

**CENTER FOR COASTAL &
WATERSHED STUDIES
REPORT
2018-2022**




HOOD COLLEGE
DIVISION OF ACADEMIC AFFAIRS
Center for Coastal and Watershed Studies

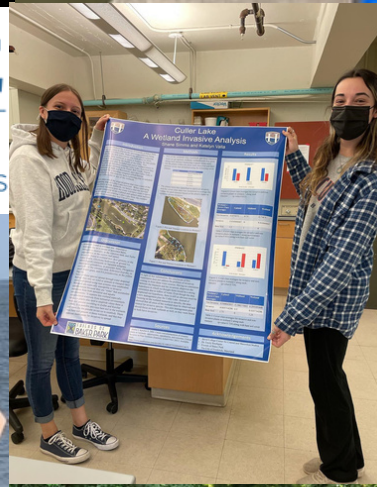
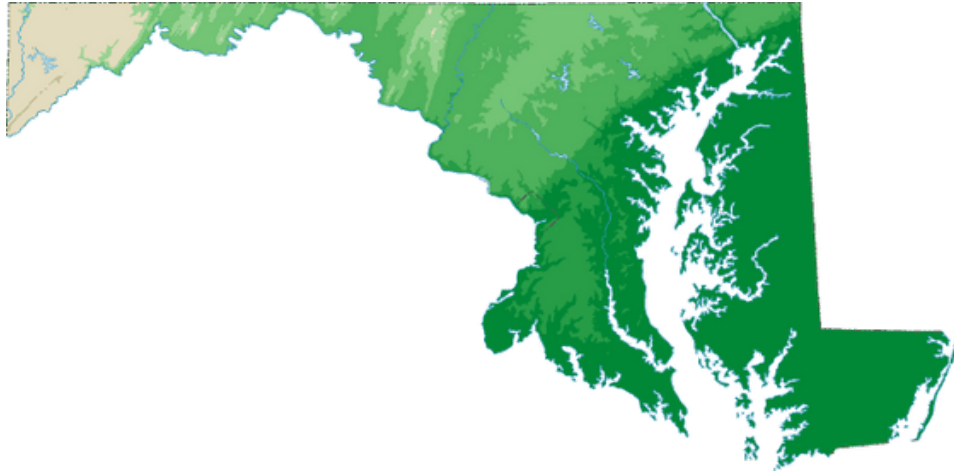


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CENTER MISSION



From coastal environments to the temperate, forested mountains, the Center for Coastal and Watershed Studies (CCWS) at Hood College studies all aspects of watersheds. The mission of CCWS is to develop an understanding of the origins, complications, and potential solutions to environmental and social impacts in our regional and global watersheds through faculty and student research projects.



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MESSAGE FROM THE DIRECTOR

Hello from the Center for Coastal and Watershed Studies!

It has been several years since we published an update on the good work that the Center is accomplishing in the central Maryland region. But let me be clear, although COVID has hampered our ability to act as an environmental services partner with the community, we have continued to make inroads in investigating the issues that present themselves to our local neighborhoods, municipalities, and institutions.

In March 2020, the onset of COVID brought most of our operations to a halt and we continued with a skeleton staff throughout the summer months. From there we gradually increased our environmental investigations and food security operations, until we could return to full capacity in the fall of 2021. In this report we document many of the projects which we have completed or are ongoing despite the impediments that COVID has caused.

As you review our work throughout 2018-2022, you will see some recurring themes that we and our partners have been confronting:

- Nuisance and harmful algal blooms and their mitigation
- Local temperature extremes in both the air and the water
- Continuing food insecurity and the need for fresh vegetables for low income families
- Documenting nutrient inputs to aquatic systems and the impacts of agricultural best management practices on these inputs

We have also hosted workshops, meetings, and discussions covering a variety of environmental issues and invited the public to take part.

In terms of formal academic activities offered through the Center, we have great news! We are now providing support for both the Coastal Studies Semester program and our new Sustainability Studies program. During the fall of 2020, we initiated the first Sustainability Studies undergraduate major within Maryland. This new program is gathering momentum and we are working hard to introduce the principles of sustainability, not only in the classroom, but throughout the campus, and, via civic engagement, within the community.

Sincerely,

Drew Ferrier
Director, Center for Coastal and Watershed Studies



ENVIRONMENTAL SERVICES

Linganore Lakes, New Market, MD

CCWS, collaborating with the Lake Linganore Home Owner's Association, monitors water quality in the residential lakes east of Frederick. During 2018–2022, monthly water samples were taken from both Lake Anita Louise and Lake Merle. Lake Linganore had undergone dredging during 2018–2020, but was sampled monthly in 2021 and 2022. Water samples from Lake Anita Louise are taken in the middle of the lake at the surface, oxycline, and bottom levels. Lake Merle water samples are collected from the surface at the public kayak dock and the dam. The water samples are analyzed for phosphate, turbidity, and pigments. Additionally, water temperature, dissolved oxygen, and conductivity are measured at each location. A low-cost treatment involving the addition of barley straw bales to the Linganore Lakes aids in preventing cyanobacteria blooms.



Constitution Gardens Lake, D.C.

In 2019, Hood-CCWS has collaborated with the National Park Service (NPS) to monitor the lake at Constitution Gardens on the Washington, D.C. Mall. NPS is interested in exploring controls for accumulations of algae that result in surface scums. The CCWS had been asked to conduct monthly water quality sampling at the lake. In addition, to assist NPS with their mitigation efforts of nanobubbling technology, CCWS Sr Scholar Kevin Sellner compiled lake



water quality data prior to and 2 months following nanobubbling treatment of the lake and summarized those data for the NPS. CCWS monthly monitoring continued through 2021 and ended in spring of 2022.



Natural Resources Conservation Service, Western Frederick County

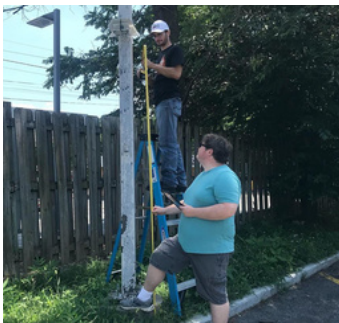


In 2020, Hood-CCWS was awarded a 2-year contract to monitor water quality in response to the implementation of conservation practices in the Catoctin Creek watershed (Frederick County). Hood-CCWS collected stream samples twice monthly in 15 locations around the middle and lower-Catoctin watershed to determine impairment by nutrients, sediments, and bacteria. Water samples were split to be analyzed by the Chesapeake Biological Laboratory for nutrients and for turbidity, suspended solids, and bacteria in the Hood-CCWS lab on campus. Over the contract period, several undergraduate students were able to participate in the field and lab work, gaining hands-on experience following sampling protocol, making field measurements, and analyzing water samples. The data will be analyzed and reported in 2022, with a focus on up- and down-stream changes resulting from conservation “best management practices” implemented at three farms in the watershed.



Air Temperature Monitoring, Frederick, MD

In the summer of 2019, the CCWS deployed 52 air loggers on utility poles throughout Frederick city to study canopy layer urban heat, which is the atmospheric layer where people reside. Loggers were placed in reflective housing, facing north, to avoid direct sunlight, and at about 6 feet high off the ground. The loggers recorded daily temperatures every hour for the month of August. Air temperatures positively correlated with urban development, where higher temperatures were recorded in areas with increased impervious surfaces and higher density construction. These urban sites were compared with reference sites that were placed in rural areas, away from potential urban heat sources.



Stream Temperature Monitoring, Frederick, MD



During the summers of 2019-2022, Hood-CCWS was contracted by the City of Frederick to conduct annual water temperature studies at stream locations throughout the City. The monitoring provides baseline data for future restoration projects as well as documents stream temperature along each stream mile potentially needed for future permit requirements. Each May, Hood-CCWS deployed 35-40 programmable temperature loggers along five tributaries and included additional monitoring stations in stream sections slated for future restoration. Stream temperature data was collected from June-August following the Maryland Department of the Environment (MDE)/Department of Natural Resources Temperature Assessment Methodology. At the end of each summer monitoring season, the loggers were retrieved and the resulting data were analyzed and compared to water quality standards for temperature required by the MDE Designated Use Class for Surface Waters. Undergraduate students assist with the temperature logger set up, deployment in the streams, and retrieval. It is anticipated the resulting baseline data sets could be used for comparisons to post-restoration data sets.

Harmful Cyanobacteria Bloom (HCB) Mitigation Techniques

In 2018, the Interstate Technology and Resource Council (ITRC, www.itrc.org) established a working group of lake managers, public officials, academics, and other experts to assemble all available, peer-reviewed scientific literature on techniques to apply to freshwaters and some low salinity estuaries to control harmful cyanobacteria blooms (HCBs). Blooms of some toxic cyanobacteria (formerly known as blue-green algae) are potential threats to human, domestic animal, and wildlife health; prevent recreational use of many system; require costly drinking water treatment infrastructure upgrades; and decrease property values in some areas. Kevin Sellner, Sr. Scholar in CCWS, was the co-lead for the mitigation and control group of 25-30



volunteers within the HCB Team and oversaw the compilation of available strategies that will be distributed from a web-portal (<https://hcb-2.itrcweb.org/>). This information is free and openly accessible to all managers of ponds, lakes, reservoirs, streams, rivers, and estuaries.

Algal & Cyanobacterial Identification and Enumeration throughout Maryland

In 2021, the Maryland Department of Natural Resources initiated a state-wide lake monitoring program to gather baseline water quality data to assess the health of lakes. As part of this program, DNR contracted Hood-CCWS in 2021 and 2022 to provide taxonomic identification services of algae and cyanobacteria present in the lake samples. Over an 8-month period of each year, Hood-CCWS analyzed over 140 water and live “algal mat” samples collected by DNR and their contractors. If cyanobacteria genera known to potentially produced harmful toxins were identified, Hood-CCWS staff would also screen the samples for microcystin/nodularin toxins. The data will help the State gauge the health of Maryland's Lakes and whether to anticipate issues with harmful algal blooms which could impact wildlife and human health.



Woronichia sp. is a toxin-producing cyanobacteria, easily identified by its thumb-print shaped colony.

Anabaenopsis sp. is a toxin-producing cyanobacteria, with a round heterocyst on each end of the filament.



Arthrospira sp. is not a toxin-producing cyanobacteria. It has a unique coiled double helix structure, with evident darker crosswalls on the edge of the filament.

Culler Lake Water Quality Monitoring, Frederick, MD



Hood-CCWS has partnered with the Friends of Baker Park (FOBP) community organization for more than 7 years allowing Hood students to use Culler Lake as a living laboratory and benefiting FOBP with helpful technical support from student results. This partnership continued in 2021, with FOBP contracting Hood-CCWS to conduct water quality monitoring of Culler Lake for nutrients, suspended solids, and

harmful algal bloom (HAB) assessment in spring to fall seasons. Samples were collected monthly by Hood-CCWS staff and summer undergraduate student workers allowing them to gain experience with water sampling protocols and lab analysis methodology. Results and data interpretation were provided monthly to FOBP for considerations in lake management strategies.



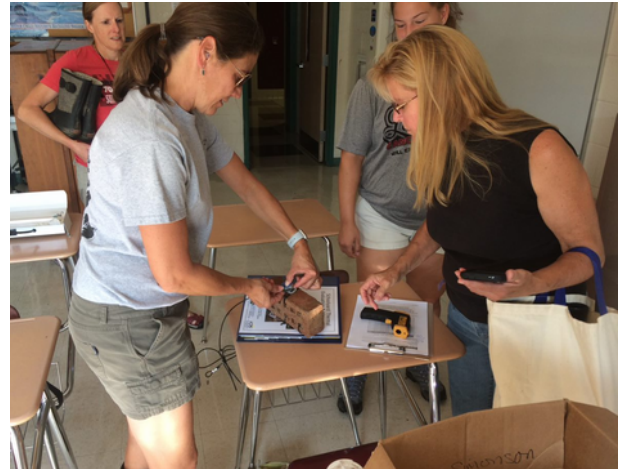
Nanobubble Treatment in Constitution Gardens, D.C.

A cyanobacteria bloom occurred in the Constitution Gardens Lake in D.C. during August of 2019, initiating research into treatments for such toxic episodes. The National Park Service chose to use nanobubble technology to treat the bloom. Nanobubbles are nano-sized (100 nanometers) bubbles invisible to the naked eye and contain ozone, oxygen, or air. Being so small, they reside in the water column and sediments for at least 2 weeks, increasing dissolved oxygen of both. On dissolving, bubbles produce small ions that decompose cyanobacteria, ultimately removing the toxic cells without the addition of routinely used harmful chemicals that would otherwise disrupt some parts of the surrounding ecosystem. The cyanobacteria (aka blue-green algae) that once coated the lake's surface disappeared by December of 2019.



Schoolyard Urban Heat Studies Program

Since 2018, Hood-CCWS has been providing support and technical assistance of its Schoolyard Urban Heat Studies program, under a National Oceanic and Atmospheric Administration (NOAA) Bay Watershed Education & Training (B-WET) grant. The program offers high school students opportunities to participate in authentic research, collecting temperature data on their school grounds for comparison to rural reference areas, determining if urban heat impacts are occurring as a result of the property's land use and local development. In 2018, the program introduced the use of commercially available "pendant" temperature loggers that teachers could easily program with their personal devices and submit temperature data online to a website customized by the Hood Computer Science Department. In 2019, the program was expanded to include Washington County Public School (WCPS) Earth Science teachers, with Frederick County Public School (FCPS) Science teachers bringing the total to number teachers participating in the program to eleven. In 2020, the program was extended to allow for Hood-CCWS staff to create online distance learning options for teacher who were faced with remote learning due to the COVID-19 pandemic. Staff hosted virtual teacher professional development, created training videos, and modified lessons for students to complete lessons online. Support for the program continued for both FCPS and WCPS through the end of the 2021-2022 school year.



Assessing Ticks: A Public Health Concern

In 2019, Frederick County, Maryland reported 126 cases of Lyme disease (46.6 cases per 100,000 residents), up from only 26 cases in 2000. Lyme disease is the most common tick-borne disease in the United States, where the primary bacterium that causes it, *Borrelia burgdorferi*, is spread to humans through the bite of infected blacklegged (deer) ticks. Maryland is the home of deer ticks as well as several other species, each that can potentially carry a range of human diseases. During the summer 2022, Hood's Center for Coastal and Watershed Studies initiated a study of local tick populations. Lauren Herr, a CCWS summer intern and Hood undergraduate, worked to develop monitoring methods for ticks in local public areas. She employed a cloth "drag" which is towed along the ground as well as traps that employ dry ice (carbon dioxide) as the attractant.

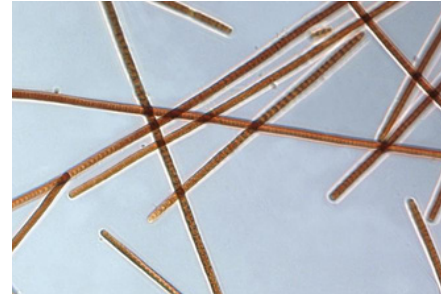


Under the direction of Dr. Gene Olinger, Lisa Brown, an Environmental Biology graduate student in the Biology Department, analyzed collected ticks for the presence of *Borrelia* sp., the bacterium that causes Lyme disease. These activities will set the stage for further work to assess this public health concern by future students and faculty.



Cyanobacteria in Spahr's Quarry, Thurmont, MD

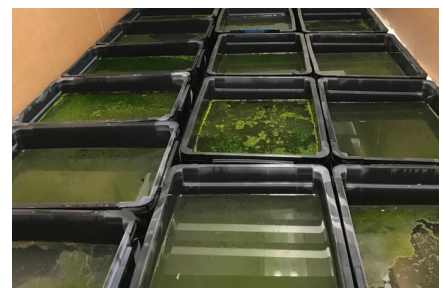
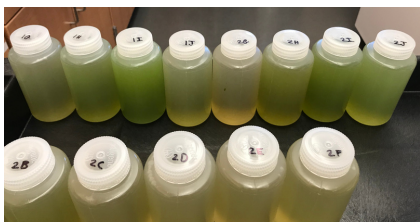
In 2018, in cooperation with Maryland Department of Inland Fisheries staff, CCWS staff determined that Spahr's Quarry, a 7-acre pond south of Thurmont, MD, was dominated by a toxin-producing cyanobacterium *Planktothrix agardhii* in winter. The quarry's owner, Mr. Richard Kline, had reached out to Fisheries staff and CCWS to assess conditions in the quarry considering that the small lake turned pink in the



colder months of the year. Considering the potential threat to human and wildlife health from the cyanobacterium, Ms. Suzy Campbell, a Hood graduate student in Biology, worked with Dr. Kevin Sellner, CCWS Sr. Scholar, to design a sampling strategy to determine horizontal and vertical distributions of the cyanobacterium. These data were then used to assess response of the cyanobacterium to dispersal of a granular hydrogen peroxide compound to reduce and possibly eliminate the noxious population. Initial results suggested that lake peroxide concentrations were <1 mg/L, at the lower threshold for *P. agardhii* control noted in the literature. Final results are pending with the completion of sample analyses and reporting by Ms. Campbell.

MANTA Biofuels

In late 2018/early 2019, Manta Biofuel and Hood College CCWS developed a collaboration investigating optimum growing conditions for algae utilized in biofuel production. The semester-long project with a Hood student, Mr. Nathan Purser, and Manta personnel was conducted in two locations, each with a control and an experimental treatment, and was refreshed weekly. Local stream water served as the base growth medium; chicken manure was added as the fertilizer; and the original inoculate algae was from a Manta production pond, but thereafter, was from the two best growing previous replicates. To allow the algae to grow to a measurable level, project staff decided to run the experiments in 5-day intervals. Depending on the weekly treatments manipulated, complementary tests were conducted on TSS (total suspended solids), nutrient analysis, or pH measurements. The end goal was to create a streamlined process that a farmer could pick up easily and, using local resources, harvest algae for potential commercial sale in a matter of weeks.



PRKN Bacteria Sampling, Washington County, MD

In 2021, Hood-CCWS entered into an agreement with Potomac Riverkeeper Network (PRKN) to support a new bacteria monitoring program involving field sampling with citizen science groups combined with lab services provided by CCWS with a newly acquired IDEXX system. Starting in 2022, volunteers collected water samples at water recreation sites in Washington and Allegany Counties under the direction of Brent Walls, the Upper Potomac Riverkeeper.

The water samples were then analyzed by Hood students trained to use the IDEXX system for *E. coli* bacteria. The resulting data is then published by PRKN online to the public about when and where to recreate. This partnership brings new technology capabilities to the Hood-CCWS labs and student engagement in hands-on technical skills.



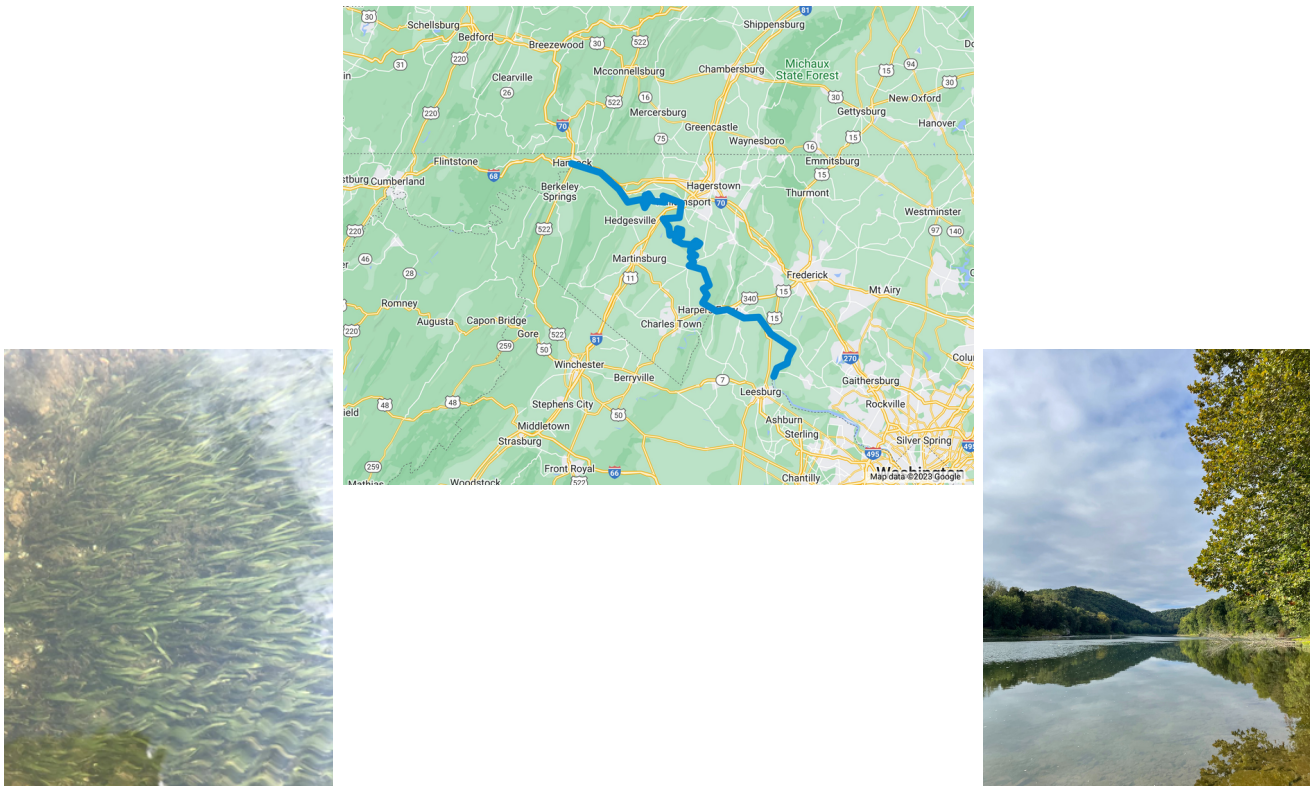
PRKN Acid Mine Drainage Sampling, MD/WV

In 2022, Upper Potomac Riverkeeper, Brent Walls, and Hood College CCWS Field Technician, Catherine Gaudlip, devised a plan to sample 10 stream tributaries in the headwaters of the Upper Potomac River to examine for any acid mine drainage effects. Sampling events occur twice a month beginning from March through December. Parameters studied include pH, dissolved oxygen, conductivity, water temperature, turbidity, and 3 metals analyses performed by Fredericktowne Labs: Aluminum, Iron, and Manganese. Daily precipitation records are tracked as well. Analyses are ongoing.



Mapping of Benthic Algae in the Potomac

In 2012, Maryland Inland Fisheries staff started to record distributions of ‘algae’ growing on the bottom of the Potomac River, from Hancock through Whites Ferry. They began a mapping project documenting algal coverages in that section of the river and reported their results at a Maryland Harmful Algal Task Force meeting in 2016. CCWS staff reached out to the Fisheries team to collaborate on additional research. Mr. Kevin Stanfield, a M.S. graduate student in Biology, initiated a field project to develop mapping techniques for autonomous detection. He used a Go-Pro® camera in a floating platform, as well as another camera supported on an aerial drone, to attempt to quantify the spatial extent of multiple covered benthic areas. He and an undergraduate biology student, Ms. Abbi Strock, used kayaks and multiple field trips in 2018 to determine distributions of algae with this new approach. He also examined river flows to correlate presence or absence of the bottom ‘algae’ with high-low discharges. Although the camera could detect the blooms, it unfortunately proved unsatisfactory for quantifying bloom dimensions and mass. His work, however, yielded recommendations on future camera mapping that could be pursued. Additionally, Mr. Stanfield documented specific flow thresholds that had to be met to allow colonization of the bottom flora.



FREDERICK FOOD SECURITY NETWORK (FFSN)



The FFSN not only provides produce to low income families, but also encourages healthy eating as well as sustainable urban agriculture. The sustainable aspect of FFSN is supported by environmental Hood students who participate in research, such as using rooftop runoff as a source of water for the gardens.



The FFSN saw a big jump in garden production when new garden sites were obtained and thus greater amounts of produce grown. In 2018, the FFSN had a total of 5 gardens and 2 greenhouses. By the end of 2019, 32 varieties of vegetables, fruits, and herbs were grown and reached 855 low-income households in Frederick. The college and community collaboration is what makes this program a huge success. Partnerships are what keep the program thriving, with the opportunities for more garden production and produce distribution. Student employees and AmeriCorps interns help maintain sites and operations, promote the FFSN through events and social media, and assist with harvesting and distributing produce.

Greenhouse Construction

Construction was underway in the fall of 2019 for the completion of a new greenhouse on the east side of the Hood College campus, behind Carson Cottage. Raised garden beds were built inside, adding to the total production of produce by the FFSN.



Hydroponic System Construction

In 2021, FFSN received a grant from the Ausherman Foundation to support the development of a new hydroponics program. FFSN received money to purchase 7 hydroponic systems including 3 Dutch Bucket systems, 1 aeroponics system, 1 large and 1 small float station system, and 1 Nutrient Film Technique (NFT) system. Between October and December of 2021, all of the systems were built with the assistance of students volunteers and paid student employees.



FFSN began operating the Dutch Bucket systems during the spring and summer of 2022, alongside student employees and volunteers. As we learn and become more familiar with these systems, we continue expanding the program to include operation of the float stations, NFT, and aeroponics.



CENTER ACADEMICS

Coastal Studies Program

2019



During the fall of 2019, the Coastal Studies Semester, consisting of 7 students of various majors, traveled to 3 different environments. The first trip was to Garrett County, MD where the students focused on tree identification and acid



mine drainage. The students visited Cranesville Swamp, a micro-climate amidst the mountains of West Virginia. This trip concluded with a visit to the headwaters of the Potomac River. The second trip took the students to Wachapreague, VA where they focused on invertebrate identification and history of the ever-changing barrier islands due to climate change. The third trip was to the Chesapeake Biological Laboratory and Patuxent Environmental and Aquatics Research Laboratory. Here, the students investigated nutrient pollution and identified local oyster disease presence. They also carried out their own experiments to study water quality parameters and an assessment of filter-feeding organisms. The students not only gained knowledge in a hands-on manner through performing research methods, they also gained valuable networking contacts for future opportunities.



2021



Coastal Studies Semester, Fall 2021, successfully ran with 11 Hood College Students and 1 Mount Saint Mary's University Student. Similarly to 2019, students explored Western Maryland's fresh water habitats, Virginia's Eastern Shore marine and brackish waters, and Southern Maryland's tributaries. Upon returning from the practical field experiences, students



connected ideas, opportunities, and knowledge into a larger, more dynamic discussion about the future of the Chesapeake Bay Watershed. The semester focused on understanding the past, present and future health of the Chesapeake Bay Watershed from the headwaters of the Potomac River to where the Bay meets the Atlantic Ocean. Students took a block schedule of 17 credit hours. Each course provided students with conceptual and applied knowledge of various quantitative and qualitative measurements of environmental and social health from interdisciplinary perspectives.



Drones: A new technology for use in Environmental Science and Sustainability

By 2025, there will be 100,000 new jobs that expect a knowledge of unmanned aircraft operations. The use of drones has expanded rapidly in the last decade. Drones aren't just useful for geography and GIS mapping. Drone technology, with thermal sensors and specialized cameras, can be used to monitor crop health, look at heat loss from buildings, survey damage from natural disasters, aid in wildlife conservation efforts, and determine the flow of contaminants into aquatic ecosystems. The Center and Biology Department are preparing Hood students for these new jobs by initiating classes in drone technology and environmental applications. Our first introductory course was offered during the summer 2022 and our students are becoming certified as FAA-approved drone operators.

Lab Practicum

The origins and answers to coastal environmental problems are found by studying the interplay among science, technology, society, and culture of the region. Working as a team, students worked collaboratively to research a watershed issue facing mid-Atlantic communities by: (1) Identifying an environmental problem, (2) Designing an experiment, (3) Collecting information, (4) Synthesizing the material and (5) Providing their results and interpretations in both a written report and oral presentation.

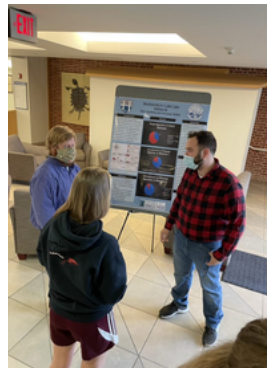


2019 Lab Practicum: Addressing Food Insecurity - Hydroponically Grown Lettuce

Large agricultural operations are one of the largest sources of runoff into the Chesapeake Bay Watershed. Other alternatives to large scale agriculture have emerged over the last few decades, such as hydroponics, aquaponics, polyculture farming techniques and agroforestry. Each of these alternative farming practices have advantages and disadvantages in terms of the use of space, water and energy. This semester students explored the sustainability, feasibility and economics of utilizing hydroponic systems to grow crops. This project focused on developing a model system to provide food access to those living in a temperate climate year round, which could help to alleviate food inequity issues on a larger scale. This class explored hydroponics as a viable option for urban environments by setting up model hydroponics systems and extrapolating the crop yields required to feed local communities.

2021 Lab Practicum: Culler Lake Wetland Management Plan

Local community group, Friends of Baker Park (FOBP) approached Hood-CCWS for advice on the identification and management of invasive plant species in the three Culler Lake constructed wetlands. Over the course of the semester, the students conducted an in-depth survey of plant species in the wetlands, identifying plants which have populated the area over five years, comparing those to the original 2016 planting list, and identifying whether the plants are native or invasive. Students learned how to identify wetland plant species, evaluate each species' percent cover, research each plant's characteristics within a wetland habitat, and develop hypotheses on plant diversity in small groups. The class used the results of the survey to create and present recommendations for a Culler Lake Wetland Management plan to support future maintenance of the wetlands conducted by The City of Frederick. The partnership served as a successful mechanism for students to transform their academic research into meaningful and useful information that can be used by both FOPB and The City of Frederick in future decision-making processes.



Sustainability

In the fall of 2020, the Biology Department and CCWS offered a new major: Sustainability Studies, B.A. This unique undergraduate degree prepares students to work toward solving some of the most pressing issues of our time. Our program focuses on the Food-Energy-Water nexus and provides hands on learning, featuring systems-thinking, high-impact practices, content knowledge, field and laboratory mentorship, College-wide sustainability initiatives, civic engagement and service learning opportunities. More than 10 students have declared Sustainability Studies as their major. In addition to the Sustainability major courses offered, CCWS staff have been invited to develop and instruct courses on principles of Sustainability for the Honors Program and First Year Seminar. CCWS Staff have supported the Hood College

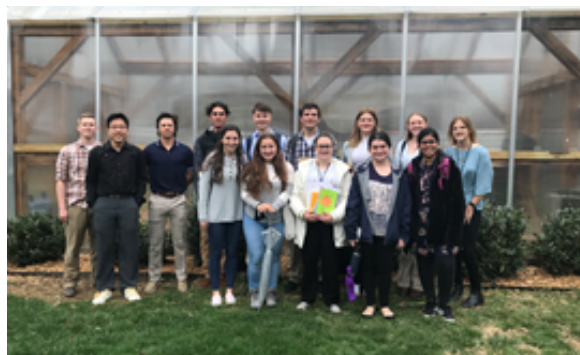


senior staff initiative to begin an on-campus Sustainability Advisory committee. Co-advised by Dr. Ferrier and Katie Huy, Sustainability students created Sustaining Hood, a student club dedicated to identifying and creating sustainable practices on Hood campus. The club's first success has been its collaborate with Aramark to grow the composting efforts in the Dining Hall with student food waste management by initiating cultural change to use the new composting bin system.



Sustainability students partnered with other departments, staff and faculty to conduct informative research on campus:

- Independent Research Project - Implement qualitative & quantitative methods to investigate the campus recycling management system
- Independent Research Project - Test the implications of wool as a seed germination substrate
- Internship - Testing tick collection methodologies and creating a user manual to identify local populations as baseline for similar studies impacted by climate change;
- Students supported work and research completed by Environmental Services and Frederick Food Security Network.
- Course Project - Measuring and analyzing “phantom energy” used in campus computer labs;
- Course Project - Understanding “Burnout” as an unsustainable system with finite energy resources in community partnership with Frederick Health Hospital;
- Campus Community Surveys related to perspectives of campus sustainability and campus recycling system.



CENTER OUTREACH EVENTS

MAC Conference 2019

Hood College CCWS staff cooperated with individuals from the Multi-faith Alliance of Climate Stewards (MACS), the Interfaith Power & Light (MD,DC,NoVA) non-profit, and Interfaith Partners for the Chesapeake organization to co-host an open afternoon meeting to discuss multiple religion obligations to address Climate Change and “Floods, Droughts, and Justice”. Introduced by CCWS Director, Dr. Drew Ferrier, the meeting was held in Hood’s Whitaker Campus Center on October 20, 2019 and included a plenary speaker Dr. Don Boesch, former President of the University of Maryland Center for Environmental Sciences, and two panels. The meeting focused on how climate change will impact our region.

Campus Trees



In 2020, the Frederick County Forestry Board assisted Hood-CCWS in the development of a Hood Campus Tree Walk to help tree-lovers of all ages locate and learn about unique trees around the campus. The walk includes 14 unique tree species, including several listed on the Maryland “Big Tree List”. A Campus Trees webpage was created by Hood-CCWS staff to provide insight on the history campus trees and includes both a printable map and an interactive site for the trees on the Campus Tree Walk.



Green Neighbor Festival

Building on the success of the initial 2017 Green Neighbor Festival (GNF), Hood-CCWS coordinated this annual spring event around Culler Lake in Baker Park both in 2018 and 2019, in collaboration with other GNF committee partners. The festival grew in size with more vendors, activities, and attendance each year. The goal of the festival is to highlight sustainable living practices, environmentally friendly activities, and “green” businesses in Frederick County.

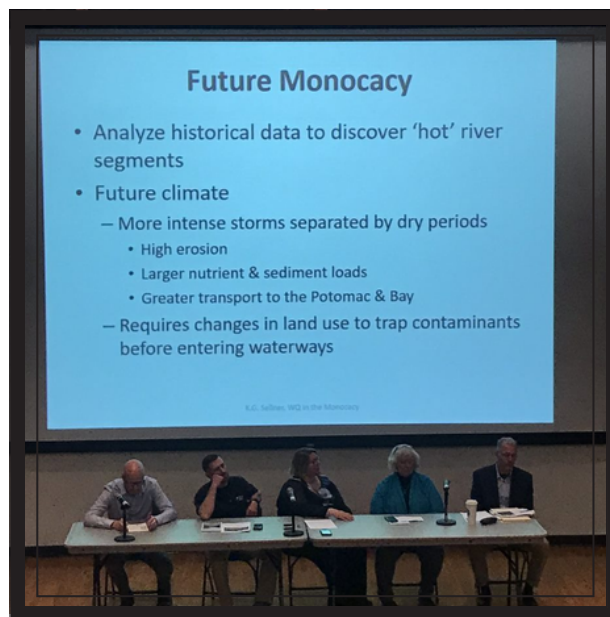


Vendors were encouraged to collect items for recycling while also offering sales of their sustainable wares or information on their environmentally-friendly practices. Additional programming was included each subsequent year from the addition of music, food, and family-friendly hands-on activity tent to a sustainability bike ride and an evening movie night. In 2019, the committee added Green Neighbor Outreach events during the week leading up to the festival to include scientific speaker and public policy panels at the Hood College campus. The events were visited by over 1000 attendees both years with several VIPs supporting the event by attending the opening fish-release to the Lake. The event was paused in 2020 to allow the new Sustainability Program to redefine the event and was placed on indefinite hold due to the COVID-19 pandemic.



Monocacy River Panel - 04/30/2019

As part of the collaborative 2019 Green Neighbor Festival, CCWS Sr. Scholar Dr. Kevin Sellner organized a multi-discipline panel of experts from Hood College, USGS, Gettysburg College, Maryland Inland Fisheries Division, and Frederick Offices of Sustainability and Environmental Resources and Planning and Permitting to present data and information on the watershed. This included dominant land uses surrounding the river and its contributing streams, the river's water quality, fish stocks and diseases, bird species and population shifts, and Frederick County programs and projects specific to sustaining a healthy river. Panelists presented summaries of the topics above and then followed with open dialog with the audience concerning current and future conditions for the County's primary river system. Some of the results were subsequently included in the CCWS Monocacy River Water Quality Assessment completed in spring, 2020.



Evening Lecture: Planning Politics and the Public Interest

On April 12, 2018, CCWS hosted a lecture by Dr. Royce Hanson, PhD, who spoke on cooperation between those developing land for homes and businesses and others committed to protecting natural lands and lifestyles. He is a recognized nation-wide leader in land-use policies, with substantial experience in the Montgomery County region. In his recent book, "Suburb: Planning Politics and the Public Interest", he carefully explains how planning politics operate within pervasive thematic influences such as the tensions between planners' logic of intended and unintended consequences and politicians' logic of appropriateness and practicalities.

NEW PERSONNEL: TECHNICIAN



CCWS acquired Chesapeake Conservation Corps (CCC) member, Catherine Gaudlip, in late summer '19 for the 2019–2020 term. Graduating from Washington College with a B.S. in Environmental Science, Catherine had the opportunity to apply environmental skills in the variety of projects the CCWS undertakes. She was involved in the sample collection, processing, and analysis of water samples coming from multiple water quality projects. She has also been working on a capstone project testing whether the presence of nanobubbles in the water column would prevent the growth of cyanobacteria.

A short summary of Catherine's time as a Corps member:

"During my term as a CCC member at Hood College, I have learned many new technical methods both in the laboratory and out in the field. Assisting with the Coastal Studies Semester (CSS) allowed me to visit multiple research centers throughout Maryland, forming those valuable connections and networks. The CSS also provided me the opportunity to reinforce scientific methods by aiding students in understanding scientific procedures. This term provided much knowledge, experience, and great guidance into the environmental workplace."

As of August 2020, Catherine now works with CCWS as a Field/Lab Technician on multiple projects.



STUDENT PARTICIPATION IN RESEARCH EXPERIENCE

Undergraduate Students

- Abbi Stock
- Gabe Urso
- Katie Valla
- Kate Maltby
- Brooke Gooding
- Nathan Purser
- Paige Tolbard
- Matthew Hardesty
- Kelly Garcia
- Heidi Ramirez
- Gavin Hayes
- Megan Anders
- Lillie Anne Meyers
- Lauren Herr
- Shaye Morrell

Graduate Students

- Robert Campbell
- Kierstyn Higgins
- Susan Campbell
- Alex Marinelli

MEET THE STAFF!



Drew Ferrier
Professor of Biology,
CCWS Director



Katie Huy
Coastal Semester Coordinator



Susan Simonson
Project Coordinator



Jennifer Carpenter
Garden and Greenhouse
Manager



Catherine Gaudlip
Field/Lab Technician



Kevin Sellner
Senior Scholar



Emily Southgate
Senior Scholar

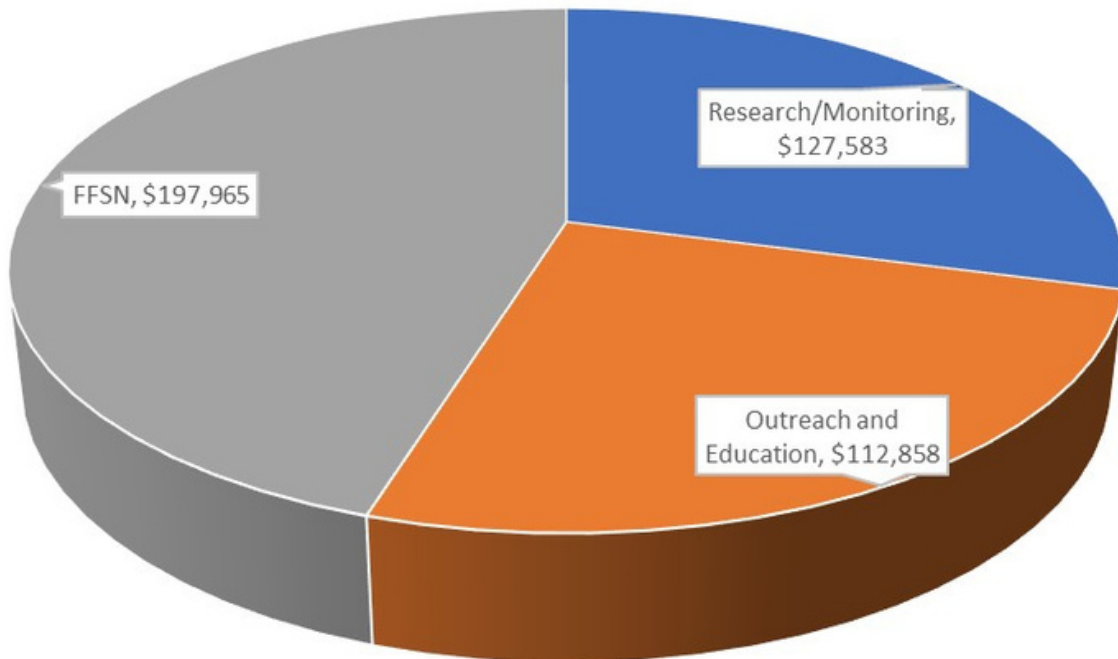
GRANTS AND CONTRACTS

2018-2022 total funding obtained: \$438,406

These are proposals/projects written and conducted through the Center for Coastal and Watershed Studies involving Hood faculty, staff, and students.

Sum of Amount Received

CCWS Funding FY2018-2022



CENTER PARTNERSHIPS

Chesapeake Bay Foundation

Chesapeake Bay Trust

Columbia Association

Frederick City Department of Public Works & Department of Recreation

Frederick County Public Schools

Fredericktowne Labs

Friends of Baker Park

Focus For Health (FFSN Grant \$5,000)

Interfaith Partners for the Chesapeake

Interfaith Power & Light

Lake Linganore Homeowners Association

Maryland Department of Inland Fisheries

Maryland Department of Natural Resources

Mountainside Education & Enrichment

Multi-faith Alliance of Climate Stewards (MACS)

National Park Service

Office of Sustainability and Environmental Resources

Potomac Riverkeeper Network (PRKN)

Trinity United Methodist Church (New Partner for FFSN this season)

USDA-NRCS

Washington County Public Schools

STAY IN TOUCH!

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