



Mapping Wetlands with AI PHOTO BY WILL PARSON/CHESAPEAKE BAY PROGRAM COVER STORY PAGE 4

- CIC Turns 10! 3
- County Tree Canopy Data Available 5
 - Donor Spotlight: Carnelious Jones 7

Board of Directors

Randall W. Larrimore, Chair Stephanie Meeks, Vice Chair Jeffrey Sabot, Treasurer Marc Bunting, Secretary **Richard Batiuk** Thad Bench Michael Brubaker Leslie Delagran Joel E. Dunn Matthew Earl Colin Harrington Ed Hatcher Pamela D. Marks Mamie A. Parker, Ph.D. John J. Reynolds Chief G. Anne Richardson Tony J. Spencer Molly Joseph Ward Beattra Wilson

Honorary Member

Gilbert M. Grosvenor

Emeritus Directors

Patrick F. Noonan Charles A. Stek

Chesapeake Conservancy Staff

Joel E. Dunn, President & CEO Ben Alexandro, Deputy Program Manager, Chesapeake Conservation Partnership Allison Anderson, Director of Institutional Giving Mike Bonnell, Chesapeake Conservation Corps Member Michael Bowman, Communications & Outreach Specialist Sue Buyaskas, Project Manager Mark Conway, Executive Vice President of Programs Jody Couser, Senior Vice President of Programs Jody Couser, Senior Vice President of Communications Carly Dean, Director of Chesapeake Tributary Strategies J.T. Dean, Director of Individual and Major Gifts Michael Evans, Ph.D., Senior Data Scientist Kelsey Everett, Partnership Digital Resources Associate Ellen Gardner, Senior Vice President of Finance & Chief Financial Officer

Adrienne Gemberling, Program Manager John Griffin, Program Manager,

Chesapeake Conservation Partnership Ryan Hill, Project Coordinator/Geospatial Analyst Louis Keddell, Geospatial Program Manager Sarah Killian, Assistant to the Executive Vice President Elliott Kurtz, Senior Geospatial Analyst Isabel Layton, Bilingual Interpretive Outreach Assistant Kumar Mainali, Ph.D.,

Senior Data Scientist & Data Science Lead Patrick McCabe, Senior Geospatial Analyst Joseph McCauley, Chesapeake Fellow Ndumezulu Mpofu, Geospatial Analyst Reed Perry, Director of Government Relations Matthew Provost, Senior Vice President of

Development & Business Strategy Elizabeth Reitzloff, Live Stake Coordinator Frank Rohrer, Restoration Project Advisor Kathy Rohrer, Restoration Project Advisor David Saavedra, Senior Geospatial Technical Lead Alicia Sabatino, Web GIS Specialist/Cartographer Daniel Salomón, Bilingual Interpretive Outreach Assistant Helen Sieracki, Human Resources Coordinator Lisa Spallitta, Accounting Coordinator Susan Stephenson, Director of Federal

Business Development Steve Storck, Acting Director,

Conservation Innovation Center Shannon Thomas, Project Coordinator Katie Walker, Geospatial Program Manager Charlotte Weinstein, Senior Geospatial Analyst

From the President & CEO



Maryland Governor Wes Moore (*seated center*) signs the Forest Conservation Act. Thank you to Gov. Moore, Sen. Sarah Elfreth, Delegate Sara Love, the Chesapeake Bay Commission, and everyone who worked to advance and pass this bill and protect Maryland's trees and forests. PHOTO BY THE OFFICE OF MARYLAND GOVERNOR WES MOORE

Maryland: Setting Great Legislative Examples

In concert with our vision and mission, Chesapeake Conservancy is celebrating the passage of our legislative priorities in the recent Maryland General Assembly session, protecting more forests and natural areas around the state to benefit nature, people and the Bay.

Maryland the Beautiful

"Maryland the Beautiful" sets a statewide goal to conserve 30% of Maryland's lands by 2030 and 40% by 2040. Maryland is the first state in the nation to set a 40 x 40 goal, a watershed moment for our climate crisis.

Forest Conservation Act

A bold and impactful update was made to the state's 1991 Forest Conservation Act, informed by the Harry R. Hughes Center for Agro-Ecology's "Technical Study on Changes in Forest Cover and Tree Canopy in Maryland," published in November 2022. Chesapeake Conservancy's Conservation Innovation Center (CIC), which turns 10 this year, served as the report's lead author and co-led the geospatial analysis.

This was the most comprehensive study of forest cover and tree canopy in Maryland ever completed. The study empowered legislators to strengthen the Forest Conservation Act by increasing the mitigation requirements for development projects to better protect priority forests and decrease forest loss. The bill also changed Maryland's forest cover goal from "no net loss" to "net gain" and created a "net gain" of tree canopy as a state goal.

Greenspace Equity Program

I am particularly excited about a program created this session called the Greenspace Equity Program. This new statewide program will help land trusts and local governments to buy and protect greenspace in Maryland's underserved and overburdened communities. The program also provides funding to improve greenspace for better public use and enjoyment.

Meanwhile, at the national level, momentum continues to build for the Chesapeake National Recreation Area, which would bring National Park Service status to the Chesapeake. Sen. Chris Van Hollen and Rep. John Sarbanes (both D-MD) have received more than 1,000 public comments on the draft legislation and are striving to introduce the bill this summer.

Recently a staunch advocate for the Chesapeake Bay announced his retirement. U.S. Sen. Ben Cardin (D-MD) has been an outstanding, exemplary champion for the environment and the Chesapeake Bay throughout his more than 50 years in public service. We will miss "our friend Ben" in the U.S. Senate.

Please join us in celebrating these legislative victories and milestones and the tireless efforts that empowered them.

Sincerely,

JOEL E. DUNN, President and CEO

Conservation Innovation Center Turns 10!

Time flies when you are having fun and empowering land conservation with high-resolution land use/land cover data.

Chesapeake Conservancy's Conservation Innovation Center (CIC) turns 10 this year. Established in 2013 with two staff members, CIC currently has 12 employees (and continues to grow!). The idea for CIC was developed and nurtured by former Chesapeake Conservancy Board Member Stephen Harper, who, after working for Intel for nearly 15 years, decided to take a conservation sabbatical at Chesapeake Conservancy.

CIC is changing how conservation is done, using cutting-edge technology to empower data-driven conservation and restoration. Just as the use of technology changed the corporate world to make it more efficient, technology is changing the conservation movement. Through local, national and international partnerships, CIC makes data accessible for restoration professionals to practice precision conservation, yielding greater impact for lower financial investment.

Chesapeake Conservancy recently hosted a webinar explaining the work of CIC. "If you get one message from what was described [in this webinar], it is that the work that you're seeing here is transforming what is going to be possible in terms of Chesapeake Bay restoration," said Chesapeake Conservancy Board Member Rich Batiuk, who retired after 33 years with the U. S. Environmental Protection Agency (EPA) as associate director for science, analysis and implementation at the Chesapeake Bay Program. View the webinar at **bit.ly/2023CICwebinar**.





We look back at a "Top Ten" of CIC's accomplishments for the 10th! (*in no particular order):

- Founded in 2013 with an initial project funded by a grant from Intel and the Digital Energy and Sustainability Solutions Campaign
- 2 Created 60+ web applications and online tools to assist local and regional conservation and restoration partners
- 3 Supported 10+ land trusts and conservation collaboratives in their land conservation efforts through customized prioritization tools, analyses and maps
- 4 Empowered the passage of Maryland Forest Conservation bills through high-resolution tree canopy analyses
- 5 Guided optimal solar implementation for 14 counties through landscape analysis with an emphasis on conservation / restoration criteria
- **6** Provided the first openly available high-resolution change data for both land cover and land use for the Chesapeake (2022)
- Hired two data scientists specializing in artificial intelligence with funding from the Grayce B. Kerr Fund Inc. (2019, 2022)
- 8 Sent keynote speakers to Esri's International User Conference (2016) and is featured in Microsoft video (2017) and *Wired* magazine (2018)
- Is subject of Harvard Business School case study (2020)
- **10** Produced Chesapeake Bay High-Resolution Land Use/Land Cover Data Project released by EPA's Chesapeake Bay Program (2016)

To learn more about the work of CIC or to propose a project that would benefit from the center's services, contact Acting Director Steve Storck at **sstorck@chesapeakeconservancy.org**.



These two images show locations where wetlands in the data used for training the AI model (green) are no longer present and were not mapped in the model wetland predictions (purple). In this example, an area that previously had a wetland and stream (*left*) has been developed (*right*).

Al Deep Learning Model for Mapping Wetlands Yields 94% Accuracy

Chesapeake Conservancy's data science team developed an artificial intelligence deep learning model for mapping wetlands that resulted in 94% accuracy. Supported by EPRI, an independent, nonprofit energy research and development institute; Lincoln Electric System; and the Grayce B. Kerr Fund Inc., this method for wetland mapping could deliver important outcomes for protecting and conserving wetlands. The results are published in the peer-reviewed journal Science of the Total Environment.

The team trained a deep learning (convolutional neural network) model for high-resolution (1m) wetland mapping with freely available data from three areas: Mille Lacs County, Minnesota; Kent County, Delaware; and St. Lawrence County, New York. The model mapped wetlands with 94% accuracy, producing more precise and accurate data than existing maps.

"We're happy to support this exciting project as it explores new methods for wetlands delineation using satellite imagery," said EPRI Principal Technical Leader Dr. Nalini Rao. "It has the potential to save natural resource managers time in the field by using a GIS tool right from their desks. Plus, it can help companies and the public manage impacts to wetlands as infrastructure builds are planned to meet decarbonization targets."

"The Infrastructure Investment and Jobs Act is pouring hundreds of billions of dollars into projects that will have an impact on the landscape. However, the data that we rely on to minimize impacts to wetlands is distressingly outdated," said Environmental Policy Innovation Center's Restoration Economy Center Director Becca Madsen, a former EPRI researcher. "There has never been a better time to invest in updating our nation's wetland data and establishing a sustainable and cost-effective process for keeping them updated."

"We're working to scale this model and produce accurate wetlands data for the entire Chesapeake Bay watershed. The automated methods we've developed leveraging AI can be game changers for conservation, because they allow us to produce wetland maps regularly, repeatedly, and reliably. We can keep our knowledge of these critical ecosystems up to date with much less effort than traditional approaches," said Chesapeake Conservancy's Senior Data Scientist Dr. Michael Evans.

What This Means for Protecting & Conserving Wetlands

The new model will help infrastructure planners avoid wetlands in the planning process, resulting in cost savings and wetlands conservation. Potential beneficial situations include ongoing efforts to expand and develop renewable energy, which requires expanding electric power infrastructure. The team will next expand the model to states or larger regions and continue to train the model on varied geographies.

The coauthors of the paper are Chesapeake Conservancy's Dr. Kumar Mainali and Senior Data Scientist Dr. Michael Evans; former Chesapeake Conservancy staff Geospatial Technology Manager Emily Mills, Senior Geospatial Technical Lead David Saavedra and former Chesapeake Conservancy Vice President of Climate Strategy Susan Minnemeyer; and former EPRI Project Manager Becca Madsen, now with the Environmental Policy Innovation Center.

Read the publication "Convolutional Neural Network for High-Resolution Wetland Mapping with Open Data: Variable Selection and the Challenges of a Generalizable Model" online in February 2023's *Science of the Total Environment* (https://doi. org/10.1016/j.scitotenv.2022.160622).

See also the digital StoryMap online, "Identifying Wetlands with Deep Learning: How an EPRI & Chesapeake Conservancy Collaboration Is Refining Desktop Wetland Identification for Improved Planning," (https://storymaps. arcgis.com/stories/4f98297b48a94e fbbbeo199681539980) August 2021.

Now Available: County-Level Tree Canopy Data

Tree canopy plays an important role in air and water quality and wildlife habitat. The Chesapeake Bay Program (CBP) is working to expand tree canopy in the watershed by 2,400 acres by 2025. The first step in working toward a tree canopy goal is understanding what you already have and how it is changing.

Working with the CBP, U.S. Forest Service and other partners, Chesapeake Conservancy is proud to help communicate the benefits of current tree canopy as well as an estimate of change in tree canopy as it relates to land use activities.

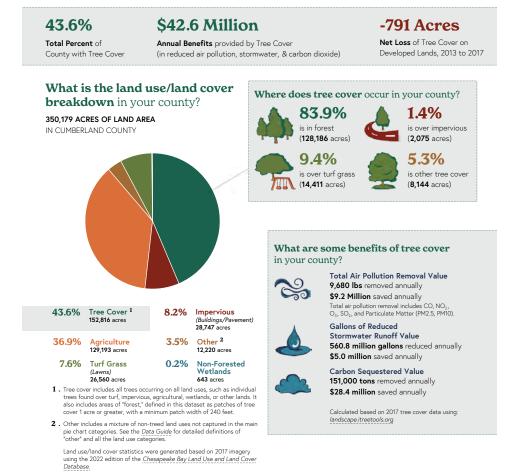
This effort is possible by using previously released 1-meter land use/land cover data produced by Chesapeake Conservancy and partners for the 2013/14 and 2017/18 time periods. Updated data based on 2021/2022 imagery are anticipated summer of 2024.

The tree canopy data are freely available. You can check on your county's tree cover status at **chesapeaketrees.net/ understand-your-canopy**.

The team anticipates generating similar fact sheets, such as municipal-scale summaries.

Tree Cover Status & Change

FOR CUMBERLAND COUNTY, PA







THANK YOU TO WEIS MARKETS!

Maryland employees present a \$1,500 check to Chesapeake Conservancy's Director of Individual and Major Gifts J.T. Dean in honor of Earth Day.

Shown with Dean (*center in jacket*) are Nottingham Assistant Store Manager Fiona Reinhardt, Perry Hall Store Manager Nick Fischer, Towson Store Manager Dan Wildt and store associates. PHOTO BY WEIS MARKETS

Charles County Students Learn About Environmental Careers Students learned a careers in the envi



Nearly a hundred students attended the career symposium. PHOTO BY MICHAEL BOWMAN

In April, the Bureau of Land Management Eastern States (BLM), Charles County Public Schools, Chesapeake Conservancy and College of Southern Maryland (CSM) hosted "Creating an Environmental Foundation for Success," a career symposium for high school and college students in Charles County, Maryland. Students learned about prospective careers in the environmental field from a panel of speakers, including Chesapeake Conservancy's Executive Vice President Mark Conway.

"The symposium was an outstanding opportunity to connect with the best and brightest students from Charles County Public Schools and the College of Southern Maryland," said Mitchell Leverette, BLM Eastern States state director. "We showcased the many programs and career paths that promote conservation and outdoor recreation on public lands in Maryland and across the country.

The students shared with us what drives their interest in public lands, the outdoors and the environment. We are inspired by the young talent we met and hopeful this engagement will motivate them to become the BLM's future leaders."

Susquehanna

Susquehanna, Chesapeake Conservancy Formalize Relationship

Susquehanna University in Selinsgrove, Pennsylvania, and the Chesapeake Conservancy have formalized their ongoing relationship through an agreement that ensures their continued cooperation on restoration projects within the Susquehanna River watershed. "Susquehanna and the Conservancy have enjoyed working closely together in shared space at the Freshwater Research Institute," said Matt Wilson, director of the institute. "I look forward to deepening and expanding our relationship with them as we pursue our mutual goal of improving the health of the Susquehanna River watershed and, ultimately, the Chesapeake Bay."

Proposed National Wildlife Refuge Lands in Southern Maryland



Chesapeake Fellow Joe McCauley helped lead listening sessions and answered questions about the proposed boundary and environmental assessment. PHOTO BY JOEL DUNN

Chesapeake Conservancy is advocating for proposed new national wildlife refuge lands in Maryland's Prince George's, Anne Arundel, Calvert, Charles and St. Mary's counties. This region provides valuable habitat for fish and wildlife, supports migrating waterfowl, protects water quality in the Chesapeake Bay, and offers recreational opportunities, including hunting and fishing.

Lands considered for conservation would promote connectivity of mature forests, protect wetlands and further the ecological integrity of natural communities in southern Maryland.

The U.S. Fish and Wildlife Service hosted three listening sessions this spring. For more information, contact Chesapeake Fellow Joe McCauley at **jmccauley@chesapeakeconservancy.org**.

CHESAPEAKE BAY PADDLE IS Back!

The exciting weekend of paddling, running, celebrating and fundraising for the Chesapeake Bay returns July 22-23, 2023!

Since its start in 2020, Bay Paddle has raised over \$330,000 in charitable contributions, thanks to founder Chris Hopkinson and participating paddlers and sponsors. This year, you can purchase raffle tickets to experience the Chesapeake Bay's beauty in your own kayak! Purchase a \$50 raffle ticket to win a handcrafted Chesapeake 17 kayak from Chesapeake Light Craft, built by Chesapeake Conservancy supporter Charles Dankmeyer. Funds raised will be evenly split among three terrific Chesapeake nonprofits: Oyster Recovery Partnership, Chesapeake Conservancy and Waterkeepers Chesapeake. Drawing takes place July 24, 2023!

See Chesapeake Conservancy's home page to purchase raffle tickets at **chesapeakeconservancy.org**. For more information about Bay Paddle, visit **baypaddle.org**.

Donor Spotlight: Carnelious Jones



Carnelious Jones COURTESY PHOTO

In August 2022, Chesapeake Conservancy joined partners led by Blacks of the Chesapeake Foundation (BOCF) to celebrate a new public waterfront park honoring the Chesapeake's Black history, culture and heritage in Annapolis, Maryland. Elktonia Beach is the last remnant of the original 180-acre property purchased by Fred Carr in 1902. Nearby Sparrow's and Carr's Beaches were privately owned and operated by Fred Carr's daughters, Elizabeth Carr Smith and Florence Carr Sparrow. The "Beaches" (1930s-1970s), as they were called, represented the heart of Black entertainment throughout the mid-Atlantic region and welcomed Blacks during a time of segregation.

There is now an opportunity to purchase the property immediately adjacent to Elktonia Beach, expanding the footprint of the new 5.17-acre park. If successful, a home currently on the property will be converted into an interpretive center and headquarters for BOCF, helping to tell the story of the "Beaches" and the rich Black history and culture that have been a part of the Chesapeake Bay for generations.

In April, a fundraiser that felt more like a party was held at Beacon Waterfront Gallery and Bar, located on what was once Carr's Beach. The evening harkened back to the "Beaches" musical history, with guests singing karaoke into the night.

BOCF board member and Chesapeake Conservancy donor Carnelious Jones has been supportive of our work. "I am fascinated to have witnessed firsthand the work of the Chesapeake Conservancy and the role it is playing now in the promotion and the inclusiveness of Black history preservation and legacy under the leadership of Joel Dunn and the most capable staff," said Jones.

Chesapeake Conservancy seeks more people to follow the example of Carnelious Jones in supporting efforts of both BOCF and Chesapeake Conservancy to expand Elktonia Park. "We have a short time to raise the funds to purchase the adjacent property. The City of Annapolis has agreed to match \$500,000 if the remaining funds are secured," said Chesapeake Conservancy's Director of Individual and Major Gifts J.T. Dean.

If you would like to contribute and help conserve the adjoining property and create interpretive opportunities for the site, please contact J.T. Dean at **jtdean@ chesapeakeconservancy.org**.

Conservancy Board & Staff News

Chesapeake Conservancy welcomes two new members to the board of directors: **Tony J. Spencer** and **Ed Hatcher. Maite Arce, Mark Belton** and **Dr. Nancy Walters** concluded their board service. **Stephanie Meeks** was elected to the position of vice chair.

"On behalf of the board, I am pleased to welcome Tony and Ed. Tony's vast experience in equity activism and cultural storytelling brings important skills to our board as we are dedicated to lifting the voices of everyone in the Chesapeake and creating public access for all," said Chesapeake Conservancy Board Chair Randall Larrimore. "Ed's dedication to Chesapeake conservation and expertise in public relations will help us communicate urgent information as we advance our efforts to conserve 30% of the Chesapeake by 2030 and address the effects of climate change." Superintendent of Harriet Tubman Underground Railroad National Historical Park **Deanna Mitchell** presented Chesapeake Conservancy with the prestigious National Park Service arrowhead plaque with gratitude for assisting the park with the "From Spirituals to Blues and Gospel: The History of a Multi-Century Musical Evolution" event on September 24, 2022.

Chesapeake Conservancy welcomes to the staff Chesapeake Conservation Partnership Deputy Program Manager **Ben Alexandro**, Geospatial Analyst **Ndumezulu Mpofu**, Restoration Project Advisor **Kathy Rohrer** and Web GIS Specialist/Cartographer **Alicia Sabatino**.

Please join us in congratulating **Reed Perry**, promoted to director of government relations. Lastly, we extend our heartfelt thanks to **Jacob Czawlytko**, **Emilie Lahneman**, **Susan Minnemeyer**,



Monserrat Pizarro, Gabrielle Roffe and **Remi Shaull-Thompson**, who left to pursue other professional opportunities.



716 Giddings Avenue, Suite 42 Annapolis, Maryland 21401 NON-PROFIT U.S. POSTAGE **PAID** PERMIT #273 ANNAPOLIS, MD

Let's Keep in Touch!



CHESAPEAKE CONSERVANCY RELIES ON OUR MANY FRIENDS TO PROTECT AND CONSERVE THE CHESAPEAKE'S GREAT RIVERS AND SPECIAL PLACES. YOUR TAX-DEDUCTIBLE CONTRIBUTION OF ANY AMOUNT IS TRULY APPRECIATED. CHESAPEAKE CONSERVANCY HAS A 4-STAR RATING FROM CHARITY NAVIGATOR. OUR TAX ID NUMBER IS 26-2271377. OUR CFC ID NUMBER IS 27293.



USE YOUR REAL ESTATE TO LEAVE A LEGACY FOR FUTURE GENERATIONS

One of the most significant ways you can leave a legacy for future generations while enjoying tax savings is by choosing Chesapeake Conservancy as the next steward of your land. As development encroaches on the last open spaces in the Chesapeake watershed, we encourage landowners to consider Chesapeake Conservancy's Gift Lands program. This is the greatest gift that you can leave behind. This is your legacy.

For more information, contact Matt Provost at **mprovost@chesapeakeconservancy.org**.



PHOTO BY WATTS