a flower's features.

I completed these two journal entries in 1976 while birding in forest and pond areas near my home. My handwriting was replaced but the illustrations and thoughts are mine! - Marty Brazeau

March 27, 1976

Today I spied a flicker feeding on ants on the ground. I also saw several birds bathe in the water hole at the Kentucky Stables woods. Juncos, Carolina wrens, goldfinches, song sparrows and white-throated sparrows were all seen bathing. The mockingbird did not have to drink as the goldfinch did.

flicker



goldfinch bowing head up to swallow water

April 1, 1976



kestrel



blue-winged teal



red-winged blackbird

Binoculars in my hand I trudged down to two ponds near Dulaney High School at 7:40 AM. I saw what I expected to find which was 4 blue-winged teal. (3 male, 1 female) While searching the pond I looked beyond and saw an American Kestrel gliding over the field then descend... and begin to hover. It hovered for 5 seconds then dove talons first and seized a brown animal I believe to be a rat.



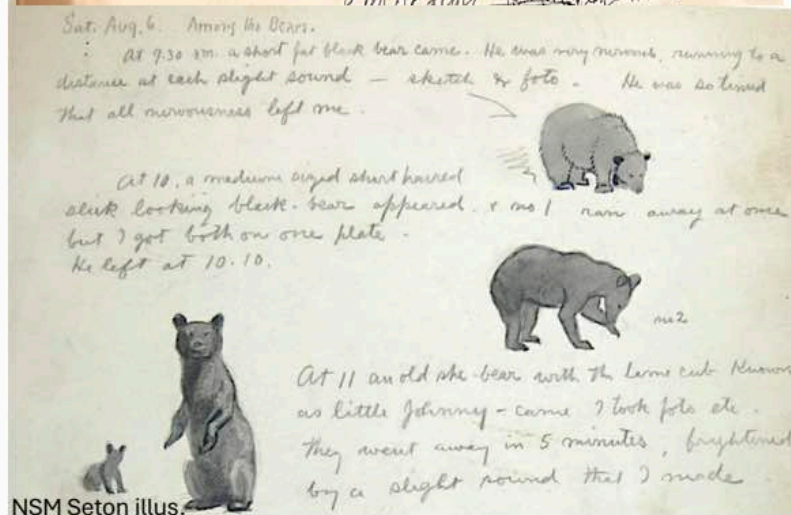
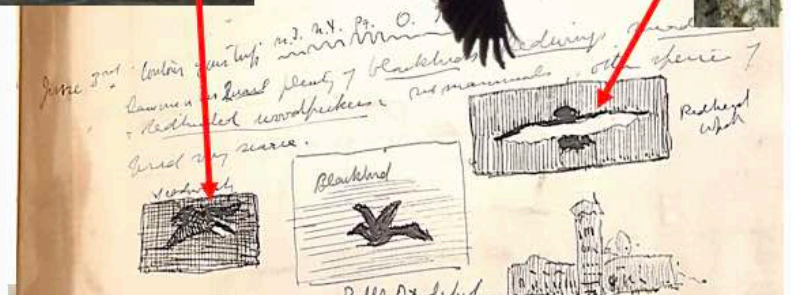
Ernest Thompson Seton kept nature journals throughout his life. His handwriting was hard to understand being "chicken scratch". Sketches below show the coloration of birds.



Meadowlark

Seton sketched the white outer tail feathers of a meadowlark and the white wing feathers of a red-headed woodpecker.

Red-headed Woodpecker



NSM Seton illus.

Seton's journal for his Yellowstone trip in 1897 provided information about grizzly bear behavior to enable him to write his Biography of a Grizzly book. The last paragraph reads: At 11 A.M. old she bear with the lone bear club known as little Johnny – came. I took foto etc. They went away in 5 minutes, frightened by a slight sound that I made. Can you read the first two paragraphs?



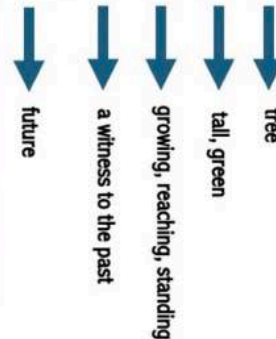
Vulture
As in Turkey
Glides it dihedral wings
Tips pointing diagonally
Upwards
(Joy Carter Wilson)



Squirrel
Acorn-craving rodent
Scurries up tree quickly
Worries about hunting foxes
Climber
(Marty Brazeau)

A Cinquain is a form of poetry, written by following a recipe. The words you choose and the form they take on paper are an important part of the writing.

- Line 1: name subject with 1 word
- Line 2: 2 words to describe it
- Line 3: 3 or 4 action words about it
- Line 4: a 4 or 5 word phrase describing subject (thought, not a complete sentence)
- Line 5: 1 word meaning the same thing as the first word, or a word that sums it all up.

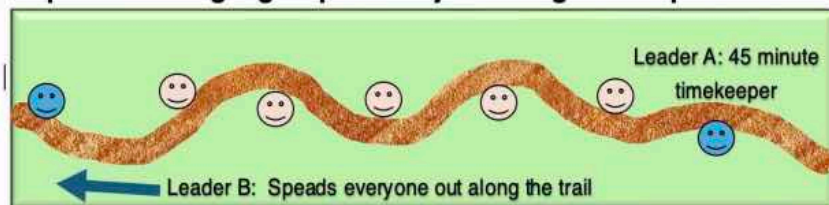


Line 1:	
Line 2:	
Line 3:	
Line 4:	
Line 5:	

Create a cinquain to share with everyone after the solo in the five boxes below. If you wish, you can draw a picture of the subject of your cinquain in the green box.



Steps for leading a group nature journaling solo experience:



1. Leader A is left at the beginning of the trail with a watch timer set for 45 minutes.

2. Leader B drops one Scout or adult participant at a time along the trail to spend the next 45 minutes on the solo. Each soloist finds a comfortable rock or log to sit on and observe the surroundings and write and draw in his or her journal. A trail with lots of bends is ideal, so each solo participant is more alone.

3. Leader B stops a bit beyond last Scout dropped.

4. After 45 minutes, leader A timekeeper walks toward leader B picking up everyone quietly. Everyone gathers where leader B sat during the solo.

5. Everyone sits in a circle to share cinquains, journal entries, drawings, animal observations, and thoughts about the experience.

6. This would be a good time to share a snack and drink water.



Ernest Thompson Seton

Ernest Thompson Seton writing in his journal with his signature and wolf hoofprint shown below photograph.

image from Bird Lore Magazine, 1902 public domain photograph

Good idea: To prevent your bottom from getting wet on a wet log during your solo, bring a square sheet of plastic or a folded kitchen garbage bag to use as a seat.



About the Authors and Contributors:

Marty Brazeau is an academic advisor and birding instructor at the Community College of Baltimore County. He is a retired school librarian with a master's degree in outdoor education. He has conducted a variety of Scout Naturalist training programs. Find his YouTube channel with keywords: bird identification Marty



Chris Castillo is a professor of mathematics at Cecil College and the Conservation Committee Chair for Baltimore Area Council. He has also served on Ecology/Conservation staff for National Camping School, where his specialties are Outdoor Ethics/Leave No Trace and geology.



Mike Huneke is a National Program Manager for the US Forest Service. In addition to being a Scoutmaster for a local troop and former Council Conservation Committee Chair, he also chairs the National Outdoor Ethics and Conservation Subcommittee. He is the author of several editions of the Broad Creek Memorial Scout Reservation Forest Stewardship Plan.



Dave Linthicum is a retired cartographer for the US Department of State. He is a long-time member of the Conservation Committee and he has run the annual Orienteering Event every fall for the last 40+ years. He has drawn nine editions of the Broad Creek camp map, and he prepared the maps of the Quarry and Hemlocks Hikes for this guide.



Bill Hubbick is an avid nature photographer. He contributed many natural history images to this publication. Bill cofounded the non-profit Maryland Biodiversity Project to catalog all the living things of Maryland to support science, nature education, and conservation.

