Program

Delaware Estuary Science & Environmental Summit 2011

“Connections — Land to Sea, Shore to Shore & Science to Outreach”

January 30 – February 2, 2011
Cape May, New Jersey

For more information visit www.DelawareEstuary.org
Welcome to the Delaware Estuary Science and Environmental Summit!

It is with great excitement that the Partnership for the Delaware Estuary welcomes you to Cape May, New Jersey for our fourth biennial Delaware Estuary Science & Environmental Summit. The theme for this year’s meeting is “Connections – Land to Sea, Shore to Shore & Science to Outreach,” with a program that we hope will entice and challenge participants to look beyond their own fields and jurisdictions to address the challenges facing the Delaware Estuary.

This 3-day meeting builds upon the momentum created at our previous conferences, held every two years since 2005: the 2005 Science Conference, “Linking Science and Management”; the 2007 Science Conference and Environmental Summit, “Setting Achievable Environmental Goals”; and the 2009 Science and Environmental Summit, “Planning for Tomorrow’s Delaware Estuary.” We once again have the goal of convening scientists, educators, resources managers, environmental organizations and others to discuss current and emerging issues and showcase exemplary research and activities in the Estuary. The program includes a full range of subject material related to estuarine science, management, and outreach, including special sessions on benthic systems, multiple stressors, combat communications, and social media.

We are delighted that this Summit consists of more than 130 oral and poster presentations, up from 120 in 2009. The presentations are diverse, spanning the environmental spectrum, giving participants the rare opportunity to learn not only about science in the Estuary, but also how this information can be better used to manage resources and engage the public. Once again, we have scheduled joint sessions where science and communications overlap, and we encourage attendees to move between these sessions to expand their knowledge.

Climate change, sea level rise, loss of natural lands, freshwater availability, and contaminants are examples of challenges the Delaware Estuary faces that require smart solutions implemented by diverse sectors working together. This watershed-based meeting provides an important retreat-like forum for the exchange of information and ideas among sectors and individuals with diverse expertise and perspectives.

Following the conference, PDE will prepare a “proceedings” document summarizing the overall program and an updated edition of the “Science Directory: A listing of scientists and others interested in the science of the Delaware Estuary.” These resources and presentations from the conference (with permission) will be made available online at www.DelawareEstuary.org, along with similar products from our previous conferences.

We hope you will be both informed and inspired by the three days ahead in Cape May with your colleagues from throughout the region. Enjoy!

Jennifer Adkins
Executive Director
Partnership for the Delaware Estuary
2011
4th Delaware Estuary Science & Environmental Summit
Connections—Land to Sea, Shore to Shore & Science to Outreach

The Grand Hotel
Cape May, New Jersey
January 30 – February 2, 2011

Sponsors

Benefactor
- Philadelphia Water Department
- U.S. Environmental Protection Agency

Patron
- Delaware Coastal Management Program
- Delaware Department of Natural Resources and Environmental Control
- DuPont
- New Jersey Department of Environmental Protection
- Sunoco, Inc.
- United States Geological Survey

Contributor
- National Oceanic and Atmospheric Administration

Friend
- The Academy of Natural Sciences, Patrick Center for Environmental Research
- ConocoPhillips
- Delaware River Basin Commission
- Delaware Sea Grant
- Matrix New World Engineering, Inc.
- McCabe & Associates
- Pennsylvania Department of Environmental Protection, Coastal Resources Management Program
- Pennsylvania Sea Grant
- PSEG Nuclear, LLC
- Rutgers University - Institute of Marine and Coastal Sciences
- U.S. Fish and Wildlife Service
Agenda at a Glance

Sunday, January 30
5:00 – 8:00pm  Registration - Penthouse Ballroom 5th Floor
6:00 – 9:00pm  Evening Reception - Penthouse Ballroom 5th Floor

Monday, January 31
8:00 a.m.  Registration - 5th Floor & Continental Breakfast – Atrium 1st Floor
9:00 a.m.  Welcome & Keynote: EPA Region 3 Administrator Shawn M. Garvin, U.S. Representative; Frank A. LoBiondo, New Jersey’s 2nd District; Commissioner Bob Martin, New Jersey Department of Environmental Protection – Grand Ballroom 1st Floor
10:30 a.m.  Break
10:45 a.m.  Session 1 - Green City, Clean Waters – Grand Ballroom 1st Floor
11:45 a.m. Lunch & Presentation: Promise & Pitfalls of Integrating Ecosystem Concepts into the Public Policy Making Process - Penthouse Ballroom 5th Floor
1:15 p.m.  Concurrent Sessions
  Session 2 - Water Quality & Quantity -Grand Ballroom A 1st Floor
  Session 3 - Social Media 101 for Scientists & Organizations -Grand Ballroom B 1st Floor
2:45 p.m.  Break
3:00 p.m.  Concurrent Sessions
  Session 4 - Climate Change -Grand Ballroom A 1st Floor
  Session 5 - Easy Web-based Tools for Projects -Grand Ballroom B 1st Floor
5:00 p.m.  Session 6 - Posters & Networking (drinks & hors d’oeuvres) - Penthouse Ballroom 5th Floor
7:00 p.m.  Dinner (on your own)

Tuesday, February 1
8:00 a.m.  Registration - 5th Floor & Continental Breakfast – Atrium 1st Floor
9:00 a.m.  Session 7 - Joint Panel Discussion: Energy in the Delaware Estuary – Grand Ballroom 1st Floor
10:00 a.m.  Plenary: Dramatic Long Term Changes in Delaware Estuary Environmental Conditions Explained Using Consistent Water Quality Monitoring – Grand Ballroom 1st Floor
10:45 a.m.  Break
11:00 a.m.  Concurrent Sessions
  Session 8 - *Special Session: The Delaware Estuary Benthos -Grand Ballroom A 1st Floor
  Session 9 - *Special Session: Multiple Stressors in Rivers and Estuaries -Grand Ballroom B 1st Floor
12:15 p.m.  Lunch & Presentation: The World Outside: What They Say About Why Your Work Matters - Penthouse Ballroom 5th Floor
1:30 p.m.  Concurrent Sessions
  Session 10 - Living Resources -Grand Ballroom A 1st Floor
  Session 11 - Combat Communications for Conservationists -Grand Ballroom B 1st Floor
3:15 p.m.  Break
3:30 p.m.  Concurrent Sessions
  Session 12 - Restoration & Enhancement/Conservation -Grand Ballroom A 1st Floor
  Session 13 - More than a Message: Communications Efforts for Results You Can Measure -Grand Ballroom B 1st Floor
5:00 p.m.  Session 14 - Posters & Networking - Penthouse Ballroom 5th Floor
7:00 p.m.  Dinner - Penthouse Ballroom 5th Floor
7:30 - 9:00 p.m.  Interactive Polling Activity - Penthouse Ballroom 5th Floor
Wednesday, February 2
8:00 a.m.  Registration - 5th Floor & Continental Breakfast – Atrium 1st Floor
9:00 a.m. Concurrent Sessions
   Session 15 - Ecological Linkages and Functions - Grand Ballroom A 1st Floor
   Session 16 - Design Principles for Scientific Products - Grand Ballroom B 1st Floor
10:30 a.m. Break
10:45 a.m. Concurrent Sessions
   Session 17 - Wetlands & Other Habitats - Grand Ballroom A 1st Floor
   Session 18 - Using Conceptual Diagrams to Communicate Science - Grand Ballroom B 1st Floor
12:30 p.m. Lunch - Penthouse Ballroom 5th Floor
1:45 p.m. Concurrent Sessions
   Session 19 - Wetlands (Part 2) - Grand Ballroom A 1st Floor
   Session 20 – Oysters - Grand Ballroom B 1st Floor
2:45 p.m. Break
3:00 p.m. Session 21 - Hot Topics - Grand Ballroom 1st Floor
4:45 p.m. Announcements, Awards, and Closing Remarks – Grand Ballroom 1st Floor

Continental breakfast is provided daily in the Atrium outside of the 1st floor ballroom. If you would like a more substantial breakfast, one can be purchased at Hemingway’s Restaurant at the front end of the hotel. The restaurant opens daily at 6:30 a.m.

Abstracts are available at the Registration Table and online at:
www.DelawareEstuary.org/news_pde_science_conference.asp

Enjoy!
Detailed Agenda

### Sunday, January 30

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>5:00 - 8:00</td>
<td>P.M. Registration - Penthouse Ballroom 5th Floor</td>
<td>5th Floor</td>
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<tr>
<td>6:00 - 9:00</td>
<td>Evening Reception - Penthouse Ballroom 5th Floor (Heavy appetizers &amp; beverages)</td>
<td>5th Floor</td>
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### Monday, January 31

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Registration - 5th Floor &amp; Continental Breakfast – Atrium 1st Floor</td>
<td>1st Floor</td>
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<tr>
<td>9:00 a.m.</td>
<td>Welcome &amp; Keynote Address Grand Ballroom 1st Floor (Jennifer Adkins, Partnership for the DE Estuary) Regional Administrator Shawn M. Garvin, U.S. EPA Region 3 U.S. Representative Frank A. LoBiondo, New Jersey’s 2nd District Commissioner Bob Martin, New Jersey Department of Environmental Protection</td>
<td>1st Floor</td>
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<tr>
<td>10:30 a.m.</td>
<td>Break</td>
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<tr>
<td>10:45 a.m.</td>
<td>Opening Session 1 - Green City, Clean Waters – Grand Ballroom 1st Floor</td>
<td>1st Floor</td>
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<tr>
<td></td>
<td>Speaker: Christopher S. Crockett, Director of Planning &amp; Research, Philadelphia Water Dept. Green City, Clean Waters is Philadelphia’s vision for meeting regulatory obligations while helping to revitalize the City.</td>
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<td></td>
<td><strong>Associated Posters:</strong> Glen Abrams, Michael Leff. Green infrastructure comes of age (29)</td>
<td></td>
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<tr>
<td></td>
<td>Michael Leff, Laura Whalen, Robert Lonsdorf, Shandor Szalay, Jim Thorne, Diane Rosencrance, Mike McGeehin, Flavia Rutkosky, Donna Suevo, Joe Berg, Jamie Blaine, Marisa Ranieri, Gerald Bright, Richard McCorkle. Regional Restoration Initiative: Case study on headwater streams (89)</td>
<td></td>
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<tr>
<td>11:45 a.m.</td>
<td>Lunch - Penthouse Ballroom 5th Floor</td>
<td>5th Floor</td>
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<tr>
<td></td>
<td>Speaker: John Duff, Associate Professor of Environment, Earth &amp; Ocean Science Dept., Uni. Massachusetts Promise &amp; Pitfalls of Integrating Ecosystem Concepts into the Public Policy Making Process</td>
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<tr>
<td>1:15 p.m.</td>
<td>Concurrent Sessions 2 &amp; 3</td>
<td></td>
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<tr>
<td>1:15</td>
<td>Lyn O’Hare, Matt Bixler</td>
<td>Achieving watershed improvements through source water protection (7)</td>
</tr>
<tr>
<td>1:30</td>
<td>Eric Vowinkel</td>
<td>The Delaware Basin demonstration project of the National Monitoring Network for coastal waters and their tributaries-relations among dissolved oxygen, biochemical oxygen demand, nutrients, and shad populations (32)</td>
</tr>
<tr>
<td>1:45</td>
<td>Andrew J. Thuman, Biswarup Guha, Ruta Rugabandana</td>
<td>Murderkill River nutrient &amp; dissolved oxygen study: The role of tidal water quality modeling (77)</td>
</tr>
<tr>
<td>2:00</td>
<td>Yoana Voynova, Jonathan H. Sharp, Matthew J. Oliver</td>
<td>Sea surface temperature and biogeochemical anomalies due to coastal upwelling in the Delaware Estuary (99)</td>
</tr>
<tr>
<td>2:15</td>
<td>A. Ronald MacGillivray</td>
<td>Emerging contaminants in the Delaware Estuary (95)</td>
</tr>
<tr>
<td>2:30</td>
<td>John Callahan, A. Scott Andres</td>
<td>A web-based mapping system for the delivery of hydrogeologic data for Delaware (44)</td>
</tr>
</tbody>
</table>
**Monday 1:15 p.m.**

**Concurrent Sessions 2 & 3**

**Water Quality & Quantity Posters:**

Patricia Wnek. Application of NOAA, National Weather Service precipitation estimates in support of ecosystems (2)

Daniel Duval, Christopher K. Sommerfield. Comparison of historical and recent sediment loads of the Delaware River (31)

Julie Becker. Identifying stakeholders’ practices and concerns about pharmaceuticals: A qualitative study (34)

Lisa Wool, Arthur Holst. Green infrastructure and nonpoint source pollution reduction education at the Philadelphia International Flower Show (54)

Sandeep Mehrotra, James Garin, Nick Barbaro, Dana Gumb, Tiffany Witwer. Hydrologic and hydraulic modeling for green stormwater practices (113)

Tiffany Witwer, James Garin, Dana Gumb, James Rossi, Sandeep Mehrotra. Successful maintenance of green infrastructure for stormwater management: New York City’s Staten Island Bluebelt (114)

**Session 3 - Social Media 101 for Scientists & Organizations —Grand Ballroom B 1st Floor**

**Speaker: Whitney Hoffman, Hoffman Digital Media, LLC**

Why social media is important to your work, and how to use it to help build awareness for your projects.

**2:45 p.m.**

**Break**

**Session 4 - Climate Change —Grand Ballroom A 1st Floor**

**Moderators: Danielle Kreeger (PDE) and Ray Najjar (PSU)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speakers</th>
<th>Topic</th>
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<tbody>
<tr>
<td>3:00</td>
<td>Simon Engelhart, Benjamin P. Horton, W. Richard Peltier, Kelvin Ramsey</td>
<td>Holocene relative sea levels and paleogeographies of the Delaware River Estuary: Implications for current rates of sea-level change (56)</td>
</tr>
<tr>
<td>3:15</td>
<td>Steve Gill, Allison Allen, Carolyn Lindley, William Sweet, Chris Zervas</td>
<td>Long-term variations in tidal characteristics and sea-level in the Delaware Estuary (38)</td>
</tr>
<tr>
<td>3:30</td>
<td>Ray Najjar</td>
<td>Climate projections for the watershed of the Delaware Estuary (57)</td>
</tr>
<tr>
<td>3:45</td>
<td>Danielle Kreeger, Jennifer Adkins, Priscilla Cole</td>
<td>Climate adaptation in the Delaware Estuary: Results from the climate Ready Estuaries Pilot (16)</td>
</tr>
<tr>
<td>4:00</td>
<td>Nathaniel B. Weston</td>
<td>Response of salt-marsh and tidal freshwater marshes in the Delaware River Estuary to sea-level rise and salt-water intrusion (73)</td>
</tr>
<tr>
<td>4:15</td>
<td>Dorina Frizzera</td>
<td>A coastal vulnerability index for the Delaware Bay: A pilot study for New Jersey coastal communities (68)</td>
</tr>
<tr>
<td>4:30</td>
<td>John Callahan, Daniel J. Leathers, David R. Legates, John H. Talley, Kevin R. Brinson, Linden S. Wolf</td>
<td>A prototype coastal flood monitoring system for Delaware (52)</td>
</tr>
<tr>
<td>4:45</td>
<td>Kelly Valencik, Jennifer Holmes</td>
<td>Survey says: Sea-level rise needs attention &amp; action in Delaware (70)</td>
</tr>
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</table>
Monday, February 1

3:00 p.m. | **Session 6 - Posters & Networking** - Penthouse Ballroom 5th Floor

5:00 p.m. | **Dinner** (on your own)

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Tuesday, February 1

8:00 a.m. | Registration - 5th Floor & Continental Breakfast – Atrium 1st Floor

9:00 a.m. | **Session 7 - Joint Panel Discussion: Energy in the Delaware Estuary** – Grand Ballroom 1st Floor

Panel Moderator: Jennifer Adkins, Executive Director, Partnership for the Delaware Estuary

A joint panel of some of the Delaware Estuary’s leading environmental officials will present and discuss policies and programs being undertaken by agencies in our region to address today’s energy challenges.

- **Collin O’Mara**, Secretary, Delaware Department of Natural Resources and Environmental Control
- **Michele N. Siekerka**, Assistant Commissioner for Economic Growth and Green Energy, NJ Department of Environmental Protection
- **Christopher S. Crockett**, Ph.D., P.E., Director of Planning & Research, Philadelphia Water Department
- **Carol R. Collier**, Executive Director, Delaware River Basin Commission

10:00 a.m. | **Special Plenary Session: Dr. Jonathan H. Sharp** – Grand Ballroom 1st Floor

Speaker: Jonathan H. Sharp, School of Marine Science and Policy, University of Delaware, Lewes

Dramatic Long Term Changes in Delaware Estuary Environmental Conditions Explained Using Consistent Water Quality Monitoring

10:45 a.m. | Break
Session 8 - *Special Session: The Delaware Estuary Benthos –Grand Ballroom A 1st Floor

Moderators: Doug Miller (UDEL) and Renee Searfoss (EPA)

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<tr>
<th>Time</th>
<th>Speaker/s</th>
<th>Title / Abstract</th>
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<tbody>
<tr>
<td>11:00</td>
<td>William Burton</td>
<td>Identifying the habitat and distribution of juvenile horseshoe crabs in Delaware Bay (6)</td>
</tr>
<tr>
<td>11:15</td>
<td>Nicole A. Raineault, Art Trembanis, Doug C. Miller</td>
<td>Small-scale hard-bottom benthic diversity in Delaware Bay (12)</td>
</tr>
<tr>
<td>11:30</td>
<td>Richard W. Greene</td>
<td>An assessment of sediment metals data from the Delaware Estuary Benthic Inventory (60)</td>
</tr>
<tr>
<td>11:45</td>
<td>John A. Madsen</td>
<td>Relevance of the geologic setting of the Delaware Estuary to offshore wind sites (64)</td>
</tr>
</tbody>
</table>

Benthos Posters:
Douglas C. Miller, Angela Padeletti. Benthic indicators derived from the 2008 Delaware Estuary Benthic Inventory (DEBI) sampling (74)

Session 9 - *Special Session: Multiple Stressors in Rivers and Estuaries –Grand Ballroom B 1st Fl

Moderators: Robert Hoke (DuPont) and David Velinsky (ANSP)

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:00</td>
<td>Julie Becker, Teresa Mendez-Quigley, Kelly Anderson, Paula Conolly</td>
<td>Safer pharmaceutical disposal practices through a pilot program for consumers (35)</td>
</tr>
<tr>
<td>11:15</td>
<td>Gregory J. Cavallo, Thomas J. Fikslin</td>
<td>Evaluation of PCB and dioxin/furan (dxf) concentrations in sediment samples from the Delaware Estuary (46)</td>
</tr>
<tr>
<td>11:30</td>
<td>David Velinsky, Don Charles, Christopher Sommerfield, Richard Greene, Thomas Fikslin</td>
<td>Tidal marshes in the Delaware Estuary: Historical reconstruction of chemical loadings (69)</td>
</tr>
<tr>
<td>11:45</td>
<td>Robert W. Scarborough, Bartholomew Wilson, David Carter</td>
<td>Supporting science-based management at the USFWS coastal Delaware refuge complex and surrounding Delaware Bay marshes (72)</td>
</tr>
<tr>
<td>12:00</td>
<td>Greg Murphy, Todd Morrison, Barry Baker, Vincent Pellerito, Ralph Stahl, Jr., Robert Hoke</td>
<td>Application of a relative risk model for natural resource assessment in the Delaware Estuary (19)</td>
</tr>
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Tuesday 12:15 p.m.

Lunch - Penthouse Ballroom 5th Floor
Speaker: Eric Eckl - Environmental Communications Consultant, Water Words That Work, LLC

The World Outside: What They Say About Why Your Work Matters - Join us for a fascinating journey through the insights that social scientists and market researchers can provide about how your work plays on the big stage of public opinion. Sometimes frustrating, sometimes encouraging, always fascinating -- we'll explore citizens' attitudes and actions when presented with information about nature protection and pollution control.
## Session 10 - Living Resources – Grand Ballroom A 1st Floor

**Moderators:** Desmond Kahn (DNREC) and Dorina Frizzera (NJDEP)

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<thead>
<tr>
<th>Time</th>
<th>Panelists/Participants</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1:30</td>
<td>Mary Allessio Leck, Charles Leck</td>
<td>Biodiversity overview - Hamilton - Trenton - Bordentown marsh (62)</td>
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<tr>
<td>1:45</td>
<td>Emma Melvin</td>
<td>Addressing aquatic invasive species in upland waterways: The challenges and opportunities for success (9)</td>
</tr>
<tr>
<td>2:00</td>
<td>Martha Corrozi Narvaez, Gerald J. Kauffman, Robert Lonsdorf</td>
<td>Restoration of shad and anadromous fish to the White Clay Creek National Wild and Scenic River (30)</td>
</tr>
<tr>
<td>2:15</td>
<td>Harold M. Brundage, John C. O’Herron, Lisa Calvo</td>
<td>Acoustic telemetry studies of the distribution and movement of juvenile sturgeons in the Delaware River and Estuary (112)</td>
</tr>
<tr>
<td>2:30</td>
<td>Joshua Moody, David Bushek, Danielle Kreeger</td>
<td>Exploring the role of ribbed mussels (Geukensia demissa) in salt marsh stabilization (40)</td>
</tr>
<tr>
<td>2:45</td>
<td>David R. Smith, Nancy L. Jackson, Karl F. Nordstrom, Penelope S. Pooler</td>
<td>Hierarchical selection of horseshoe crab spawning habitat: A sandy beach is the last thing on their ganglia (76)</td>
</tr>
<tr>
<td>3:00</td>
<td>Mark L. Botton, Robert E. Loveland</td>
<td>Reflections on five decades of horseshoe crab science in Delaware Bay: What we have learned, and suggestions for further research (13)</td>
</tr>
</tbody>
</table>

**Living Resources Posters:**

- Emily Suzanne Maung, Douglas C. Miller. Predicting the effects of methoprene application on horseshoe crab populations in Delaware (33)
- Steven H. Pearson, Harold W. Avery. Resource overlap and potential competition between invasive red-eared slider turtles and native red-bellied turtles in Pennsylvania (48)
- J.E. Stone, W.F. Bien, J.R. Spotila, H.W. Avery. Distribution and abundance of non-native red-eared slider turtles (Trachemys scripta elegans) and native red-bellied turtles (Pseudemys rubriventris) (49)
- Heidi Wood-Tucker, Angela Padeletti, Michael DeHaven, Charles Owens, Catherine M. Gatenby, Danielle Kreeger, William Lellis, Steven G. Hughes. Laboratory culture of the lightfoot mussel, Elliptio complanata (116)
- Danielle Kreeger, Roger Thomas, Eric Powell. Spatial and temporal variability in oyster food quality in the Delaware Estuary (91)
- Roger Thomas, Danielle Kreeger, Sylvan Klein, Angela Padeletti, Zoe Ruge, Matthew Gray, Catherine Gatenby. Occurrence of freshwater mussels (Unionidae) in surveyed streams of southeastern Pennsylvania, 2000-2010 (92)
- Danielle Kreeger, Roger Thomas, Sylvan Klein, Angela Padeletti, William Lellis. Recent discoveries of rare freshwater mussels (Unionidae) in the urban corridor of the Delaware Estuary (78)
- Paula Zelanko, Nathan H. Rice, David Velinsky. Using carbon and nitrogen stable isotopes of osprey (Pandion haliaetus) to infer historic ecosystem characteristics within the Delaware Bay (131)
## Tuesday 1:30 p.m. Concurrent Sessions 10 & 11

### Session 11 - Combat Communications for Conservationists – Grand Ballroom B 1st Floor

**Speaker:** Eric Eckl, Environmental Communications Consultant, Water Words That Work, LLC

Conservation and controversy go hand in hand. Sooner or later, the mud will fly and your work and your reputation will be on the line. In this hands-on workshop, you’ll learn the dos and don’ts of managing controversial situations: deflecting their accusations, making yours stick. You’ll develop confidence and skills to set the record straight and come out on top.

### 3:15 p.m. Break

### 3:30 p.m. Concurrent Sessions 12 & 13

### Session 12 - Restoration & Enhancement/Conservation – Grand Ballroom A 1st Floor

**Moderators:** Laura Whalen (PDE) and Paul Racette (PEC)

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<thead>
<tr>
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<tbody>
<tr>
<td>3:30</td>
<td>Laura Whalen, Danielle Kreeger, Simeon Hahn, Paul Racette</td>
<td>A science-based regional restoration approach in the Delaware Estuary: Overview (85)</td>
</tr>
<tr>
<td>3:40</td>
<td>Paul Racette, Laura Whalen, Danielle Kreeger, Simeon Hahn</td>
<td>A science-based regional restoration approach in the Delaware Estuary: Urban Waterfront Case study (10)</td>
</tr>
<tr>
<td>3:50</td>
<td>Scott E. Bush, Christine J. Potts</td>
<td>Conceptual ecological restoration of two urban waterfront parcels in the Bridesburg section of Philadelphia, Pennsylvania (93)</td>
</tr>
<tr>
<td>4:05</td>
<td>Joe Berg</td>
<td>Watershed restoration, trade-offs between headwater restoration projects and downstream confluence projects, and the concept of regenerative design (80)</td>
</tr>
<tr>
<td>4:20</td>
<td>Jane Fava, Kathy Bergmann, Aaron Clauser</td>
<td>Brandywine Valley Association’s Red Stream Blue Program: A working model for stream restoration (11)</td>
</tr>
<tr>
<td>4:35</td>
<td>Will Hohman</td>
<td>Wetland green infrastructure design along the Delaware River: A project harmonizing stormwater management, pollutant removal, and native species habitat enhancements with the ebb &amp; flow of human impacts on our environment (104)</td>
</tr>
<tr>
<td>4:50</td>
<td>Jessica Anderson, Linda Rink</td>
<td>If we build it, they will boat: How raising awareness of river recreation and providing boating opportunities will increase recreational use and stewardship of the tidal Delaware River (83)</td>
</tr>
</tbody>
</table>

### Restoration & Enhancement/Conservation Posters:

- Kathy Bergmann, Jane Fava, Aaron Clauser. Monitoring streambank restoration through a bank erosion and deposition protocol (43)

- Sherestha Saini, Nancy L. Jackson, Karl F. Nordstrom. Bulkhead configurations and horseshoe crab spawning on sandy shorelines in Delaware Bay, New Jersey (55)

- Mike Haberland, Craig McGee, Pat Rector, Sandra Goodrow. Retrofitting detention basins in Cherry Hill, NJ (61)

- Angela Padeletti, Danielle Kreeger, Steven G. Hughes, Heidi Tucker-Wood. Freshwater mussel recovery: A core component of watershed-wide bivalve restoration (81)

- Ron Smith, Karen Sprinsky, and the students from the Environmental Science Program at Haddonfield Memorial High School. Ecological restoration: Practice, science and education, using restoration projects in the Cooper River Park to improve (127)

- Laura Whalen, Karen Johnson. Corporate & Community Environmental Stewardship Program (CESP) (86)

- Laura Whalen. Rain gardens for the bays – St. Jones Watershed case study (90)
<table>
<thead>
<tr>
<th>Time</th>
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</table>
| Tuesday 3:30 p.m. | **Concurrent Sessions 12 & 13**  
**Session 13 – More than a Message: Planning a Communications Effort for Results You Can Measure – Grand Ballroom B 1st Floor**  
Speaker: Eric Eckl, Environmental Communications Consultant, Water Words That Work, LLC  
How many citizens heard your message? Responded? Took action to save their hometown river? Increasingly, funders demand that grantees document accomplishments and learnings. In this session, participants will learn a simple system for planning outreach campaigns that include the data collection you need to prove what you accomplished—and accomplish even more next time.  
**Associated Poster with Session 13:**  
Ronald L. Ohrel, Jr, Elizabeth Boyle, Tamara Beeson, Lisa Tossey. What’s that big pinwheel all about? Communicating to the public about alternative energy research (21) |
| 5:00 p.m.     | **Session 14 - Penthouse Ballroom 5th Floor**  
**Posters & Networking** |
| 7:00 p.m.     | **Dinner - Penthouse Ballroom 5th Floor** |
| 7:30 - 9:00 p.m. | **Interactive Polling Activity - Penthouse Ballroom 5th Floor** |
### Wednesday, February 2

**8:00 a.m.**  **Registration - 5th Floor & Continental Breakfast – Atrium 1st Floor**

**9:00 a.m.**  **Session 15 – Grand Ballroom A 1st Floor**

***Ecological Linkages and Functions***

**Moderators:** Susan Kilham (Drexel) and Jessica Sanchez (DRBC)

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Topic</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Chris Sommerfield, David J. Velinsky</td>
<td>Understanding tidal marsh accretion in Delaware Estuary (45)</td>
</tr>
<tr>
<td>9:15</td>
<td>Robert Chant, Maria Aristizabal, Chris Sommerfield</td>
<td>The role of stratification in controlling salt flux, sediment transport and primary production in Delaware Bay (42)</td>
</tr>
<tr>
<td>9:30</td>
<td>Anna L. Hermes, Elisabeth L. Sikes</td>
<td>Assessing sources and sinks of carbon in Delaware Bay: A biogeochemical approach (98)</td>
</tr>
<tr>
<td>9:45</td>
<td>Justin Meschter, Nathaniel B. Weston</td>
<td>Sediment and heavy-metal deposition in tidal freshwater and saltwater marshes in the Delaware River Estuary: temporal and spatial patterns of deposition and possible impact of sea-level rise on rates of deposition (115)</td>
</tr>
<tr>
<td>10:00</td>
<td>David Walsh, Christopher Sommerfield, J. Bailey Smith, Jeffrey Gebert</td>
<td>Historical bathymetric morphology of the Delaware Estuary, a component in developing a comprehensive sediment budget (110)</td>
</tr>
<tr>
<td>10:15</td>
<td>J. Bailey Smith</td>
<td>Delaware Estuary Regional Sediment Management Planning effort: A 16-month status report of opportunities and challenges (3)</td>
</tr>
</tbody>
</table>

**Ecological Linkages and Functions Posters:**

Mara Aristizabal, Robert Chant. A numerical study of the circulation, stratification and salt fluxes in Delaware Bay Estuary (5)

Ramona Stammermann, Michael Piasecki. A numerical approach to study sediment transport processes in marshes of the Delaware Bay (22)

**9:00 a.m.**  **Concurrent Sessions 15 & 16**

**10:30 a.m.**  **Break**

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**10:00 a.m.**  **Session 16 – Grand Ballroom B 1st Floor**

***Design Principles for Scientific Products***

**Speakers:** Caroline Wicks, EcoCheck (NOAA-UMCES Partnership) & Joanna Woerner, Integration & Application Network, Science Communicators

How to effectively communicate your science in printed (brochures, posters, articles), web, and presentation media. Topics covered include overall design principles, formatting graphs and maps for effective communication, and tips for PowerPoint presentations.
### Session 17: Wetlands & Other Habitats – Grand Ballroom A 1st Floor

**Moderators:** Kenneth Strait (PSEG) and Angela Padeletti (PDE)

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<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Title</th>
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<tbody>
<tr>
<td>10:45</td>
<td>Robert B. Coxe</td>
<td>State of Delaware vegetation community and land cover map (8)</td>
</tr>
<tr>
<td>11:00</td>
<td>Dave Bushek, Danielle Kreeger, Laura Whalen, Josh Moody, Angela Padeletti</td>
<td>Mussel powered living shorelines for salt marsh erosion control (25)</td>
</tr>
<tr>
<td>11:15</td>
<td>Joseph Smith, Robert Allen</td>
<td>A retrospective look at sea-level rise induced habitat changes at the forest-wetland fringe along the Delaware Bay, New Jersey (27)</td>
</tr>
<tr>
<td>11:30</td>
<td>Jeffrey C. Cornwell, Michael S. Owen</td>
<td>Denitrification in Delaware Bay tidal marshes and creeks (123)</td>
</tr>
<tr>
<td>11:45</td>
<td>Tracy Elsey-Quirk, A. Smyth, M. Piehler, B. P. Horton, J. Mead, D. J. Velinsky</td>
<td>Denitrification in an urban tidal fresh-water wetland of the Delaware (53)</td>
</tr>
<tr>
<td>12:00</td>
<td>Tiffany Witwer, Michael Usai, Laurie Machung, Sandeep Mehrrotra, Kevin Ward</td>
<td>Water quality enhancement and flood attenuation through wetland restoration and creation in a New York City watershed (75)</td>
</tr>
<tr>
<td>12:15</td>
<td>Thomas McKenna</td>
<td>A simple model for evaluating tidal inundation of wetlands in the Murderkill Estuary (Kent county, Delaware) (111)</td>
</tr>
</tbody>
</table>

**Wetlands Posters:**

- Alison B. Rogerson, Amy D. Jacobs, Andrew M. Howard. The use of two wetland rapid assessment methods in Delaware (39)
- Ramona Stammermann, Michael Piasecki. Generating numerical model grids of marshes with the use of LIDAR data (23)
- Tracy Elsey-Quirk, R. Thomas, D.J. Velinsky, Danielle Kreeger, Angela Padeletti, Martha Maxwell-Doyle. Initiation of long-term monitoring in wetlands along Delaware and Barnegat Bays (65)
- Kelly Somers, Danielle Kreeger. The contribution of land use practices to changes in tidal wetland condition and configuration in representative Delaware Estuary marshes (129)

### Session 18: Using Conceptual Diagrams to Communicate Science – Grand Ballroom B 1st Floor

**Speakers:** Caroline Wicks, EcoCheck (NOAA-UMCES Partnership) & Joanna Woerner, Integration & Application Network, Science Communicators

Conceptual diagrams are visual displays of attributes and processes of an ecosystem. They can be used in 1-way (e.g., in a presentation) and 2-way (e.g., workshop setting) communication. This session includes a short lecture, a hands-on activity, and group discussion about effective science communication.

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<tr>
<th>Time</th>
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<tr>
<td>12:30</td>
<td>Lunch - Penthouse Ballroom 5th Floor</td>
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## Session 19 - Wetlands (Part 2) – *Grand Ballroom A 1st Floor*

**Moderators:** Kenneth Strait (PSEG) and Angela Padeletti (PDE)

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<thead>
<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Title</th>
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<tbody>
<tr>
<td>1:45</td>
<td>Andrew Homsey, Richard T. Field, Jo Young-Heon, Geri Pepe, Kurt Philipp</td>
<td>Methods For quantifying tidal wetland changes in Delaware’s Inland Bays (1937 To 2007) (47)</td>
</tr>
<tr>
<td>2:00</td>
<td>Alison Rogerson, Amy D. Jacobs, Andrew M. Howard</td>
<td>Delaware’s wetland trends and condition assessment (28)</td>
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<tr>
<td>2:15</td>
<td>Drexel Siok, Bartholomew Wilson, Robert W. Scarborough, David Carter</td>
<td>Marsh vulnerability index: Assessing health of Delaware’s marshes. (102)</td>
</tr>
<tr>
<td>2:30</td>
<td>Danielle Kreeger, Martha Maxwell-Doyle, Amy Deller Jacobs, Angela Padeletti, Tracy Quirk, Thomas Belton, Dorina Frizzera</td>
<td>The Mid-Atlantic Coastal Wetland Assessment: Integrated monitoring of tidal wetlands for water quality and habitat management and restoration planning (119)</td>
</tr>
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## Session 20 – Oysters – *Grand Ballroom B 1st Floor*

**Moderators:** Desmond Kahn (DNREC) and Dorina Frizzera (NJDEP)

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>1:45</td>
<td>Eileen Hofmann, David Bushek, Susan Ford, Ximing Guo, Eric Powell, Dale Haidvogel, John Wilkin, John Klinck</td>
<td>Understanding how disease and environment combine to structure resistance in estuarine populations (36)</td>
</tr>
<tr>
<td>2:00</td>
<td>Eric N. Powell, John Klinck, Ximing Guo, Eileen Hofmann, Susan Ford, David Bushek</td>
<td>Can oysters develop resistance to dermo disease in the field: Evaluation using a gene-based population dynamics model (1)</td>
</tr>
<tr>
<td>2:15</td>
<td>Diego Narváez, John Klinck, Eric Powell, Eileen Hofmann, John Wilkin, Dale Haidvogel</td>
<td>How does environmental variability affect the dispersion of oyster larvae?: A numerical study for Delaware Bay (15)</td>
</tr>
<tr>
<td>2:30</td>
<td>Zhiren Wang, David Bushek, Susan Ford, Eric Powell, Dale Haidvogel, John Wilkin</td>
<td>Inter-annual variability in circulation and water properties in Delaware Bay and its relationship to disease prevalence (59)</td>
</tr>
</tbody>
</table>

### Oyster Posters:

- Elizabeth Diamond, David Bushek. Do scavengers influence dermo disease transmission among Delaware Bay oysters? (20)
- David Bushek, Susan Ford, Iris Burt, Emily Scarpa, Brenda Landau. MSX and dermo disease in Delaware Bay oysters: The role of disease refugia (37)
- Kurt M. Cheng, David Bushek. Using ribbed mussels as sentinels for dermo disease in Delaware Bay (105)
- Ximing Guo, Coren Milbury, Liusuo Zhang, Yongping Wang, David Bushek, Susan Ford. Genetic structure of Eastern Oyster populations in Delaware Bay (118)
<table>
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<tr>
<th>Time</th>
<th>Speaker/Presenter</th>
<th>Title of Presentation</th>
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<tbody>
<tr>
<td>3:00</td>
<td>Maya K. van Rossum</td>
<td>River values: The values of a clean and healthy Delaware River (18)</td>
</tr>
<tr>
<td>3:15</td>
<td>Gerald J. Kauffman</td>
<td>Socioeconomic value of the Delaware Estuary: A hard-working river and bay (41)</td>
</tr>
<tr>
<td>3:30</td>
<td>John Callahan</td>
<td>Development of a GIS database in a marine spatial planning context for offshore wind power for Delaware (106)</td>
</tr>
<tr>
<td>3:45</td>
<td>Desmond M. Kahn</td>
<td>Cumulative impact of industrial water intakes in the Delaware River on the Delaware River spawning stock of striped bass (125)</td>
</tr>
<tr>
<td>4:00</td>
<td>Bart Wilson and John Madsen</td>
<td>Investigation and review of the surface and sub-surface sediment distribution of Reach E to evaluate the potential suitability of “beneficial reuse” of sediments removed for the Delaware Estuary Main Channel Deepening Project.</td>
</tr>
<tr>
<td>4:15</td>
<td>Ashlie Strackbein, Rachel Dawson</td>
<td>Federal opportunities to maximize watershed conservation: Delaware River Basin Task Force and Delaware River Basin Conservation Act (66)</td>
</tr>
</tbody>
</table>

**Hot Topics Posters:**

S. Stephen Platt. The new dreaded “F” word … Fracking. Is the hydraulic fracturing process the real cause for concern in unconventional shale gas development? (67)

V. Lyle Trumbull, Will Meeks, Mark Ray, Steven Alexander, Ronald Chiarello, Al Pfister, Larry Malizzi, Jason Ayers, Grant Matthews, Robert Tawes, Jason Kase, Calvin Douglas, Don Wendt. The natural resource advisor program: An innovative approach to protect natural and cultural resources during the Deepwater Horizon oil spill response (79)

Donna W. Pitz, Patty Elkis. Economic value of protected open space in southeastern Pennsylvania (107)

Dave Jungblut. "Keeping it real -High school science curriculum"- Hurricane Katrina and BP oil spill inspire creative curriculum (128)

Priscilla Cole, Danielle Kreeger. Natural capital at the Partnership for the Delaware Estuary (88)

Jennifer A. Adkins. PDE Alliance promotes top priorities for the Estuary (124)

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**Wednesday 3:00 p.m.**

**Session 21 - Hot Topics – Grand Ballroom 1st Floor**

**Moderators:** Carol Collier (DRBC) and Allison Allen (NOAA)

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**4:45 p.m.**

**Announcements, Outstanding Student Presenter Awards, and Closing Remarks - Grand Ballroom 1st Floor**
Special Poster Session – 2011 Technical Report for the Estuary and Basin (TREB)


Jessica Rittler Sanchez, Jerry Kauffman, Andrew Homsey, Karen Reavy. Land use changes in the Delaware River Basin (130)

John Yagecic. Assessment of water quality indicators for the State of the Estuary / State of the Basin reports (94)

Jeffrey A. Gebert. Integration of sediment budget and dynamics research with an RSM (regional sediment management) initiative for the Delaware Estuary (103)

Douglas C. Miller, Angela Padeletti. Benthic indicators derived from the 2008 Delaware Estuary Benthic Inventory (DEBI) sampling (74)

Danielle Kreeger, Ken Strait, Andrew Homsey, Angela Padeletti. Tidal wetland indicators for the 2011 state of the Delaware Estuary and Basin technical report (122)

Gerald Bright, Dave Burke, Robert Limbeck, Jerry Mohler. Delaware Estuary non-tidal living resources: status and trends (50)

Laura S. Whalen, Simeon Hahn, Renee Searfoss, Paul Racette, Anthony Dvarkus, Danielle Kreeger, Kenneth Strait, Joe Berg, Dorina Frizzera. Restoration section of the State of the Estuary Report (87)
Poster Presentations

Glen Abrams, Michael Leff. Green infrastructure comes of age (29)

Jennifer A. Adkins. PDE Alliance promotes top priorities for the Estuary (124)

Mara Aristizabal, Robert Chant. A numerical study of the circulation, stratification and salt fluxes in Delaware Bay Estuary (5)

Julie Becker. Identifying stakeholders’ practices and concerns about pharmaceuticals: A qualitative study (34)

Kathy Bergmann, Jane Fava, Aaron Clauser. Monitoring streambank restoration through a bank erosion and deposition protocol (43)

Gerald Bright, Dave Burke, Robert Limbeck, Jerry Mohler. Delaware Estuary non-tidal living resources: status and trends (50)

David Bushek, Susan Ford, Iris Burt, Emily Scarpa, Brenda Landau. MSX and dermo disease in Delaware Bay oysters: The role of disease refugia (37)

Kurt M. Cheng, David Bushek. Using ribbed mussels as sentinels for dermo disease in Delaware Bay (105)

Priscilla Cole, Danielle Kreeger. Natural capital at the partnership for the Delaware Estuary (88)


Elizabeth Diamond, David Bushek. Do scavengers influence dermo disease transmission among Delaware Bay oysters? (20)

Daniel Duval, Christopher K. Sommerfield. Comparison of historical and recent sediment loads of the Delaware River (31)

Jeffrey A. Gebert. Integration of sediment budget and dynamics research with an RSM (regional sediment management) initiative for the Delaware Estuary (103)

Thomas M. Grothues, Joseph Dobarro, Rose Petecca, Hal Brundage, John C. O’Herron, Lisa Calvo. Acoustic mapping of sturgeon and their critical habitats in the Delaware River and Estuary from a multi-sensored autonomous underwater vehicle (117)

Ximing Guo, Coren Milbury, Liusuo Zhang, Yongping Wang, David Bushek, Susan Ford. Genetic structure of eastern oyster populations in Delaware Bay (118)

Mike Haberland, Craig McGee, Pat Rector, Sandra Goodrow. Retrofitting detention basins in Cherry Hill, NJ (61)

Dave Jungblut. "Keeping it Real -High School Science Curriculum"- Hurricane Katrina and BP Oil Spill inspire creative curriculum (128)

Danielle Kreeger, Roger Thomas, Sylvan Klein, Angela Padeletti, William Lellis. Recent discoveries of rare freshwater mussels (Unionidae) in the urban corridor of the Delaware Estuary (78)
Danielle Kreeger, Roger Thomas, Eric Powell. Spatial and temporal variability in oyster food quality in the Delaware Estuary (91)

Danielle Kreeger, Sue Kilham. Overview of the 2011 state of the Delaware Estuary and Basin Technical Report (121)

Danielle Kreeger, Kenneth Strait, Andrew Homsey, Angela Padeletti. Tidal wetland indicators for the 2011 state of the Delaware Estuary and Basin Technical Report (122)

Daniel J. Leathers, David Legates, John Talley, John Callahan, Kevin Brinson, Linden Wolf. A data gap analysis and inland inundation survey for the Delaware coastline (51)

Michael Leff, Laura Whalen, Robert Lonsdorf, Shandor Szalay, Jim Thorne, Diane Rosencrance, Mike McGeehin, Flavia Rutkosky, Donna Sueo, Joe Berg, Jamie Blaine, Marisa Ranieri, Gerald Bright, Richard McCorkle. Regional Restoration Initiative: Case study on headwater streams (89)

Emily Suzanne Maung, Douglas C. Miller. Predicting the effects of methoprene application on horseshoe crab populations in Delaware (33)

Sandeep Mehrotra, James Garin, Nick Barbaro, Dana Gumb, Tiffany Witwer. Hydrologic and hydraulic modeling for green stormwater practices (113)

Chris Miller. The Cape May Plant Materials Center-developing plant technologies for a changing climate (71)

Douglas C. Miller, Angela Padeletti. Benthic indicators derived from the 2008 Delaware Estuary Benthic Inventory (DEBI) sampling (74)

Ronald L. Ohrel, Jr, Elizabeth Boyle, Tamara Beeson, Lisa Tossey. What’s that big pinwheel all about? Communicating to the public about alternative energy research (21)

Angela Padeletti, Danielle Kreeger, Steven G. Hughes, Heidi Tucker-Wood. Freshwater mussel recovery: A core component of watershed-wide bivalve restoration (81)

Steven H. Pearson, Harold W. Avery. Resource overlap and potential competition between invasive red-eared slider turtles and native red-bellied turtles in Pennsylvania (48)

Donna W. Pitz, Patty Elkis. Economic value of protected open space in southeastern Pennsylvania (107)

S. Stephen Platt. The new dreaded “F” Word ... Fracking. Is the hydraulic fracturing process the real cause for concern in unconventional shale gas development? (67)

Tracey Elsey-Quirk, R. Thomas, D.J. Velinsky, Danielle Kreeger, Angela Padeletti, Martha Maxwell-Doyle. Initiation of long-term monitoring in wetlands along Delaware and Barnegat Bays (65)

Alison B. Rogerson, Amy D. Jacobs, Andrew M. Howard. The use of two wetland rapid assessment methods in Delaware (39)

Sherestha Saini, Nancy L. Jackson, Karl F. Nordstrom. Bulkhead configurations and horseshoe crab spawning on sandy shorelines in Delaware Bay, New Jersey (55)

Jessica Rittler Sanchez, Jerry Kauffman, Andrew Homsey, Karen Reavy. Land use changes in the Delaware River Basin. (130)
Ron Smith, Karen Sprinsky, and the students from the Environmental Science Program at Haddonfield Memorial High School. Ecological restoration: practice, science and education, using restoration projects in the Cooper River Park to improve (127)

Kelly Somers. The contribution of land use practices to changes in tidal wetland condition and configuration in representative Delaware Estuary marshes (129)

Ramona Stammermann, Michael Piasecki. A numerical approach to study sediment transport processes in marshes of the Delaware Bay (22)

Ramona Stammermann, Michael Piasecki. Generating numerical model grids of marshes with the use of LIDAR data (23)

Julia Stone. Distribution and abundance of non-native red-eared slider turtles (*Trachemys scripta elegans*) and native red-bellied turtles (*Pseudemys rubriventris*) (49)

Kathleen Strakosch Walz, Stephen Domber. Developing a wetland condition monitoring network for New Jersey: Application of new assessment methods (101)


V. Lyle Trumbull, Will Meeks, Mark Ray, Steven Alexander, Ronald Chiarello, Al Pfister, Larry Malizzi, Jason Ayers, Grant Matthews, Robert Tawes, Jason Kase, Calvin Douglas, Don Wendt. The Natural Resource Advisor Program: An innovative approach to protect natural and cultural resources during the Deepwater Horizon oil spill response (79)

Heidi Wood-Tucker, Angela Padeletti, Michael DeHaven, Charles Owens, Catherine M. Gatenby, Danielle Kreeger, William Lellis, Steven G. Hughes. Laboratory culture of the lightfoot mussel, *Elliptio complanata* (116)

Laura S. Whalen, Karen Johnson. Corporate & Community Environmental Stewardship Program (CESP) (86)

Laura S. Whalen, Simeon Hahn, Renee Searfoss, Paul Racette, Anthony Dvarkus, Danielle Kreeger, Kenneth Strait, Joe Berg, Dorina Frizzer. Restoration section of the State of the Estuary report (87)

Laura Whalen. Rain gardens for the Bays – St. Jones Watershed case study (90)

Tiffany Witwer, James Garin, Dana Gumb, James Rossi, Sandeep Mehrotra. Successful maintenance of green infrastructure for stormwater management: New York City’s Staten Island Bluebelt (114)

Patricia Wnek. Application of NOAA, National Weather Service precipitation estimates in support of ecosystems (2)

Lisa Wool, Arthur Holst. Green infrastructure and nonpoint source pollution reduction education at the Philadelphia International Flower Show (54)

John Yagecic. Assessment of water quality indicators for the State of the Estuary / State of the Basin Reports (94)

Paula Zelanko, Nathan H. Rice, David Velinsky. Using carbon and nitrogen stable isotopes of osprey (*Pandion haliaetus*) to infer historic ecosystem characteristics within the Delaware Bay (131)
Ms. Collier was appointed Executive Director of the Delaware River Basin Commission (DRBC) on August 31, 1998. The DRBC is an interstate/federal commission that provides a unified approach to water resource management without regard to political boundaries. Before joining DRBC, Ms. Collier was Executive Director of Pennsylvania's 21st Century Environment Commission. Governor Tom Ridge formed the Environment Commission in 1997 to establish the Commonwealth’s environmental priorities and to recommend a course of action for the next century.

At the time Governor Ridge asked Ms. Collier to serve as executive director for the 21st Century Environment Commission, she was Regional Director of the Pennsylvania Department of Environmental Protection (PADEP) Southeast Region. Prior to PADEP, Ms. Collier served 19 years with BCM Environmental Engineers, Inc., Plymouth Meeting, PA., beginning as a student intern and ultimately becoming Vice President of Environmental Planning, Science and Risk.

Ms. Collier has a B.A. in Biology from Smith College and a Masters in Regional Planning from the University of Pennsylvania. She is a Professional Planner licensed in the State of New Jersey, a member of the American Institute of Certified Planners (AICP) and a Certified Senior Ecologist. In 1997 she was presented the Touchstone Award from the Society of Women Environmental Professionals and in 1998 the Woman of Distinction Award from the Philadelphia Business Journal. In 2007 the American Water Resources Association (AWRA) presented her with the Mary H. Marsh Medal for exemplary contributions to the protection and wise use of the nation’s water resources.

She is a member of her township’s environmental protection advisory board, on the Boards of the American Water Resources Association (AWRA) and the newly formed Clean Water America Alliance (CWAA), teaches environmental management courses at the University of Pennsylvania and has published on environmental and water-related topics. She has testified before the U.S. House of Representatives and the Pennsylvania Legislature. In 2004 she was a member of a nine person U.S./China/Japan team to assist the People's Republic of China with river basin management. Ms. Collier has also participated in water management and sustainable forest practice events along the Yangtze River in China and in the rain forests of Ecuador. She thinks proper management of water resources is the key to our economic and environmental future.
Christopher S. Crockett, Ph.D., P.E.,
Director of Planning & Research
Philadelphia Water Department

Christopher oversees a staff of 30 that conducts infrastructure planning, asset management, water and wastewater applied treatment research, energy management, renewable energy projects, stormwater management plan reviews, stormwater rate credits, water quality studies, air emissions and land management, and regulatory compliance support for the Philadelphia Water Department. Chris has over 15 years of experience in the water, stormwater, and wastewater industry participating and leading innovative projects to improve customer service, performance, revenue, and regulatory compliance. He has been responsible for stormwater and CSO compliance and managed teams to accomplish green infrastructure and watershed management approaches. Some accomplishments include leading the source water protection programs, development and implementation of new stormwater management requirements for development and studies of impervious cover based stormwater billing for non-residential customers. Under Chris' leadership, his teams have won numerous local, state, and federal awards. He has also been involved in several national and worldwide groundbreaking environmental projects using information technology for early warning systems for drinking water supplies and public notification for recreation. His current focus is on energy management including biomethane and renewable resources and asset management.

John Duff
Associate Professor and Graduate Program Director
Environmental, Earth & Ocean Sciences Department
University of Massachusetts / Boston

John Duff received his J.D. from Suffolk University Law School in Boston and his LL.M. from the Law and Marine Affairs Program at the University of Washington. He also holds degrees in business (B.S.B.A.) from the University of Lowell and Journalism (M.A.) from the University of Mississippi. Over the course of the last twenty years he has worked as a newspaper reporter; an attorney in private practice; served as general counsel to a nonprofit organization focusing on marine habitat protection issues; and, has directed the marine law research programs at the law schools of the universities of Mississippi and Maine. His work earned him a Fulbright Senior Fellowship in 1998. Since 2004, Prof. Duff has served as a faculty member in the Environmental, Earth and Ocean Sciences Department at the University of Massachusetts/Boston where he teaches courses on climate change and clean energy law, environmental policy, ocean and coastal law and land use. Prof. Duff is currently working on research related to ecosystem-informed management, ocean planning and the increasing privatization of offshore public resources. Virtually all of the work that he has been engaged in deals with the interface of natural resource assemblages, technology and public policy. Prof. Duff's research has been published in a variety of journals and professional reports. He is a co-editor of the book INTERNATIONAL OCEAN LAW; he serves on the editorial board of OCEAN DEVELOPMENT AND INTERNATIONAL LAW; and, he is a past president of The Coastal Society. He is a Faculty Advisor in the United Nations-Nippon Foundation Law of the Sea Fellowship Programme and a consultant to municipal, state, federal and intergovernmental agencies.
Eric Eckl  
Environmental Communications Consultant  
Water Words That Work, LLC

Eric is fascinated by the intersection between language, technology, and the environment. He blogs on the topic at http://waterwordsthatwork.com. Eric’s company, Water Words That Work LLC, helps nature protection and pollution control organizations professionalize and modernize their communications efforts. The company helps its clients plan and deliver pollution prevention, fundraising, and issue advocacy campaigns.

From its early days as hobby blog, Eric has grown the company to a team of four market research and campaign experts and a stable network of graphic designers and other contractors. The company produces websites, videos, advertising campaigns, email blasts, and other marketing materials.

Since opening its doors, Water Words That Work has assisted more than 50 conservation organizations. Clients include the National Park Service, the Alliance for the Chesapeake Bay, the Southwest Florida Water Management District, the Minnesota Association of Watershed Districts, the Ogeechee Riverkeeper, and the New Jersey Department of Environmental Protection. Before launching Water Words That Work, Eric led advocacy and fundraising campaigns, managed media relations, and oversaw web and print publishing activities for a variety of conservation organizations. He has appeared on CNN and in the pages of the New York Times. He is a frequent speaker at environmental, marketing, and technology conferences.

Shawn M. Garvin  
Regional Administrator  
U.S. Environmental Protection Agency, Region 3

Shawn M. Garvin was named Regional Administrator on November 5, 2009. Shawn’s career in intergovernmental affairs spans more than 20 years at the federal and local levels. In his most recent position as Senior State and Congressional Liaison for EPA Region 3, he provided counsel to agency leadership, environmental program managers, press officers and others involved in complex and controversial public health and environmental matters. Shawn's contributions to high-profile environmental litigation cases, emergency response clean-ups, contaminant investigations, and public health crises have earned him numerous EPA gold, silver and bronze medals. He's worked closely with Congressional Delegations, Governors, state and local elected leaders, environmental agencies and citizen advocacy groups. Early in his career at EPA, he served as special assistant to the Regional Administrator. Prior experience includes working as an aide to then-Senator Joe Biden, D-Del., and working on the staff of former New Castle County (Del.) Executive Dennis Greenhouse. Shawn is a native Delaworean and graduate of the University of Delaware. He lives in Wilmington with his wife and their son.
Whitney Hoffman has been involved in New Media and Social Media for the past five years, both as a content producer and as the organizer of Digital Media conferences. She has organized Podcamp conferences in Philadelphia, New York and Boston, and as Director of Operations for the Podcamp Foundation, consults with organizers of similar conferences in other cities around the Country and overseas. Most recently, she helped organize the Web2Open sessions at O’Reilly’s Web 2.0 Expo in New York City in November, 2009.

She is CEO of Hoffman Digital Media, producing the LD Podcast, an internet radio show about learning and learning disabilities featuring interviews with well-known experts including Dr. Robert Brooks, Anne Ford, and Marcus Buckingham. She also produces OB-GYN To Go, a podcast focusing on resident and physician education. She has spoken at many blogging and podcasting conferences including BlogPhiladelphia, Podcamp conferences, and at Podcasters Across Borders in Ontario Canada in 2008 and 2010. She presents regularly to business and non-profit groups and conferences on a variety of topics including using social media tools for marketing and PR, and Business Strategy Using the Social Web.

She has an undergraduate degree in developmental biology from the University of Pennsylvania, and a JD from the Dickinson School of Law of Penn State. Whitney co-authored Public Assembly Facility Law with Turner D. Madden for the International Association of Assembly Managers and presented at their annual conference. While working with Mr. Madden, Whitney helped design the Americans with Disabilities Act access program for the National Football League and the SuperBowl, as well as providing on-site services for the event for eight years.

U.S. Representative Frank A. LoBiondo

A boy named Frank LoBiondo grew up in constant admiration of his father; a man who knew the balance between the demands of operating a successful business, serving as an elected public servant, being active in his community, and providing for his family. As a young man Frank loved the time he spent on his grandparents farm helping where needed. Frank became a successful small businessman, working at the family trucking company for 26 years. Frank also became an active participant in numerous civic and charitable pursuits, including the SPCA, the Cumberland County Guidance Center, and the local YMCA. Frank’s achievements in the community eventually led to his nomination by local leaders and private citizens to further serve the community through public office.

Frank has served South Jersey on the county, state, and federal levels since his first successful election to the Cumberland County Board of Chosen Freeholders in 1984. Following his three-year service as a Freeholder, he was elected to the New Jersey General Assembly where he represented the First Legislative District from 1988-1994. In November 1994, Frank became the representative of the Second Congressional District in the House of Representatives where he serves South Jersey to this day.

On Capitol Hill, Congressman LoBiondo is a member of the House Transportation and Infrastructure Committee. Frank also serves as the Top Ranking Republican on the Subcommittee for Coast Guard and Maritime Transportation. He is also on the Water Resources and Environment and Aviation, which have jurisdiction over critical issues that affect New Jersey’s growing transportation needs.

Congressman LoBiondo is a staunch advocate for strengthening our nation’s security while ensuring a future for New Jersey’s military bases and service personnel with noted attention to issues of military pay and benefits. Frank has championed this cause with his service on the House Armed Services Committee. Frank also serves on the Air & Land Forces Subcommittee, Readiness Subcommittee, and Terrorism, Unconventional Threats & Capabilities Subcommittee.

In Washington, Frank LoBiondo is known as a fierce supporter of veterans, and he continues to work hard to expand access to community-based health care providers which minimizes the need for South Jersey veterans to commute outside the state for VA-approved services. Frank has always maintained a strong commitment to protecting the environment, a result of a childhood devotion to the outdoors. During his time in public office, he has striven to protect fragile wildlife and wetlands, and has stood up for projects that endeavor to preserve and restore the New Jersey coastline. Congressman LoBiondo has won recognition for his environmental work from the Audubon Society, the League of Conservation Voters, and the Sierra Club.

Frank has been a strong voice for the private business sector having once owned and operated his own small business. He believes government intervention is not responsible for the creation of jobs and economic growth, but the hard work and success of private businesses.

Frank was born on May 12, 1946 in Rosenhayn, Cumberland County. He went on to receive his B.A. in Business Administration from St. Joseph’s University in Philadelphia before returning to his home in Cumberland County. Frank currently resides in Atlantic County with his wife Tina and their two rescued Weimaraners, Lola and Luca.
Collin O’Mara
Secretary
Delaware Department of Natural Resources and Environmental Control

Collin O’Mara serves as Secretary of the Environment and Energy for Delaware Governor Jack Markell. In this role, he serves as the chief steward of Delaware’s natural resources and leads the state’s efforts to ensure access to clean water, improve air quality, remediate contaminated sites, reduce flood damage, expand youth outdoor experiences, and restore wildlife habitat. He also oversees implementation of the Governor’s goal to make Delaware a leader in the global clean energy economy.

When Governor Markell appointed Secretary O’Mara in 2009, he was the youngest state cabinet official in the nation. Since joining the administration, he has worked to modernize Delaware’s energy sector with a focus on reducing pollution, stabilizing costs, improving reliability, and seizing economic development opportunities. He has negotiated the shutdown of the most polluting coal units in the state, facilitated switch-fueling of units, overseen installation of cutting-edge pollution controls on the largest coal unit in the state, and is helping to facilitate a wide range of renewable energy projects. He has led an aggressive energy efficiency campaign in collaboration with the Sustainable Energy Utility and local utilities, including the implementation of the nation’s first HomeStar program.

Under the Governor’s leadership, Secretary O’Mara has championed a range of innovative legislative initiatives, including the Energy Conservation and Efficiency Act and the Clean Energy Jobs Act. These bills established statewide goals reducing per capita electrical and natural gas consumption by 15 percent and 10 percent, respectively by 2015, strengthened the state’s renewable portfolio standard, expanded renewable rights, enhanced net-metering, modernized renewable energy incentives, enabled vehicle-to-grid technology, and strengthened building codes for energy efficiency. He has also launched statewide efforts to prepare Delaware for increasing threats from sea-level rise and other climate impacts, particularly in the coastal communities.

In addition to his work in energy and climate policy, Secretary O’Mara also helped spearhead the state’s landmark universal recycling legislation, which, for the first time, requires trash haulers to provide curbside recycling pickup statewide without increasing cost to consumers. He also is leading the effort to modernize DNREC through restructuring, the first significant reorganization of the agency since 1972, in an effort to make the agency leaner and more efficient in carrying out its mission.

Secretary O’Mara serves on numerous boards including the Executive Committee of the Sustainable Energy Utility Oversight Board, State Water Supply Coordinating Council, Vice Chair of the Ozone Transport Commission, Executive Committee of the Regional Greenhouse Gas Initiative, Executive Council of the Chesapeake Bay Program, Board of the Climate Prosperity Project, the Delaware Cancer Consortium, Open Space Council, Nutrient Management Commission, and the Center for the Inland Bays.

Prior to joining Governor Markell, Secretary O’Mara served as the Clean Tech Strategist for the City of San Jose, and was the primary architect of the city of San Jose’s Green Vision, built upon the belief that
environmental sustainability and smart economic development are inextricably linked and entirely compatible. He helped San Jose attract more than 50 clean technology companies, which created more than 3,000 new jobs and generated nearly $2 billion in new investment. Previously, Secretary O’Mara led a division of Syracuse city government where he was responsible for overseeing the modernization of city services and leading the cutting-edge accountability and efficiency program as Director of SyraStat.

A native of Syracuse, NY, Secretary O’Mara was a Marshall Scholar at the University of Oxford, a University Fellow at the Maxwell School of citizenship and Public Affairs, and a Presidential Scholar at Dartmouth. He is a Catto Fellow at the Aspen Institute, a U.S. Green Building Council LEED (Leadership in Energy and Environmental Design) accredited professional, and completed Stanford Business School’s Executive Management Program in Environmental Sustainability.

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**Bob Martin**  
Commissioner  
New Jersey Department of Environmental Protection

Demonstrating his commitment to building a strong, experienced team, Governor Chris Christie nominated Bob Martin to serve as Commissioner of the Department of Environmental Protection.

An accomplished business and industry leader with recognized expertise in energy and utilities, he served as a key policy adviser throughout Governor Christie’s gubernatorial campaign. He assisted in shaping and drafting then-candidate Christie’s Energy Policy and Environmental Policy, and provided policy guidance on other major issues. In recent years, he also has served as a respected and trusted adviser, primarily in energy policy, to several other candidates for U.S. Senate, congressional and gubernatorial seats.

In 2008, he retired as a partner with Accenture LLP after more than 25 years. Accenture is the world’s largest business and technology consulting firm with more than 140,000 employees around the globe.

Highly experienced in consulting, he has achieved impressive results working with a variety of businesses and industries – particularly energy and utility companies – to improve efficiency and enhance performance in an increasingly competitive marketplace. He has expertise in all aspects of business and management consulting, including business strategy and planning, business transformation and re-engineering, IT strategy, systems implementation, and change management. He also has considerable experience in project management of large systems integration and in business re-engineering projects.

Commissioner Martin also has extensive international experience. While living in England from 1991 to 1995, he worked with several large U.K. water and electric utilities as the companies privatized and the markets deregulated. He also spent significant time working with utility and energy companies throughout Europe and Canada.

Actively involved in the community, he was a candidate for State Senate in New Jersey’s 15th District in 2007. He formerly served as the Chairman of the Finance Committee for the Mercer County Republican Committee. He served on the Salvation Army Advisory Board of Greater New York from 2001 until
January 2010, and as its Chairman from 2007 until January 2010. He served on the Princeton Healthcare System Foundation Board in 2008 and 2009. He also served on the Board of Trustees at the Chapin School in Princeton from 1996 to 2008, and on the Finance Advisory Committee for Hopewell Township from 2005 to 2007. He has been active in coaching youth soccer and lacrosse in Hopewell Valley for more than 13 years.

Born and raised in Massachusetts, Commissioner Martin earned a bachelor of arts in Economics and Sociology from Boston College in 1979 and an MBA from The George Washington University in 1982.

He and his wife, Brenda, have lived in Hopewell Township for more than 14 years. They have three children: Andrew, 24; Sara, 21; and Caroline, 12. Mrs. Martin is a teacher at the Cambridge School in Pennington.

Jonathan H. Sharp  
Professor of Oceanography  
College of Marine and Earth Studies  
University of Delaware

Jonathan H. Sharp received BA (Biology) and MS (Biochemistry) from Lehigh University; PhD (Oceanography) from Dalhousie University; post-doctoral research experience at Scripps Institution of Oceanography. He has lived in Lewes for past 37 years with wife, Gwyneth. He raised his son and daughter here and both are now successful PhD environmental scientists.

Jonathan’s research interests include: microbial biogeochemistry (estuarine, coastal, and oceanic), Analytical methodology for routine aquatic analyses, Translation of estuarine research results to resource management. He has published over 100 papers (in refereed literature) and reports including 30 papers in the refereed literature from his research group specifically about the Delaware Estuary. He has also published a number of newsletter articles and guest newspaper editorials on estuarine science and policy.

Dr. Sharp has been heavily involved with research, resource management, and outreach on the Delaware Estuary for over 30 years, including being primary advisor for 16 MS and PhD projects about the Delaware Estuary from 1981-present. He served as the chairman of the Scientific and Technical Advisory Committee for the Delaware Estuary Program (DELEP) planning stage from 1989-1996; then became the chairman of its Monitoring Implementation Team and first Chairman of the Board of the non-profit Partnership for the Delaware Estuary (PDE). He continues to serve on Monitoring Advisory Committee of DELEP and Advisory Board of PDE. He has served formally on a number of advisory committees and given informal advice to Delaware River Basin Commission for over 25 years. He has provided informal advice and assistance to Delaware Department of Natural Resources and Environmental Control and the similar agencies in New Jersey and Pennsylvania regarding measurements and interpretation of data on estuarine resources. He has provided various consulting activities on about Delaware Estuary science for Delaware River Basin Commission, Public Service Electric and Gas Company, Duffield Associates, DuPont Company. He has had some similar advisory and technical committee involvement with Maryland and California on Chesapeake and San Francisco bays, respectively. Recently, he has served on two national advisory committees (for NOAA and EPA) assisting management of estuarine nutrient problems.
Michele N. Siekerka, Esq.
Assistant Commissioner for Economic Growth & Green Energy
New Jersey Department of Environmental Protection

Prior to joining the Department of Environmental Protection as its first Assistant Commissioner for Economic Growth and Green Energy, an office newly established by DEP Commissioner Bob Martin, Michele N. Siekerka, Esq. was president and CEO of the Mercer Regional Chamber of Commerce. Commissioner Martin’s vision statement for the Department recognizes that a healthy environment and healthy economy go hand in hand. Siekerka’s experience with New Jersey’s business community coupled with her legal background provide the foundation for understanding the economic impact of regulatory processes, especially for small businesses and entrepreneurs.

Siekerka’s new role is designed to work with all stakeholders—environmental advocacy organizations, large and small businesses and industry, local governments, and residents—to identify and create opportunities for economic growth while maintaining the highest standards of protection for the environment. She is the DEP’s point person to help New Jersey tap the full potential of renewable energy by coordinating efforts with other state agencies and working to help businesses develop more opportunities for wind and solar power.

The Robbinsville resident was with the Mercer Regional Chamber of Commerce for over six years. Siekerka recently completed a year-long Ford Foundation Fellowship for Regional Sustainable Development, working with Chamber of Commerce and business leaders from across the nation to develop regional action plans. She also served on Governor Chris Christie’s Red Tape Review Group. Prior to the Chamber of Commerce, Siekerka worked with the Automobile Association of America as a senior legal consultant and vice president of human resources; prior to that, she was a partner in a Mercer County law practice. Siekerka earned a BA in Political Science and German from Rutgers University and a JD from Temple University School of Law.

Caroline Wicks
Science Communicator, EcoCheck

Caroline Wicks is a science communicator with EcoCheck, a partnership between the National Oceanic and Atmospheric Administration (NOAA) and the University of Maryland Center for Environmental Science (UMCES). Caroline received a Bachelor of Science in Biology from the University of North Carolina at Wilmington and a Master of Science in Biological Oceanography from the University of Maryland. While Caroline’s education is in research science, she has attended and taught numerous science communication workshops. Her current job focuses on product development for EcoCheck, including newsletters, reports, and books, which requires collaboration with many federal and state agencies.
Joanna L. Woerner
Science Communicator
Integrated and Application Network

Joanna L. Woerner is a Science Communicator with the Integration and Application Network, www.ian.umces.edu, a collection of scientists interested in solving, not just studying, environmental problems. As a Science Communicator, she has taught numerous courses on how to communicate science more effectively and has collaborated with various partners to create documents which convey complex scientific concepts to broad audiences. Joanna has received a B.S. in Marine Science from The Richard Stockton College and a M.A. in Technical and Scientific Communication from Miami University.
We thank you for coming to the 2011 Delaware Estuary Science and Environmental Summit. Please feel free to contact our staff with questions.

**Staff List – Partnership for the Delaware Estuary**

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The mission of the Partnership for the Delaware Estuary is to lead collaborative and creative efforts to protect and enhance the Delaware Estuary and its tributaries for current and future generations.  
[www.DelawareEstuary.org](http://www.DelawareEstuary.org)
Notes
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