HOW TO SUPPORT OUR EFFORTS

If you would like to help, please write a check to the Town of Phippsburg, (go to Town Hall or mail to 1042 Main Road, Phippsburg, 04562), with a designation to the Basin Oyster Project (BOP). Your donation will allow us to continue our work toward creating sustainable oyster reefs in the Basin; provide education on oysters and oystering in Phippsburg; celebrate oyster restoration with informational tours, age-appropriate school lessons, as well as to help sponsor an annual oyster festival. If you share your e-mail, we will gladly send you bulletins about our on-going work.

MEET THE TEAM!

Jessie Batchelder - Manomet Fisheries Manager (scope includes Basin green crab study and baseline ecological survey)
Caitlin Cleaver, PhD - Assistant Professor of Environmental Studies, Colby College
Dean Doyle - Basin Oyster farmer & Chair, Phippsburg Shellfish Commission
Lydia Gregoret - personal use oyster farmer and scientist, Phippsburg
John Herrigel - Maine Oyster Company owner, Phippsburg
Avery Hunt - Phippsburg resident and writer
Joe Jerome - Northeast Saltwater Charters, Phippsburg
Dot Kelly - Phippsburg Conservation Commission and Lead for the BOP
Michele LaVigne - Assistant Professor. oceanography, Bowdoin College, and collaborator with BOP on oyster research & ocean acidification
Marissa McMahon - Manomet non-profit fisheries director, Brunswick. (Scope includes baseline ecological survey for the BOP)
Ryan Saul - Phippsburg resident and Basin oyster farmer
Rebecca Schultz - Basin neighbor and NRCM scientist
Ellen Winchester – Co-chair, Phippsburg Conservation Commission
Olivia Richardson - Summer worker, MOC & BOP
Eleina Struk – Summer intern and Bowdoin student

OPEN FARM DAY

All the farms in the New Meadows River Shellfish co-op participated in the 3rd annual Open Farm Day. From their boats on the water, they shared information about our industry and about oysters themselves. They were visited by family, friends and the general public who motored out to the farms on the New Meadows River to visit and enjoy the gorgeous summer day!

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Basin Oyster Project

Shellfish Reef Restoration

FALL 2023 • PUBLISHED BY BASIN OYSTER PROJECT

REPORT FROM BOP INTERN, ELEINA STRUK, & SUMMARY OF OUR EFFORTS BY CAITLIN CLEAVER

FROM ELEINA: This was my summer of oyster enlightenment. When I began my internship, I didn't have a clue about building an oyster reef. But with help from those involved with BOP and the oyster farmers and diggers, I began to value, and learn from, all the people I met. Through these conversations, and my hands-on experiences, I became more confident. Although I did a lot of research and reading to understand oyster science, much of what I learned came from local knowledge.

Working with the oysters themselves was a revelation. Checking out the floating bags with Dot [Kelly] every week, we would celebrate when there was no death amongst the oysters. While I had never been involved in the world of coastal Maine and its aquaculture, my experiences have given me a great appreciation for the workings of the marine ecosystem.

My main project this summer, working with Caitlin Cleaver (Assistant Professor at Colby) was analyzing the spawning and settling of oysters in the Basin to determine if our reef building efforts could be self-sustaining. Cait and I determined the three most useful ways to look for signs of successful reproduction and settlement were to sample the adult oysters in the Basin using a smear test, conducting shoreline surveys to look for oysters in the intertidal zone, and deploy shell bags to see if we could collect newly settled oysters.

The smear test involves looking at the gonad of an oyster under a microscope to determine if they were fertile by the lack or presence of egg or sperm. We took sample oysters from floating bags on one of three LPAs on a weekly basis to see if they had spawned within that week.

We found that the oysters at all three LPAs were, in fact, fertile. However, we also saw no decrease, meaning they had not yet released their eggs and sperm between July and early August.

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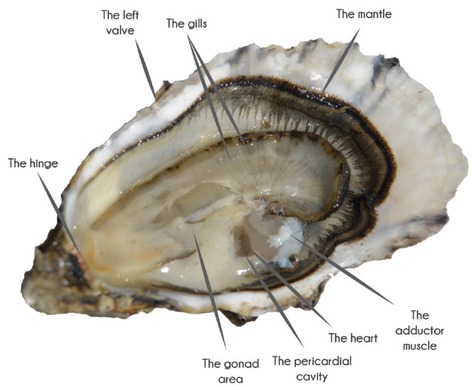


The anatomy of the Oyster

Oyster Basecamp in West Point

"Planting the Seed" A BOP OYSTER WORKSHOP

An exciting one-day summit & workshop will be held at Basecamp in West Point in late October. This gathering is designed to foster future collaboration in oyster reef restoration, marine science & education. There will be 30-plus people attending, including a mix of scientists, Maine state agencies like Marine Resources, legislators, oyster farmers, Nature Conservancy representatives, educational leaders and institutions like Bigelow Labs and The Island Institute.

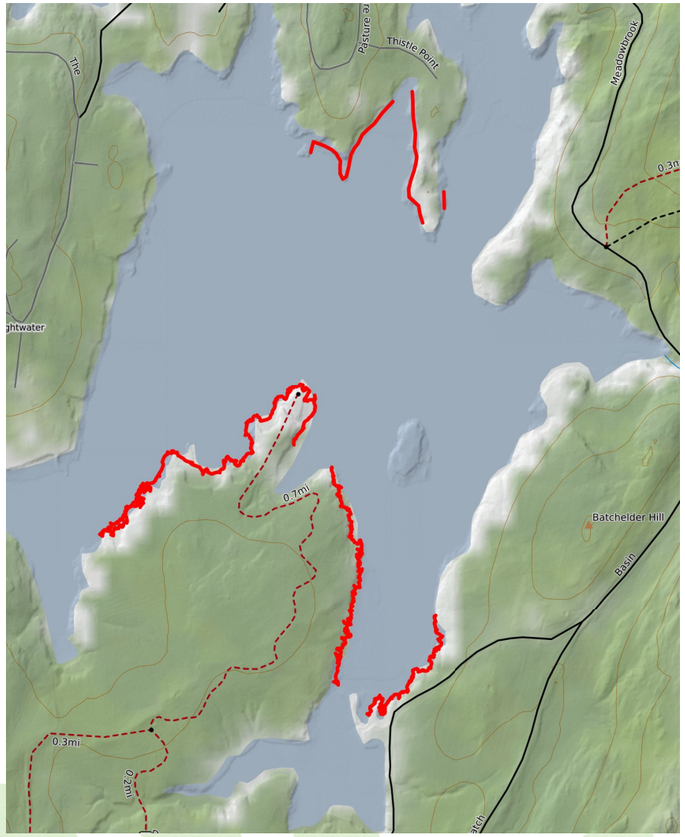
Keynote speakers will be the Executive Director of the Billion Oyster Project, as well as the Lead Scientist for the Hudson River Foundation in NY that started that program. This event is intended to plant the seed (pun intended) for future collaboration in oyster reef restoration, marine science, education & shaping community aquiculture use policy.

SUMMARY OF EFFORTS BY CAITLIN CLEAVER Con't

AND FROM CAIT:
We did a shoreline survey to look for oysters that had settled in the intertidal as evidence that there has been successful oyster reproduction in the past. We did this in July and covered the shoreline near the dam, from our LPA at Denny Reed to the Denny Reed point, at Thistle Point and some of the Brightwater shoreline. We found a total of 138 oysters: 45% were living and 75% were attached to the substrate.

Finally, we put out bags of empty oyster shells (good places for baby oysters to settle) every two weeks, starting at the end of June through late September, and we examined those shells under a microscope to see if we could find baby oysters. In one of the last bags collected at the end of September, we had a few shellfish that may have been oysters, but we are waiting to confirm their identification. Not seeing young oysters on our shell bags doesnt necessarily mean the oysters aren't spawning, we may have missed them due to observer error, our method is not working, or we missed a spawning event. We're going to regroup this winter and figure out the best way to monitor this phenomenon for next year. Another option for next summer may be using an eDNA robot to pick up evidence of oyster spawning events. In mid-September, Manomet staff worked with a graduate student in Dr. Erin Gray's lab from the University of Maine to deploy an eDNA robot that is sampling the water looking for DNA evidence that there are oyster larvae in the Basin - results TBD. We are also potentially expanding our efforts to monitor an oyster reef building effort by Midcoast Conservancy in the Sheepscot River to see how things vary in a different area of the coast.

Looking ahead, we will continue to do the substrate mapping and shoreline surveys. We'll figure out how we want to monitor oyster settlement- it may be with the shell bags again or a different method. For now, though, we've wrapped up our field work for 2023 and are looking forward to next season!



Map of Basin Shoreline Survey, with sites marked with red lines

Aged oyster shells ready to be stuffed into mesh bags (good places for baby oysters to settle) and floated in the Basin.

ROBOT TO THE RESEARCH RESCUE!

Jessie Batchelder, Fisheries Project Manager at Manomet, a partner with the Basin Oyster Project, is toting a unique (and heavy) research robot on her way by boat to deploy it at our BOP sites. This rather strange contraption is an "eDNA" (environmental DNA) robot, which is designed to autonomously collect and filter water samples to be sent later to a lab for analysis. This automated device cuts out a lot of time it would otherwise take for someone to regularly collect and filter water samples and has been developed by Aaron Snow at the University of Maine, where he is a student under Dr. Erin Grey.

Manomet has partnered with us for pilot testing of the robot. Explains Jessie: "We're hoping to use 'eDNA' to look for evidence of oyster spawning and to understand if and when oysters are spawning in the Basin. This is vitally important if we want the reef to be self-sustaining. "

100,000 OYSTER DONATION

Muscongus Bay Hatchery, from their New Meadows oyster nursery, gave a very generous donation of over 100,000 young oysters to the Basin Oyster Project for us to continue to raise at our Restoration project sites in the Basin.

We have always gotten our larvae and seed oysters from this hatchery since 2017 when the Nature Conservancy started their pilot effort. Pictured: Maddie Cox (left), who runs the operation, and two of her helpers.

COLLABORATION WITH BOWDOIN COLLEGE

This Fall, we are continuing to bolster our partnerships with regional universities through a semester-long collaboration with Bowdoin College. Associate Professor, Michele LaVigne and Associate Director of Science at Bowdoin's Schiller Coastal Studies Center, Jaret Reblin, are teaching their students how changing ocean chemistry impacts the marine environment through a course called "Ocean Acidification."

In early September, to kick-off their learning experience, we hosted a field trip for 22 undergrad students, under the tutelage of Michele and Jaret, at Basecamp Lodge in West Point. We covered the history and progress of BOP and then the students got to ditch their notebooks and head out on two boats for a hands-on experience at an actual oyster farm. John Herrigel, in his oyster farmer role, gave them an overview of oyster farming, demonstrating how the oyster cages are hauled and the fledgling oysters inside are cleaned and sorted. The students also learned how to measure water quality from the boats at the same time. The "class" ended with a shucking lesson from Joe Jerome back at Basecamp and fresh oyster snacks.

Over the next few weeks, the students will collect water quality data metrics in The Basin and at various oyster farms throughout the New Meadows River, to help them develop individual research questions. Come December, the group will share their findings with the ten farmers of the New Meadows River Shellfish Cooperative, in an effort to spark discussion and build a foundation for future projects.
-by Olivia Richards