

Coastal Science Academy

DEI's Coastal Science Academy is a yearlong program designed to help K-12 educators adopt scientific inquiry and methods geared to students and the local coastal environment, using DEI's "Let's Find Out" approach that encourages student engagement and critical thinking.

Ten teachers from Washington County will receive four days of training at DEI's marine research facility and education center on Great Wass Island, in the Town of Beals, during the summer. Daily workshop topics will include the scientific method, research topics, experimental design, and educator resources. Teachers will learn to: 1) raise microalgae; 2) use field study to support research; 3) participate in a research project; and 4) learn to use citizen science data reporting platforms, such as those used by Sea Grant and the Gulf of Maine Research Institute.

Once the school year begins, DEI will work with teachers to help them design and implement one or more research topics selected by them and their students. Support will be in the form of consulting and technical assistance, and may include one field trip at, or facilitated by, DEI staff, such as hatchery tours, field work, marine science days at DEI, use of wet labs, and other activities to support their projects. DEI staff will also be available to visit and provide support at the schools during the pilot project. Contact by phone, email and other technology will be available, as teachers gain confidence.

As an example, DEI has worked with teachers and students in our local schools who wanted to understand more about the ecology and natural history of a local clam population. Our research question was: "How do predators affect the growth and survival of juvenile soft-shell clams at three different tidal heights on mudflats in our community?" Students from ages 4 to 13 learned how to raise microalgae to feed larval and juvenile soft-shell clams, *Mya arenaria*, worked with the local clam shellfish committee to define an area that was once productive for clams, and then submitted an application to the Department of Marine Resources for permission to transplant their juvenile clams, in an attempt to enhance a depleted area for local clam harvesting in the future. Once in the field in the spring, with the help of DEI staff members, children and their teachers broadcast the clams they raised under four 14-ft x 14-ft nets to protect juvenile clams from predators. Core samples were taken from each netted site prior to planting clams to determine natural clam abundance and size, and to estimate densities of predators such as milky ribbon worms, moon snails, and green crabs. Each netted area will be monitored twice a year by DEI staff and the children. This is one example of how school students can perform relevant, meaningful research with guidance from educators. Other research projects could include any aspect of ocean ecology relevant to the students' interests.

To pilot our Coastal Science Academy, DEI will select up to 10 teachers from six to eight coastal schools who commit to participate for the year. We will contact them prior to the Academy to ascertain their goals and needs. We will create a survey instrument to gather reactions to the Academy and will work with faculty at the University of Maine at Machias to design a program to collect longitudinal data for tracking student progress. Our Director of Research, whose expertise is recognized statewide, will provide documentation of contact hours approved by the Washington County Support System for the recertification process required of Maine educators. DEI will use this as a learning opportunity for future academies, using an external program evaluator to determine our program's strengths and areas for improvement. In addition, we will document our pilot program through a videographer in order to share results and help promote future academies. Assuming our pilot is successful, we envision opening the Academy to teachers from all coastal areas in Maine.