Chesapeake Research Consortium

Annual Report 2024

CRC

Photo credit: Chesapeake Bay Program

From The Director

Nothing happens until something moves.
- Albert Einstein

I love this quote, simply because it can be interpreted in physical, mental, or spiritual terms, and placed into so many contexts. It's the perfect follow-up to last year's theme of our Annual Report, which was commitment. While commitment is laudable and necessary, if its outcome is stagnation or inertia instead of movement, it was for naught. So, I am incredibly proud to say that movement aptly described the past year for the CRC.

Movement can also describe a group of people with a shared purpose who build collective power to create change, and that's what the partnership did last year. The effort to envision what was beyond 2025 brought forth a gathering of ideas from hundreds of people. They showed up in large and small ways from every corner of the partnership, not because they had to, but often out of sheer commitment to the idea of a healthy and resilient Bay. But now comes the difficult step of moving forward through those ideas and deciding which to implement. Doing so requires a hefty dose of bravery, a spirit of innovation, the tools to make decisions under uncertainty, the need to balance multiple objectives, and the willingness to stretch outside the comfort zone as you go from commitment to action.

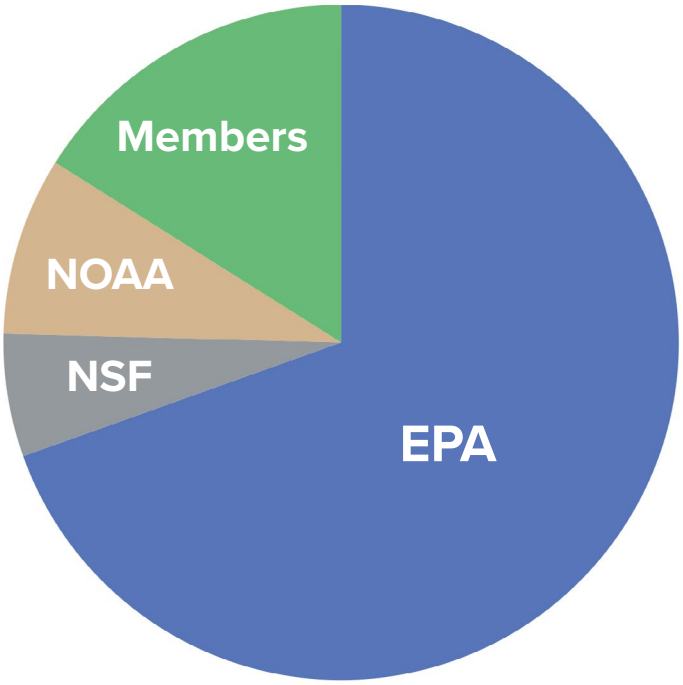
Here's how movement showed up in the work of the CRC, both in providing science to the partnership and preparing the next generation of environmental leaders. Our movement in preparing for strong future leadership was especially large. After the Chesapeake Bay Program's Science and Technical Advisory Committee (STAC) published the Comprehensive Evaluation of System Response (CESR) in 2023, one might have assumed that STAC would take a well-deserved break. CESR had identified opportunities for improved effectiveness in reaching our goals beyond 2025, and STAC moved those ideas forward, from broad sketches to renditions in more detail, such as the idea of "Tiered Implementation" of the Total Maximum Daily Load. CRC convened past members, current members, and valued partners to do so. With our long-time communications partner, Green Fin Studio, we prepared a CESR Report in Brief and one-pagers to communicate important scientific advances to inform policy-makers, and Green Fin provided STAC members with specialized training on how to do just that. The 2024 Chesapeake Community Research Symposium had a record number of attendees, necessitating consideration of a larger venue for its next occurrence in 2026.

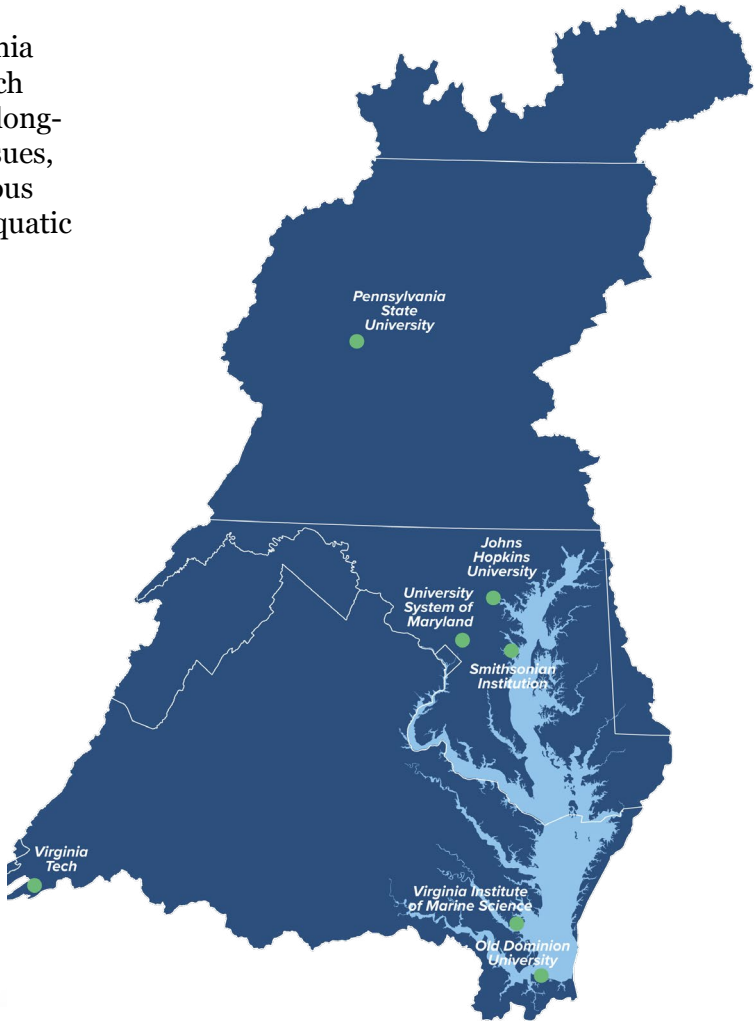
We accomplished the graduation of nine of our "Staffers" from the Environmental Management Career Development Program (EMCDP) into professional roles, demonstrating the impressive results of the investment in their professional and leadership skills. As a result of that success, we have welcomed nine new future leaders into the program. Chesapeake Student Recruitment, Early Advisement, and Mentoring (C-StREAM) contributed another cohort of Fellows into the world and is now providing substantial evidence of its value; three C-StREAM alumni have now gained positions in the highly-competitive EMDCP program. Both the C-StREAM and EMDCP programs have now provided a well-structured and tested pathway to successful environmental careers. The "Staffers" of the EMDCP program have again proven critical during this period of visioning and change, providing the innovation that only they can while they continue to be the glue of the Chesapeake Bay Program. We continued to convene scientists, managers, and educators around a variety of issues via the CRC Roundtable, our monthly webinar series now in its fifth year. We even set another registration record: 371 registrants for a session on stream restoration. Intentional and thoughtful movement, indeed.

As always, our profound thanks for your engagement and passion in common cause.
Denice Wardrop | Executive Director, Chesapeake Research Consortium

Institutions & Funding

Established in 1972, the CRC represents Old Dominion University, Smithsonian Institution, The Johns Hopkins University, University System of Maryland, Penn State University, Virginia Institute of Marine Science and Virginia Tech. As an association of some of the most active research centers in the U.S., a primary goal is to ensure continued long-term support for basic and applied research for coastal issues, from land-based watershed considerations through rigorous investigation of water quality and living resources in its aquatic ecosystems.





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We mourn the passing of our Trustee Harihar Rajaram, and look forward to a new Johns Hopkins University Trustee soon.

Kang Xia
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Our Vision

A sustainable and regenerative Chesapeake Bay ecosystem that plays a vital role in the health and well-being of all stakeholders.

Our Mission

The Chesapeake Research Consortium (CRC) fully enables its member institutions and the broader scientific community in the region to inspire and implement solutions to the understanding and management of the Chesapeake Bay and its watershed, by defining, coordinating, and disseminating the research and education needed for its science-based management.

To transition from this mission to strategic action, we translate "to fully enable" into four "enabling" roles: convening managers and provisioners of science, filling the pipeline of environmental professionals, building the big stage for dissemination of solutions, and supporting member institutions in the research and education efforts that are relevant to the Chesapeake Bay partnership efforts. This framework of enabling roles allows us to plot a course forward in our daily work, resulting in the portfolio of programs and efforts highlighted below.

Convening

Convening brings together a diverse team with different areas of expertise to tackle a shared problem, taking advantage of collective intelligence. It requires a clear purpose that participants can work towards in a collaborative effort. In the case of the CRC, restoration of the Bay and watershed provides this clear purpose, albeit at a large scale. Currently, coordination of STAC, the biennial conference, and the CRC Roundtable are examples.

Creating Pathways

CRC's aim is to evolve and strengthen a leadership pathway that attracts and retains a diverse community so that the necessary diversity of perspectives is applied to the protection and restoration of complex human-impacted ecosystems. We do this at two professional levels; the Staffer's program is notably recognized as having high value for young professionals, and the relatively new C-StREAM program serves undergraduate students from diverse backgrounds. These are examples of programs that cannot be provided at the scale of individual institutions, and are effectively delivered by the CRC.

Building the Big Stage

Exchange of information must happen at a large scale within the restoration effort, both between scientists and managers, as well as among scientists with Bay-related expertise. The CRC newsletter, CRC Roundtable, and accompanying social media efforts serve to provide platforms for targeted, inclusive, and informed conversations that match scientific advances and management needs, as well as provide topical areas around which networks of scientists can form. Both are necessary elements to move us collectively toward decision-making for effective and sustainable management of the Chesapeake Bay, its watershed, and its living resources.

Member Support

The seven member institutions of the CRC collectively represent an astounding portfolio of research and educational resources, across a large geographic area. The CRC aims to bring this collective expertise to bear on the restoration effort through the facilitation of collaborative and multi-institutional efforts of both higher education and interdisciplinary research. The three roles above (convening, filling the pipeline, building the big stage) all interweave to serve this purpose, as well as additional tools such as the Chesapeake Bay Expertise Database and the participation in multi-institutional research proposals.

2024 Accomplishments

Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC)

Prepared by Meg Cole

Maintaining Momentum

Momentum is defined as the quantity of motion, and that is exactly what the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) continued to do in 2024 via its crucial role in supporting science-based decision-making and advancing the restoration of the Bay. STAC focused its energy on enhancing advisory coordination, fostering key collaborations, delivering valuable science-based outcomes, integrating climate change adaptation strategies, and expanding the role of social sciences in Bay management.

Advisory Coordination & Workshops

STAC has played a key role in advising the Chesapeake Bay Program's (CBP) strategic priorities, including the Beyond 2025 initiative. This work involved providing technical guidance to CBP leadership and helping shape long-term restoration goals. In 2024, STAC continued its active engagement in workshops and collaborative efforts, including the Climate Change Modeling 3.0 workshop. This event offered valuable insights into climate adaptation strategies to support the Bay's restoration amid changing environmental conditions.

STAC member Kenneth Rose (UMCES) presenting at the May STAC workshop on Climate Change Modeling.

Looking ahead, STAC is planning four FY25 workshops on the following key topics: striped bass habitat, brook trout restoration, market-based approaches, and applications of artificial intelligence and machine learning in Chesapeake Bay research. These workshops aim to advance science-based solutions to support CBP's goals. More information on upcoming workshops can be found on the STAC website.

Science-Based Outcomes

STAC's science-based recommendations continue to play a crucial role in improving water quality in the Bay. In 2024, STAC published six reports resulting from key workshops that informed the next phase of watershed management and restoration. Topics included stream restoration, wetland ecosystem services, and the impacts of solar farms on hydrology and water quality. The 2024 reports are available on the STAC Publication Page.

An implication from the Comprehensive Evaluation of System Response (CESR) report, STAC continued to explore a tiered approach to implementation of the Bay's Total Maximum Daily Load (TMDL) this year, drafting a two-page brief on the concept. This approach underscores the importance of prioritizing nutrient and sediment reductions where they will have the most significant impact on improving living resources via habitat suitability analysis, staggered timelines, and interim goals prioritize actions with the greatest ecological impact. This approach, allows for immediate, targeted benefits that are important to people while continuing to strive towards achieving the long term goals of the TMDL.

Looking Ahead: Investing in the Future
STAC is dedicated to advancing the partnership by integrating science, social equity, and climate resilience into restoration efforts. In 2024, a key effort by the committee was the formal approval of the STAC-led Social Science Workgroup (SSWG). The goal of this workgroup is to provide a platform to integrate social science perspectives across the range of CBP's efforts, focusing on the human dimensions of watershed management. Social sciences cover a wide array of disciplines, including behavioral economics, sociology, governance, environmental justice, and public policy. The SSWG aims to help define and apply social science frameworks that address key partnership challenges while fostering collaboration between physical and social scientists.

STAC also advanced the integration of diversity, equity, inclusion, and accessibility (DEI-A) principles through its FY24 STAC Workshop Request for Proposals (RFP), which requires that all proposed workshops be inclusive in their design and address DEI-A principles, promoting equitable outcomes throughout the planning, execution, and outcomes of workshops. In August 2024, STAC released the FY25 STAC-Sponsored Science Synthesis Project RFP, seeking proposals focused on managing climate change impacts on water quality, living resources, and communities within the Chesapeake Bay Watershed. The selected project(s) will synthesize existing data to inform climate adaptation and risk-informed decision-making while incorporating DEI-A principles into its research approach.

Building Resilience: Preparing for Future Challenges
As the Chesapeake Bay faces growing challenges from climate change, population growth, and land-use changes, STAC remains committed to restoration efforts that are adaptable and resilient. In 2024, STAC reinforced its position in a letter to the Executive Council, emphasizing the need for climate change considerations to be integrated into all CBP planning and decision-making processes. The committee also stressed the increasing importance of focusing on living resources and addressing social and economic factors that influence pollution and land-use decisions.

Moving forward, STAC is dedicated to driving science-based recommendations, facilitating collaborative workshops, and bridging the gap between natural and social sciences. By bringing together insights from a wide range of disciplines, STAC will continue to help shape the program's efforts to build resilience in the face of an ever-changing future.

Chesapeake Executive Council Meeting in Annapolis, MD, on December 10, 2024.

CRC Executive Director Denice Wardrop shaking hands with Maryland Governor Wes Moore.

Since its creation in December 1984, the Chesapeake Bay Program's (CBP) Scientific and Technical Advisory Committee (STAC) has worked to enhance scientific communication and outreach throughout the Chesapeake Bay watershed and beyond. STAC provides independent scientific and technical advice through all activities. STAC serves as a liaison between the region's scientific community and the CBP. Through professional and academic contacts and organizational networks of its members, STAC ensures close cooperation among and between the various research institutions and management agencies represented in the Bay watershed.

Environmental Management Career Development Program (EMCDP)

Prepared by Melissa Fagan

"Life is a journey, not a destination. It's the movement along the pathways that shapes us, not the place we end up."
– Attributed to Ralph Waldo Emerson

When you engage in workforce development programing, you hear the term pipeline used a lot to describe the movement of people through the professional ranks. In fact, CRC formerly used the pipeline term to represent our work in shaping the next generation of Chesapeake Bay leaders. However, as we grow in this space, we've realized that pipelines are too confining and inflexible and what we are doing with our career development program is creating pathways for our Staffers to travel. Our pathways meander and have forks. They twist and turn, sometimes unexpectedly. Sections of our pathways are an uphill battle while other stretches offer respite in the flats. No matter what their journey looks like, CRC Staffers are moving through their experience growing, learning, exploring, and leaving waves of impact trailing after them. No two pathways look the same but are unique in their experience just like each of our Staffers and their professional journeys within CRC and the larger Bay professional community.

And what makes this work even more fulfilling? We are seeing C-StREAM Fellows join the Career Development Program as they move down their own pathways. We have had the pleasure of supporting one Fellow who has now moved on to continue work within the Chesapeake community, are currently supporting a second Fellow who is engaged in critical communications and engagement work and are preparing to welcome a third Fellow who will be critical to the Bay Program's monitoring and assessment activities.

2024 was another year of transition for the Environmental Management Career Development Program. Our Staffers successfully navigated their pathways into new roles with Bay partners such as the US Geological Survey, the Alliance for the Chesapeake Bay, the Choose Clean Water Coalition, University of Maryland Center for Environmental Science, and Maryland's Department of Natural Resources. This migration allowed us to bring a new group of travelers to our network of trails and we are eager to see what directions they take as they begin to map out their growth and development plans. Take a look at the graphic below to see what hiring this new group of travelers looked like!

421 Resumes reviewed

39 Interviews conducted

8 Staffers hired

While our Staffers are moving down these various paths, they are also integral parts of the Chesapeake Bay Program's ability to move forward and progress toward achieving program goals and objectives. CRC Staffers continue to provide unwavering coordination support, robust technical contributions, and creative and inclusive energy. They met all the transitional challenges 2024 had to offer and are well prepared to support the Bay Program as they look beyond 2025 to the future of the Bay's restoration and conservation efforts.

CRC Staffers embrace the Halloween spirit and transform into Chesapeake Bay invasive species.

CRC's Environmental Management Career Development Program (EMCDP) gives early career environmental managers and scientists an entry point into the Chesapeake Bay's restoration community in a way that not only provides critical professional experience but that also advances individual growth so that future leaders are prepared to continue the restoration and management of the Chesapeake Bay and its watershed.

Chesapeake-Student Recruitment, Early Advisement, and Mentoring (C-StREAM)

Prepared by Denice Wardrop and Allison Burbach

C-StREAM fellows, NCBO interns, and mentors gather at the end-of-summer Symposium at the Smithsonian Environmental Research Center.

In 2024, the C-StREAM Fellowship program continued to forge new pathways to environmental careers and move gracefully through them. Through thoughtfully designed events throughout the summer, we focused on fostering community, building professional skills, and creating meaningful connections between fellows, mentors, and environmental professionals.

The four main in-person events hosted during the spring and summer were a Mentor training event, orientation for both Mentors and Fellows, the Fellows event, and the Symposium. Orientation kicked off the summer by engaging the new fellows in the program, the Chesapeake region, and mentors from the host organizations. The Fellows event brought together current and past Fellows to develop a network of Fellowship participants, connect as peers, and offer professional development about post-college opportunities. The summer concluded with the Symposium where C-StREAM and NOAA's Chesapeake Bay Office (NCBO) interns shared their work with an audience of other interns, mentors, and environmental professionals from across the Chesapeake Bay region.

In addition, two biweekly series kept Fellows learning and engaging with their cohort every week. Every other Friday, Fellows tuned in to 'Lunch and Learn' professional development sessions covering topics including the development of a career pathway, a better understanding of how to apply for and land a federal job, the historical and cultural context of the Bay, and a special session by Green Fin Studio on science communication best practices. Every other Wednesday, Fellows gathered virtually for 'Lunch Bunch' sessions for casual conversation with their cohort, which provided an opportunity to build connections in a relaxed, comfortable setting.

Looking To The Future
Our C-StREAM Program Coordinator, Randy K. Rowel, and Bart Merrick (NOAA CBPO) jointly managed orientation, professional development, and a final symposium, all in a hybrid format. We are grateful to Randy K. Rowel for his leadership over the past three years, and look forward to welcoming a new face, Gabriella Giordano, into the role of Program Coordinator. Gabriella's expertise in network building will strengthen the connections between current and past Fellows, and continue to weave the fabric of a community of practice.

C-StREAM 2024 by the numbers:

87 Applicants

8 Fellows (1 returning)

12 Mentors

6 Institutions

The Chesapeake-Student Recruitment, Early Advisement, and Mentoring (C-StREAM) is a program focused on recruiting, advising, and mentoring college students from populations who have been historically excluded from the environmental field and are therefore currently underrepresented in environmental research and management professions so that the necessary diversity of perspectives is applied to the protection and restoration of complex human-impacted ecosystems.

The Chesapeake Community Modeling Program (CCMP)

Prepared by Allison Burbach & Raleigh Hood

+1
New member

10
Meetings held

4
Newsletters

CCMP convened the ninth biennial Chesapeake Community Research Symposium June 10-12, 2024, in Annapolis, MD. The theme for the symposium was Chesapeake Bay Restoration: Managing Water Quality for Living Resources in a Changing Climate. The plenary speakers were Ashley Spivey (Kenah Consulting), Martha Shimkin and Anna Killius (Chesapeake Bay Program Beyond 2025 Steering Committee Co-Chairs), and Hilary Harp Falk (Chesapeake Bay Foundation).

In addition, two panels offered robust discussions on the following topics:

- Visionary Paths in Chesapeake Bay Restoration by the Next Generation
- Advances in Coupled Natural and Human Systems Research, Understanding and Applications

In-person attendees increased by 47% along with 28% more individual presentations over the previous year's attendance (sessions and posters). Since its beginning in 2008, the Symposium has continued to expand and grow in terms of the topics covered, the number of presentations, and the number and diversity of attendees.

New this year, CRC offered 25 scholarships to cover the cost of registration for undergraduate and graduate students. Five scholarships were reserved for C-StREAM fellows. CRC and CCMP are committed to investing in future generations of scientists as well as promoting diversity, equity, and inclusion of underrepresented groups.

Plenary speaker Dr. Ashley Spivey, Kenah Consulting, discusses how to include indigenous people and knowledge in management decisions.

The CCMP steering committee has begun planning the 2026 Symposium. To support the continued growth of this meeting, we are exploring other venue options and opening space for sponsors and exhibitors.

The Chesapeake Community Modeling Program (CCMP) is a long-term collaborative effort between CRC, the University of Maryland Center for Environmental Science – Horn Point Laboratory (UMCES-HPL), and the NOAA Chesapeake Bay Office, that is dedicated to advancing the cause of accessible, open-source environmental models in support of research and management efforts.

Communications

Prepared by Lauren Huey & Allison Burbach

Our communications strategy is founded on a commitment to sharing knowledge as broadly and openly as possible, as well as providing the spaces necessary for the vetting of that knowledge and discussion of how to implement it in the ongoing work.

CRC Streamline

In 2024, CRC sent out a monthly newsletter called the CRC Streamline. Each Streamline was centered on the theme of the previous month's Roundtable webinar and included the link to the recorded discussion as well as additional resources related to that month's theme.

2024 CRC Streamline by the numbers:

10
Countries reached

11
Newsletters sent

8946
Opened newsletters

1962
Subscribers

Changes From 2023:

+3036
opens

+383
subscribers

CRC Social Media

CRC uses LinkedIn to support our mission and vision, along with Facebook. From job announcements to posts about upcoming events, social media is an important and growing part of CRC's virtual presence.

2024 CRC social media by the numbers:

2120
Followers across all platforms

1233
Reactions on LinkedIn

631
New followers across all platforms

CRC Roundtable

The CRC Roundtable is a monthly virtual seminar series that hosts targeted, inclusive, and informed conversations matching scientific advances and management needs related to the Chesapeake partnership. The seminars aim to build connectivity across organizations and identify ways to increase our collective decision-making competency. Each webinar invites a diverse range of speakers to set the stage, followed by facilitated discussion. We've built a gathering space for awkward questions and open dialogue. The webinars are also recorded and uploaded to the CRC YouTube channel as a resource for all.

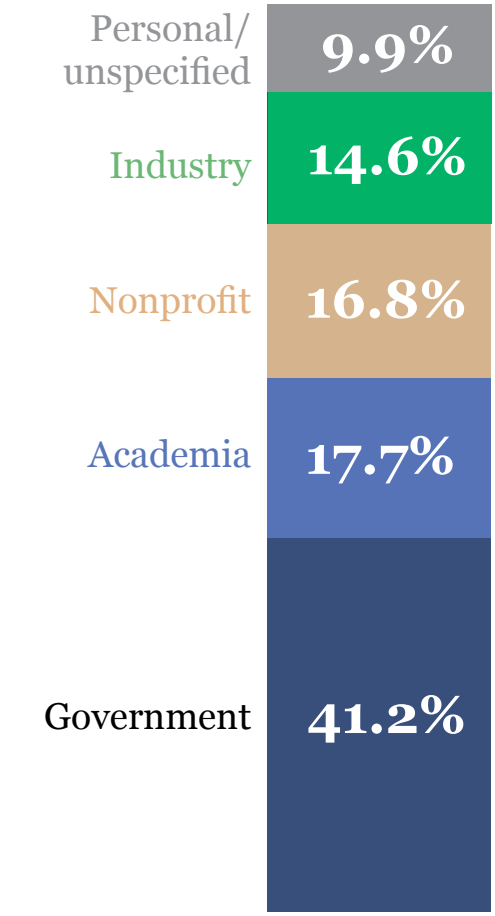
2024 by the numbers:

- 10 — Webinars hosted
- 4 — Years of webinars
- 49 — Webinars hosted since 2020
- 108 — Average attendees
- 3034 — Views of recorded webinars

The CRC Roundtable is facilitated and supported by Green Fin Studio. These seminars could not happen without our generous speakers sharing their time and expertise with our audience. Thank you!

JAN	**Planning for the Chesapeake Bay Watershed of the Future** Peter Claggett, USGS Eric Leshinsky, City of Annapolis, MD
FEB	**Stream Restoration: Are current practices giving us what we want?** Gregory Noe, USGS Erik Michelsen, Anne Arundel County, MD
MAR	**How to Protect Local Waterways** Laura Cattell Noll, Alliance for the Chesapeake Bay Shannon Moore, Frederick County, MD
APR	**The Solar Situation: The state of the science and the industry** Lauren McPhillips, PennState Mike Rolband, Virginia Department of Environmental Quality Ryan Stewart, Virginia Tech
MAY	**CRC Member Take-Over Series: Smithsonian Environmental Research Center (SERC)** Patrick Megonigal, SERC John Parker, SERC Moderator: Tuck Hines, SERC
JUN	**UninHABitable: Harmful Algal Blooms Across the Watershed** Margaret Mulholland, Old Dominion University Rosalina Christova, George Mason University Judy O'Neil, University of Maryland Center for Environmental Science Moderator: Christian Jones, George Mason University
SEP	**Flotsam and Jetsam: Fighting Debris in the Chesapeake Bay Watershed** Kelly Somers, EPA Renee Sanders, VIMS
OCT	**The Burden of Data Centers on Our Communities** Lauren Bridges, University of Virginia Julie Bolthouse, Piedmont Environmental Council
NOV	**Eat Your Invasives: The Bay's Battle with Blue Catfish** Bruce Vogt, NOAA Mike Hutt, Virginia Marine Products Board
DEC	**Connecting Communities Through Water** Nainoa Thompson, Polynesian Voyaging Society

The CRC Roundtable attracted a diverse audience in 2024:



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CRC Streamline

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Chesapeake Bay
Expertise Database

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Photo credit: Chesapeake Bay Program