Chesapeake Research Consortium

Photo credit: Chesapeake Bay Program

CRC

Annual Report 2019-2020

January 2021

From the Director

Straight roads do not make skillful drivers…

Paulo Coelho

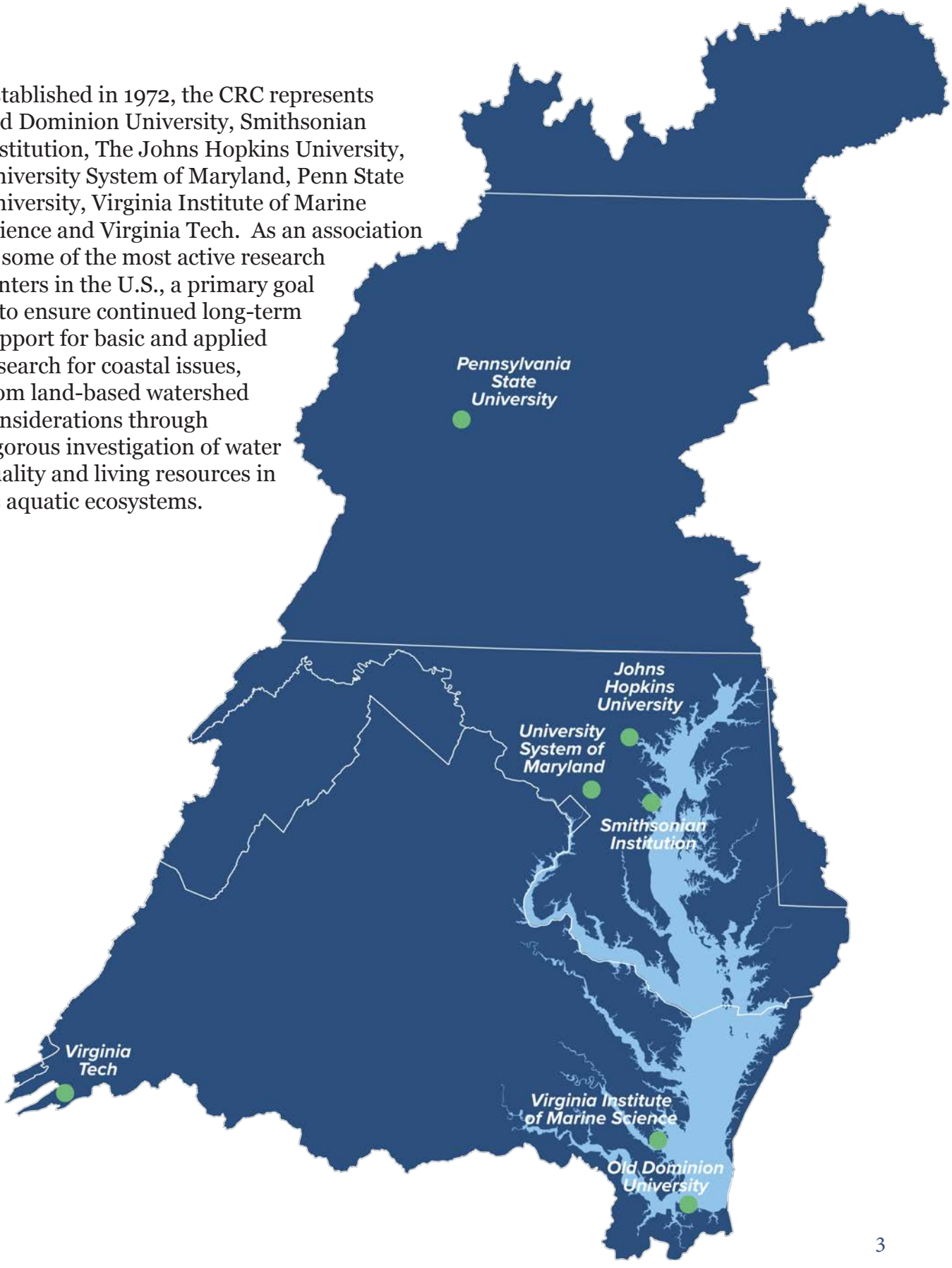
I am always struck by our ability as scientists and practitioners to embrace and experience a curved and complex path to understanding, and to have boundless curiosity for its nooks, crannies, and nuances. The complete stories of those intellectual and experiential journeys can be so wonderfully rich. But if you are like me, when you retell it to the wider world, you go to great lengths to straighten the line from beginning to end, as if you had planned it that way all along and circumstances had obeyed. But it is in the ups, downs, left and right turns that the learning occurred, and so to re-tell the story as a straight line deprives both the storyteller and the story recipient of all that learning. In other words, it does nothing to make us more skilled in our collective driving. This is a year that felt like a drive down San Francisco's Lombard Street for us, and I suspect for you, too. We gripped the wheel, we plied the brakes, we learned to pay attention to things previously unseen, we ran over a few cones, we felt exhilarated, we felt exhausted, we are grateful to have arrived safely at the bottom. Above all, we are much more skilled drivers than we were before. I would venture to say that we are not alone. In response to the times, one of our most significant actions this year was to create a space (a themed newsletter and accompanying monthly roundtable series) where we could gather and describe twisting journeys to one another, to become aware of the necessary driving skills, and to practice driving under the eye of an experienced practitioner. Green Fin Studio is our valued vehicle designer and co-pilot in these and other ventures, and we are looking forward to gathering your input and refining these convening spaces. To this end, this first CRC Annual Report describes our collective journey down Lombard Street, in a way that includes the ups, downs, left, and right turns, because nothing less will do when our objective is to become skilled drivers. We are looking forward to the opportunity to use those skills in the coming year to be even more smooth and quick in the turns, and to have even more partners in the car (electric, of course). Our profound thanks for your passion and partnership.

All the best,

Denice Wardrop
Executive Director
Chesapeake Research Consortium

Institutions

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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Our Vision

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

Photo credit: Chesapeake Bay Program

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.

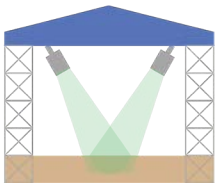
To transition from this mission to strategic action, we translate "to fully enable" into four "enabling" roles: convening managers and provisioners of science, filling the pipeline of environmental professionals, building the big stage for dissemination of solutions, and supporting member institutions 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 a diverse group of 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 CRC's new webinar series, titled CRC Roundtable, are examples.

Filling the Pipeline

CRC's aim is to evolve and strengthen a leadership pipeline 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

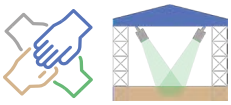
Exchange of information must happen at a large scale within the restoration effort, both between scientists and managers, as well as among scientists with Bay-related expertise. The bi-monthly CRC newsletter, CRC Roundtable, and accompanying social media efforts serve to provide platforms for targeted, 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 forward 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.

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

Prepared by Annabelle Harvey



As a committee comprised of 38 experts from various research, academic, federal, and private institutions in the watershed, the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) provides independent science and technical advice that is interdisciplinary, actionable, and relevant to management needs, so that the CBP partnership operates on the best available science to meet its stated goals and outcomes. Utilizing tools such as technical workshops and reviews, STAC gathers experts from across the watershed and the world to effectively integrate the latest research and guide the partnership into 2025 and beyond.

Photo credit: Chesapeake Bay Program

Meeting virtually throughout the year, STAC members continued work on two major projects that will provide short- and long-term guidance to the partnership. For the first, STAC continued to evaluate system response and gaps in knowledge for the report titled "Achieving Water Quality Goals in the Chesapeake Bay: Comprehensive Evaluation of System Response (CESR)". With the 2025 TMDL Watershed Implementation Plan deadline approaching, now is an appropriate time to identify where water quality programs and policies may not be yielding anticipated system responses, and to better understand possible reasons for these disparities. This report is a STAC-wide collective effort and represents the first such initiative since the Chesapeake Futures 2000 publication.

For long-term guidance, STAC and the CRC are sponsoring a Climate Change Science Synthesis project entitled "Quantifying the impacts of past and future climate and eutrophication on the dynamics of dissolved oxygen in the shallow waters of Chesapeake Bay" (Jeremy Testa, UMCES). Competitively awarded in 2019, the project addresses Dissolved Oxygen (a key issue/water quality criteria), living resources habitat, and the simulated distribution, timing and severity of hypoxia, which was highlighted as a priority by the STAC 2018 Climate Change 2.0 workshop. A report outlining the findings of the synthesis project will be completed in March of 2021 and STAC looks to continue sponsoring relevant synthesis projects to support long-term restoration goals

STAC staff have initiated a portfolio of efforts to increase the effectiveness of STAC products and efforts, including a searchable public database of recommendations from each STAC workshop report and review, revised guidance for formulating workshop reports and recommendations, and new internal communication channels to support the ongoing work and its members. The new STAC Recommendations Database tags each recommendation with key words and categories, organized by the CBP Goal Implementation Team

and workgroup structure, providing guidance for science strategy efforts, identifying areas of uncertainty, and providing support for science initiatives. In conjunction with the database, STAC staff issued guidance on constructing the recommendations that emerge from each workshop, in order to ensure that recommendations are both actionable and relevant to restoration goals in the partnership. Finally, with the challenges of the virtual workspace, STAC prioritized improving communications and coordination between quarterly meetings by reviving the STAC Newsletter. Each quarterly edition includes upcoming meeting dates for CBP groups and partner organizations, reminders for tasks to be completed by members, and timely updates on STAC efforts. STAC is also working to improve communication of its workshop and internal products by hosting leads from the CBP Communications Workgroup at every meeting to present strategies, tools, and tips for communicating technical information to various relevant audiences.

Environmental Management Career Development Program (EMCDP)

Prepared by Melissa Fagan

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. While our role within the Chesapeake Bay Program's partnership was established many decades ago, it took a global pandemic turning our daily operations upside-down for us to hit the pause button, take a step back, and think about what we are trying to do with this program. What we are really trying to do. And so, a period of reflection and this purpose statement was born.

Coupled with this global pandemic was the escalating cry for equality and social justice. As we listened to these cries, we not only looked at what we were doing, but how we were doing it and examined ways in which we could intentionally work to diversify the EMCDP and in turn, the future of the Bay's workforce. In 2020 we took specific steps to drive us toward that change. We worked with program partners and diversity experts to update our position announcements so that they were as inclusive and descriptive as possible. We broadened our recruitment avenues and specifically targeted and connected with institutions, programs, associations and partners that serve underrepresented communities. We restructured our screening process to allow for the creation of more diverse candidate pools and we updated our selection process so that we have more direct control in shaping the program in a way that reflects CRC's values and our commitment to a diverse workforce. We recognize that recruitment and hiring are only part of the picture and we must deliberately develop and maintain an inclusive organizational culture. We have much more work to do but we are committed to continued listening, learning, and growing in a way that supports all the Bay's future leaders.

CRC program staff and the CRC Staffers embedded within the Chesapeake Bay Program spent most of 2020 working in a virtual environment. For the EMCDP itself the transition was fairly simple. However, for the Chesapeake Bay Program Staffers, moving the daily operations of a multi-jurisdictional federal, state, and local

government and non-government partnership with over 800 active participants spread across the 64,000 square mile watershed was no easy feat. Our Staffers did a tremendous job facilitating the Chesapeake Bay Program's transition which allowed the partnership to maintain its productivity while finding creative new opportunities for continued collaboration.

Over the course of this year, we have become reliant on the program's online persona more than ever. In 2021, we will be spending time updating our website content to be more informative and dynamic and developing a presence on the social media platform LinkedIn where we hope to not only engage with potential new Staffers and program partners, but to also harness the power of our program's alumni.

As we wrap up 2020 and look ahead to 2021, we are proud of what we have accomplished and learned. And we are ready to take what has come from this productive period of self-examination and weave that into the future fabric of this program. While we hope that 2021 is not as tumultuous as 2020, we think it will be just as exciting!

Photo credit: Chesapeake Bay Program

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

Prepared by Denice Wardrop


Photo credit: Chesapeake Bay Program

Chesapeake-Student Recruitment, Early Advisement, and Mentoring (C-StREAM), begun in 2018, 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. In spite of the challenges presented by the pandemic, we successfully supported our largest class of C-StREAM interns to date, with three of the nine being returning C-StREAM Fellows. These nine paid internships are supported by funding from NOAA, EPA, and CRC, and represent substantive and detailed projects that are directly linked to partnership science needs. The nine C-StREAM interns were joined by an additional three NOAA/CRC interns, and all internships were successfully delivered virtually. Their projects ranged from creation of databases to assessment of management approaches to network analysis, requiring expertise in both physical and social sciences. Bart Merrick (NOAA CBPO) and Melissa Fagan (CRC-EPA) jointly managed orientation, professional development, and a final symposium, all in a virtual format, and their success in a challenging environment was confirmed by the intern's own evaluation of their experience.

The experience of providing virtual internships was leveraged into learning by Cuiyin Wu (recent staffer), who surveyed both interns and mentors as per the benefits and challenges of a virtual internship and compared mentor and intern perspectives on management styles. The interns illuminated myriad benefits of virtual internships as:

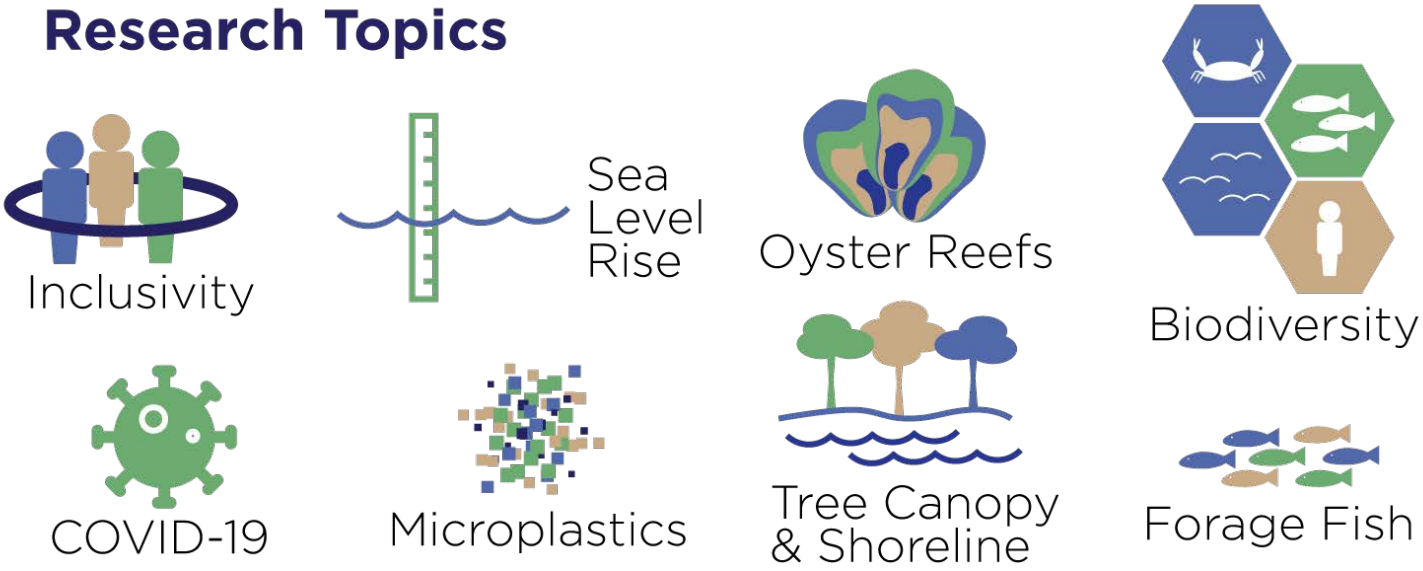
- Virtual internships increase accessibility and allow for a wider and potentially more diverse candidate pool
- Planning for a virtual experience motivated the development of clear internship expectations and the articulation of communication preferences
- Interns find it easier to build breaks into schedule with virtual internships
- Flexibility to set start and end time of workday
- Lack of time spent commuting

These benefits are significant, and speak strongly to instituting virtual internships as an important part of the student engagement portfolio. The survey also illuminated three challenges that offer opportunities to improve these virtual experiences: a higher demand/burden on mentors, a lack of social interaction, and the difficulties of creating an equitable and productive work environment for the interns. We will utilize these recommendations in the future offerings of both virtual and in-person internships.

Our recent award from the National Sciences Foundation GEOPAths Program will build on these objectives by increasing the retention of students into sustained and individually tailored programs of engaged scholarship over multiple years that will inspire them in ways that will eventually allow them to take on positions of leadership in their discipline. The most significant aspects of this resourcing are the ability to hire a Program Manager, and the formation of a more robust learning community of interns, mentors, and institutions. We look forward to a future where our C-StREAM program of student recruitment, mentor and student support, and evaluation and improvement attracts participation of a large number of internship opportunities.

CSTREAM 2020

Research Topics



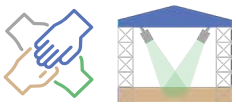
The Chesapeake Community Modeling Program (CCMP)

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.

CCMP and CRC successfully held their biennial symposium, the Chesapeake Community Research Symposium 2020 virtually in June. The theme of the symposium was Chesapeake Bay Research and Management: Progress and Future Challenges. It highlighted recent progress, challenges, and prospects for research, monitoring and modeling efforts that are used to guide management and restoration efforts in the Chesapeake Bay. The symposium more than doubled previous years' attendance with 495 participants and over 130 presentations over four days. The program is available online, as are videos of the plenary speakers and panel discussions.

CCMP has also started the process of updating their website to provide a more user-friendly platform and serve as a community resource with information about a suite of tested and broadly used models that can be applied to the Chesapeake basin and estuary.

CRC Roundtable



CRC Roundtable is a monthly virtual seminar series that hosts targeted, inclusive, and informed conversations matching scientific advances and management needs around topics relevant to the Chesapeake partnership. The lunchtime seminars include a diverse range of researchers, managers, and other professionals and aims to build connectivity across participating organizations and identify ways to increase our collective competency for decision making.

Each webinar hosts a few lightning-type talks to set the stage, followed by facilitated, open discussion with attendees who have the ability to speak and have a conversation with the presenters. We've built a gathering space for the community to ask awkward questions and hold an open dialogue. This past year's webinars have discussed the impacts of COVID-19 on long-term monitoring programs, environmental justice, and citizen science.

CRC Streamline

CRC introduced a newly reformatted bi-monthly newsletter, the CRC Streamline. Each Streamline is centered on a particular theme, identified by partner needs in the restoration effort, and will present a curated set of discoveries and colleagues at each institution relevant to that theme. CRC is unique in its position to support collaboration between researchers and faculty throughout the region to address key research questions and advance scientific understanding of the Bay and its watershed. This new format allows for a more efficient identification of potential colleagues and knowledge areas and enhances connectivity between our members and partners, hopefully catalyzing a series of networks built around issues and inspiring a space for continuing discussion.

Connect With Us

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CRC Streamline

Chesapeake Bay Expertise Database

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