**Patrick Center Staff (2009)**

**Administration**
Dr. David J. Velinsky (PCER Director; VP for Environmental Science)
Lori McCole; Science Administrator
Kristen Kepics; Office Manager
Daniel H. Snyder (*retired May 2009*)

**Asia Center**
Dr. Clyde Goulden (Director)
Tuya Goulden

**Environmental Biogeochemistry**
Dr. David Velinsky (Section Leader)
Paul Kiry
Mike Schafer
Linda Zaoudeh
Paula Zelanko

**Center for Environmental Policy**
Roland Wall (Director)
Erin Johnson
Dr. Richardson Dilworth III (Visiting Scholar)

**Fisheries**
Dr. Richard J. Horwitz (Section Leader)
David Keller
Shane Moser
Paul Overbeck

**Watershed and Systems Ecology**
Dr. Jerry Mead (Section leader)
Dr. James Bedison (UPENN, Visiting Investigator)

**Francis Boyer Chair**
Dr. Ruth Patrick
Susan O'Connell

**Macroinvertebrates**
Recruitment in future
**Phycology**
Dr. Donald F. Charles (Section Leader)
Frank Acker
Patrick Boylen
Dr. Mihaela Enache
Sara Mays
Dr. Eduardo Morales
Pat Palmer
Dr. Ling Ren
Dr. Babs Rinkel
Judith Marie Roszek
Andrew Tuccillo

**Project Support**
Roger L. Thomas (Section Leader)
Robin Davis
Sylvan Klein
Dr. Danielle Kreeger
Rosemary L. Malfi
Zoe Ruge

**Quantitative Population Biology**
Dr. James N. McNair (*resigned February 2009*)

**Summer Research Interns**
Woody Cyr
Paul Thomas
Marcell Vasquez

**Research Associates**
Dr. Jeffery Ashley, Philadelphia University
Dr. Jonathan Fingerhut, St. Josephs University
Dr. James Pizzuto, University of Delaware
Dr. Christopher Sommerfield, University of Delaware

**Volunteers**
Michelle Brannin
Bill Frezel
Roland Harper
Kate Rack
Paulina Rojas
David Schogel
Tina Stonefield
HIGHLIGHTS

DEPARTMENTAL HAPPENINGS

- **Ruth Patrick** was inducted in the National Woman’s Hall of Fame in Seneca Lakes, NY in October, 2009.
- **Jerry Mead** (Watershed and Systems Ecology) and **Roger Thomas** (Project Support) explored various locations in Chile for field sites in the development of a multi-institution National Science Foundation proposal.
- **David Velinsky** (Environmental Biogeochemistry) presented a lecture entitled “Back to the Future: A Historical Perspective of Ecological Change in the Delaware Estuary using Sediment Cores” at Saint Joseph’s University’s 8th Annual McGroddy Frontiers in Science Seminar Series.
- **Clyde Goulden** (Asia Center) and **Jerry Mead** (Watershed and Systems Ecology) presented multiple seminars at two meetings in China. **Richard Horwitz** (Fisheries) was an author on papers that were presented.
- **Patrick Center** hired a Ruth Patrick Post-doctoral Scholar (**Dr. Tracy Elsey Quirk**; Ph.D., University of Delaware) to assist in various wetlands projects.

ASIA CENTER

- **Clyde Goulden** continued his NSF_PIRE-supported research in Mongolia where he interviewed nomadic herders about their perception of the changing climate. He returned via South Korea where he gave two talks at Kangwon National University.
- **Clyde Goulden** attended two international meetings in China: the International Limnology Society in Nanjing, where he gave a talk on the effects of climate change on lakes and rivers, and the 13th World Lake Conference in Wuhan, China where he discussed the need for training students to monitor lakes and rivers throughout Asia. He, along with **Jerry Mead**, presented results from various PCER studies.
- The **Asia Center** developed and exhibited materials at these meetings highlighting the research being conducted by Academy scientists in Asia.

CENTER FOR ENVIRONMENTAL POLICY

- **Roland Wall** received a renewal of the grant from the William Penn Foundation to continue the programs in the Center.
- The Center started a new group for low tech companies called *Profitable Pathways for the Future* to help companies learn and transfer ideas on sustainable practices.
- The **Environmental Associates/Center for Environmental Policy** sponsored 44 public events in 2009, with a total audience of ~5,700 attendees.

See list of Town Square events and Center for Environmental forums below.
**ENVIRONMENTAL BIOGEOCHEMISTRY**

- **Paul Kiry** and **Paula Zelanko** completed water quality analyses for monitoring studies in NY, NJ, and PA sponsored by NY DEC and DRBC.
- **David Velinsky, Sylvan Kline, Jerry Mead and Roger Thomas** completed field sampling trips to various tidal marsh systems in Barnegat Bay (NJ) to collect sediment cores and map marsh elevations.
- **David Velinsky, Paul Kiry, Mike Schafer and Roger Thomas** completed field sampling trips to various tidal marsh systems in the Delaware estuary to collect sediment cores.
- **David Velinsky and Paula Zelanko**, along with Nate Rice (CSBE), are analyzing Osprey feathers, collected between ~1860s to the present from birds frequenting Delaware Bay, to assess ecosystem changes in the estuary.
- **David Velinsky** and **Roger Thomas** are initiating a tidal wetlands monitoring program in the Delaware Estuary in conjunction with researchers at the Partnership for the Delaware Estuary, Rutgers University, Villanova University and Wetlands Services, Inc.

**FISHERIES**

- **Rich Horwitz, Paul Overbeck, Shane Moser** and **David Keller** were successful in sequencing of mitochondrial DNA from historical specimens (early 20th Century) of bridle shiner from the ANS Ichthyology collection.
- **Rich Horwitz** was awarded an EPA project to confirm identification of stream survey fish vouchers collected throughout the United States.
- **Rich Horwitz** and **Jerry Mead** initiated the Lake Chautauqua Watershed Comprehensive Management and Monitoring Plan Study.

**PHYCOLOGY**

- **Don Charles** organized a workshop of seven diatom ecologists at the Academy to review, and help develop, diatom indicators for New Jersey streams using US EPA Tiered Aquatic Life Use / Biological Condition Gradient approach. Results are being used by NJ Department of Environmental Protection to revise state nutrient criteria standards.
- Phycology Section biologists (**Frank Acker, Eduardo Morales, and Ling Ren**) analyzed algal samples for states of Delaware, Maine, Virginia, New Mexico, and Montana, and provided algal data and analyses to help these states assess the ecological conditions of their rivers and streams.
- **Mihaela Enache** completed a US EPA-sponsored paleolimnological study of New England lakes to assess long-term water quality changes.
**WATERSHED AND SYSTEMS ECOLOGY**

- **Jerry Mead** and **David Velinsky** were awarded a grant from the PA Coastal Zone Management program (PA DEP) to study the impacts of land use and climate change on Tinicum Marsh, a Delaware River tidal freshwater wetland.
- **Jerry Mead** and **Roger Thomas** went to Southern Chile and identified 5 stream study sites that had temperate old growth forests in their watersheds. The pilot study was aimed at locating study sites to test Mead's hypothesis that the relationship between stream channel width and riparian forest cover in the northeastern U.S. is largely an artifact of human disturbance within the watershed.
- **Jerry Mead** and summer interns mapped riparian forest cover in the Piedmont and Coastal plain of the Delaware River basin to test model estimates of riparian forest cover. The research was presented at the 13th World Lake Conference and was published in the meeting’s proceedings.
- **James Bedison** and **Jerry Mead** measured the concentration of carbon in stream bank soils in the Coastal Plain of the Delaware Basin. They developed a model that predicts concentrations of carbon as a function of land cover and soil type.

**FIELD WORK**

**Fisheries** – High Lonesome Ranch Stream Restoration (CO); Delaware River (NY, NJ, PA); SE PA Eel Studies (PA, DE); Black River (NY), Chautauqua Lake Watershed Water Quality (NY), Bridle Shiner Studies in upper Delaware River.

**Environmental Biogeochemistry** – Tidal wetlands in the Delaware Estuary: Sediment Coring (NJ, PA, DE); Tinicum Marsh Monitoring and Bioaccumulation (PA); Barnegat Bay Sediment Coring (NJ), Chautauqua Lake Watershed Water Quality (NY).

**Watershed Ecology** – High Lonesome Ranch Restoration (CO); Black River (NY), Chautauqua Lake Watershed Water Quality (NY), Old Growth Forest Research in Chile (SA).

**Project Support** – Oyster Population Health Assessment (TX); Chautauqua Lake Watershed Water Quality (NY); Old Growth Forest Research in Chile (SA); Delaware and Barnegat Bays sediment coring.
OUTREACH

Patrick Center Scientists maintain memberships on a number of local and regional resource management committees such as:

1) Toxics Advisory Committee; Delaware River Basin Commission
2) Science and Technical Advisory Committee (STAC); Delaware Estuary Program
3) Diatom Taxonomic Consistency Workgroup; United States Geological Survey
4) Subcommittee on Ecological Flows; Delaware River Basin Commission
5) Fishes Technical Advisory Committee, PA Biodiversity Program.
6) Board of Directors, Partnership for the Delaware Estuary
7) North American Benthological Society’s Science and Policy Committee

Patrick Center staff has either participated in, or moderated, various forums, workshops and classes including those hosted by the Center for Environmental Policy’s Town Square, Pennypack Farm and Education Center and Delaware River Keeper.

They have also participated in various advisory roles for students of all levels including high school, undergraduate and graduate programs.

Various public outreach activities:
Academy Membership Night
Earth Day at the Academy
Highlight of Delaware Coring Program in Philadelphia Inquirer (Health and Science)
Interviews and Articles in local newspapers

PROPOSALS & GRANTS  *(Italic is source: Submitted; Not all proposals listed)*

CENTER FOR ENVIRONMENTAL POLICY

ENVIRONMENTAL BIOGEOCHEMISTRY
- *Delaware River Basin Commission*: Water Quality Monitoring Project
- *US EPA and Delaware Estuary Program*: Wetlands Monitoring Studies
- *ERC Endowment Funds*: Wetlands Monitoring
- *New Jersey Department of Environmental Protection*: Mercury Bioaccumulation Study
- *Cotswold Foundation Endowment Funds*: Wetlands Monitoring
FISHERIES

- **Tennessee Eastman**: Holston River Survey
- **Tennessee Eastman**: Sabine River survey
- **Chautauqua County Planning Dept**: Lake Chautauqua Watershed Comprehensive Management Plan
- **Chautauqua County Planning Dept**: Lake Chautauqua Pre-implementation Monitoring Study
- **National Science Foundation**: Collaborative Research: The effects of riparian forests on the energetic ecology of brook trout: a multi-regional study of food availability, growth, density and production.
- **US Environmental Protection Agency (US EPA)**: Identification of QA/QC vouchers from National Stream Surveys, Phase II.
- **National Park Service**: Status of Bridle shiner in Upper Delaware River, 2009 work.
- **Cotswold Foundation Endowment Funds**: Molecular genetics of bridle shiner in Susquehanna and adjacent drainages.

PHYCOLOGY

- **United States Geological Survey (USGS)**: National Water-Quality Assessment Program (NAWQA)
- **US EPA**: National River and Stream Assessment (NRSA)
- **State of Maine Department of Environmental Protection**: Algal Monitoring
- **Commonwealth of Virginia Department of Environmental Quality**: Algal Monitoring
- **State of Delaware**: Algal Monitoring
- **Philadelphia Renewable Energy**: Algal Biofuels
- **USGS**: Cascade Lakes paleo-ecology
- **National Science Foundation**: development of Paleoecology database, NEOTOMA
- **State of New Jersey Department of Environmental Protection**: TALU

PROJECT SUPPORT

- **Dow Chemical and Seadrift Coke**: San Antonio Bay Oyster Population Health Assessment
- **US Army Corps of Engineers**: Delaware Estuary Seston Study Year 2
- **Eastman Chemicals**: Sabine River Survey
- **Eastman Chemicals**: Holston River Survey
- **National Fish and Wildlife Foundation**: Freshwater Mussel Restoration Program.
- **Commonwealth of Pennsylvania**: Growing Greener: Freshwater Mussel Restoration Program Partnership for the Delaware Estuary NOAA Delaware Estuary Bivalve Restoration

WATERSHED AND SYSTEMS ECOLOGY

- **National Science Foundation**: Legacy sediments and the response of channel morphology to riparian forests.
- **National Fish and Wildlife Foundation**: Stream-lined Watershed Integration Model (SWIM)
- Delaware Valley Planning Commission: Quantify the Economic Value of Protected Open Space in Southeastern Pennsylvania
- US EPA (Regions III): SWIM Model Development for Community Outreach

**GRANT AND CONTRACT REVENUE**

Below is the grant and contract revenue for the Patrick Center from 2005 to 2009. Values for 2010 are projected.

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<th>Year</th>
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**PUBLICATIONS**


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**PRESENTATIONS**

**Ashley J.T.F., M. Vasquez, H. Stapleton, M. Schafer, R. Horwitz and D.J. Velinsky. 2009.** Bioaccumulation of PCBs and PBDEs within a tidal freshwater marsh. Presented at the 2009 Delaware Estuary Science Conference, Cape May, NJ.


**Enache, M., D. Velinsky, D.F. Charles, C. Sommerfield, et al. 2009.** Diatom-based reconstruction of past environmental changes in the Delaware River tidal region along a north-
south transect. 20th Biennial Conference of the Coastal and Estuarine Research Federation, 1-5 November 2009, Portland, OR.

**Enache, M.D., D.F. Charles, and A. Tuccillo.** 2009. Diatom-based transfer functions developed within the National Lake Assessment project, U.S.A.: Comparing the predictive power of WA and WAPLS models developed at national and regional scales. 11th International Paleolimnology Symposium, Guadalajara, Mexico, December 16, 2009.


TOWN SQUARE AND CENTER FOR ENVIRONMENTAL POLICY FORUMS

January 15: Green Economy: Economy and Environment Working Hand-in-Hand

January 22: Bike Sharing in Philadelphia

January 29: How to Live Sustainably
(Panel discussion with members of Young Involved Philadelphia)

February 5: The Dominant Animal: Human Evolution and the Environment in the Obama Administration (Featuring Paul Ehrlich)

February 11: How can the federal government support cities?
(Mayor's Institute on City Design - Featuring Mayor Nutter - Cosponsored with Penn Praxis, Penn School of Design)

February 12: Green Condo Initiative – Organizational Meeting

February 19: Sustainability and the City Budget: Choices and Trade-offs for Philadelphia.
(Featuring Deputy Mayor Altman, City Budget Director Dubow, City Director of Sustainability Hughes)

February 26: Completing the Schuylkill River Trail to Create the Region’s First Green Transportation Corridor

March 10: Focus Group on Philadelphia Greenworks.
(Partnered with faculty from Drexel, Penn, Villanova; staff from Rohm & Haas; Mayor's Office of Sustainability

March 10: Informational Meeting on “The Future of the Parkway.”
(With Logan Square Neighborhood Association)

March 19: Green Vibrant Philly Neighborhoods: What to do In Your Community
(Urban Sustainability Forum)
March 23: Informational Meeting on New Recycling Ordinances  
(Cosponsored with Recycle Now)

March 30: Teaching Evolution in Elementary School

April 13: Legislative Hearing: Republican State Policy Caucus – Watershed Modeling

April 16: Delaware Valley Greenhouse Gas Inventory  
(Urban Sustainability Forum)

April 18: The Enduring Wilderness: Earth Day Program at ANSP

April 23: The State of our Nation’s Endangered Wildlife  
(Silverman Memorial Lecture)

April 30: Reducing the Carbon Footprint of Museums.  
(Special Program for American Association of Museums)

May 4: Condominium Energy Use  
(Program for the Green Condominium Initiative)

(Cosponsored by Penn Design, Penn Praxis, Penn Institute for Urban Research)

May 18: U.S. Congressional Field Hearing - Green Infrastructure and Federal Policy  
(Featuring Rep. Schwarz, Rep. Fatah; Cosponsored by Northeast-Midwest Institute)

May 21: Urban Agriculture: How can we feed Philadelphia?  
(Urban Sustainability Forum)

May 26: Kick Off: New Voice of Business  
(Introduction by Mayor Nutter)

May 27: The History of Global Warming Research  
(Collaboration with Philadelphia Area Committee on the History of Science)

June 10: Information meeting on advocating for recycling in commercial bldgs.  
(Cosponsored by the Recycling Alliance)

June 16: Special Screening – The End of the Line  
(Film on marine fisheries depletion/Introductory lecture by Dr. David Velinsky)

June 18: Greenworks Philadelphia  
(Urban Sustainability Forum - Featuring Director Mayor's Office of Sustainability)

July 9: Introduction to Transition Communities
July 16: Protecting Parklands
(Urban Sustainability Forum - Featuring City Director of Parks and Recreation)

July 21: Health Care, Food Safety and Antibiotics
(Cosponsored with Pew Charitable Trusts)

September 9: Investing in the Planet - Part 1 (Global Warming and Investment)

September 17: Urban Sustainability Forum "No Vacancy": Reimagining Vacant Land in Philadelphia

September 21: Energy Use in Condominiums
(Second Town Square for Green Condo Initiative)

September 24: An Evening with Explorer Richard Wiese

October 14: Investing in the Planet – Part 2

October 20: Awakening Green IT (Featuring Joe Tait, CIO, NMS Labs)

October 22: Investing in Green Infrastructure (Urban Sustainability Forum)

October 26: Forum on Street Furniture and Bus Shelters
(Cosponsored with City Office of Transportation and Utilities; featuring Mayor Nutter, Deputy Mayor Cutler)

November 9: Federal Policy Briefing on Climate Change
(Cosponsored with PEC, Clean Air Council, Natural Resources Defense Council)

November 15: First Annual Wild and Scenic Film Festival
(Fund Raiser - Cosponsored with Greener Partners)

November 17: An evening with polar explorer Lonnie Dupre

November 19: Public Transit: The way back into the city
(Urban Sustainability Forum)

December 7: Investing In the Planet - Part 3 (Featuring former PA DEP Secretary McGinty and Dave Stengis, VP for Sustainability, Campbell Soup)

December 15: International Sustainability Conference – Cosponsored by the Asia Center of the Academy, the City of Philadelphia, the World Trade Center, and the Philadelphia Global Sustainability Association of Business Students. Featuring officials from Henan Province, China.