

# 2013 Summer Newsletter

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*Working to preserve, protect and enhance the natural resources of Cape Cod.*



Coastal resiliency project studies role of natural communities 9>

This June, APCC was awarded an \$80,000 grant from the Massachusetts Environmental Trust that will enable APCC to work with the U.S. Geological Survey (USGS) and the Cape Cod Commission to evaluate the potential effects of rising sea level on the mid-Cape's groundwater system.

Rising sea levels and climate change could significantly affect the Cape's water resources. Cape Cod's aquifer is composed of glacial deposits of sand, which contain a fresh groundwater layer sitting on top of a deeper, denser seawater layer.

Earlier USGS studies of the lower Cape aquifer indicated that rising sea level could cause changes in the water table, stream base flow, and position of the freshwater-saltwater interface. Such changes could have far-reaching implications for public water supplies, wetlands, water bodies, management of wastewater and stormwater infrastructure and development. The USGS study of the mid-Cape aquifer will build on those earlier studies to develop a regional model.

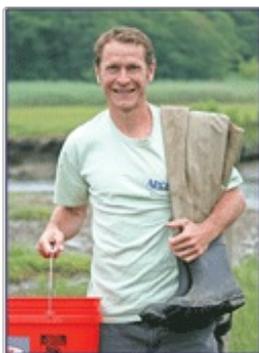
APCC and partners will develop outreach materials and community adaptation measures. Several public workshops are planned during this three-year program. Project partners are the Cape Cod Commission, the Nature Conservancy, Cape Cod Five Cents Savings Bank, the Mass Bays Program and the Barnstable County Coastal Resources Committee. APCC still needs to raise additional funds to fully support the project.

This is the fourth MET grant that APCC has received. Prior grants were for wastewater education, stormwater utility outreach, and monitoring of invasive species. The Massachusetts Environmental Trust is one of the state's largest sources of funding for water quality initiatives to improve and safeguard the state's water resources. Funding is from environmental license plate revenues which have funded more than 650 grants totaling over \$17 million. Click [HERE](#) for more information, visit .



## APCC's salt marsh program interns: Carl DePuy and Diane Byers

APCC coordinates a program to monitor the health of Cape Cod salt marshes in order to document the need to restore tidally restricted marshes, and to measure the success of marsh restoration efforts. The monitoring program is largely volunteer-based, but the success of the program is made possible in large part to the assistance of our seasonal salt marsh interns. Chosen yearly from a group of highly qualified candidates with undergraduate coursework in related fields of study, APCC's salt marsh interns gain invaluable experience toward their degrees and future careers.



**Carl DePuy, Summer Coastal Ecology Educator** Carl DePuy is APCC's first coastal ecology educator. The position was added to provide unique scientific field work experience for secondary science teachers. Carl currently teaches ecology and horticulture at Dennis-Yarmouth Regional High School, and plans on incorporating into his classroom what he studies in salt marshes during his summer work with APCC. He attended Huxley College of Environmental Science at Western Washington University, and recently graduated from Green Mountain College with a Master of Science degree in environmental science. Carl wrote his thesis on salt marsh dieback within the Cape

Cod National Seashore.

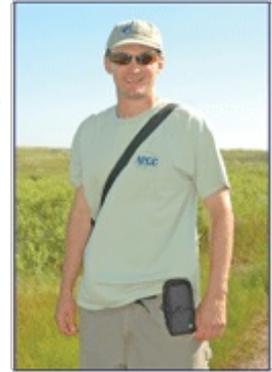
**Diane Byers, Salt Marsh Monitoring Intern** Diane Byers is APCC's 2013 summer salt marsh monitoring intern. Diane was born on Cape Cod and has lived in Chatham her entire life. In high school, Diane participated in many environmentally-related volunteer opportunities such as horseshoe crab tagging, island mapping and beach cleanups. These activities helped foster her love for Cape Cod and its environment. Diane recently graduated from the University of Vermont with a dual major in anthropology and sociology, and coursework in biology. Her long-term career goal is to become a park ranger or work at the Woods Hole Oceanographic Institution, providing her with the opportunity to be involved in the Cape Cod scientific community and to share what she knows with others.



**Debra Rogers, Maggie Geist Intern** As APCC's 2013 Maggie Geist intern, Debra Rogers is working in the application of Geographical Information Systems (GIS) to digitally map and analyze ongoing environmental monitoring projects. The Maggie Geist Internship is named in honor of APCC's former executive director. Debra is creating GIS maps of several salt marsh restoration sites to visually connect monitoring data to the exact geographic locations where it was collected. The mapping will help project managers accurately track changes to the sites in order to gauge the success of restoration efforts. Debra is also working with our Whitlock intern to continue to update APCC's Cape Cod Critical Habitats Atlas. This project includes an interactive online map, which will be made available for future use on [www.apcc.org](http://www.apcc.org).

Debra will complete her B.S. in Geography from Bridgewater State University in May, 2014. Her previous experience includes work with the Mashpee Wampanoag Tribe's Department of Natural Resources, the town of Falmouth's Department of Natural Resources, the town of Bridgewater's Planning Department, and Science Wares, Inc. She is currently a member of the Falmouth Agricultural Commission. Debra is continuing to build valuable experience toward a career that fosters environmental integrity on Cape Cod, the place she and her young family call home.

**Alex Etkind, Whitlock Intern** APCC's Whitlock Internship, named after APCC's founder, Dr. Herbert Whitlock, provides opportunities for individuals pursuing graduate-level degrees in environmental issues. Our 2013 Whitlock intern is Alex Etkind. Alex is mapping the Cape's natural communities, a project that was begun by APCC's 2012 Whitlock intern. The documentation will be used to update APCC's Cape Cod Critical Habitats Atlas and will also be provided to the Massachusetts Natural Heritage and Endangered Species Program for its state-wide mapping program.



Alex has a B.A. (magna cum laude) in Environment, Earth and Ocean Sciences from the University of Massachusetts, Boston, and has also attended the Harvard Forest Keystone Cooperator Program. His work experience includes testing and using native plant species in energy-efficient green roofs, serving as a land steward at the Wildlands Trust, and as stewardship coordinator for The 300 Committee Land Trust where he works part-time. Alex has a strong interest in pursuing advanced studies in forestry and understanding the interaction between human activity and forest resources.



In his role as APCC's 2013 Whitlock intern, Alex Etkind has identified and mapped a variety of uncommon natural communities. An example is a sea level fen, which is the first one ever documented in

Massachusetts. A sea level fen is a wetland influenced by both acidic freshwater seepage from uplands and periodic overwashing from a salt marsh. The mix of these two environments produces a distinct natural community made up of both salt marsh and freshwater plant species. Pictured at left is a section of the sea level fen documented by Alex featuring a thick sphagnum moss bed and carnivorous sun dew plants.



APCC continues to weigh in on the proposal to build a 127,000 square foot Lowe's Home Improvement Store off of Route 134 in South Dennis. In July, APCC testified at two public hearings and submitted a position statement to the Cape Cod Commission outlining numerous concerns about adverse local and regional impacts that would result if the store were built.

In the months leading up to the hearings, APCC conducted extensive public outreach in the town of Dennis, talking to hundreds of residents about the key issue areas associated with the proposed development. In particular, APCC is concerned about impacts to water quality, traffic and community character.

According to the project proposal, Lowe's wastewater treatment will not meet the nitrogen reduction requirements established by the Cape Cod Commission for Bass River, which is a nitrogen-impaired water body. Instead, Lowe's proposes to pay a cash contribution, meaning it will continue to impact Bass River's water quality.

Likewise, Lowe's will not be able to reduce the traffic congestion caused by the 4,150 estimated weekday and 7,658 estimated Saturday vehicle trips it will generate. Lowe's is proposing to pay a traffic mitigation fee for these impacts.

APCC maintains that the project is too large and the consequences are too great for cash payments to be an acceptable alternative to actually fixing the problems it will create. APCC believes these impacts, along with other aspects of the project concerning incompatibility with the Cape's traditional character, are significant project detriments. The Cape Cod Commission may approve a project only if the project's benefits outweigh its detriments. APCC's position statement on the proposed Lowe's and additional information about the project can be found [here](#).



Combing the beach for interesting shells is all part of the summer ritual on Cape Cod. Chances are, those who have spent any time in the endeavor have stumbled upon a reoccurring mystery: the occasional clam shell with a neatly drilled hole going right through it. Blame this who-dunnit on the moon snail.

Moon snails, both the Atlantic moon snail (*Neverita duplicata*) and its cousin the northern moon snail (*Lunatia heros*), are large marine gastropod mollusks with spiral shells that can grow up to four inches across. With a little careful hunting, live moon snails can be found partially buried in Cape Cod's sandy tidal flats; however, the shells of dead snails are more

commonly seen washed up on the beach or utilized as a favored residence of hermit crabs.

But, getting back to the mystery: the moon snail is a beautiful but relentless predator. It has a voracious appetite, eating several times a day. And clams are one of its prime targets. The moon snail uses its enormous foot, which is three times bigger than its shell, to dig into the sand and reach its prey. With its teeth, or radula, it drills a small, perfectly round hole through the clam shell. Acidic enzymes are secreted from the snail's



mouth to help soften the shell and partially digest the clam. Then, the moon snail inserts its long tubular mouth and sucks up the clam like a milkshake! Grizzly, perhaps, but it's all part of the unseen daily drama of life taking place just below the surface of the Cape Cod shoreline.



APCC has once again been selected to serve as the Cape Cod host for the Massachusetts Bays Program. The contract is awarded on a yearly basis. Since 2006, APCC has served as the host organization for the Cape Cod regional coordinator.

The Mass Bays Program is one of 28 National Estuary Programs designated under the federal Clean Water Act to protect and restore estuaries of national significance. The Mass Bays Program works with local communities to protect and restore the coastal ecosystems and coastal heritage of Cape Cod Bay and Massachusetts Bay.

As the Cape Cod host, APCC's priorities for the coming year include assisting local communities with coastal restoration projects, improving coastal water quality and habitat, examining the effects of sea level rise on the Cape's groundwater and subsequent effects on ecosystems and communities, and updating the Comprehensive Conservation and Management Plan for the Mass Bays Program. APCC will also assist the Barnstable County Coastal Resources Committee, the County's advisory committee on coastal issues. For more information, contact Jo Ann Muramoto, APCC senior scientist and Mass Bays Program regional coordinator for Cape Cod, at (508) 362-4226 ext. 16.