

ALONG THE TOWPATH

A QUARTERLY PUBLICATION OF THE

CHESAPEAKE & OHIO CANAL ASSOCIATION

An independent, non-profit, all-volunteer citizens association established in 1954 supporting the conservation of the natural and historical environment of the C&O Canal and the Potomac River Basin.

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Trees, Fungus and Complexity Science

By Trent Carbaugh

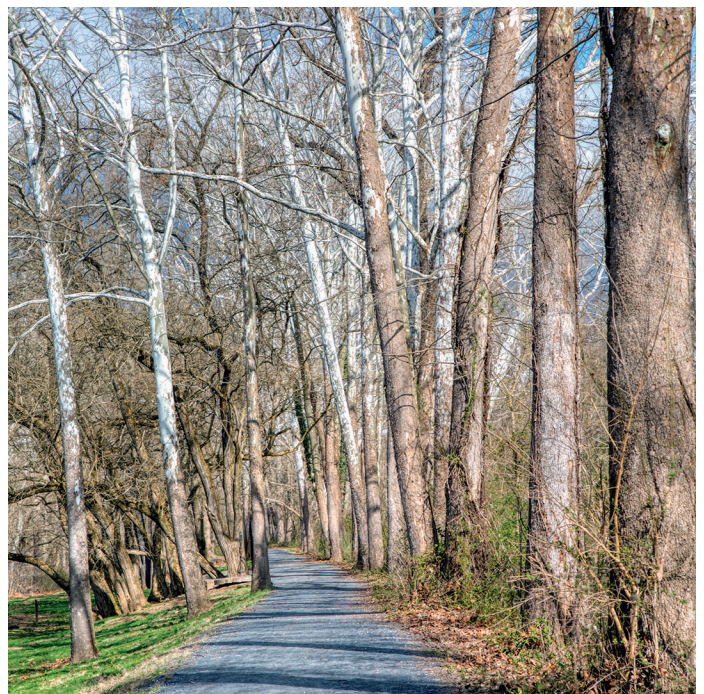
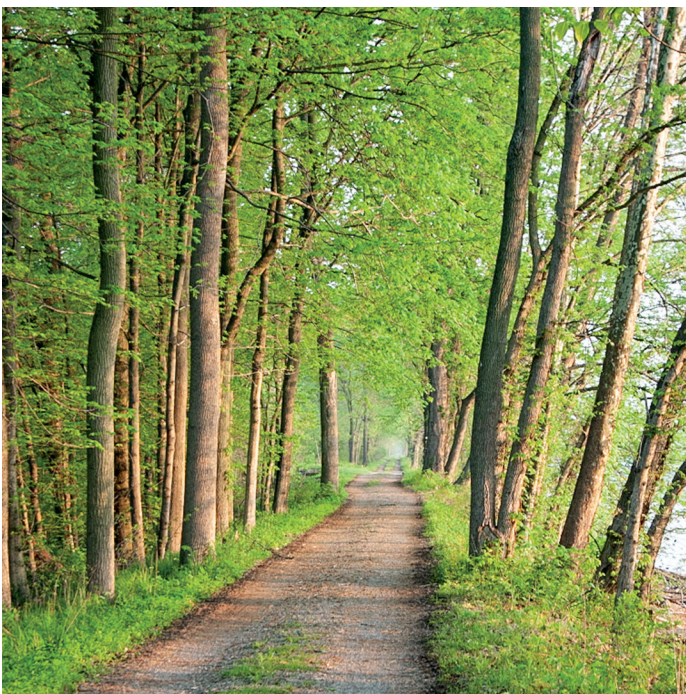
Anywhere we go on the C&O Canal we will find trees. In some places they will be sparse and in others they are parts of large forests. Although most of the forest around and in the park has been cut at least once, we are fortunate that there are some true old growth trees still surviving. These trees are hundreds of years old and give us a little glimpse of what the original trees of the giant eastern forest that grew from the Atlantic shore to the Mississippi river valley looked like. It must have been a truly grand sight to behold.

Every now and then a new discovery about the natural world changes our perception of what is around us. Sometimes new information confirms those things that our subconscious minds understand on some level, and the proverbial light bulb turns on. This happened to me after reading a book about the subject and admittedly I'm quite fascinated with the concepts described in this article.

Most people love trees and most understand that trees are vital to keeping nature in balance. We need trees; not only do they convert carbon dioxide into oxygen, but they also provide microclimates that influence weather patterns both locally and on a larger scale if a forest is big enough. On a hot summer day going into a forest will cool you down (in some cases 10–15 degrees cooler) and you'll feel a little better because of the higher level of oxygen that you breathe in under the trees. Trees also give us timber, the wood we use for houses, furniture, paper and all the other things wood can be used for. Wood is a constantly renewable resource.

Much of the science of forestry is supported by commercial interests, both private corporations and governmental agencies. The idea is to get the biggest yield of usable timber, as well as the highest profit, as fast as possible. After old growth

Continued on page 4



Trees are a fundamental part of the C&O Canal experience any time of year – Photos by Steven Dean

President's Report

By Tiffany Ahalt

The trail is the thing not the end of the trail. Travel too fast, and you miss all you are traveling for.

— Louis L 'Amour

I had the opportunity to attend the International Trails Conference in Reno, Nevada last month. Every two years American Trails sponsors the International Trails Summit (formerly Symposium) to bring together trail and greenway advocates, managers, planners, and users, as well as tourism and business interests. With over 900 attendees this year, the summit is the largest gathering of all trail interests — professionals, managers, and users who believe their combined voices are the best way to strengthen trails for everyone.

My takeaways were many and the new connections have already proven useful in my career and as a volunteer. Safety and e-bikes were two of the most common topics associated with casual conversation, workshops, panel discussions and white papers.

We all know too well that safety is a growing issue not only on the towpath but on all multi-use trails. The Association's Safety Committee has patiently been pushing the need to advocate for safety for some time. This task falls on all of us: the Association, the National Park Service and other partners. Perhaps this is an opportunity for the Association to take the lead and rally our partners to come together. There has been much discussion about how we can advocate for improvements in signage and educate those who are new to using the towpath.



President Tiffany Ahalt addresses the membership at the Association Annual Meeting – Photo by Steven Dean

But first, let's start with need for greater civility and communication. Sometimes these challenges can often be overcome with a simple courtesy conversation among users. Look for more from the Association about our plans to create a campaign in partnership with our stakeholders including our tourism partners who invest thousands of dollars to promote the canal experience.

Speaking of trails, please join me in congratulating our Canal Town partners in Brunswick, Maryland (Frederick County) who, along with the Town of Boonsboro (Washington County), received the designation of official Appalachian Trail Communities on June 3.

A few months into the new year, please join me in welcoming our newest board members, many who have already jumped in to serve in a variety of capacities. A special thanks to our volunteers who planned a terrific annual meeting and most recently, the annual Douglas Hike. Remember, these activities are not possible without our dedicated volunteers.

I wish you an enjoyable summer season and don't forget to make the most of your C&O Canal experience by taking family and friends for an overnight in a lock house, enjoying a meal in one of our quaint Canal Towns, and learning more about the great history of the people and places along the towpath.

*Yours in serving the C&O
Canal Association,*

Tiffany

The Association Welcomes New Members

Steven Deux

Jerry & Jo-Anne Hersh

Jonathan & Kim Hymes

Barbara Miller & Arthur Chenowith

Abbie Ricketts

David Wendt

Thank you for your continued support of our organization! If you have any membership-related questions, please contact Pat White, Membership Chair, at membership@candocanal.org.

Donors to Association Funds

February 1 to April 30, 2023

A – Nancy C. Long Aqueduct Fund

– Supports restoration and preservation of the 11 aqueducts on the C&O Canal. The fund was established with a generous donation made by C&O Canal advocate Nancy Long.

C – The Cumberland

Repair and Maintenance Fund

– Donations specifically identified for repair and maintenance of the historic canal boat replica in Cumberland.

D – Davies Legal Fund

– Supports the Association's involvement in activities such as the opposition to the transfer of public land to any individual or enterprise for private use.

R – Ken Rollins C&O Canal Fund

– Supports current projects and programs in and for the C&O Canal National Historical Park.

S – Rachel Stewart

Swains Lock Area Fund

– Funds improvements in the area around Swains Lock as they are identified in conjunction with the National Park Service.

Donating Funds

Visit www.candocanal.org/contributions/ or scan the QR code with a mobile device for further information about Association funds or to make a contribution now.



James Alden – **A, C, D, R**

James B. Bachtell – **R**

Gerald N. Bloom – **D, R**

John R. Bogdan Jr – **A, C, R**

Michael Bucci – **A, C, D, R**

Richard T. Busch – **D**

Chris & Wayne Cerniglia – **R**

Joel I. Cohen – **R, S**

Norman J. Cook – **R**

Jay S. Creswell – **R**

Jeffrey Crooks – **R**

Chiara Ferris – **C**

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Robert J. McManus – **R**

Edward Terhune Miller – **A, D, R**

Lorraine R. Minor – **R, S**

Russ Norfleet – **Sierra Club**

Potomac Region Outings – **R**

Rachel Jessup Rogers – **D**

Raphael Semmes – **A, C, D, R, S**

Michael D. Shallenberger – **A, D**

Michael A. Shaw – **A, R**

Susi B. Slocum – **A**

Brenda Sparenborg – **R**

Robert W. Stevens – **A, R**

Cynthia Sumner – **D**

Jean H. Swank – **R**

C. Jean Toleman – **A, C, D, R**

Frank W. Valentine – **A, C, D, R**

Glenn E. Watkins – **A**

Elizabeth S. Wessel – **R**

David Wiecking – **A, S**

IMO Karen Gray

Nanette Johnson – **R**

George & Mary Kennett – **R**

Thomas W. Mears – **R**

IMO Bradley Haigh

Shirley K. Haigh – **R**

IMO Eric Larsen

Jacquelyn A Ventura – **S**

IMO Roy Sewall

Hilda Maibach – **D**

Help the Association – Make Payments Online

The Association website makes it easy to pay on-line using your credit card. Processing online payments is more secure and easier for our volunteers. You can renew your membership, purchase event meals or bus tickets, or make donations. We use PayPal to process our payments, but you don't need a PayPal membership. You can use your credit or debit card. *Note – PayPal will encourage you to sign up. That is unnecessary. You can deselect the button "Save info and create your PayPal account."*

trees in an area are cut, faster growing trees, usually conifers of some type, are replanted. To make a long and complicated story short, this is not the best way to run a forest. It's counterproductive to a forest's growth, not to mention a complete forest's health. Nature is a complex collection of interacting systems that function on a global scale. The more we examine these systems the more we learn just how complicated they are.

This brings us to a Canadian forestry biologist, Dr. Suzanne Simard. She was not the first scientist to understand the complex nature of tree and forest life cycles; in fact, the First Nations peoples in her beloved western Canadian forests were well versed in the life cycles of the forests that they lived in. Most scientists, though, don't have that rare gift that Dr. Simard does: the ability to explain complex scientific ideas in a way that anyone can understand as well as place it in a human context. Although Dr. Simard and her colleagues and students' work was and is done in the massive forests of the Pacific Northwest, the principles appear to be true for any forest in the world.

Competition versus Cooperation

Conventional forestry science works on the idea that trees compete with each other all of the time for resources, water, sunlight, and nutrients. As noted earlier in this article, it is believed that to get the highest yield of desirable trees for timber forests need to be heavily managed. Mature trees are cut and target species are replanted in neat orderly rows to facilitate later harvesting. This practice often does not work the way it is expected to and is bad for the trees as well as animal life that depends on them.



Small mycelia just under the leaf litter; deeper down in the soil they can be larger – All photos by Trent Carbaugh

What Dr. Simard and others have posited is that forests work by cooperation, not competition. Completely different species of trees share resources with each other on a regular basis. The idea of leaving trees to their own devices, or replanting with compatible species, increases the overall health of the entire forest as well as ensuring a diversity of species for the benefit of all creatures concerned. It also increases the productivity of the target tree species for later logging.

Mycelium Networks

Take a walk in the forest, or even a small stand of trees. Anytime, except the coldest parts of the winter, you will see fungus growing on dead trees or as mushrooms popping up from the ground. Those mushrooms and their cousins are the fruiting

The Scientific Method

Scientific method is a set of steps used to prove or disprove a hypothesis. Different scientific disciplines modify the use of the method to fit the specific parameters of the needs of a particular discipline, but the basic method is always the same. The basic steps are:

1. *Make an observation.*
2. *Ask a question.*
3. *Form a hypothesis or come up with a testable explanation.*
4. *Make a prediction based on known facts and your hypothesis.*
5. *Test the hypothesis by experimentation.*
6. *Carefully examine your results to confirm your hypothesis or form a new hypothesis or prediction.*
7. *Repeat as necessary.*

For this process to work, good records need to be kept so that other scientists can repeat your experiments to prove the validity of your hypothesis. If a hypothesis is shown by experimentation to be valid a detailed paper is produced and subjected to peer review. This is a long, sometimes painful, process but it is how new ideas enter science.

The Reductionist Method – Occam's Razor

Attributed to John of Occam, a 14th century Franciscan monk and theologian, Occam's Razor is a thought process that allows you to "shave" down explanations to bare facts. This is a useful tool to use when examining a new or modifying an existing hypothesis.

Occam's Razor states:

"The simplest explanation that will account for a circumstance or event is most likely the correct explanation."

Sir Arthur Conan Doyle's character Sherlock Holmes put this idea in even simpler terms: *"When you have eliminated the impossible, whatever remains, however improbable, must be the truth."*

bodies of a complex and massive network of fungi growing under the forest floor. This is known as a mycelium network, or how the journal *Nature* describes it when publishing Dr. Simard's first paper on the subject, the "Wood Wide Web."

In simple terms the mycelium network connects the tips of tree roots together and facilitates the transfer of nutrients and other resources between trees. Chemical information is also passed along this network; for example, a tree being attacked by insects will put this "information" out on the network and other trees will excrete enzymes distasteful to the invaders to ward off damage. For facilitating this exchange of chemical information, the fungus receives photosynthesized sugars from the trees in trade. It is much more complex than this simple description; different species of fungi are adapted to work with specific tree and shrub species, and others break down dead wood, etc.

Reductionist Science and Complexity Science

There are different ways to commit acts of science. All of them use the tenets of scientific method and the check of Occam's Razor. How a particular researcher gets to a result is up to the researcher, but it basically boils down to experiments that can be reproduced by other scientists and repeatedly getting the same results. This is accomplished by either reductionist science, or a newer (or really old, depending on your view of the history of science) way of thinking: complexity science.

In reductionist science samples are broken down into their constituent parts and analyzed. This process can tell us what chemicals and compounds something is made of as well as often where they came from. It can also tell us that things move around, but not how they move. Reductionist science is mostly done in lab environments with complicated equipment and nice white lab coats, what many folks think all scientists do.

Complexity science on the other hand, looks at the whole of a system to



"Mother" Beech Tree

ascertain how all of the elements of the system function either cooperatively, competitively or neutrally. This can be as small as studying the interactions of microscopic plants and animals in a drop of water or as massive as how oceans, land, atmosphere and planetary mechanics produce weather patterns. Complexity science is mostly done in the field and involves much direct observation, on site experimentation, and critical thinking on the fly to figure out how things work, and more importantly how things work together.

Both methods have their place and complement each other. As we pay attention to what is going on around us and use the constantly improving ways we have to examine what we see; we find out that what was often considered a simple thing turns out to be so complicated that we have to radically alter our thought processes and preconceived assumptions just to start to understand something. The problem is when new ways of thinking go against the entrenched ideas of the past, some folks have a difficult time changing, (or simply can't stand being proven wrong) and when you add in potential business interests, it can get even worse.

Mother Trees

If you know what to look for you can see this complexity all along the towpath in forested areas. The accompanying photographs are from an area that has beeches, oak, and the ever-present sycamores, all three species being some of my personal favorite trees. This delightful place is just off the towpath slightly west of McCoy's Ferry across the berm at Culvert 144. If you choose to see for yourself, please tread lightly (and carefully).

I'm going to use beech trees as an example as they are subject to much research and they cover most ways that trees cooperate with each other, they are also easy to recognize if one is not familiar with tree species. In the small stream valley between the canal and railroad tracks there are beech trees of all ages and one very large beech, which is a mother tree. This is a term coined by Dr. Simard to describe an



View of the small valley near McCoy's Ferry with beeches, sycamores and other trees

older tree that takes care of its own genetic progeny as well as other younger trees and neighbor trees in distress.

Now, to be fair to the trees, a large tree could just as well be a father tree as it could be a mother tree, but the point is that trees in the position of being older and more mature seem to "act" in a way that is very similar to how human parents treat their children. Perception is nine-tenths of reality and putting difficult concepts into a human framework, if done with care, often is an enlightening way of explaining difficult scientific concepts to non-scientists.

The large beech that is seen in the photos connects to all of the beeches on the west side of the creek. The bank is

eroded enough that an observer can easily see the root system connecting the smaller trees in places. Beech trees reproduce both sexually and asexually which means that the smaller beeches growing directly from the root system are essentially clones of the parent tree. Beeches also sexually reproduce by pollen distribution which ultimately produces beechnuts. These get distributed around the forest by squirrels and other animals spreading genetic diversity of the beech population over a larger area.

Beeches that grow from beechnuts, as well as the ones growing from the mother tree's roots, also connect to the mother tree and other trees by the Common Mycorrhizal Network (CMN). This is a system of fungal tubes created, in



Asexually reproduced beeches growing from the mother tree's root system



Beechnuts provide food for squirrels, who distribute the nuts around the area



The mother tree's surface root structure growing around a limestone outcropping above the stream bank



Beeches growing so close together with their roots joined that they are virtually one tree

the case of beeches by ectomycorrhizal fungi, connecting root systems to not only the mother tree but to other compatible tree species in an area.

The currency of the tree world is sunlight. Trees need light to photosynthesize carbon dioxide into sugars for energy. Trees also need minerals for various purposes that are often not available in the immediate area. Trees need to have large canopies of leaves (or needles, in the case of evergreens) to provide the energy for this process. But if our mother beech tree has a large canopy the smaller beeches under the canopy are not getting enough sunlight to thrive. So, Momma can send sugars to the young trees to bolster their energy needs, and not just to the young beeches! Any youngster attached to the network benefits from the transfer of sugars. The trees seem to understand that species diversity is very important for the overall health of a forest.

During times of stress, such as droughts, a mother tree will withhold resources from the total system and support only her own offspring till the resource situation improves. All of this is facilitated by the CMN for the cost of some sugar. Communication between trees and fungi is done by enzymes that science is just beginning to understand, which travel through the network.

In time, large trees die and fall down. Their wood is broken down by other fungal species and insects, and the leftover resources are transferred about the neighborhood. The biggest benefit to younger trees is the reduction of the upper canopy letting more sunlight onto the shorter younger trees starting the process over again. This complex system benefits the trees, the fungi, the thousands of insects that inhabit the forest floor and soil, and on to all of the animals living in the area.



Chicken of the woods fungus that breaks down wood on both live and dead hardwoods



Yellow wart mushroom



Pheasants back mushroom

To be fair, there is some resistance to the idea of a cooperative forest. Arguments against this idea range from “There’s just not enough research to form conclusions” to “Competition is how everything in nature works.” Some objections are valid, and some are not, but new information is always suspect by those who prefer not to change. Should you have those kinds of questions I invite you to peruse some of the following resources.

Remember that science is not just for folks that have letters after their names. Anyone can and should participate in science. Once you understand how scientific research is done (it’s not difficult) and apply your critical thinking skills, draw your own conclusions. Our world is a wondrous place, and we owe it to ourselves and our descendants to learn as much about it as we can. The C&O Canal National Historical Park is a protected area, aside from its unique historical treasures it is also a fantastic outdoor laboratory to study nature in all of its infinite variety.

Resources

These are popular works that are excellent introductions to the study of trees:

Finding the Mother Tree, Discovering the Wisdom of the Forest, Suzanne Simard, Knopf, 2021

The Hidden Life of Trees, What They Feel and How they Communicate, Peter Wohlleben, Greystone Books, 2015

In addition to these resources, the **Mother Tree Project** is a great source of information and has a library of scientific papers should you want to delve deeper. Visit mothertreeproject.org for further information. The QR code at right provides a link to the project site.



Karen Gray's Contributions to *Along the Towpath*

By Steven Dean

Karen Gray made many contributions to the C&O Canal. She researched history, volunteered as the C&O Canal NHP librarian and historian, managed the Level Walker program, organized symposiums, supported other parties' books and studies, and supported many other activities. Another of her endeavors is very well known to *Along the Towpath* readers – her regular *Accompanied by the Past* feature.

For over 20 years, Karen provided insightful commentary on a wide range of topics related to the C&O Canal. Often her articles were related to the history and features of the route of an upcoming Douglas Memorial Hike or Fall Heritage Hike. At other times she provided history related to the canal, its construction, its operation, the people who lived and worked on it, or the transition of the canal from a disused business to a national historical park. Karen's writing provided an ever-growing body of knowledge based on her own painstaking research and that of others, including William Bauman. They also featured relevant and interesting historical photos.

The many enthusiastic comments of *Along the Towpath* readers attested to the popularity of Karen's writing. She firmly believed in the importance of her work, but was also the first to admit that our understanding of history was constantly evolving. Karen's words from the December 2017 *Along the Towpath* sum up those thoughts.

Most of us think of history as about the past. And it is. But it **never gives us back the real past** and *in truth our history is nothing more than what we think we know about some piece of the past at a given time, based on our sources at that time.* As such, history

changes and this is especially true in the present when, to an increasing extent and at an increasing speed, knowledge in almost every area of historical study has been changing and growing. This growth is due to the flood of new data and materials that subsequently require critical and scholarly analysis and interpretation.

Many people asked Karen and the C&O Canal Association if Karen's articles could someday be published in a book. Karen was against that – she felt that some of her older articles could become outdated as history evolved. We respect Karen's wishes and will not publish her writings in a book.

We may, at times, republish some of Karen's articles in support of C&O Canal Association programs. When we do that, we will note the date of the article and that certain factors may be out of date. However, most of the content related to the canal's features that hikers would encounter are still valid, and that information is quite helpful to event participants.

The C&O Canal Association maintains an on-line archive of past *Along the Towpath* newsletters. It is available at candocanal.org/atpnews/. Karen's past articles are available in the archives. Readers should consider that some of the earlier articles may contain outdated information, but the series remains a wonderful resource for appreciation of the canal and its history. A guide to Karen's articles follows.



Along the Towpath
Archive Link

A Guide to *Accompanied by the Past* Articles

June 1999 – *Never Underestimate a Culvert* – A discussion of the types of culverts.

December 1999 – *Chesapeake and Ohio Canal – The First Quarter-Millennium* – A summary of the efforts to foster trade between the colonies and the western territories.

December 2000 – *Completing the "Fifty Mile Section" and James M. Coale, President of the C&O Canal Company in 1850* – Two articles marking the 150th anniversary of the completion of the C&O Canal.

March 2001 – *Walking through History Along the Canal's First 10 Miles* – A summary of the history and features of the lower 10 miles of the canal for the 2001 Douglas Memorial Hike.

June 2001 – *Charles Fenton Mercer and the Birth of the C&O Canal* – The first president of the C&O Canal Company.

September 2001 – *Fort Frederick to Williamsport: This Walk Has It All* – An overview of the 2001 Heritage Hike route.

December 2001 – *Charles Fenton Mercer and the Birth of the C&O Canal* – The second part of the story of the first president of the C&O Canal Company.

March 2002 – *Spring Gap to Cumberland* – An overview of the history along 2002 Douglas Memorial Hike route.

September 2002 – This is the first article entitled *Accompanied by the Past*. A history of the Hancock area for use as a companion to the 2002 Heritage Hike.

December 2002 – A summary of engineer Charles B. Fisk's work on the construction of the canal from 1828 to 1837.

March 2003 – *History and Engineering Along the Route of the Douglas Hike* – A summary of the canal from Violettes Lock downstream to Carderock.

June 2003 – *A Lock is Not Just a Lock* – A discussion of the various lock designs used on the C&O Canal.

September 2003 – *Town Creek to the Paw Paw Parking Area* – An overview of the history and engineering along the route of the 2003 Heritage Hike.

December 2003 – *The Mysterious Grave at Lock 69* – The story of a grave marker along the towpath near Oldtown.

March 2004 – *Thomas Cresap and Oldtown* – An account of a colorful character named Thomas Cresap, who was a central figure in the Oldtown area.

June 2004 – *Pre-Construction Surveys for the C&O Canal* – Early surveys to assess the feasibility of a navigable canal route along the Potomac.

September 2004 – *From Pearre to the Western Maryland Trestle at 143.4* – A discussion of the C&O Canal and Western Maryland Railway along the path of the 2004 Heritage Hike.

March 2005 – *Dargan Bend to Brunswick* – An overview of the rich history of the canal above Brunswick, past Harpers Ferry and up to Dargan Bend.

June 2006 – *Arthur Pue Gorman, C&O Canal Company President* – The story of Arthur Pue Gorman, who served as the C&O Canal Company president starting in 1872.

September 2006 – *Fort Frederick: Where the Canal and the 18th Century Meet* – A brief history of the Fort Frederick and an overview of the canal in the area.

December 2006 – *C&O Canal Freighters* – A discussion of the design and construction of the various classes of C&O Canal freighter boats.

March 2007 – *Oldtown to Paw Paw* – A description of the 11 miles of towpath covered in the 2007 Douglas Memorial Hike.

June 2007 – *Passenger Service on the C&O Canal* – Packet boat service through the C&O Canal era.

September 2007 – *Locks 34 to 38* – An overview of the route of the 2007 Heritage Hike, from the Harpers Ferry area to the Shepherdstown area.

December 2007 – *Steamboats on the C&O Canal* – Steamboat use on the canal as an alternative to mule drawn boats.

March 2008 – *Whites Ferry to Seneca* – Structures and history along the route of the 2008 Douglas Hike.

June 2008 – *The Georgetown Canal Incline: Its Ups & Downs* – The colorful story of the structure built to supplement the inadequate delivery capabilities of the eastern terminus of the canal.

September 2008 – *Hancock to Fort Frederick* – The many important structures between Hancock and Fort Frederick encountered during the 2008 Heritage Hike.

December 2008 – *The Irish Contractor Michael Byrne* – A brief account of Michael Byrne, an important contractor involved with numerous structures along the canal, including the Monocacy Aqueduct.

March 2009 – *The 1954 Douglas-Washington Post Hike* – An account of the famous 1954 hike.

June 2009 – *The Battle to Save the Canal, Part I: 1938–1954* – The history of public support to preserve the C&O Canal.

September 2009 – *Highlights Along the 2009 Heritage Hike Route* – A summary of the C&O Canal and the Western Maryland Railway between Hancock and Pearre.

March 2010 – *Spring Gap to Cumberland* – The history and features of the 2010 Douglas Hike route.

June 2010 – *C&O Canal Engineering: The Early Years* – The early canal engineering of the C&O Canal and the people behind it.

September 2011 – *Fort Frederick to Hancock* – An article featuring the highlights of the 2011 Heritage Hike.

December 2011 – *The Battle to Save the Canal, Part II: Summarizing the Three-Decade Journey, 1938 to 1968* – Further details of the canal's progression from the B&O Railroad sell-off to the public law making the C&O Canal a national historical park.

March 2012 – *Seneca to Whites Ferry* – An overview of the structures and history along the route of the 2012 Douglas Memorial Hike.

June 2012 – *The Battles over the Eastern Terminus and the Naming of the Canal: Part I* – The story of how the final location of the eastern terminus and the name of the canal were established.

September 2012 – *The Battles over the Eastern Terminus and the Naming of the Canal: Part II*

March 2013 – *The Remarkable Original Canal Engineering at Big Slackwater* – An overview of the 17 structures that support the Big Slackwater canal section.

June 2013 – *The Canal Prism: Variable and Dangerous* – A description of how the canal prism is not just a simple "ditch" but is a major structure.

September 2013 – *The C&O Canal at Harpers Ferry* – The history of the C&O Canal's relationship to Harpers Ferry.

December 2013 – *Lessons from Those Boating on the Canal* – Accounts from interviews with persons who lived near or worked on the canal.

March 2014 – *Williamsport History and Canal Mysteries* – History of Williamsport, the most successful port along the C&O Canal.

June 2014 – *Managing Canal Water Levels in the Operating Era* – A summary of the various structures that provided water to the canal and controlled the level of water.

September 2014 – *Dam 6 and its Associated Structures* – Outline of the key structure encountered during the 2014 Heritage Hike.

December 2014 – *The Era of River Boat Navigation on the C&O Canal: 1830–1850* – A discussion of the first of three eras of boat navigation.

March 2015 – *C&O Canal Boats and Navigation: 1851–1870* – A continuation of the account of boat activity on the canal.

June 2015 – *C&O Canal Boats and Boating 1870–1889: Part I* – Boat types and experiences on during a busy time in the canal operating era.

September 2015 – *Finishing the Last Fifty Miles* – The struggles to complete the canal from Dam 6 to Cumberland.

December 2015 – *C&O Canal Boats and Boating 1870–1889: Part II* – A continuation of the June 2015 article.

March 2016 – *C&O Canal Boats and Boating 1850–1889* – Details of the history of canal boat operations after the canal reached Cumberland.

June 2016 – *The C&O Canal Trusteeship 1890–1901* – The financial struggles of the C&O Canal Company after the devastating 1889 flood.



The Potomac Refining Company building – Courtesy of the National Park Service, C&O Canal National Historical Park

September 2016 – *1902–1904: The Canal Towing Company Formation and Railroad Interests in the Canal* – The continued struggles of the canal to remain in operation.

December 2016 – *1904–1923: The Last Two Decades of Canal Navigation* – The final days of canal operation.

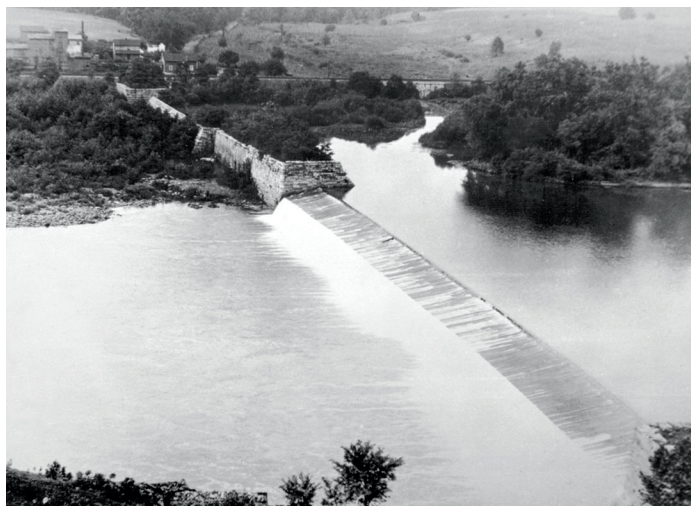
March 2017 – *The Second Watered Section of the Canal: Miles 22.12 to 62.27* – An overview of the route of the 2017 Douglas Memorial Hike.

June 2017 – *The Boatless Canal: 1924 to 1936* – The period of the canal leading to Government ownership after operations ended.

September 2017 – *The Selling of the C&O Canal: 1936–1938* – Efforts to sell the canal after the significant damage of the 1936 flood.

December 2017 – *The Collapse of the Conococheague Wall: In Search of the Truth* – An account of the damage to the Conococheague Aqueduct in 1920 and efforts to understand if the story is valid.

March 2018 – *Canal Engineering from Dam 3 to Harpers Ferry* – A study of the structures below Dam 3 in support of the 2018 Douglas Memorial Hike.



Dam 6 – Courtesy of the National Park Service, C&O Canal National Historical Park



Dam 5 area, with protective pier – Courtesy of the National Park Service, C&O Canal National Historical Park



Lock 31, with locktender, shanty and passing train – Courtesy of the National Park Service, C&O Canal National Historical Park

June 2018 – *The Sources of C&O Canal and National Historical Park History* – Information on important sources of C&O Canal history.

September 2018 – *Seneca to Whites Ferry* – An overview of the route of the 2018 Fall Heritage Hike.

December 2018 – *In the Beginning: Navigation on the Canal in 1830–1831* – A look at the earliest days of C&O Canal navigation.

March 2019 – *The Canal in News Reports: 1847–1872* – Reports of canal operations and events that were found through William Bauman's research.

June 2019 – *Who Owns the Boat?* – A look at boat ownership during the 1874–78 and 1891–1923 eras of canal operation.

September 2019 – *Shepherdstown to Dam 4: History and Engineering* – Information related to the route of the 2019 Fall Heritage Hike.

December 2019 – *The Canal Company's Financial Crisis: 1838–1842* – A summary of one of many financial crises in the canal's history.

March 2020 – *Lift Lock 31: Not Your Ordinary Lock* – The story of a unique lock visited during the 2020 Douglas Memorial Hike.

June 2020 – *When Construction Faltered: 1842–1850* – Faltering construction and a change in leadership.

September 2020 – *1865–1867: Restoring the Multi-City Eastern Terminus* – The C&O Canal, with the Washington City Canal and the Alexandria Canal, supported operations in three cities.

December 2020 – *1889: After the Flood* – The canal's finances were a "total wreck" after the 1889 flood.

March 2021 – *1889–1890: Two Courts and a New Railroad* – Efforts to restore the canal after the 1889 flood and an attempt to convert the canal to railroad use.

June 2021 – *1890 Part A: The Court Battles Begin* – Canal bond holder efforts to take control of the canal and restore operations.

September 2021 – *1890 to 1906 and Beyond: Extending the Trusteeship* – A review of the legal actions extending the trusteeship and the appeals court responses.

December 2021 – *The Trusteeship's First Years: 1891 to 1906* – The struggles of the canal to stay in business and operate under trusteeship management.

March 2022 – *1903 and the Beginning of the Canal Towing Company* – The Canal Towing Company was incorporated on February 23, 1903.

June 2022 – *The Trusteeship: 1906–1938* – Trusteeship ownership continued during the last days and after the end of canal operations.

September 2022 – *1938–1945: Selling the Canal and Closing the Canal Cases* – The final chapter of canal legal activity.



Mule-drawn boat approaching the Conococheague Aqueduct – Courtesy of the National Park Service, C&O Canal National Historical Park



Big Pool in the 1890s – Courtesy of the National Park Service, C&O Canal National Historical Park

Herman Hollerith and the C&O Canal

By Rod Mackler

On the C&O Canal, at 31st Street, NW, in Georgetown, there is a large brick building. The building has been renamed “Canal Square,” housing some trendy Georgetown shops and a seafood restaurant (the now-shuttered Sea Catch). But in the more distant past it played an outsized role in the history of information technology. A plaque on the 31st Street side of the building, placed by IBM in 1984, summarizes that history. This was the laboratory and manufacturing center for Herman Hollerith, who developed automated tabulating machines and the punch cards that hold the data that they process.

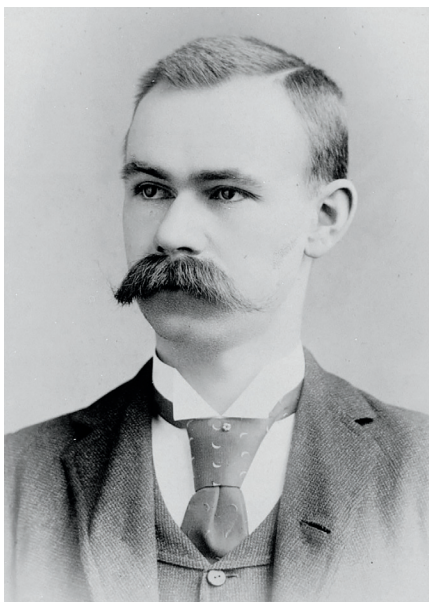
Herman Hollerith was born in 1860 in Buffalo of German immigrants. He was educated at home by tutors, then in New York City at City College and the Columbia College School of Mines. He worked briefly teaching mechanical engineering at MIT, as a patent examiner in Washington (experience that would become useful as he later filed his own patents) and developing railway brakes in Saint Louis. He came back to Washington with one of his mentors from Columbia to work as a statistician for the census of 1880. Seeing the laborious way paper census data were aggregated, he decided there must be a more efficient way to count the nation’s population.



Hollerith House at 1617 29th Street, NW in Georgetown – Both photos this page by Rod Mackler

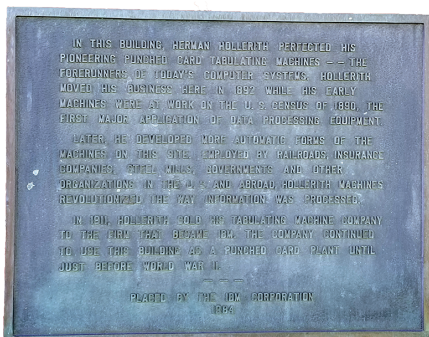


Hollerith factory, C&O Canal, at 1054 31st Street, NW in Georgetown



Above – Portrait of Herman Hollerith – Courtesy of the Library of Congress, public domain

Below – IBM plaque on the 31st Street side of the Hollerith factory – Photo by Rod Mackler



1	2	3	4	5	6	7	8	9	0	On	S	A	C	E	a	c	e	g	EB	SB	Ch	Sy	U	Sh	Hk	Br	Rm
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3	0	0	0	0	W	20			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1	1	1	1	0	25	A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B	2	2	2	2	5	30	B	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
C	3	3	3	3	0	3	C	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
D	4	4	4	4	1	4	D	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E	5	5	5	5	2	C	E	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
F	6	6	6	6	A	D	F	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
G	7	7	7	7	B	E	G	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
H	8	8	8	8	a	F	H	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
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Hollerith (census) card – Courtesy of the Library of Congress, public domain

IBM Plaque Wording

In this building, Herman Hollerith perfected his pioneering punched card tabulating machines - - the forerunners of today's computer systems. Hollerith moved his business here in 1892 while his early machines were at work on the U.S. Census of 1890, the first major application of data processing equipment.

Later, he developed more automatic forms of the machines on this site. Employed by railroads, insurance companies, steel mills, governments and other organizations in the U.S. and abroad, Hollerith machines revolutionized the way information was processed.

In 1911, Hollerith sold his tabulating machine company to the firm that became IBM. The company continued to use this building as a punched card plant until just before World War II.

Placed by the IBM Corporation 1984

Hollerith went to work on devising machines to make the counts. Operators used the punch cards to record the data to feed the machines. He filed his first patent application in 1884. The punch cards had fields for the various categories of census information: age, race, sex, occupation, and so forth. They were counted by completing an electric circuit through the punched hole. At first, he used a hand ticket punch, like he had seen conductors use on trains, then he developed machines to punch the cards from a typewriter keyboard.

The 1880 census required seven years to complete. In contrast, using Hollerith's machines, a good count of the country's population was available in three months, and much more detailed tables were complete in another two years, at a cost to the government of just a fraction of the 1880 census. In addition, the cards allowed Hollerith to feed them back into the tabulating machines to verify the first count and to sort them by various fields, yielding far richer information.

The processing of the 1890 census led to some other significant discoveries. For one, the women employed to punch

the cards were generally more productive than the men, with obvious implications for the employment of women.

Hollerith first expanded his business in the governmental sector, to state governments and health departments in the Northeast, then overseas, to census bureaus in Austria, Germany, Italy, and Canada. Then he applied the same technology to commercial companies, starting with the insurance industry, whose actuaries are dependent upon the aggregation of data, the strength of Hollerith's tabulating machines.

Hollerith developed a business plan that would serve him well as he expanded his company in the U.S. and internationally: he did not sell his machines to his governmental and commercial customers. Instead, he leased out the machines, maintaining control and increasing revenue. He also understood that the reputation of his machines depended upon quality control. He maintained that quality by continuing to service the hardware. Initially Hollerith himself and his brother-in-law serviced the machines, but he began training a corps of technicians to make repairs and adjustments.

Finally, he found that he could maintain the quality of the cards, with a far lower failure rate than those cards manufactured by others, if he manufactured them himself.

In 1892, Hollerith bought the former cooper's shop on the C&O Canal and moved his business from downtown Washington to Georgetown. There he established an assembly plant for his tabulating machines, trained technicians to service them, and began the manufacture of punch cards. Punch cards continued to be made there until 1984. Hollerith joined the Potomac Boat Club and organized barge parties for his employees on the C&O Canal.

In 1911, Hollerith sold his company, the Tabulating Machine Company. He continued as a consultant until 1921, when he retired completely. After a couple of mergers and name changes, in 1924 Thomas J. Watson renamed the successor company International Business Machines, or IBM. In any case, the German American Hollerith had divested himself of any interest in the company long before IBM's German subsidiary colluded with the Nazis to make the Holocaust more efficient.

Also in 1911, Hollerith commissioned architects and builders to construct an elegant house in Georgetown, literally up the hill from his plant on the canal. The 10,000 square foot Georgian-style mansion at 1617 29th Street, NW, had a view of the Washington Monument and the Potomac River. The house included all the modern conveniences of the day, including electric lights, an electric refrigerator, and an Otis elevator. Hollerith's wife, Lucia Talcott Hollerith, landscaped the garden of the plot, which comprises over half an acre. In 1924, she became one the founders of the Georgetown Garden Club; some of her specimen plants survive today. The Holleriths had six children: three sons and three daughters.

Herman Hollerith died in 1929 and is buried in Oak Hill Cemetery, just a couple of blocks from his home. His three unmarried daughters continued to live in the house

until the last one died in 1994. All three are buried in Oak Hill Cemetery near their parents. The three sons were all engineers and inventors; two of them are buried in Oak Hill. Later generations, however, moved in different directions. Two of Hollerith's great grandsons are Episcopal priests in the area; one recently retired as the bishop of the Diocese of Southern Virginia; the other is the current dean of Washington National Cathedral.

The Hollerith House, as it is still known, has turned over a couple of times since the last of Herman Hollerith's daughters died. The plumbing and electrical systems have been updated and the Otis elevator refurbished. It now has a chef's kitchen and a pair of two-car garages. It sold most recently, in April 2020, to the Embassy of Qatar for \$17.75 million.

Principal source: Austrian, Geoffrey. *Herman Hollerith, Forgotten Giant of Information Processing*, New York, Columbia University Press, 1982.



Grave marker: Herman Hollerith, 1860-1929, wife Lucia Beverly Talcott Hollerith, 1865-1944, son Richard Hollerith, 1900-1967, and (daughter-in-law) Helen, Farquharson Hollerith, 1898-1988, Oak Hill Cemetery, Georgetown



Grave marker for three Hollerith daughters: Lucia Beverly Hollerith, 1891-1982, Nannie Talcott Hollerith, 1898-1985, and Virginia Hollerith, 1902-1994, Oak Hill Cemetery – Both photos this page by Rod Mackler

Maryland and District of Columbia Breeding Bird Atlas

By Sue Muller

The Maryland/District of Columbia Breeding Bird Atlas is a five-year project (2020-2024) with the purpose of collecting breeding bird data to map the distribution of breeding birds across Maryland and the district. This is the third atlas for Md./D.C., and the results of this atlas will be compared with the previous two atlases.

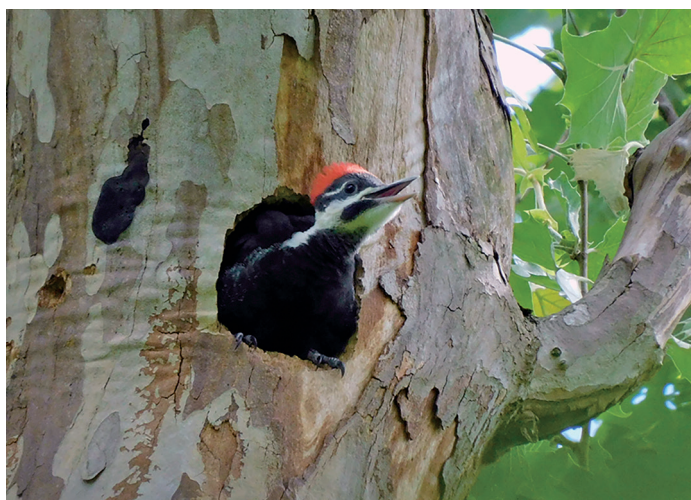
An *Intro to Atlasing* training video from atlas coordinator Gabe Foley is available for prospective project participants. The video explains the study and how to get involved collecting breeding bird data. Breeding data is gathered by volunteers using the eBird app. Volunteers look for breeding activity, such as a bird carrying nest material, a nest with eggs or a bird on the nest incubating eggs.

The late spring is the best time to document breeding birds with so many birds feeding young or building nests. Head out to your favorite section of the C&O Canal and look for evidence of breeding birds! Submit your surveys through eBird.

Resources

Intro to Atlasing
[www.youtube.com/
watch?v=6om6GHBaqAY](https://www.youtube.com/watch?v=6om6GHBaqAY)

*Cornell Lab of
Ornithology eBird*
eBird.org



This pileated woodpecker is a breeding confirmation showing a nest with young from the Williamsport area. The young woodpecker is begging for food and anxiously awaiting the arrival of an adult with food.



*This prothonotary warbler is a confirmation of breeding because it is carrying food to the nest to feed young. The bird was spotted near the Whites Ferry area.
— Both photos by Sue Muller*

2023 Butterfly Walk

Butterflies are plentiful on the C&O Canal. The variety and activity can vary widely, and July in Oldtown is great time and place to view them.



Oldtown Directions

Join Paul Petkus in Oldtown at 9:00 a.m. on July 8 for a walk to observe butterflies and moths. Bring walking shoes and water; photography is encouraged. Refer to the calendar on page 22 for further information.



Volunteers in Parks

By Jim Heins

Summer VIP Projects Are Heating up Faster than the Weather

The Association sponsored the second annual C&O Canal and Riverside Cleanup on April 15. We sponsored 12 sites this year, hoping for more next year. It was a successful clean-up and, depending on where the cleanup site was, the weather was very nice. The Western District didn't fare as well on the weather as downstream locations. There was less trash to pick up this year, and any number of factors might explain that fact. In addition to the cleanup, the Swains Lock campground and day use area got a good cleaning to start off this year.

A group of six stalwart volunteers recently spent a morning building six new picnic tables that were placed in service in the area of Riley's Lock. These tables represent a coordinated effort between the park and our association. The park purchased the metal frames and our association paid for the boards that make up the table tops and seats. Volunteers, under the direction of the VIPs, cut the boards to proper lengths, primed and painted them, and then assembled the tables.

There are more tables being planned and the materials are being ordered. *A call for volunteer support was sent out to Association members on May 19* to once again prime and paint boards. Once that has occurred, the assembly crew will rise back up and complete the process.

The new fencing installed by the VIPs last year now needs to be primed and painted per a request from the park service. *A call for volunteer support was sent out to Association members on May 19* for that project as well. Each of these projects are two separate day projects, one to do the priming and another to return and paint the material with park service brown paint.

In addition to these activities, another Swains Lock campground Stewardship cleanup will be coming up soon.

Other projects on the horizon are the repair of a number of older picnic tables and the installation of additional benches throughout the park.

We welcome your help with these projects. The same few volunteers tend to do most all of these projects. Age and health are taking a toll on us, so if you can spare some time and energy, and if the project day is right for you, please consider giving us a hand.

Please contact me at vip@candocanal.org for further information or to sign up for a project.

2023 Odonate Walks

Dragonflies and damselflies make up the Odonata order. The C&O Canal NHP has one of the most diverse odonate populations of any national park. The canal in Oldtown has an especially large population of odonates, and Dickerson is another especially active area.

Join Steve Dean in Oldtown at 9:00 a.m. on June 24, or in Dickerson at 9:00 a.m. on July 22. The walks will be up to two miles. Bring water and walking shoes; photography is encouraged. *Stokes Beginners Guide to Dragonflies* is a good reference. Refer to the calendar on page 22 for further information.



Oldtown Directions



Dickerson Directions

C&O Canal NHP Well Water Policy

By Steven Dean, from National Park Service Release

The well water in C&O Canal hiker-biker campsites is now signed non-potable. Water from wells at fee campgrounds will remain potable and safe for drinking, cooking, or washing. This change is because the National Park Service (NPS) wants to ensure that there is a more reliable water source year-round for visitors in the park and that the drinking water that is provided is as safe as it can possibly be, especially considering that the park's wells are in a flood zone. Wells are marked if the water is potable or non-potable.

Fee Campground Wells. The NPS will maintain potable water in a targeted number of wells in fee campgrounds. However, as a general precaution for wells located in a flood zone, park visitors are advised to boil or treat the water before use for your own protection. Well handles will be removed from fee campgrounds in mid-November to protect against freeze. Note that well water within the drive-in campsites is potable and treated with iodine – do NOT drink if you have any iodine allergies or if you are on medication for an overactive thyroid.

Hiker-Biker Campground Wells. The wells in the hiker-biker campgrounds will be signed as non-potable. Visitors are asked to bring their own water supply or water sanitizing equipment to treat well water before use. Handles will not be removed, and these wells will remain in operation year-round. This policy will ensure there will be a more reliable water source in these locations.

Water in Park Buildings. Visitor centers, park buildings, and comfort stations are provided water by the nearby municipality and do not require drinking water sampling by the park. Please note that the Swains Lock campsite draws on the same municipal water as the Swains Lockhouse and will remain potable.

Purification Methods: Water purification tablets, filters, and sanitizing tablets can be purchased at camping supply stores.

- **Water purification tablets.** These tablets contain iodine, halazone, or chlorine and kill most waterborne bacteria, viruses, and some (but not all) parasites. Over time purification tablets lose their potency, so keep your supply fresh.
- **Water Filters.** Some parasites – including cryptosporidium parvum, giardia lamblia, and larger bacteria – are not killed by purification tablets. A water filter should be used to provide additional protection.

- **Boiling.** Boiling will kill microorganisms. First, bring water to a rolling boil, and then continue boiling for at least one minute. Before heating, muddy water should be allowed to stand for a while to allow the silt to settle to the bottom; dip the clear water off the top and boil.

Resources

Park Facilities
[www.nps.gov/choh/
planyourvisit/index.htm](http://www.nps.gov/choh/planyourvisit/index.htm)

Park Conditions
[www.nps.gov/choh/
planyourvisit/conditions.htm](http://www.nps.gov/choh/planyourvisit/conditions.htm)



Pumps with non-potable water will have this notice posted – Photo by Paul Petkus



Pumps at hiker biker camp sites will not have potable water – Photo by Steven Dean

On the Level

By Steven Dean

February to April 2023

This report covers level walker activity for February through April. Earlier reports are included in some cases, but any reports for activity performed on May 1 or later will be in the September Along the Towpath.

The Level Walker program is a long-term Association volunteer activity and the oldest volunteer program on the park. Level walkers periodically visit their levels and assess conditions, pick up trash and perform light trail clean-up. The program is popular because level walkers can work on a schedule and frequency of their choosing. Many level walkers are long-term volunteers.

One of our long-term level walkers has recently resigned from the program – Dennis Kubicki, who supported Levels 45 and 54. We thank Dennis for his long-term regular support on those levels.

This report also includes the first reports from two new level walkers. Louis Robbins is supporting Level 9 and Mary Ann and Jim Moen are covering Level 52. Both levels needed the support, and their participation is appreciated and welcomed.

Summer is near and with it comes the increased use of the park and the risks inherent with warm weather. Watch for bikes and other towpath users and keep safety in mind when passing. Many bikers ride faster than the 15-mph speed limit and approach with no warning; use care when on the towpath and when stepping back on the towpath. Watch for snakes, especially copperheads, and also watch for animals that are behaving abnormally; the risk of rabies increases during the summer. Be careful to check for ticks after time on the canal. Poison ivy is throughout the park. Be sure to wear proper footwear and carry plenty of water.

Check the Plan Your Visit link on the park's website before visiting the park. The link with QR code is provided on page 23. This provides the most up-to-date information on park closures and notifications. The summer season brings the increased risk of storm activity and flooding.

For information about the Level Walker program, please email lw@candocanal.org.

Level 2 Incline Plane to Lock 5: Rod Mackler reports Feb. 27: It was moderate winter day. Towpath ruts were recently repaired by the NPS. The prism was mostly empty, probably due to the work on Lock 1 and 2. My Merlin app told me I heard Carolina wrens, blue jays, cardinals, a tufted titmouse, song sparrow, white-throated sparrow. I also saw most of those, plus a pair of mallards and some Canada geese.

Level 3 Lock 5 to Cabin John Creek: Allyson Miller reports Jan. 30; Feb. 7, 24 and 28; and March 20 and 32: In January, a car bucket seat was found by Lock 6 and later removed by the NPS.

Trash seems to heaviest at Lock 7. Dog waste bags and fishing bait containers are frequently found. The middle column on the Lock 7 house porch has fallen and was removed in February but was replaced in March. A sink hole was noted at Lock 7 during the first March walk and reported to the NPS; it was being filled in during the second walk. A small muskrat was observed swimming in late February in the prism upstream of Lock 6.

Level 4 Cabin John Creek to Lock 14: Larry Heflin reports February through April: The towpath was monitored over numerous walks, through all conditions. No significant issues were reported during this period. **Allyson Miller reports Jan. 14, Feb. 13, and Feb. 14:** Severe puddling and rutting was noted near Lock 8. The puddles extend across the entire towpath; people attempting to go around the puddles were making the path wider and walking into the vegetation. I observed that Locks 9 and 11 through 14 had been cleared of almost all dead debris and fallen trees and they looked very nice.

Level 5 Lock 14 to Bridge at Cropley: Mindy Ginsburg reports Jan. 15: It was a gorgeous, crisp and chilly day on the path. Winter is my favorite time on Level 5, without the leaves on the trees, there are new and seemingly endless gorgeous views of the Potomac River, many more than one could ever see during the balance of the year. The prism was dry all around and there was a nice thin layer of ice wherever there was some accumulation of water. **Jude and Mary Fran Franklin report March 17 and 18:** The towpath was very clean and in good condition with a few puddles. There was water in the canal from Mile 10.5 to Mile 12. Little to no water from Mile 10 to the beltway and the canal is filled with trees, plants, and other growth. Many trees were recently cut down throughout the Carderock area.

Level 6 Bridge at Cropley to Lock 20: Nancy Benco, with Iris Garrelfs, reports Feb. 14: The towpath was clean and in good condition. Birds observed included golden crowned kinglet, Carolina wren, chickadees, mallard ducks, common merganser, turkey vultures and Canada geese. Cat tails were present in the canal prism in places.

Level 8 Lock 21 to Lock 22: Rinze and Sue Roosma report March 23: It was a very pleasant spring day on the towpath. There was plenty to look at and admire in nature, including blue bells, spring beauties, bloodroot, Dutchman's breeches, great blue herons, turtles and bald eagle on a nest. The towpath was damaged by rutting in some places. Speeding bicycles were noted.

Level 9 Lock 22 to Seneca Aqueduct: Louis Robbins reports Feb. 10 and April 9: There was no trash on both walks because a canal steward had cleaned previously. The towpath was generally good except for an area south of Seneca where an unexpected sharp dip was a risk to southbound bicyclists. The pedestrian stairs at the Seneca lock were in poor condition in February but

had been replaced in April. The long wall along river where the towpath and canal built out into the river (1.5 miles north of Lock 22) has locations where the modern concrete backing is missing and the stone wall at these locations show effects of age and freeze thaw cycles. Visual observation of river side of wall from the top indicated no bowing or obvious failures. Coping stones on top of wall are missing in many locations.

Level 12 Sycamore Landing to Edwards Ferry: Pat Hopson, with Ray Abercrombie, Margaret Neuse and Frank Wodarczyk, reports March 5: Pat, Ray, and Frank met at Sycamore Landing; Frank left right away to walk the entire level, while Pat and Ray cleaned around Sycamore Landing. Margaret started at Edwards Ferry and the rest of the group met her there. The most notable thing about this walk is that the river level was very high everywhere. At Edwards Ferry it completely covered the red and yellow caution lines. The water level at Goose Creek was very high and the graffiti was still present. We found very little trash anywhere. We were delighted that the towpath surface had drained so well after the earlier heavy rains.

Level 13 Edwards Ferry to Harrison Island: Liz Wagner reports March 1: Conditions were generally good on the level, but the Broad Run Trunk bridge still shows signs of wear. Trash was light and visitation was low, mostly a few bike riders. Wildlife included northern cardinals, robins, eastern bluebirds, great blue heron, downy woodpeckers, turkey vultures, belted kingfisher and a pair of mallards.

Level 15 Whites Ferry to Lock 26: Jon Wolz reports Feb. 6, March 29, and April 26: During the February walk, NPS trucks were encountered en-route to repair the towpath damage at Mile 38. The damage occurred during high water in May 2022. The towpath was reported in excellent condition during the later walks. The towpath is narrow due to undergrowth on the level. Part of the Lock 26 lock house foundation has fallen. The large maple tree at Lock 26 is in poor condition and has a marker indicating that it will be taken down. The berm sides of culverts on this level are partially obstructed and need clearing.

Level 16 Lock 26 to Monocacy Aqueduct: Jon Wolz reports Feb. 22, March 28, and April 25: A downed tree was across the towpath near Milepost 41 in February and was reported. The tree roots damaged the towpath surface. It was noted in March that the towpath surface was fine, though the soft shoulders were beginning to have plants grow, especially from Lock 27 to Milepost 41. The shoulder on the riverside about Milepost 41 is eroding down the steep bank. The river side of the towpath wall at Mile 41.3 has an ongoing situation with strong leak flowing from about halfway down the earthen wall to the Potomac River. Picnic tables at the Monocacy Aqueduct are often moved by users closer to the river and can be lost during high water. Through-riders from Pittsburgh to Georgetown were encountered in April at Lock 27. **Mike Ciancoisi reports Feb. 11:** A level walk was conducted to assess the condition of the four culverts on the level. Water levels were low on this date. Culvert 65 has had some stone loss on the towpath side. Some logs block the inflow arch, but water still passes through. No concerns were

reported for Culvert 66 or Culvert 68. Culvert 69 conditions were consistent with earlier assessments. Sink holes are present but no other issues were reported.

Level 17 Monocacy Aqueduct to Nolands Ferry: Earl Porter reports Feb. 13 (with Ed Boddinger), March 20 (with Ed Boddicker), and April 20 (with Ed Boddinger): The Monocacy Aqueduct was partially blocked during all walks; typically arches 2, 5 and 6 were open. Trash was consistently high on the level. Restroom conditions were poor on the earlier walks and reported to the NPS. Conditions improved later.

Level 18 Nolands Ferry to Point of Rocks: Bob Carpenter reports Feb. 7 and March 28: Trash was very light on the towpath but heavier at the Point of Rocks parking area and boat ramp during both walks. The towpath was generally in good condition with hoofprints noted. Water was flowing through the culverts, but no issues were noted. The highlight of March walk was the sighting of a bald eagle nest in a large sycamore tree near Milepost 46; a male eagle was visible near the nest

Level 19 Point of Rocks to Catoctin Aqueduct: Don Peterson reports April 14: Park use was at a moderate level. No unusual findings were reported.

Level 20 Catoctin Aqueduct to Lock 30: Bob Carpenter reports April 26: This was my first level walk on Level 20 and, except for the 0.75 miles on a gravel road, this is an enjoyable level to walk. Towpath usage was very light considering the nice day and was primarily bicyclists. Trash on this level was light. The beautiful Catoctin Aqueduct was in excellent condition. There was a partial obstruction at the upstream arch of the aqueduct.

Level 22 Lock 31 to Lock 33: Karlen Keto reports Feb. 20, March 18, and April 9: It was busy during the February walk. It was a great day to be on the towpath. I noted progress on the Lock 31 house repairs in March and I met a delightful group from Washington, D.C. consisting of two moms and about 12 male adolescents. In April I encountered a senior citizen and her dog from Silver Spring walking in memory of her husband, who loved the canal. Maryland Task Force and several fire/rescue companies were out to practice fast water rescues. Very few bicyclists gave a warning as they approached.

Level 23 Lock 33 to Dam 3: Arthur Tsien reports Feb. 25: This was my second walk of this level in 2023. It was a dark gray, cold day with a few snow flurries. Despite the weather, I had my usual positive experience walking the towpath. The level looked good generally, with nothing of major concern. There were no significant changes from my prior reports. Machinery and other materials for the NPS stone wall repair project were on both sides of the towpath and in the canal prism downstream of Lock 34.

Level 27 Antietam Aqueduct to Lock 38: Jonnie and Joycie Lefebure report Feb. 2: It was a lonely walk on the near deserted level, despite the beautiful weather. The sun was bright, the wind was laid, the river running full. All three culverts were feeding water into the river. The new towpath surface was in excellent condition. **Ben, Jennifer, Holly and Zoe Helwig report April 30:** It rained during the entire walk and there were very few

people out. There were four campers at the Antietam camp area. The towpath was in good condition but there was horse waste on it at Lock 38.

Level 28 Lock 38 to Lock 39: Evan Hicks reports April 16: Most of the trash was found along the water's edge close to Lock 38 and parking lot. The towpath between 38 and 39 is in very good condition with beautiful blooming of flowers and trees.

Levels 28 and 29 Lock 38 to Snyders Landing: Brigitta Shroyer and Joel Anderson report March 18: The picnic table at Kiliansburg was moved by someone to a location downhill close to the river. It was too heavy for the two of us to move back uphill. Light graffiti was noted on the stonework in Lock 38. The towpath was in good condition. There are a few sections that are marked as rough trail by the NPS, but we found the surface to be perfect overall. We encountered a group of three loaded through-hikers

Level 30 Snyders Landing to Lock 40: Charles Connolly reports Feb. 23: It was a positive level walk, and many appreciative folks were encountered. Topcoat was recently laid on Miles 78 and 79, which was much needed. It was still soft, and bicycles were leaving ruts. Old trash was recovered from the prism because it was visible due to the lack of undergrowth. The weather was warm for February and visitation was heavy. A variety of wildlife was heard or seen, including barred owls, wild turkeys and red shouldered hawks.

Level 32 Marsh Run Culvert to Dam 4: David Plume reports Feb. 4: It was a very cold day and I only saw six other people willing to brave the cold; all were walkers. The towpath between Dam 4 and Dam 4 Cave had been repaired in sections by hard packed dirt and gravel. From Dam 4 Cave to the Marsh Run Culvert there was no damage to the resurfacing and the towpath is in excellent condition. The prism was in good condition, but there were a couple of spots with erosion near the towpath.

Level 34 McMahons Mill to Opequon Junction HBO: Trent Carbaugh reports March 26: All the new towpath work looks very good, very different but good. I shall miss many of the trees, though. The towpath was in excellent shape on the whole level. There were numerous bikers and walkers out. I talked to a group of bicyclists from the Western Maryland Bike Club who passed me very properly on the narrowest part of the towpath. There were a nice bunch of folks committed to doing things correctly.

Level 37 Falling Waters to Lock 44: Arthur Tsien reports Feb. 8: This was my second level walk on this level and my first of the year. The level generally looks good. The towpath surface was in good shape. I didn't notice serious rutting, hoofprint damage, or tire grooves. There were no real impediments to biking or walking. Most trash was found around the Lock 44 area and the towpath was mostly clean.

Level 42 Four Locks to McCoys Ferry: Jack and Deb Ebersole report March 28: The towpath was in good shape. There is a sink hole in the prism near the stop lock at Mile 110. This is a long-standing condition. The lock tender shanty at Lock 50 continues to degrade and needs some repairs or refurbishment. The bluebells were starting to bloom.

Level 45 Ernstville to Licking Creek Aqueduct: Dennis Kubicki reports March 29: The towpath surface remains in generally good condition with very few potholes and ruts. Weeds are proliferating in the median strip between travel lanes. They have been recently cut along with vegetation outboard of the path. Trash was minimal. Park facilities were in good repair. A brush and tree limb clearing activity was in progress this date. The motorized "chopper" that was being used has left debris along its route.

Level 47 Little Pool to Hancock: Mike and Judi Bucci report March 21: It was the day of spring. Since it was mid-week, not many people were out. There was evidence of beaver activity above Little Pool. We met a Texan in his 20s reading Thoreau. He was biking from Pittsburgh to Georgetown on his way to surprising his father in Quantico for his 60th birthday. We also met two Student Conservation Agency workers in a truck who were clearing blowdowns. There was more trash than usual along Little Pool and the trash was mostly fishing and beer related.

Levels 47 and 48 Little Pool to Round Top Cement Mill: Phillip M. Clemans reports March 30: It was a crisp but sunny day. I could not help but rejoice at another hike on the C&O Canal! The towpath was solid, with a few depressions in places. The Bowles House looked good from the towpath and all culverts appeared to be clear. The prism holes above Culvert 185 appear to be growing. Pileated woodpeckers were evident and were the apparent cause of wood debris at places along the towpath.

Level 49 Round Top Cement Mill to Lock 53: Paul Petkus, with Sue Muller, reports Feb. 19 and April 2: In February it was a beautiful afternoon for a visit to the park. Visitation was very light in this area of the park on this day, so nature took center stage. Signs of spring were beginning to emerge due to the mild winter. The highlight of the afternoon was an eagle sighting. The April walk took place on a nice afternoon. Wind from a storm that passed through the area previously left some branches on the towpath. There were no downed trees between Miles 126 and 134. Degradation of the waste weir gate structure near Lock 53 was observed. Spring wildflowers were emerging. The resident groundhog at the cement mill was out. It was a good day for observing birds and a better day for seeing butterfly activity than we expected on a cool day.

Level 50 Lock 53 to Dam 6: Steven Dean reports March 28: The level was very clean. The towpath has held up well since resurfacing in 2011. No culvert issues were noted. There was more water in the prism than normally encountered.

Level 51 Dam 6 to Sideling Aqueduct: Steven Dean reports March 2: The level was clean and in good condition. No towpath issues were noted. Culverts were closely inspected, and no issues noted. Water level was higher than normal in culverts.

Level 52 Sideling Aqueduct to Fifteen Mile Creek Aqueduct: MaryAnn and Jim Moen report Feb. 23: It was a beautiful day and numerous people were out on bicycles, both on the towpath and the nearby rail trail. The towpath was rutted in places, apparently by large machinery. A group of four people with equipment were working to remove dead trees from near the

The Big Help Out

By Steven Dean

People in the United Kingdom and around the world participated in *The Big Help Out* on May 8 as part of the celebration of the coronation of King Charles III. The objective of The Big Help Out was to raise awareness of volunteering and encourage people to make a difference in their community.

A representative from the British Embassy, Washington D.C. contacted the Association about conducting a volunteer project on the C&O Canal as part of the Big Help Out. The Association and the National Park Service coordinated a one-time level walk. The embassy group asked to perform their cleanup in the area above Georgetown. They were assigned to cover the area from Inclined Plane to Lock 5.

Seven British Embassy staff members participated in the cleanup on May 8, including a mixture of U.K. and U.S. staff and three military personnel from the British Army and Royal Air Force. The walk was very successful, with 12 bags of trash removed and four abandoned electronic scooters retrieved. Nik Turk, the group leader, commented: "As a team we really enjoyed the time spent walking along the canal, good weather helped. Some of group had never been there before."

We appreciate the support the British Embassy provided and that the canal made some new friends. We hope they return often.



Participants in *The Big Help Out* – (l-r) Karl Heinz (holding camera), Isatou Jaiteh-Kabba, Major Shishir Gurung, Neil Nickson, Nik Turk, Corporal Ben James and Wing Commander Rich Sharp.

On the Level – Continued from previous page

towpath. Hopefully the towpath will be smoothed over when the tree removal efforts are completed.

Level 54 Lock 59 to Lock 60: Dennis Kubicki reports Feb. 10: The towpath itself remains in a degraded condition, as reported previously, with many ruts, potholes, and indentations from motorized vehicles. The bordering woodland is characterized by dead trees (marked with big "Xs"), deadfall, and recent "grooming" of the borderland (up to 15 feet from the path) by a motorized "chopper" producing piles of tree debris. Conditions at the Stickpile Hill Hiker-Biker Camp were clean and orderly.

Paul Petkus reports April 21: There were no puddles due to the lack of recent precipitation, but there would be some relatively large puddles if it had rained recently. This level seems to have more potholes than most others in Western Maryland. The potholes on this level can be bypassed. Regardless, the potholes should be gone soon because of the NPS plan for towpath resurfacing.

Level 55 Lock 60 to Culvert 208: Paul Petkus reports March 18 and April 14: It was a cold, but otherwise pleasant late winter afternoon for the March outing. Observation of reptile and amphibian activity was the focus of the outing. Fewer birds were active than I would have anticipated. The emergence of wildflowers was an indication that spring was approaching. Park visitation was very light and now towpath or structure issues were noted. It was unseasonably warm for the April visit, but it was not humid. Park visitation was light but probably normal for a weekday in that part of the part. I chatted briefly with a member

of a search and rescue team who was looking for a lost 13-year-old girl who got separated from her family near the Paw Paw Tunnel. Butterflies were active. Reptiles and amphibians were plentiful. Spring wildflowers added color. No changes were detected in any of the structures.

Level 56 Culvert 208 to Lock 61: John Wiggins and Kathleen Moriarity report April 10: It was a beautiful early spring day with abundant wildflowers. No observed changes to the level infrastructure and very little trash. There were almost no people out (one bicyclist), but there were lots of signs of recent towpath cleanup work having been done, presumably by NPS.

Levels 56 and 57 Culvert 208 to Lock 63 1/3: Barbara Sheridan and Pat White report Nov. 25: Conditions were pretty much unchanged from previous visit. Both levels surprisingly clean. Large water-filled potholes noted mostly on Level 56. This condition was expected since neither level has an improved surface yet. There was the usual number of branches, which we removed from the towpath. There were no issues at any of the locks.

Level 64 Kellys Road Culvert to Spring Gap Recreation Area: Nasra Sakran and Laffy Buckler report March 8: The canal was totally filled with water the entire level. There was almost no trash. No wildlife was seen. There was some growth of garlic mustard here and there. No humans were observed. There were some potholes on the towpath and a fallen tree was reported.

Roving Level Walker: Mark Stover reports February through April: Mark walks various parts of the entire canal on a regular basis. Downed trees and other issues are frequently reported.

Calendar of Events – 2023

C&OCA Business

C&OCA Hike and Dinner or Other Event

C&OCA Nature Walk

C&OCA Paddle Trip

C&OCA Hike

Non-C&OCA Event

C&OCA Bike Trip

June 24, Sat., **Monocacy River Paddle Trip.**

One-day paddle trip. Reservations are required.

For more information and reservations contact Barbara Sheridan at canoemaster@candocanal.org or 301-752-5436.

June 24, Sat., **Oldtown Dragonfly and Damselfly Walk, 9:00 a.m.**

Meet at Lock 70 area in Oldtown. Walk will proceed downstream.

Photography is encouraged. For information contact Steve Dean at editor@candocanal.org.

July 8, Sat., **Nature Walk Focusing on Butterfly Identification,**

9:00 a.m. Meet at Lock 70 area in Oldtown. Walk will proceed upstream. For information contact Paul Petkus at papetkus@yahoo.com or 773-450-6039 (text).

July 15, Sat., **Brunswick to Monocacy Aqueduct Paddle Trip.**

4-5 hour paddle trip. Reservations by July 5 are required.

For information and reservations contact Tony Laing at canoemaster@candocanal.org or 301-980-8932.

July 22, Sat., **Dickerson Dragonfly and Damselfly Walk, 9:00 a.m.**

Meet at the Dickerson Conservation Area. The walk will proceed upstream. Photography is encouraged. For information contact

Steve Dean at editor@candocanal.org for information

Aug. 6, Sun., **Board Meeting, 1 p.m.**

Meeting will be conducted via Zoom.

Aug. 18-20, Fri.-Sun. **Paw Paw Bends area Paddle Trip.**

Potomac River from Paw Paw, W.Va. to Little Orleans, Md. Trip includes two nights camping. Reservations are required.

Contact Barbara Sheridan for information and reservations canoemaster@candocanal.org or 301-752-5436.

Oct. 1, Sun., **Board Meeting, 1 p.m.** at Williamsport
Check calendar for details.

Oct. 6-11, Fri.-Wed., **Through Bike Ride,**

Cumberland to Georgetown. No sag wagon provided. Reservations required. Limited number of riders. 30 to 40 miles per day for 6 days. Participants must be willing to accept instruction from ride leaders before and during the trip, and must come equipped with recommended bicycles and have clothing for warm, cold, and rainy weather. Camping can be an option for some nights. Contact Denny Sloppy, dennysloppy@yahoo.com or 814-577-5877.

Oct. 21, Sat., **Heritage Hike and Dinner.**

Details will be published in the September *Along the Towpath*. Contact Jonnie Lefebure programs@candocanal.org.

Dec. 3, Sun. **Board Meeting, 1 p.m.**

Glen Echo Town Hall, 6106 Harvard Ave.



Norm Liebow, aka the Ice Cream Man, made an appearance at the Douglas Memorial Hike. Norm generously provides ice cream, water and snacks to hikers during Association hikes. (l-r) Richard Radhe, Norm, Jonnie Lefebure and Robert Hibbert – Photo by Jon Wolz

Important Information –

- » *Liability waivers are required for many Association activities.*
- » *Hikes require proper footwear. Paddling, hiking and biking participants are responsible for their own equipment, food and water.*
- » *Reservations and/or advance fees are required for some events. Reservations must be received prior to the listed closing date. Advance fees are non-refundable after the reservation closing date.*
- » *Participants must arrive on-time for outdoor event start times. Outdoor events are usually rain or shine, however in extreme cases may be canceled for weather travel conditions or other reasons. Check www.candocanal.org/calendar/ (use QR code at right), Facebook @candocanal.org or contact the event host for updates.*
- » *Participants are expected to comply with any local health or safety related rules in effect.*
- » *The Association cannot accommodate requests for variations from established event agendas, transportation and arrangements, including requests for alternate pick-up or drop-off locations.*



C&O CANAL NATIONAL HISTORICAL PARK

Personnel and Contact Information

C&O Canal National Historical Park Headquarters

142 W. Potomac St., Williamsport, Md. 21795

Superintendent	301-714-2202	Tina Cappetta
Deputy Superintendent	301-714-2200	John Noel
Superintendent's Assistant	301-714-2201	Mackensie Henn
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Chief of Business Mgmt.	301-714-2204	Ben Helwig
Chief of Resource Mgmt.	301-714-2225	Jeri DeYoung
Chief of Maintenance	301-714-2211	Jim Yelton
Chief of Interpretation, Education and Volunteers	301-714-2238	Christiana Hanson
Partnerships Coordinator	301-714-2218	Anthony Bates
Volunteer Coordinator	301-491-7309	Emily Durán Hewitt
Cultural Resources Manager/Historian	301-491-2236	Justin Ebersole
Safety Office	301-745-5804	John Adams

Palisades District

Mile 0 (Tidelock) to Mile 42.19 (Monocacy River)

Interpretive Supervisor	301-767-3702	Vacant
District Ranger Law Enforcement	301-491-6279	Joshua Cunningham
Supervisory Visitor Use Assistant	301-767-3703	Vacant
Georgetown Partnerships Coordinator	240-291-8466	Shaun Lehmann

Western Maryland District

Mile 42.19 (Monocacy River) to Mile 184.5 (Cumberland)

Interpretive Supervisor	240-625-2931	Joshua Nolen
District Ranger Law Enforcement	301-722-0543	
Cumberland Subdistrict	301-722-0543	
Hancock Subdistrict	301-678-5463	
Ferry Hill Subdistrict	301-714-2206	

Visiting the Park

The C&O Canal NHP is open 365 days a year, but may be closed at times due to weather conditions, towpath issues or repairs. Park visitor centers are located at Georgetown, Great Falls, Brunswick, Williamsport, Hancock and Cumberland. They may be closed seasonally or due to staffing limitations.

www.nps.gov/choh/planyourvisit/index.htm
(QR Code at right) provides information about park facilities, towpath local closures, NPS events, canal boat programs, visitor centers, camping and other visit related information. The park phone number is 301-739-4200.



Check park status before visiting.

Other Useful Contacts

Canal Quarters Program – www.canaltrust.org/programs/canal-quarters/

Canal Towns – www.canaltrust.org/programs/canal-towns/

24-HOUR EMERGENCY:

911 or 866-677-6677

REPORT SAFETY HAZARDS OR TOWPATH ISSUES:

HAZARDS CHOH_Hazards@nps.gov

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Associate Editors: Tom Aitken, Bill Holdsworth and Ned Preston.

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Association business – 19%, history/education – 30%; nature – 25% volunteer/project activity – 22%, NPS/park information – 4%

C&O CANAL ASSOCIATION

Membership in C&OCA is open to all persons with an interest in the C&O Canal, the C&O Canal National Historical Park and the Potomac River Basin. Annual membership dues are: \$25 individual, \$35 family, and \$50 patron, assessed on a calendar-year basis, and include subscription to the newsletter. Dues should be mailed to the C&O Canal Association or paid on-line. C&OCA is a non-profit organization as defined by section 501(c)(3) of the Internal Revenue Code, and all contributions are tax deductible to the fullest extent of the law. A copy of our current financial statement is available upon request by contacting the C&OCA at the address above or emailing inquiries@candocanal.org. Documents and information submitted to the State of Maryland under the Maryland Charitable Solicitations Act are available from the Office of the Secretary of State for the cost of copying and postage.

C&OCA maintains a web page at www.candocanal.org. The webmaster is website@candocanal.org. Inquiries can be directed to the Association at inquiries@candocanal.org.

ASSOCIATION OFFICERS

President: Tiffany Ahalt, president@candocanal.org

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Second Vice President: Anthony Laing

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Culvert 234, at Mile 175.35, is just below Lock 73 and the old B&O Railroad (now CSX) crossing back into Maryland. It is a 6-foot sandstone culvert with a 3-foot rise. The culvert was built in 1838 to 1840 and is in good condition with some long-standing concrete repairs evident, especially on the berm side. A typically active stream flows through it. – Photos by Steven Dean



ALONG THE TOWPATH

Chesapeake & Ohio Canal Association
www.candocanal.org

In This Issue

Trees, Fungus and Complexity Science	1
Presidents Report.....	2
New Members	2
Donors to Association Funds	3
Karen Gray Article Listing	8
Herman Hollerith and the C&O Canal.....	12
Breeding Bird Atlas	15
Butterfly Walk.....	15
Volunteers in Parks	16
Dragonfly Walks	16
C&O Canal Water Pumps.....	17
On The Level.....	18
The Big Help Out.....	21
Calendar and Events	22
Contacts.....	23

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