

HAROLD W. BORNS, JR.

SYMPOSIUM



The Harold W. Borns, Jr. Symposium is an annual event that features presentations and discussion by Climate Change Institute graduate students and faculty on emerging research and topics related to global climatic and environmental change.

The 28th Annual Harold W. Borns, Jr. Symposium will be held on April 28th and 29th at Wells Conference Center, University of Maine.

NEW FOR 2020 — DIGITAL COMMONS PUBLICATION

All CCI Minipapers submitted for the 2020 Harold W. Borns, Jr. Symposium will be published in UMaine Digital Commons unless the author opts out on the form. Please note the Digital Commons release form that will need to be completed/submitted with your CCI mini paper contribution. If you do not wish your CCI Minipaper to be published in Digital Commons, you must indicate this on the Digital Commons release form.

IT IS MANDATORY FOR ALL CCI GRADUATE STUDENTS TO SUBMIT A MINI PAPER AND PARTICIPATE IN THE BORNS SYMPOSIUM. FIRST YEAR STUDENTS ARE REQUIRED TO SUBMIT A POSTER RATHER THAN A 10-MINUTE PRESENTATION. ALL OTHER CCI STUDENTS MUST PRESENT A 10-MINUTE TALK. ALL CCI STUDENTS MUST SUBMIT A MINI-PAPER AND SIGN A FORM INDICATING WHETHER THEY AGREE TO POST IN PROCEEDINGS ON DIGITAL COMMONS.

FACULTY ARE INVITED TO SUBMIT A POSTER OR MAKE A 5- OR 10-MINUTE PRESENTATION (see below for guidelines). FACULTY MUST SUBMIT A MINI-PAPER IF THEY ARE PRESENTING AND SIGN A FORM INDICATING WHETHER THEY AGREE TO POST IN PROCEEDINGS ON DIGITAL COMMONS.

If you are a student who has received a Churchill Exploration Grant in the last cycle (2019), you must present on your Churchill-funded research; you will be automatically entered in the competition for the Churchill Award for Outstanding Exploration, but you must still submit your mini-paper by April 13, 2020. If you had an earlier Churchill grant, you can still be considered for the award by submitting the Churchill Outstanding Exploration Award form. Forms are available on the CCI website.

<https://climatechange.umaine.edu/graduate-program/borns-symposium/>

SUBMISSION GUIDELINES

Submission guidelines and presentation formats will be posted on the CCI website at: (<https://climatechange.umaine.edu/graduate-program/borns-symposium/>).

The deadline for mini-paper submission for all categories is: April 13 2020. Late submissions will not be considered.

Mini-paper submissions should be sent in **both word & pdf format** via email to Becky Addressi (Rebecca.Addressi@maine.edu). Attached is an example of the format guidelines for the CCI mini-paper submission. Mini-papers must be submitted for all presentations, along with signed permission form (see below).

Three presentation options are available:

1. **Oral Presentation** (10 minutes + 2 minutes for questions) (*Graduate Students and Faculty with new research*). All CCI graduate students, beyond the first year, are required to present in this mode.
2. **Poster Presentation** (*Undergrads, First Year Grad Students (required) & Faculty*).
3. **Oral Research Update** (*Faculty only*) (5 minutes, + 2 minutes for questions). This presentation format was introduced to encourage short presentations regarding new research activities, a significant result or update related to an ongoing project (discussed at a previous symposium), or discussion of a research project where the investigator is seeking to broaden participation by CCI researchers.

If you have questions about process or deadlines, please contact Dan Sandweiss <dan.sandweiss@maine.edu> with a copy to Betty Lee <bliqcs@maine.edu>.

Providing Marine Harvesters with Tools to Handle a Rapidly Changing Ocean

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Abstract: The rapid rate of environmental change occurring in the Gulf of Maine, coupled with the depletion of marine stocks from overfishing and ecological change, highlights the need for marine harvesters to reduce their vulnerability to potential future changes through diversification. Aquaculture is often presented as an appropriate means of diversification. To this end, a series of aquaculture training courses designed for marine harvesters have been delivered in several Maine towns to help facilitate potential adaptation efforts. Social science research is being done in conjunction with these efforts to improve harvester's successful transition to aquaculture.

Project Goals

The goal of this project is to provide marine harvesters with the skills and information needed for the practice of aquaculture. Due to the rate of change experienced in the Gulf of Maine (GoM) over the past decade, and especially over the last several years (**Figure 1**), Maine fishermen are being encouraged to reduce their vulnerability to such changes by diversifying their businesses through aquaculture.

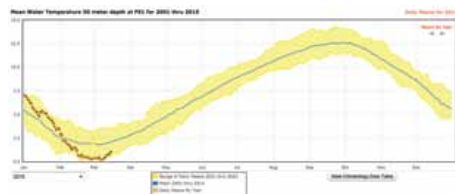


Figure 1. 2015 temperature profile for GoM. Temperature ranges is already 7.5°C.

Aquaculture differs from wild harvest in the same manner as a farming differs from a hunting and gathering. Transitioning between the two necessitates an education in the technical aspect of husbandry and a cultural shift from harvesting. In 2015 municipal employees from the towns of Brunswick and Harpswell worked with various groups to develop and deploy an 8-week aquaculture-training program. This program is designed to give wild harvesters the information necessary to consider an aquaculture business and the skills required to start one.

¹ Record, N 2014. Maine waters warming fast, *Bigelow Laboratory for Ocean Sciences Transect 6:8-9.*

The research component of this project involves: identifying potential barriers to the successful adoption of aquaculture, assessing general attitudes towards aquaculture, and an overall assessment of the course itself. These will help tailor future classes and can potentially facilitate harvester's successful transition to aquaculture.



Image 1. Harvesters from Harpswell and Brunswick learn about bivalve biology and ecology.

Initial Results

A total of 18 fishermen enrolled in the course. Several harvesters have expressed pursuing Limited Purpose Aquaculture leases with the majority of the class indicating they were likely to be involved in aquaculture in the future. Several barriers have been identified including: information deficits, application logistics and community interactions. Classes provide an excellent model for training other harvesters to deal with future changes in the GoM.

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