## UMaine doctoral student seeks to increase industry sustainability

Locals and tourists flocking to the coast to eat fresh shellfish may not know about costs and risks that aquaculturists encounter getting the seafood to the table.

One of the biggest issues for aquaculture farmers is selecting lease sites without knowing the physics and biology of the estuary environment, which can result in unpredictable productivity.

With more and better information, the industry could become increasingly sustainable, both economically and environmentally. Katie Coupland, a doctoral candidate in oceanography at the University of Maine Darling Marine Center, is working to make that happen.

Coupland's mentor, assistant professor Damian Brady, described her work as "beginning the end of trial-and-error aquaculture."

"In aquaculture, we're at a point where there isn't enough information out there to decrease risk, so what we're pursuing in the SEANET program is bringing new information to this field so we can make better decisions and decrease the risk," Brady says.

'What's really innovative about our approach is to take those same tools that we've been using for water quality and start applying it to the aquaculture industry, so that we can make viable predictions about a particular ma-



Matthew Gray and Katie Coupland deploy a buoy. Gray is a postdoctoral research associate and Coupland is a doctoral candidate in oceanography; both are based at the University of Maine Darling Marine Center in Walpole.

rine species and the environ-

Coupland utilizes buoys. handheld sensors, computer models and biweekly boat trips to gather water samples that can improve understanding of shellfish growth in different areas of the river and understand the potential for climate to impact the aquaculture industry.

She does a lot of work on a computer in her lab, a small building nestled in the pine trees just up the hill from the Darling Marine Center's boat launch. Coupland also regularly gets out in the field, or rather, in the water. During her river research cruise, she

obtains data and water samples in additional locations over a much larger area.

"Just being out there and feeling — physically — the differences in temperature between the upper and lower river is a lot more meaningful than just seeing the numbers being read out from a buoy," she says. "I love being out there in the field and seeing those differences firsthand and being able to get an idea and that instinctual feeling of how the system is different from the head down to the mouth.'

Coupland came to UMaine after earning an undergraduate degree in environmental science and management and a master's degree in biological oceanography at the University of Rhode Island.

She enrolled in UMaine's School of Marine Sciences to take part in the Sustainable Ecological Aquaculture Network project to learn numerical modeling, a skill that's "applicable and has a direct impact on people outside of academia," more specifically, the community and shellfish growers.

The Damariscotta River grows more than 50 percent of the oysters in Maine, which Coupland says makes it a great laboratory in which to learn about the economic value of shellfish aquaculture.

Coupland's developing a water current model to esti-

mate the temperature, salinity and the speed of currents in five estuaries of midcoast Maine. The information will enable her to know more about how changes in temperature and precipitation impact shellfish growth differ-

ently across the estuaries. She's also developing a water quality model to explore how nutrients and light penetration change based on the physics of the estuaries and how this affects algae and shellfish growth in the

Damariscotta River. To do the research, she uses LOBO (land/ocean biogeochemical observatory) buoys, which measure temperature, salinity and pH (acidity of the water), as well as nutrient and chlorophyll levels and turbidity (cloudiness of the water).

Because the models provide hourly high-resolution estimates of both the physics and the biology of the river, Coupland can examine short- and long-term responses to weather and climate change.

Optimally, her research will yield information about variables in aquaculture, which could bolster economic and environmental sustainability in Maine's changing climate. All of which could help aquaculture farmers reduce their costs and risks as they work to supply seafood for diners on the Maine coast.

## **Maine Catholic Parishes** and Schools contribute over \$45,000 to CRS **Rice Bowl**

Parishes and schools in the Diocese of Portland combined to raise over \$45,000 for the Catholic Relief Services' (CRS) Rice Bowl program during the 40 days of Lent in 2016. CRS Rice Bowl is a faithin-action program that encourages Catholics to fill cardboard bowls with monetary donations, giving alms to those in need and honoring Jesus' call to serve our neighbors.

Over 50 Catholic parishes and schools in Maine participated in the 2016 program, contributing a total of \$45,070. It marks the fourth straight year that total contributions have risen in the diocese, and a nearly \$10,000 increase from 2013 (\$35,842).

The top three contributing parishes in 2016 were Holy Spirit Parish (St. Martha Church, Kennebunk; St. Mary Church Wells) with \$5,941; St. Paul the Apostle Parish (St. John Church, Bangor; St. Mary Church, Bangor; St. Joseph Church, Brewer; St. Teresa Church, Gabriel Church, Winterport) with \$3,723; and Good Shepherd Parish (Most Holy Trinity Church, Saco; St. Joseph Church, Biddeford; St. Margaret Church, Old Orchard Beach; and St. Philip Church, Lyman) with \$3,694.

"I'm amazed at the generosity and sacrifice on display in our diocese," said Ruth Oakley, the director of Missions/CRS for the Diocese of Portland. "The continuing increase in donations represents a growing awareness and sensitivity towards those less fortunate around the world.

According to Catholic Relief Services, 75 percent of the donations support CRS' humanitarian relief programs in nearly 100 countries worldwide, while 25 percent of the proceeds are given to hunger and poverty alleviation efforts in the donor's community. Since 2011, the diocese has collected \$237,475 for the program.

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## Federal government to send Economic **Development team to** Maine for post-mill closure help

In a rare move, the federal government will deploy a team of economic development experts to Maine to help industry, state and community leaders form strategies for reinventing Maine's forest products industry after a series of devastating mill closures.

The U.S. Department of Commerce's Economic Development Administration announced plans to send an Economic Development Assessment Team (EDAT) to Maine last week. It also revealed plans to invest more than \$4 million in economic development projects in the state, including about \$1.5 million dedicated to the forest products industry.

U.S. Sen. Angus King said such a team has only been deployed 30 times in the Economic Development Administration's history, usually in crisis situations. The most recent instance of an EDAT deployment came in the wake of the 2010 BP oil

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lins and U.S. Rep. Bruce Poliquin joined U.S. Deputy Assistant Secretary of Commerce for Economic Development Matt Erskine for the announcement.

In the past eight years, 10 Maine mills have shuttered, prompting Maine's delegation to draft a letter calling for the federal government's aid, King said. In response to what King called a "disaster" and "slow-moving hurricane," the Economic Development Administration decided to deploy a team to help organize, plan and offer advice.

The EDAT will visit from Aug. 17 to 19, touring mill facilities, forestry operations and research centers and meeting with industry and local economic development officials to form a plan of attack.

"Next month's [EDAT] process will examine how local, state and federal partners can work together to foster future innovation and commercialization of the forest economy," Erskine said.

Poliquin said the EDAT's input could be vital to finding the best way to leverage Maine's 34,000 workers in the forestry industry, and the millions of acres of woodland that are among the state's most valuable as-

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help the federal government could offer could be to "get out of the way," he said.

Collins said the grants would be a significant boost toward reimagining opportunities in the Maine economic landscape.

'This partnership is aimed at spurring the economic growth and saving and creating jobs for the great people of our great state," she said. "Each of the grants that have been announced today support innovation, revitalization of the forest products industry, the promotion of innovative products and economic development throughout our region."

The grants are as follows: •\$1.24 million to C&L Aviation Group, a Bangorbased aircraft maintenance and repair company, to renovate a hangar into an aircraft maintenance and repair facility. C&L applied for that grant earlier this year, and it now will be able to move forward with yet another expansion and expects to hire at least 50 new workers, according to the Economic Development Administration.

•\$711,600 to the Maine Development Foundation to track and measure longterm economic progress rebehind by the EDAT.

•\$519,930 to Biobased Maine, a trade association that promotes the use of wood biomass for the production of biobased chemicals, materials and fuels, to develop a "road map" to advancing biobased manufacturing in the state.

•\$345,000 to the Bangor Target Area Development Corp. in Orono to upgrade a portion of the center creating a new laboratory so Twin Rivers Paper Co. can relocate its research and development operations from Montreal to Orono. Twin Rivers operates one of the state's six remaining paper mills in Madawaska.

• \$1.6 million to Central Maine Community College in Auburn to expand the school's precision machining technology lab to allow for a boost in training and increase in enrollment for an in-demand field.

In addition, the Department of Defense announced Friday it would invest \$3.3 million in the Forest Bioproducts Research Institute at UMaine to push forward research on converting wood into jet fuel.

Since 2010, the Economic Development Administration has awarded \$30.3 million in grants to Maine.

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