

COVE CURRENTS

Greetings from the Executive Director

At 6:00 a.m. I walked out of my high-rise condominium in Center City Philadelphia and into a perfect summer morning. The sun was shining, pedestrians were sipping their first cup of coffee on their way to work, joggers were out for their daily run, and cars were few and relatively quiet. As I came closer to the corner where a food truck spends its day, the proprietor was busy filling the air with the aroma of bacon sizzling on a pan. Although I was enjoying this tranquil environment and was thankful for the beautiful day ahead of me, the people of Moore, Oklahoma popped into my mind. As we all know from news reports, an EF 5 tornado hit Moore, a city of 58,000 residents on May 21, 2013. Twenty-four people were killed, including nine children, 233 were injured, and 13,000 homes were destroyed. An article from Reuters dated the same day stated, "For blocks around, houses were reduced to heaps of rubble and trees were stripped of their leaves. The air was tinged with the smell of wet pine from wrecked homes."

Closer to home, we remember vividly the pictures of destruction caused by Superstorm Sandy. Many of us have personal tales to tell in her aftermath. We are not alone. National weather-related disasters have occurred far and wide in 2013: cyclones in Australia; earthquakes in Argentina; tornadoes in the Southern Hemisphere; and drought over 80% of the contiguous United States. All of these phenomena have resulted in loss of life, property damage, public health issues, and economic hardship. An article in the *Wall Street Journal* by Angela Chen on July 31, 2013 states that "The U.S. government is predicting as many as six major hurricanes in the Atlantic region for this year, compared with two major hurricanes that occurred in 2012."

Weather, and by extension climate, is a subject that affects, in one way or another, all living things. It is a very big subject. Scientists spend their lives studying it and planning for potential disastrous results while trying to mitigate those results when and where it is possible.

At Palmyra Cove we believe that weather is a worthy course of study and a timely one given its prominence in the news and in our lives. Our target audience includes teachers, students, and the general public.

John Moore, Director for Geoscience/STEM Education at Palmyra Cove Nature Park, facilitates the American Meteorological Society (AMS) DataStream courses and GLOBE Teacher Training courses at the Cove, in part to promote the study of weather and climate in the classroom. Also, John will be teaching these courses and others as part of a GeoSTEM Teacher Professional Development Series at Burlington County College, Mt. Laurel campus this Fall Semester.

Back at the Cove, a new WeatherBug exhibit has been installed in the Environmental Discovery Center (EDC) which will bring the subject of weather and climate front and center for our students and visitors alike. The exhibit consists of an indoor Digital Display (LCD) unit which displays real-time weather conditions in addition to three-day weather forecasts, Doppler radar, and local weather alerts. The instrumentation for receiving this data has been installed on the roof of the EDC, the data is transmitted to the LCD unit in the exhibit hall and is available for all to observe. WeatherBug allows the user to track storms, measure precipitation, and chart observations. Over time weather patterns emerge, knowledge expands, and understanding evolves.

Our ownership of a WeatherBug system makes us part of the CBS3 WeatherBug Schools program network. PCNP will contribute local data, from its WeatherBug station, to meteorologists for their micro-climate studies. Each of the WeatherBug stations in the region is used for monitoring and contributing to a database that aids meteorologists in their effort to issue specific weather watches and warnings in the hope of protecting life, property, and public health in case of a major weather event.

Once again, as summer turns into fall we will have an opportunity to observe and experience the changing colors, ecosystems, and wildlife at Palmyra Cove Nature Park. This year, WeatherBug will help us keep an eye on the changing weather as well. Visit often; we'll be looking for you.

Clara Ruvolo, Executive Director



Palmyra Cove Nature Park Celebrates the
10th Anniversary
of the Grand Opening of the
Environmental Discovery Center
2003-2013



Pictured are: Clara Ruvolo, Executive Director, Palmyra Cove Nature Park; Robert Shinn, former Commissioner, NJ Department of Environmental Protection; and George Nyikita, former Executive Director, Burlington County Bridge Commission.

Naturalist Notes

Cove Campers summer camp has ended for the season and we had such a blast this year. All of our campers and counselors had fun exploring the different habitats around the park. Some of the activities our campers participated in this year include building wildlife shelters, launching driftwood boats into the Delaware River, painting with Phragmites reeds, and building a replica of an eagle's nest on the beach, which they helped clean. Campers also searched for tadpoles and macroinvertebrates in Bullfrog Pond, seined the Delaware River for fish, and caught and identified the butterflies of Palmyra Cove. Each week of camp concluded with a night hike, during which we spotted the active beavers in Beaver Pond and our common Little Brown Myotis bats eating insects above our heads. Our new camp for younger children went very well and we do plan on offering it again next summer, extending our campers ages from children going into first grade to our young naturalists going into eighth grade.

I am now preparing for our Cove Caterpillar preschool program for children ages two through five, which starts Monday, September 9. Our preschoolers will be exploring our forest, beach, butterfly gardens, and wetlands, turning over logs, scooping through ponds, searching for animal homes,



tracking wildlife, and finding caterpillars and snails. If you are interested in signing up for the ten-week program, please contact me for availability and registration at kmerola@bcbridges.org.

Kristina Merola, Naturalist



My Perfect Day

It was the Sunday before Memorial Day and my wife and I thought we would spend a quiet day together. After church, we headed to Amico Island County Park to do some birding. Since it was lunch time we stopped at the Docksides Café in



Dredge Harbor. The Docksides isn't fancy, just a luncheonette in a marina but the food is good and you can sit right on the river and watch the boats come and go. The waitress was friendly and it was pleasant by the water. We could look across the inlet and see Amico.

After lunch we got in the car and made the short drive to Amico. The weather was just right, not too warm, not too cold and just a slight breeze. The sky was a very suitable shade of blue with the right amount of fluffy white clouds to make it interesting. We hiked south along the trail and commented on how lush the vegetation was. We went about half a mile and didn't see another soul. We stopped at an outlook where we could see a heronry opposite the inlet from us. The Great Blue Herons were coming and going like airliners at Philly International.

After a short respite, we continued our walk and came to the first people we met, a young family down by the river. The little kids looked cute running along the shoreline. As



we walked we checked off the birds we were seeing. It wasn't a great day for the birds, but still, we counted towhees, red winged black birds and yellow warblers. My wife was pleased to see lots of turtles in the pond in the middle of the park. We saw a healthy looking buck just off the trail already

wearing his tawny summer coat and growing his antlers. A little further on we met and spoke with another couple who

were not familiar with the park and told them about the heronry. They seemed excited to go see it for themselves.

We made our way back to the car and headed home. We stopped at the garden shops on River Road and checked out the plants but didn't find anything we needed to buy. Once home we sat in our backyard. I made myself a gin and tonic and poured my wife a glass of chardonnay. As we sat and sipped, I thought that I could spend "every day this way" (inspired by "Coney Island" by Van Morrison).

Clyde Croasdale, *Guest Contributor*



Education Corner

Educational Activities: Our spring season began March 15th with Moorestown Friends and ended with a visit by Yorkship Elementary School on June 18th. During that three-month period, 25 schools and 2300 students participated in park programs. Spring in the park was particularly special this year due to the birth of two owlets and two raccoon cubs. It was possible to sit on a bench and watch both sets of babies at the same time. Photographers were often seen camped out for hours to get the perfect shot. For many of the students, it was their first time seeing these baby animals.

Our summer session started with a visit by Doane Academy on June 20th. Doane students participated in a river seining and a cleanup.

Palmyra Cove Nature Park offered our own camp program during the weeks of July 8 and 15. In addition to our camp program, we have another 250 children scheduled for visits.

Teaching Staff: Our teaching staff had some changes this spring and summer. We lost some valuable people who decided to get "real" jobs, but we added some quality people to pick up the slack. Our new additions are Armand "Butch" Bianchini (Riverton), Beth Bresnahan (Cinnaminson), Donna Malinowski (Cinnaminson), and Gibson Reynolds (Collingswood). The four have varied backgrounds and experiences but share a common interest in teaching children about nature.

Summer Staff: Our summer intern staff features two veterans and three new additions. Our veterans are Christiana Fattorini, Gettysburg College, and Alexander Wolf, Drexel University. Christiana helped with the training of the rookies and assumed a major leadership role with the interns. Alex handled the front desk responsibilities and assisted with maintenance. Our new additions include: Steve Forney, a junior at Wilkes University; Alexandra Lucas, a senior at William Patterson University; and Hayley Hanuscin, a sophomore at Temple University. Our interns meshed well and made significant contributions to our school programs in the late spring. In addition to leading activities with our summer visitors, the interns played a major role in the Cove Campers program.

Around the Park: Summer in the park can be very hot, but a steady breeze along the river or a trail shrouded by trees can be a welcome relief. The park wildlife also takes a break from the summer heat by being inactive during the day. The best wildlife viewing times are early morning and around dusk. On the other hand, many of the reptiles and amphibians relish the sunlight and can be observed in our ponds. If you are thinking about visiting the park in the summer, bring water to drink and wear light-colored clothes, including a hat. No matter what time of day you visit, there is always something interesting to see.

Edward Sanderson, *Director, Environmental Education*



Establishing a Geoscience and Remote Sensing Laboratory

Two major national science education policies that will impact our schools in the near future have been introduced to the public for review, discussion, and implementation. They are the Next Generation Science Standards (NGSS), which were recently released, and the Science, Technology, Engineering, and Mathematics (STEM) education which continues to be discussed. To put it simply, Science, and Science Education in our schools will shortly be in a phase of transition. This presents an opportunity for the Environmental, Geoscience, and Earth Sciences to be promoted and/or introduced into our schools. Discussions concerning the NGSS adoption and implementation and STEM Education development present opportunities for students to learn about Planet Earth, the Earth Systems Science, and how our local environment is a part of a bigger picture.

For over four decades, there has been an ongoing discussion that focuses on how and where students should be exposed to environmental concepts, principles, and studies. Often at the center of that debate are the differences between informal and formal education. While there is no argument that students should be exposed to field studies and activities where students can interact directly with the environment, the fact is that students spend most of their academic experience in schools. Science education in primary schools is practically non-existent; junior high has some exposure, often through a limited curriculum; and high school for the most part focuses on the Biology, Chemistry, and Physics paradigm, driven by college admission requirements for “rigorous” laboratory experiences. However, that is changing.

The obvious question would be, is there a way to do both? The answer is yes! There is plenty of educational research that emphasizes hands-on learning, and problem based learning as instructional strategies that lead towards student success. The thousands of students that visit the Cove each year receive not only very high quality instruction, but gain hands-on experiences as well, and the instruction always includes a clear relationship to environmental problems or issues that society faces. Through geoscience technologies, students now have the opportunity to add to their experiences skill sets that emphasize the use of remote sensing technologies. You may read about 21st Century Learning Workforce Development Skills in our schools. The Geoscience and Remote Sensing Laboratory is a place where those skill sets can be learned, developed, and practiced.

There is an array of satellites and remote sensors that can provide students with global data, often in real time, and a view of the Earth from space. Since February (2013) students from the Burlington County Institute of Technology, led by Job Coach Tom Boris, have worked to develop strategies and



identify resources for students and teachers. Students are conducting ground observations that include daily weather/clouds observations, water quality analysis, and soil temperature investigations. Through the spring, the team also conducted Phenology studies, which investigate seasonal changes that are linked to climate studies. Data is being shared with NASA scientists as part of Global Change research. This spring a WeatherBug weather station was installed in the Environmental Discovery Center where real time meteorological data can be obtained for studies. Real time weather data and imagery updates visitors to the Cove as to current site specific weather conditions. These groups of ground observations are then compared to satellite imagery from several earth observing satellites, i.e. LandSat, Terra, Aqua, Suomi NPP, and GOES. These two elements, ground observations and measurements, and satellite imagery, form the foundation for a Geoscience and Remote Sensing Laboratory. These types of investigations are academically rigorous. The Geoscience and Remote Sensing Laboratory illustrates the interdisciplinary nature of Science and Technology and Engineering and Mathematics, the true nature of STEM education. Finally, the NGSS includes new standards in the Earth and Space sciences which will present a new challenge to many schools. In light of the fact that many schools often are quick to eliminate Earth Science classes during times of limited budgets, this presents an opportunity to promote the Geosciences and GeoSTEM.

The Geoscience and Remote Sensing Laboratory will continue to be developed through the Institute of Earth Observations at Palmyra Cove Nature Park. This fall we will be conducting GLOBE Program training, American Meteorological Society DataStreme courses, and a new GeoSTEM Teacher Seminar series at Burlington County College. Through the development of GeoSTEM Master Teachers, we are influencing curricula and course offerings throughout the Delaware Valley.

John D. Moore, *Director for Geoscience STEM Education*



Photos credited to Bennett Landsman, Steve Greer, Jonathan Maccormack and Barbara Farnsworth. Palmyra Cove Environmental Education Foundation thanks Ed McCabe for his assistance in editing Cove Currents.

Upcoming Events

Registration is required to participate in Palmyra Cove Nature Park programs. For more information please see our website at www.palmyracove.org or contact Kristina Merola at (856) 829-1900 x 267 or kmerola@bcbridges.org.

Families/small groups: to reserve a private hike contact Ed Sanderson at (856) 829-1900 x 263 or esanderson@bcbridges.org.

Sept 2	9:00 a.m. – 4:00 p.m.	EDC closed for Labor Day	
Sept 7	9:00 a.m. – 11:00 a.m.	Family Hike	All ages
Sept 9	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 9	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 10	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 16	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 16	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 17	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 21	9:00 a.m. – 12:00 noon	Beginning Birding	Adult
Sept 23	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 23	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 24	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 30	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Sept 30	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 1	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 5	9:00 a.m. – 11:00 a.m.	Family Hike	All ages
Oct 7	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 7	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 8	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 12	1:00 p.m. – 5:00 p.m.	Oktoberfest Fundraiser	All Ages
Oct 14	9:00 a.m. – 4:00 p.m.	EDC closed for Columbus Day	
Oct 14	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 14	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 15	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 19	9:00 a.m. – 12:00 noon	Beginning Birding	Adult
Oct 21	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 21	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 22	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 28	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 28	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Oct 29	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 2	9:00 a.m. – 11:00 a.m.	Family Hike	All ages
Nov 4	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 4	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 5	9:00 a.m. – 4:00 p.m.	EDC closed for Election Day	
Nov 5	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 11	9:00 a.m. – 4:00 p.m.	EDC closed for Veteran's Day	
Nov 11	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 11	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 12	10:00 a.m. – 11:00 a.m.	Cove Caterpillars Program	Preschool
Nov 16	9:00 a.m. – 12:00 noon	Beginning Birding	Adult
Nov 28	9:00 a.m. – 4:00 p.m.	EDC closed for Thanksgiving Day	
Nov 29	9:00 a.m. – 4:00 p.m.	EDC closed for Thanksgiving Day	
Dec 7	9:00 a.m. – 11:00 a.m.	Family Hike	All ages
Dec 21	9:00 a.m. – 12:00 noon	Beginning Birding	Adult
Dec 25	9:00 a.m. – 4:00 p.m.	EDC closed for Christmas Day	



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Photo by Barbara Farnsworth

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