

## Enhancing Undergraduate Environmental Education in the Hudson Valley: Exposition & Connections



October 29 - 30, 2004

Marist College ~ Poughkeepsie, New York

**Presented by:**

*Environmental Consortium of Hudson Valley Colleges & Universities  
Pace Academy for the Environment  
Rivers & Estuaries Center on the Hudson*

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## Agenda

### Friday, October 29<sup>th</sup>

8:00 am     **Registration & Poster Set-up**

9:00 am     **Welcome Address**

**Dr. Dennis J. Murray**

President

*Marist College*

**Higher Education, the Environment &  
the Future of the Hudson River Valley**

**Mr. John Cronin**

Director

*Pace Academy for the Environment*

Managing Director

*Rivers and Estuaries Center on the Hudson*

**Conference Goals and Objectives**

**Dr. Michael G. Tannenbaum**

Dean, School of Science

*Marist College*

9:15 am     **Panel - Environmental Curricular Models  
and their Role in Undergraduate Education**

Moderator: **Dr. Kevin J. Farley**

Professor

Civil & Environmental Engineering

*Manhattan College*

Panelists: **Dr. Henry W. Art**

Director, Center for Environmental Studies

Professor of Biology

*Williams College*

**Dr. William J. Focht**

Director, Environmental Institute

*Oklahoma State University*

Executive Committee

*Council of Environmental Deans & Directors*



**Dr. Jill S. Schneiderman**  
Professor and Chair  
Department of Geology and Geography  
*Vassar College*

10:15 am **Break**

10:30 am **Panel** - Enhancing and Expanding Undergraduate Environmental Research Opportunities

Moderator: **Dr. John P. Harrington**  
Dean, School of Science & Engineering  
*SUNY at New Paltz*

Panelists: **Dr. Nicholas L. Clesceri**  
Professor of Environmental Engineering  
*Rensselaer Polytechnic Institute*

**Ms. Frances F. Dunwell**  
Hudson River Estuary Coordinator  
*NYS Department of Environmental Conservation*

**Dr. Michael G. Tannenbaum**  
Dean, School of Science  
*Marist College*

11:45 am **Lunch & Keynote Speaker**

**Dr. Judith E. McDowell**  
Senior Scientist  
Associate Dean Academic Programs  
*Woods Hole Oceanographic Institution*

1:15 pm **Poster Session** - Enhancing Undergraduate Environmental Education Through Environmental Curricula, Research, Scholarship and Creative Activity

2:15 pm **Breakout Session 1**

3:15 pm **Break**

3:30 pm **Breakout Session 2**

4:30 pm **Shuttle to Poughkeepsie Waterfront for Hudson River Cruise and Dinner on the Rip Van Winkle**



## **Saturday, October 30<sup>th</sup>**

8:30 am     **Breakfast**

### **Consortium Project Update: River Summer Semester**

**Dr. Stephanie Pfirman**

Professor and Chair of Environmental Science  
*Barnard College*

**Mr. John Cronin**

Director  
*Pace Academy for the Environment*  
Managing Director  
*Rivers and Estuaries Center on the Hudson*

10:30 am    **Working Session - Developing Collaborative Action Plans**

11:15 am    **Decisions on Current Projects and Future Directions**

12:00 pm    **Closing Remarks**



## Keynote Address: John Cronin

“Higher Education, the Environment, and the Future of the Hudson River Valley”



**John Cronin**

Director, *Pace Academy for the Environment*  
Managing Director, *Rivers & Estuaries Center*

Welcome. It is good to see so many of you again and good to see so many new faces as well. If any one of us was inserted randomly in the universe, the chance that we would land near or on a planet, any kind of planet is one in a billion, trillion, and trillion. The chance that you land on a habitable planet is far smaller, and to land on a planet with intelligent life, far smaller still. That you land on a planet where you recognize the environment, can eat the food, and communicate with the beings around you, is so remote that the chance would be virtually zero. The one grain of sand, that little grain of sand that elevates the chances, ever infinitesimally smaller above zero, represents the planet we are sitting on. Evolution tells us that our ancestors from other species crawled out of the ocean 400 million years ago, leaving the most ubiquitous habitat on the planet to take their chances on the land, and finding out that the total amount of land mass that can support life on the planet is 12%, and the amount of water on the planet that could actually help us to live and thrive is only .036% of water on the planet. To get here at all, millions of our ancestors had to do certain things at precise moments in order for us to be born at all. One bad turn one day, one bad headache one night, and you would not exist at all. So in cosmological, planetary, evolutionary and family terms, it is against all conceivable odds, and actually the odds are not conceivable if you think about it, that we are here and we are all here together in this room, and here in the Hudson Valley. The Hudson River represent a miniscule fraction, I'm not sure if it is even calculable, of that .036% of the worlds water that will help us survive. And even on the Hudson, 22% of that water is naturally un-potable, the rest we have to treat extensively in order to drink. Most of the fish species are still considered too contaminated to eat, a vast amount of our wetlands and habitat were obliterated long ago in the Hudson River Valley.

That is some of the bad news. The good news is that we are in this room, given all these other things; we are now in this room not by chance but by choice. And we are here because of common concern and common interests. If I was addressing you just a few years ago, what I would be doing is I would be waiving my fist in the air and I would be saying to you, "what we have to do is battle the bad guys, we have to identify the polluters, we have to sue the power plants, we have to lobby, we have to litigate, we have to agitate." But, I don't believe that is true anymore. There is always a place for advocacy, there is always a place for litigation, and there is always a place for legislation. But that is not our most pressing challenge in 2004, and that is not our most pressing mission over these



next two days. The Hudson River as an environmental war zone is a time honored metaphor. But even in wartime, a time is declared for rebuilding, and that is the mission that is ahead of us on the Hudson River. The mission ahead of us on the Hudson River is how do we rebuild this extraordinary ecosystem that we have been fighting to save, at least in the modern environmental movement, over the last forty years. And we did save it, but it is on its way to a sure death. We have to rebuild it, we can't just save it. We can't rest on that plateau. And we are not going rebuild it by just pointing fingers at people we decide not to like.

The mission is not just here in the Hudson, it is global. The Center for Disease Control tells us that in this next year, 2 million people, mostly children, are going to die from water contamination. Do they need litigation? I don't think so. Do they need neighbors somewhere on this planet with a hunger for knowledge and a passion for applying that knowledge for solutions for living? Yes. That's what they need. And does the Hudson need the same? Without question, the Hudson needs the same. Governor Pataki called for the Rivers and Estuaries Center in his State of the State address. He wasn't just calling on us to rally around some buildings that were destructed. What he was saying was the Hudson River Valley deserves to be a global center for environmental research, education, knowledge, and understanding. Look at where we are located. We are located by the political capital of the world, we are the commercial capital of the world, and we have three congress people in the Hudson River Valley that are on the appropriations committee. To the south of us is the center of foundation given in the midst of the most powerful politicians in the country. Look at the history of the Hudson River and what we have accomplished here, and the information that can still come from here, and the knowledge that can still come from here. Yes, the Hudson River deserves to be a global center for knowledge and the application of that knowledge. And higher education is the key to making that happen. In the Hudson River Valley, the key to making higher education carry out that mission is going to be the Environmental Consortium of Hudson Valley Colleges and Universities. This is not just the first time that colleges and universities in our region have organized around the environment. This is the first time colleges and universities in our region have been organized, period. Aside from our two conferences, when was the last time any one of you were at a conference that was called for Hudson Valley colleges and universities to get together on a common topic? Anybody? But it is not surprising that the environment is the one topic that would end up brining us together. Because that is the story and that is the history of the Hudson River Valley.

And in the short life of this Consortium, it has accomplished a lot. We have 33 member institutions. Not because faculty have volunteered their colleges and universities but because college and university presidents have signed up their institutions to be members. The passion that is coming out of some of our individual members in the consortium is remarkable. Mike Tannenbaum's diligence and dedication in pulling today together, Stephanie Pfirmann instilled infectious enthusiasm for organizing River Summer, which you will hear a lot more about, Sister Brigid Driscoll's vast experience and her experience as former president of Marymount College and the work she is doing with us at the Rivers and Estuaries Center and coordinating the programs up there. And, this is not an exclusive list, but I'm just mentioning examples. Importantly, Michelle Land and her tireless work and boundless talent in organizing and directing the work of the Consortium, and I would like thank Michelle, very much, for all her work. And I am happy to announce today that the Rivers and Estuaries Center has pledged to fund Michelle's position for the next year to direct the work of the Consortium. In addition to that, we are funding a position for Donna Kowal who will be assisting Michelle Land in helping to organize the Consortium. This is a major step forward in giving the Consortium a permanent future. In addition, the Rivers and Estuaries Center will commence construction, this year, on its first facility down on Denning's Point. We call it 'Building One'. It is not a very elegant title, and it might change, but building it is 'one' because we are expecting a two, a three and a four. It is 4,000 square foot facility. It is going to be a rehab of an old brick structure from a former brickyard down there. It will be a green design, thermal heating and cooling system, solar assist heat and power, composting toilets, and natural ventilation system. The entire 4,000 square feet is going to be used for programs. Those of you who know, the Rivers and Estuaries Center have





an office on Main Street in Beacon, which you are all welcome to visit at any time. We are going to keep that for administration. This Building One is not just going to be our first program building; it is going to open up 65 acres of waterfront that has not been open to the public before down on Denning's Point. The central program that will be in that building, that I am going to invite you all to join in and participate in as we design it over the next year, will be to make that facility a continuing teacher training institute on the Hudson River. Not just elementary, middle, and high school but higher education as well. The Rivers and Estuaries Center always believed that its education mission should be one not of going out and trying its best to get millions of students onto Denning's Point, but instead to create a whole new generation of knowledgeable, skilled and talented teachers to reach out to those students. So one of our first programs on Denning's Point will be a teacher training institute.

Higher Education is, from my point of view and especially at the undergraduate level, the Grand Central Station of education. This is where we are hoping all of our elementary, middle, and high school kids are going to go, this is where our teachers are being trained, this is where we are sending off students to do their graduate work in science, law and in other fields. This is where it is really all happening. And as we think about the next two days, I would like you to think about this idea and think about all that we can accomplish at that undergraduate level, and what we can accomplish at all levels of higher education.

When I talked about the idea that the chance of any one of us being on this planet is so infinitesimally small, the statistics I was quoting were from Carl Sagan. I am a great admirer of Carl Sagan. I sat on a science panel for a foundation not too many years ago, I was one of two non-scientists, and Carl Sagan's name came up, and I sat there in horror as all these scientists, 15, in a group jealous rage slammed Carl Sagan and talked about how awful he was and what a big ego he had. If we can summon in these next two days, if we can summon in the next year, a fraction of the passion he had for reaching out to people, especially students, to getting them to care about and to be passionate about the planet on which they live, to inspire them to make the regions around them their own special sphere of interest and to encourage the world at large to think of us all as being part of a global community, not just a local community, if we can summon just a fraction of that passion, this Consortium is going to go on to accomplish huge and great things that will be an example for the rest of the country and for the rest of the world. What it takes is imagination. That's all it takes.

Forty years ago there was a tiny group of people, Pete Seeger was one, Frannie Reese was another, and Bob Doyle was another, who imagined a far different Hudson than the one they inherited, because the one they inherited was awful. And we are living today in the Hudson River Valley they imagined. You can swim in it, people are fishing in it, pollution is reduced, and waterfronts are being revitalized. The question we have to think about today and tomorrow and over this next year, is what kind of environment, what kind of region, what kind of river, what kind of watershed are we willing to imagine, so that the next generation can stand here, at this podium, and say, I am living in the River Valley that you all here imagined.

I welcome you and thank you for being here, and let's have a great two days.

## Conference Goals and Objectives

**Dr. Michael G. Tannenbaum**

Dean, School of Science

*Marist College*

[Transcript not available]



## Panel 1: Environmental Curricular Models and their Role in Undergraduate Education



### Moderator:

**Dr. Kevin J. Farley**  
Professor, Civil & Environmental Engineering  
*Manhattan College*

### Panelists:

**Dr. Henry W. Art**  
Director, Center for Environmental Studies, Professor of Biology  
*Williams College*

**Dr. William J. Focht**  
Director, Environmental Institute, *Oklahoma State University*, Executive Committee  
*Council of Environmental Deans & Directors*

**Dr. Jill S. Schneiderman**, Chair and Professor of Geology  
*Vassar College*



**Henry W. Art:**

***What are Good Curricular Models for Environmental Clusters, Minors, and/or Majors?***

The most successful and enduring curricular models for environmental studies programs, ranging from clusters to free-standing majors, are those that evolve out of shared philosophies, strengths, resources, and opportunities of a particular institution. In short the most effective architectures or environmental studies programs are vernacular ones. 2. How do we facilitate interdisciplinary learning?

There are a great diversity of fostering interdisciplinary learning and teaching, some of which are “curricular,” many of which are “extracurricular,” and all of which require some degree of “institutional ownership.” Curricular facilitation may include the design of project, research, and/or synthesis courses; field trips; team teaching; capitalizing on study abroad programs; and establishing faculty development seminars. Extracurricular facilitation may include approaches ranging from opportunistic alliances with environmental organizations; developing environmental facilities such as field stations, the use of the campus and the local community as foci for environmental activity outside the classroom.

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**William J. Focht:**

***Environmental Program Curricula in Higher Education Focused on Identifying Core Competencies***

The Council of Environmental Deans and Directors (CEDD) is conducting a study of environmental program curricula in higher education focused on identifying core competencies. This talk will present some of the results of the first phase of this study. CEDD members were asked to answer questions about their programs and curricula in an on-line survey. Later, they were asked to complete Q sorts of statements made in the on-line survey. Factor analysis of these sorts revealed three dominant perspectives on curricular design. Comparison of statistical analysis of the survey data with the Q factors demonstrate that curricular perspectives align generally with Carnegie classifications of host institutions. CEDD has applied for funding to extend this initial study to non-CEDD members, to conclude with a national conference to explore opportunities for consensus on core competencies among the nation's environmental programs.

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***Jill S. Schneiderman: Environmental Curricular Models and their Role in Undergraduate Education***

Environmental education is study that might provide the following:

1. A sense of a whole;
2. Perspective on time and space
3. Understanding of power relations in different arenas. Its purpose could be to teach humility and develop a sense of responsibility for and constructive action against injustice. How can educators deliver on such abstract and perhaps lofty goals? Educators from the social sciences, humanities, and social sciences must teach together across disciplinary boundaries and provide real world, field experiences for our students.



## Panel 2: Enhancing and Expanding Undergraduate Environmental Research Opportunities



### Moderator:

**John P. Harrington**, Dean, School of Science & Engineering  
*SUNY New Paltz*

### Panelists:

**Nicholas L. Clesceri**, Professor of Environmental Engineering  
*Rensselaer Polytechnic Institute*

**Frances F. Dunwell**  
Hudson River Estuary Coordinator,  
*New York State Department of Environmental Conservation*

**Michael G. Tannenbaum**, Dean, School of Science  
*Marist College*



Collaborative  
Large-scale  
Engineering  
Analysis  
Network for  
Environmental  
Research

- Will enable a community framework for model forecasting that will promote more effective adaptive management approaches for human-dominated complex environmental systems, based on engineering analysis and design;
- Will provide a national resource that will consist of interacting field sites networked through an integrating cyberinfrastructure that will provide a shared-use resource;
- Will support long-term data collection with advanced sensor array systems, data aggregation, analytical tools for visualization and exploratory data mining and predictive modeling of large-scale dynamic environmental management strategies;
- Will consist of (a) groups of investigators studying highly urbanized regions and/or landscapes stressed by human activities; (b) specialized personnel and technology that support the investigators, and (c) a virtual analysis network that will serve as the central organizational framework for collaborative investigations. The investigators will be connected through a broadband cyber network of common platforms and shared protocols, whereby the network will enable the development of effective engineering approaches across a wide range of environments; and
- Will enable participation from a broader engineering and science community, including educators, students, practitioners, and public sector organizations and individuals, who will have access to the equipment, data, models, and software from CLEANER.

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## ***Frances F. Dunwell: How the Goals of the Hudson River Estuary Program Can Serve as a Framework for Consortium Activities***

The NYS Estuary Management Act of 1987 directed the NYS Department of Environmental Conservation to develop a long range plan for the tidal Hudson from the Troy dam to the Verrazano Narrows. The first plan was adopted by Governor George E. Pataki in 1996. It has been periodically updated. The goals of the program offer a framework around which the consortium can organize its work. They address the following key themes:

- Restoring signature fisheries
- Conserving and restoring aquatic habitat
- Improving water quality
- Cleaning up contaminants and reducing them at the source
- Conserving key upland habitats for plants and animals
- Conserving the scenery and pastoral landscapes of the valley
- Revitalizing riverfront communities
- Promoting public understanding of the river
- Celebrating our success

Since the launch of the program eight years ago, there have been substantial accomplishments in many of these areas. These will be very briefly described in the talk and are also summarized on our web site [www.dec.state.ny.us/website/udson/hrep.html](http://www.dec.state.ny.us/website/udson/hrep.html). In the process of doing this work, large databases have been generated, a variety of maps using digital technology have been produced, and information needs have been identified. Long term data sets exist for some places.

Ambitious objectives are now being developed to guide our program for the next decade. As we move to implement our long range goals, the academic community can play a key role. There is a wealth of opportunity for undergraduate as well as graduate level study, for individual as well as class projects, for single discipline and for multi-disciplinary work. Opportunities include:

1. Pick one of our goals and contribute to achieving it (understand the management questions and organize studies to help address them).
2. Adopt a resource and study it in depth (for example a stream). Develop projects at different scales and integrate a variety of disciplines.
3. Multiply our efforts through common methods and approaches. For example every college in the Hudson Valley could adopt a different stream and study key aspects of it using standard methods.
4. Help us learn from other places, and help us take our knowledge to the world (for example, illuminate the relationship of estuaries to oceans)
5. Use our data bases to extract new information (fisheries, water quality, habitat, GIS) or fill information gaps in our data bases.
6. Apply for a grant from our Polgar Fellowship program (joint project with Hudson River Foundation)
7. Integrate your work with our education program

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## **Michael G. Tannenbaum: "Crossing Boundaries"**

"Crossing Boundaries" was the theme of a recent conference hosted by the Council on Undergraduate Research (CUR), a national organization whose mission is to support and promote high quality undergraduate student-faculty research and scholarship. I borrow this theme to provide a framework for advice about enhancing undergraduate research (UR) opportunities for Hudson Valley colleges and universities, particularly in light of the birth of the Environmental Consortium. The Consortium can play a key role in facilitating the crossing of *institutional* boundaries, which I foresee as an important springboard to enhance our collective UR efforts, especially if we can attract funding from the NSF (URC; REU; and C-RUI programs) and/or other sources. Because many issues are too large for one discipline alone to understand, crossing *disciplinary* boundaries is a common curricular phenomenon. Why not extend this practice to as a way to enhance UR at our institutions? I will provide examples of successful interdisciplinary programs and funding sources (including the NSF, the Merck Foundation and the NCUR- Lancy Initiative) for such collaborative ventures. Finally, I will encourage attendees to cross the boundaries *between teaching and research* by crafting research-rich curricula, a strategy advocated by Project Kaleidoscope (among others). The explicit inclusion of research (and research-like) activities into the curriculum is one mechanism for faculty, their students, and their institutions to sustain UR beyond the traditional summer time frame.

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## Panel – “River Summer”: A Proposal for a Summer Field School on the Hudson

### John Cronin

Director, *Pace Academy for the Environment*  
Managing Director, *Rivers and Estuaries Center on the Hudson*

### Timothy Kenna

Adjunct Professor of Environmental Science  
*Barnard College*

### Roger Panetta

Professor and Chair of History  
*Marymount College of Fordham University*

### Stephanie Pfirman

Professor and Chair of Environmental Science  
*Barnard College*

**STEPHANIE PFIRMAN:** Good morning. Yesterday we heard that interdisciplinary environmental education is clustered by commonplace. Williams College takes them to the mountains. We take them to the river. Hands on projects facilitate the holistic approach. Team teaching with faculty from different disciplines can have spectacular results. It works well for students and faculty alike. What we are going to talk about today is a proposal to bring all those different aspects together, to get the Consortium to work together, the faculty to work together, and the students to work together.

The River Summer proposal starts in the Adirondacks. Each week we will move one step down the river and culminate in Manhattan and the coast. Our plan is to get it started next summer.

River Summer will be taught by teams of faculty from different institutions, working together to teach students at different locations on the river. Faculty will get to know each other and their respective institutions. Faculty will educate the students, from different perspectives, at each of the areas along the route. Follow up discussions about the proposal yielded a need for a director. Tim Kenna was identified in the proposal as the director.

This type of experience [River Summer] can transform the undergraduate experience. When I was an undergraduate, I studied at Colgate. I remember we traveled in vans for two or two and a half months.

River Summer will be teaching faculty and students about the environment they live in. Students will be encountering this environment as they study in college, and continue to encounter it later on in life. And they can teach their kids. Many members of the Consortium mention that they grew up by the river and moved up and down river. We want to work to create this environment where people learn about where they live, and it can have a synergistic effect.



I will not discuss the many logistics, as it is easy to get lost in minutia. What we want to do today with the panel is hear from them as to what their vision is, what they feel Summer River can accomplish for students, for the Consortium, and for faculty. Then we want to hear from you about what you would like to see, and how to continue.

We are working on funding, and the program is expensive. The point is to bring people together, and that costs money. We have sent a proposal to the Teagle Foundation. They are interested and I have had discussions with them. On November 3rd we will be putting in proposal to the FIPSE Foundation (a pre-proposal).

The big thing we are working for is the NSF GeoEd. It is an interesting program area that looks to fund innovative programs, to fund consortiums and unusual partnerships, which I think we are, and include state of the art cognitive learning. For this reason we have brought in a cognitive psychologist to work with us.

Our plan is once we get all expression of faculty involvement by November 4th, telling us about where you might want to teach and what you want to teach, we will construct a curriculum and propose it to GeoEd. Then we will get it to the Consortium for comment and work on how to get students and faculty involved.

I will now turn this over to my colleagues for their comments, and then open it up for general discussion.

**JOHN CRONIN:** Back in the late 60s when Pete Seeger had the idea for building or restoring a sloop, Pete's theory from the beginning, when you asked him, "What are you going to do?" he would say, "the purpose is to bring people to the river. The river will accomplish what they want to accomplish, it will take care of that." The River will build its constituency. It motivates them to do something more, more than anything that has been done on the Hudson. Just to bring people to the river, in that year, was a foreign notion. The power of the river, despite how awful it was, built its own constituency. My own personal experience has been the same. I had never spent any time out on the river. I did a lot of speeches and investigated polluters, but I didn't learn the environment until I was working with commercial fisherman, and I was out on the river. That transformed my experience, and that is what we are after. That transformative experience should not be thought of for students only. This is going to be transformative for faculty, students, and the Environmental Consortium. If that is not the case, then it will not be a successful program. River summer is not just going to change students; it is going to change me.

A year ago, I was in Sarasota at Mote Marine Laboratory where I noticed so much work gets done in the hallway. I was meeting people, talking to them and asking about the work they do, and I realized that every one of them wanted to be a Florida marine biologist since they were little, and they were in heaven. We need to start building that kind of culture, education, research, science, thinking, knowledge, and start breeding people who want to be Hudson River economists, historians, biologists, scientists, etc. We want that generation. The Consortium has to do innovative and exciting programs. We have to make it easy to get students and ourselves outside of the walls. River Summer will do that and will be getting people on the water. This stuff is done all the time, but other programs don't have what the Hudson has to offer. We are talking about breaking down barriers between institutions and the river, institutions themselves, cooperating faculty with multiple institutions. Breaking down barriers in our own institutions, not just in our buildings and classrooms. By pursuing the mission of the Consortium, we can transform the Hudson Valley into an extended



classroom. We are each going to wrestle with issues at our own institutions. Think of this as a summer “abroad” on the Hudson. This is going to break down barriers in our institutions by attracting students of multiple institutions, and getting faculty from different disciplines.

For students, I think it is very important that this not just be education. This has to be an adventure. But because it is an adventure, we have to be careful so as not to protect students from adventure. They should get a dose of adversity. They're not sleeping in a place they are accustomed to; they have to get to shore using arm power, etc. Making River Summer an adventure is very important.

Interdisciplinary is easy for us to say. We've been talking about this at Pace, and we've been looking at interdisciplinary programs in other schools. The truth is that 99% of environmental programs are multi-disciplinary not interdisciplinary. There is a big difference in that multi-disciplined programs offer courses from different departments and hope the students synthesize and integrate the information and concepts on their own. To be truly interdisciplinary, we have to provide the synthesis. One of the great things we have going on the Hudson is that the river demands it. If you are out on Haverstraw Bay the depth for 3 to 5 miles is 10 feet. Why is that important to fisherman, why was it civilized, what does the distance between the shores mean? The river is going to help us create an interdisciplinary program.

Another thing that is important for students to get out of it is the need for an understanding of the history of Hudson. I suspect no matter how we approach it, what we create, will be of use to all students. Faculty who participate will learn so much, and since they are not students anymore, it will be an experience they never would have had.

Faculty does not have to be formal faculty from a college or university. We want a diversity of faculty from other institutions or organizations that do teach, even though they are not academic institutions. For example we have folks from Clearwater here. We have a great wealth of that in the Hudson Valley.

An important common theme is sense of place. People are going out there and not just having a unique academic experience, they are going to have an opportunity to understand a place: the place in which they will be spending four years or more. The Hudson is a place with rich history, culture, politics making it unique. But, this is not just a unique river, rather it is a global center of economics, opinion, politics, etc. We need to make them aware of this as they are enjoying themselves; that they are still in that place, with that sense of history and that sense of currency.

**ROGER PANETTA:** I think the most important word in the proposal is the idea of field. It is one of the ways the Consortium can realize its promise to approach the river in a new and fresh way. This idea, and particularly the emphasis on field, is so important. This is the kind of experience that takes you outside the self. It touches on a problematic word 'experiential' and other ways of learning. Notions of emotions and feelings. It is an entry into the study of nature and the environment around us. There is a body of literature addressing this topic. Several books cover this topic and discuss strategies and philosophies. There is pedagogy here. If you saw the proposal, there are concerns about the pedagogy. We welcome your comments.

There is a methodology of teaching in the field. I taught a field course during the centennial of the Brooklyn Bridge. I walked with the students out onto the bridge. When we got to the middle of the bridge and I started explaining about the expansion joints, and the movement of the bridge, one



student fainted when saw this. She didn't know it moved. All literature suggests you have to be prepared for that.

It is important that there is literature and to become familiar with it. The question I keep thinking about is how come we haven't been here earlier? As a historian, there is within the profession a value made about the field experience, and it is a legitimate way of learning. It is important that we articulate and be clear to demonstrate that the program has achieved visible goals, and break down some inhibitions.

Yesterday we talked about sensors - I want to take the word back. As a historian, the field, to me, is about sensors. I mean the ability to see a place and draw from that place's sensors; how history has transformed that place. There is more than what you see. Below the surface are reams of history that you don't see unless you pause, stop, and look. The first thing is to get students to see things as sensors. Unpack the history - how did we cross the river before bridges were built, how were they constructed, how did relations change after construction? When I look at the bridge, measurable vibes about history are embedded. We tend to see things and pass them by. We need to get students to see, rather than to walk through and pass through. "Look up" is my mantra. I think of that because of the cities and you see its history and language when you look up.

I have 3 objectives for programs. In the 80s was the first time I did a Hudson River field course for undergraduates. In the late 80s I did one for teachers and educators. We had morning class, and then we were in the field in the afternoon. We came away with a deep bond and affection people had with the experience. You knew, without understanding and appreciating it, there was bonding and it was an important experience. I began to think 'what is this place I teach in?' All these pieces of history untouched. I saw the Croton aqueduct and realized we can walk and look at ventilator shafts, and the Croton Dam. So I started a course on the New York City water supply. The Brooklyn Bridge. River City, Manhattan is an island shaped by two rivers. I would ask the students, "How many rivers did you cross to get here?" Some would answer, "None." Invisibility to what we see. That course centered in lower Manhattan. You can look at South Street as a laboratory for history.

All these field experiences, once you broke through the first time, you see a series of other possibilities.

### **Here are my 3 goals:**

1. Unpack the history. Have students look at artifacts and the place. I want to talk about riverscape and the landscape intimately. How do I look at the place and the community I live in? The Anaconda plant, how did it shape the character and history of community? What legacy did they leave here? Ruins. How are we going to use that history as simply seeing it. I see history here. Can we find the men who worked here, their relationship, what did they do with their waste? The area is bubbling with issues. The fieldwork is to find the people and bring them back.
2. Assess the present. When I take students there, I ask them what would they do with this property? Close to Marymount is the GM plant. I ask them, what do you want to do here? Look at this location, what does it call out for? What will you put here, housing, a company, a park, etc? What will it look like?
3. Explore the future. Where is this going to go? The structures lasted almost 100 years. Nobody in 1898 sat down and said this is a 100-year decision so we should be careful.



Decisions we make about the pieces of the field students are looking at... giant locations, more sophisticated sense of importance and impact on the future.

It is very clear from the research that students are transformed from this experience. We need to capture it in a form that is important. The format we would like is by field entry journal. Those journals become important and create stories that become records.

Is it important to me? Yes. My students complain, "he never stops walking." I'm always asking, can we see more, can we capture more, and make the experience physical?

**TIMOTHY KENNA:** I won't take too much time because I want to open it up for your contributions. I was born in Poughkeepsie and spent my summers in the Adirondacks. I attended Vassar College for my undergraduate degree. In my junior year I did the SEAS semester. I went back and worked with them for 10 years. I have a lot of experience with that kind of program. After graduating from Vassar and spending 10 years with SEAS, I wanted to get a degree in science and studied at WHOI. I studied a river in Siberia that was contaminated with nuclear material. What is puzzling is that I traveled so far to study a river and the ocean extensively, and then upon my return realized that Hudson was here the whole time. I came back to see the river for what it was. Now I'm studying the Hudson and seeing it in a new light, and I try to bring that to students.

I teach an environmental measurements course with the Hudson being so close, and my interest in water in general, and find the best way to teach the river is to get them out there and let them do the work themselves. Take them out on the water and try to understand from any viewpoint. The SEA experience was an emersion program. Students are contained on a ship, clearly unifying them. Unifying the students develops a strong sense of community. Information is presented, and they instantaneously have to apply that information. We give them information, the next day or next minute, the students have to use it and make connections with what they can do with it. Programs like SEA and others work because students are contained and can be fed information they can use and see. When developing a class, I wondered how to take the emersion program and adapt it to college. They do not retain the information after they leave class and do other things. There is no connectivity or unifying theme. So what I've done is take the students out and collect samples, spend a long day in the field. We take a boat from the George Washington Bridge to the Verrazano. We pass Barnard College, and I tell the students to look up, and they see their environmental lab and chemistry building, and they say "wow!" They change; they see it in a new light. The river is flowing by them. By allowing them to collect samples, they do all the work. Then they do measurements in the lab (biological, chemical, etc.). All their work relates to a common theme. What was the estuary like on the day that you were out there? I tell them, "you are the first people to look at this data, it is yours." They have a sense of ownership. The students are excited about what they will do next. I don't worry about them forgetting since it is all connected. There are other things that we can bring to the program using a similar approach, but different subjects.

I agree with my colleagues that we have to get them out there and do things hands on. This is outside my area, but using the Hudson River School of Painters as an example, the subject can be approached by reading a book, looking at slides of the paintings, maybe go to a museum and look at the actual painting. But still, you don't have the experience of trying to paint the Hudson. Let's determine where the artist was sitting, and then go there and have students sit down and give them paint. What were the artists thinking? With the act of doing things themselves, I think the students will gain enormously.



My concern is wondering what does this program have to be in order to be legitimate. What academic rigors do we need to put the students through. Help us with that. Where is it going to go? The Hudson is so rich with different experiences. If we brought modules that we thought about and seem to work, and share with the group, we would all gain, and that is the sort of thing we are looking for.

By the end, students will hopefully see that Hudson is not a separator, but connects you to the entire landscape. Faculty will benefit, we will be trading different modules and will adapt programs. The Consortium will benefit, part of the role of the Consortium will be to create access to the river for the Consortium schools. The access is usually the stopping point, so it is important for the Consortium to help them get out on the river.

## Question & Answer:

**CHRIS BOWSER (Clearwater):** Who is your target audience for the River Summer? Is it undergraduates?

**STEPHANIE PFIRMAN:** Yes, including a liaison for middle school teachers. Once the program is put together for undergrad and middle school, we have addressed the entire population. Then you can go into other programs for families, elders, etc. Because we have an ambitious timeline, our focus right now is on undergraduate. We have not decided if it should be offered as a capstone or introductory course. I prefer the latter as a way to engage students.

**MIKE TANNENBAUM:** How do we provide academic legitimacy? I think that the first thing to be done is make a list of desired learning. Certain things are transcendental. We can't capture on paper what we want students to get out of this. The faculty designing the experience will give a starting point for discussion.

**JOHN CRONIN:** I wonder if there is another step up from that, and look at it differently. What should be the outcomes of River Summer and whose job is it?

Outcome A: Faculty  
Outcome B: Student  
Outcome C: Institution

**Oriented towards participants.** The student outcome is the key part, but there will be a lot. We could create a matrix and assign the outcomes. Students will make sure 'this' happens, faculty will make sure 'this' happens, etc.

**STEVEN WILSON:** In the past, students who wanted to learn environmental studies, worked with me. We were not called mentors. The notion was that learning is a two way street. We, as faculty, would make a contract with the student and outline responsibilities. It was an exciting time in my life. I recommend strongly that we tie in distance learning.

[...] Lastly, there has been a Hudson River Ramble just completed. 139 different events held, some of those were visiting sites of Hudson River School painters. There were 50 of us at one site. There are a lot of contacts there.



**CHRIS BOWSER:** I'd like to do a quick survey and ask the people in this room, how many of you believe field experience is something that would benefit your organization or institution. [All hands were raised in the affirmative.] Do you feel that your institution or organization has some link or connection to success out of classroom and field experience? [Approximately a dozen hands were raised in the affirmative.] It is interesting in this Valley (and room), the amount of outfield experience we have is amazing. Yesterday I was in a workshop and we were pulling out core curriculum that can be shared for environmental programs. The same might be explored for field experience. The Rivers and Estuaries Center can bridge the gap, pedagogy... collating and giving some academic credentials to field experience. We can institute a rigorous survey of field experience as a path to academic credibility.

**MICHELLE LAND:** What are the next steps that we need to accomplish.

**STEPHANIE PFIRMAN:** Faculty interest and money. We would like to get an expression of interest from members (name, institution, discipline, where to go, what to do with students) and put together sample curriculum. We are asking people to submit these by November 4 the as the proposal is due on 15th.

**JOHN CRONIN:** It is important that you understand that for the expression of faculty interest, we aren't asking you to give up 5 weeks of your summer, just a portion that you want to contribute. Some may be in the field, or just an hour lecture.

**STEPHANIE PFIRMAN:** Once we have that and the proposal is out, we will then look at how we will have students get credit, cost, etc. What we want to do is make it accessible to all students. We are planning for 32 students. We will run two programs, one offset by one week. We are looking for 32 students for the first year, one from each institution. We are hoping that 1/3 of those students can be fully funded. What I would like to do is get a feeling from you on numbers of what you feel students are willing to pay for five weeks, five credits.

**HOWARD HOROWITZ:** Realistically, with the room and boarding, \$3,000.

**MARY LEOU:** This is a turning point for the way we think of environmental education. How we go about legitimizing the program. I ran a small pilot program for teachers in New York City. I learned many lessons and faced many challenges. I am continually reminded to think out of the box. It will take planning to really come together and really integrate. The River itself will speak the curriculum. It is integrated. Allow students to take ownership over their own learning. My students knew more than I did. They went to places that I don't have time to go. Students who want additional credit demonstrated some project that goes into science, ecology, or history, etc. You want everyone to have equal footing. All start in one place, but may end up in different areas. In assessing if this should be a capstone culminating experience, maybe starting earlier is not so bad. The experience may change direction of the students and influence them to continue with environmental studies. Impact of that experience over four years will allow time to assess the effects on the students.

**JOHN CRONIN:** Your comment about it being experiential raised a question that came to me. How do we do this in such a way that it's not over-organized, that we don't become an obstacle to the experience? We have to plan a certain amount, that is part of the art, rather than the science of making this happen. We don't want to get in the way of the experience.



**MARY LEOU:** You need to step back and allow for students to do their own independent and group work. K-12 was a challenge. I allowed for times where they were doing their own group thinking and going off on their own topics. Students took their own field trips, museums, etc. They were self-directed.

**ROGER PANETTA:** I have always felt terrible about thinking of higher education assessment and judgment of things that are new are associated with things that are old. I think John's concern is you want to demonstrate legitimacy. Not to prescribe everything that happens, but to document it. That form can create legitimacy. Colleges and universities will be crediting this, and I can hear the discussions now of where the credits go. Our plea is for this: expression of interest. A similar program has been done in part somewhere in this country. When expressing interest, if you know of any program in your intellectual domain that deals with this type of program, let us know. We can learn and adapt to what we are doing.

**ALAN BERKOWITZ:** I think that one of the dangers of over-structuring is getting too sequential. You are moving down the river, and you have to be careful not to go too far with being extremely sequential.

1. Create teams of students and faculty that might reflect courses some students will have. I think you have a course on a history strand that would appeal to history students. Faculty can join the group a couple of times. Students can work on a project that gives you some cross-disciplinary aspects and would fight sequentiality.
2. Need the community aspect. Intellectual integration. No matter how hard you say interdisciplinary, thoughts may still be disciplinary. When you get to a place and have an expert speak of a particular topic, the faculty member mentoring the group the whole time can integrate that information. You would need to flesh out roles.

**STEPHANIE PFRIMAN:** Pace Law School can talk about law at the different stops.

**MIKE TANNENBAUM:** What do we think students will pay? I think surveying field stations that run 4,5, 6-week sessions, room board and credits could be a starting point to see where the market is. [i.e. New Hampshire, Cornell, and others offer five week, five credit programs.]

**KEVIN FARLEY:** A follow up to the opening comments where John explained he got the message through the River. That's how many of us got into the environment. My daughter recently went to Washington D.C. for a congressional program through her school. She came back with a different perspective. It was not what was taught, but she related to the conservative point of views around her. Have you given thought to not making it so structured? One of the most effective ways of teaching is by challenging values. I used the PCBs in the Hudson problem in class. I never told students what my views were. Is it good? Is it not good? Students would ask questions, but I never reflected my view. It was important for students to develop their own values.

**JOHN CRONIN:** That is very important. It is very easy, through comments and casual analysis, for students to pick up your point of view. We should be disciplined to walk that line and help them to access information and try not to instill or dictate values. Students see through their teacher's eyes and that can be important. When I taught, students were quick to agree with my point of view.

**STEPHANIE PFRIMAN:** To bring in history, we have to come at it from another direction.





**JOHN CRONIN:** The beauty of history is learning about the people that worked at the time, not just about the buildings and remains. There is a whole other point of view, and it is important for us to be disciplined about that.

**ROGER PANETTA:** When working on the oral history of workers in Hastings, we interviewed a day watchman. He was missing part of his digit. When asked about it, he told us about an accident where he opened a lid, didn't take his finger away in time. He said "it was my fault, and I missed a day of work." That was his view. The students spent a lot of time asking questions. Why did he do that? What does it mean? Were there lawyers around? Students start spinning.

**ALAN MOLOF:** In every place there is a community. There is a waste plant, commercial establishments, etc. These issues are not mentioned as part of the program. How can you study the river and not study the input?

**MICHELLE RODDEN:** We have run two similar intensive workshops. Grants provide stipend to participants to help offset costs they might incur. They are responsible for their own room and board. It runs 4-6 weeks in the summer; students are generally undergraduates. It is offered as one credit per week.

**STEPHANIE PFIRMAN:** Where did you get the grants?

**MICHELLE RODDEN:** Ramapo College, NSF, FIPSEE Grant. Another thing to consider is internships or cooperative education. Students pay for a 3 credit course, we provide interviews with employers. Students are paid and provided room and board. From a community college standpoint, if students are not getting anything except credit, it will be a problem. As far as community colleges supporting this initiative, the community college wants to be involved in everything, but students generally need to make money during the summer. Faculty will need some kind of stipend and/or release time to participate.

**TIM KENNA:** In one session, Steve mentioned using role-playing to discuss topics. You give groups real information that has been assembled, and see where the students end up with the decision or outcome. How might we adapt something like that to this program?

**STEVEN WILSON:** Students are given information and there will be different opinions on what should happen. Provide students materials in preparation. Figure out a way to reach across disciplines and also get participants from different backgrounds. Will this be a graded type of credit, or a pass/fail? What will the outcomes be? Would participants prepare weekly assignments, a paper at the end?

**STEPHANIE PFIRMAN:** We talked about daily journals, but the exact shape is yet to be determined. It is important for the students to recount the day and have something due each week. We want them to do some group projects. At the end we proposed a poster session at Barnard College. It would be a nice way to showcase what they learned. We originally thought to keep enrollment within the Consortium. This can serve as model for other rivers.

**ROGER PANETTA:** We need to think about not doing papers that only the professors see. Need to make products public in some way that advertises what they are doing so that it is public, not private.



Part of the discussions we were playing with the idea of students doing a collective report and making a statement about the state of the river, and make that a culminating document.

**JOHN CRONIN:** Without involving students in this part of it, but to make this semester publicly known, we can invite the general public to a website and they can watch the real time adventure over 5 weeks going down the river. If they will be doing weekly journals, they can upload the journals to a website and get the raw experience.

**JIM UTTER:** I wanted to make a pitch for the watershed area, to make sure it is included. We run programs like this, and students who are giving up jobs to participate need to make money during the summer. One way to structure it is to provide a stipend to students, college to do fund raising to cover costs. Corporations can make it easier to get money.

**HOWARD HOROWITZ:** It is important to keep in mind and recognize that a couple of weeks after the program ends to put together the project and reflect on a finished product, takes time.

**JOHN CRONIN:** I'd like to thank the panel, and especially Stephanie Pfirman who has been the major coordinator of the River Summer.



## Workshop Sessions



- (A) Building Research Connections Between Undergraduate and Graduate Programs
- (B) Compiling a Master Environmental Curriculum
- (C) Crafting and Funding Interdisciplinary Environmental Research Programs
- (D) Creating Solutions for Faculty Time Constraints While Engaging Students in Research
- (E) Enhancing Environmental Education at Small Colleges
- (F) Exploring Case Studies and Project-Based Learning for the Classroom
- (G) Incorporating Environmental Research into the Curriculum
- (H) Integrating the Humanities and the Hudson: Research Opportunities and Initiatives for Faculty
- (I) Sharing Faculty Expertise Through Guest Lectures, Innovative Lab Exercises, Field Trips, and Other Mechanisms
- (J) Starting and Sustaining Constructive and Mutual Conversations Between “The Two Cultures”



## ***(A) Building Research Connections between Undergraduate and Graduate Programs***

### Facilitators:

#### **Rachel Grob**

Associate Dean of Graduate Studies  
*Sarah Lawrence College*

#### **Jennifer Phillips**

Assistant Professor  
*Bard Center for Environmental Policy*

### **Models of Collaboration:**

- Institutional collaboration (Faculty-faculty)
  - Preferably Long-term relationships
  - Funded
- Create Opportunities for undergraduates (standardize methodologies) (Undergrad students-graduate faculty) participate in larger research projects –
  - Summer long
  - Spatial, locational advantages
- Policy students (i.e. Bard Center for Environmental Policy M.S.) to “add value” to science project (Graduate students in Policy- grad research in science).

### **Constraints:**

- Don't want to give up your best students
- Mentoring undergraduates is a valuable learning experience, but is time consuming and hard.
- Focus on educational value of collaboration may hinder publication or other tenure earning criteria.

### **Recommendations:**

- Consortium can facilitate topical meetings or at least breakout sessions by research topic at larger meetings so researchers can make connections.
- Consortium can help to support faculty in their involvement with community-based or educational focused work (which may limit tenure) at institutional level.
- Facilitate model of undergraduate institution writing proposals to use labs.
- Connections between undergrad and grad can encourage undergrad curriculum that prepares best students for feeding into graduate system in Hudson Valley.



## ***(B) Compiling a Master Environmental Curriculum***

### Facilitators:

#### **Alan H. Molof**

Associate Professor of Environmental Studies  
*Polytechnic University*

#### **Michelle Land**

Adjunct Professor of Environmental Studies  
Program Coordinator, Pace Academy for the Environment  
*Pace University*

**MICHELLE LAND:** It was not our suggestion to adopt the same line of courses across the board. Instead we were asking a question: Are there courses that the Consortium might suggest as core courses that should be offered? Every institution has its own strengths and resources. Maybe the Consortium can fill in blanks, and suggest one or two courses. Perhaps a databank for guest lecturers to fill in gaps. Our group came up with two core courses: an issues course and a survey course.

- Hudson River Issues – 1<sup>st</sup> time exposure. How can we incorporate horizontally, policy law, history, etc. and introduce undergraduates to the whole concept.
- Methods of Survey – skills necessary to investigate and analyze environmental issues.
- literature research
- sampling
- oral histories
- GIS (introductory)
- The hope is that a students' senior thesis will integrate the issues and survey courses (with many courses in between).



## ***(C) Crafting and Funding Interdisciplinary Environmental Research Programs***

### Facilitators:

#### **Mark Lindeman**

Director of Environmental Studies Program and Assistant Professor of Political Studies  
*Bard College*

#### **Michael Tannenbaum**

*Marist College*

Participants discussed interdisciplinary research at various scales, ranging from small-scale collaborations of two or three scholars to coordinated efforts to advance consortium-wide research goals.

- Use existing programs to structure research (USGS, DEC).
- Need infrastructure and consistency for data collection.
- Use existing data (USGS, DEC).
- How to use the Consortium to facilitate interdisciplinary research?
  - Emphasize ongoing major research agendas in Consortium communications on web site.
  - Can Consortium help provide data infrastructure? (much existing data waiting to be shared).
  - Prod Consortium members to provide information on researchers' skills and interests.
  - Make this contact/interest information readily searchable on the web site.
  - Consider greater use of listserv(s) to discuss research ideas.
- Meetings on focused topics (networking and working meetings).
- Environmental agenda identified by:
  - Researchers
  - Communities
  - HREP Plan
  - DEC website

### **Funding:**

- NSF
- IES
- DEC – HREP
- NITLE
- HR Foundation
- Sea Grant
- Polar Fellowships

In order for an interdisciplinary course to work, those individuals have to think outside the box, they need to cross boundaries and try things. It may not be comfortable, and they should expect the unexpected. Mary Leou (New York University) suggested looking for funding in non-traditional areas. For example; corporate funding and other interdisciplinary areas.



***(D) Creating Solutions for Faculty Time Constraints While Engaging Students in Research***

Facilitators:

**John P. Harrington**

Dean, School of Science and Engineering  
*State University of New York at New Paltz*

**Lynn E. Maelia**

Professor of Chemistry  
*Mount Saint Mary College*

**JOHN HARRINGTON:** Many faculty don't have time. A recommendation may be for institutions to allow undergraduates to interact with faculty or other institutions that have large labs.

**LYNN MAELIA:** Constraints were: time, funds, and professional and institution recognition.

- Get students early in their college career is key.
- Choose projects carefully so timeframe is reasonable.
- Use the summer to train students so they are ready in the fall.
- Have a training course to teach skills and tools they will need.
- Scholarship is defined in many ways. Make a case for all you do, including grant writing, classroom innovation, mentoring, and involvement in your discipline outside of the classroom.



## *(E) Enhancing Environmental Education at Small Colleges*

### Facilitators:

**Margaret Bussigel**

Professor of Sociology  
*Mount Saint Mary College*

**Madeline Mignone**

Assistant Professor of Biology  
*Dominican College*

**MARGARET BUSSIGEL:** Colleges, like ours, without environmental programs, have to make decisions about how to introduce the environment into their curriculum. One possibility is to create a major. But we should consider alternative possibilities as well.

### Curriculum Suggestions:

- Offer environmental science course to raise awareness
- Insert environmental issues into already existing classes
- Introduce a course into a core (interdisciplinary)

### Consortium Contribution:

- Consortium could develop a web page with information about on-line resources and links to data, lists of collections of local agencies, grants, etc.
- Use the Consortium to provide access to local projects as well as research/summer opportunities.
- Develop a coalition of colleges to “share” students, faculty and expertise so that students can extend outside of limitations of each small college.
- Share course information/syllabi
- Develop a training program for faculty development.
- “3+2” programs set up.
- KEVIN FARLEY: Look at the possibility of joint programming. A large college can work with a small college, for example at St. John's students spend three years at one school taking humanities, etc., and then the last years are spent at Manhattan to finish the engineering program.





## ***(F) Exploring Case Studies and Project-Based Learning for the Classroom***

### Facilitators:

**Kevin J. Farley**  
*Manhattan College*

**Richard Carbonaro**  
*Manhattan College*

**KEVIN FARLEY:** This was a large session and most of the time was spent sharing information. Base on my interpretation, the following are recommendations that came out of our sessions for case studies and project-based learning:

- Case Studies (1) - The Consortium web site to list case studies people are using and list sources for appropriate reference material.
- Case Studies (2) - John Ansley (Marist College) discussed available resources through the Marist archives. The Consortium should help disseminate information about the Marist Archives and other resources that are available at Hudson River Valley colleges and universities.
- Project-Based Learning (1) - Steve Stanne (NYS DEC) suggested that role-playing in the classroom can be used as an effective way of presenting opposing sides of an environmental issue.
- Project-based Learning (2) – When possible, laboratory courses should be structured around a Hudson River theme. This is currently being done at Barnard, Marist, and Orange Community College.
- Project-Based Learning (3) – Several participants expressed concerns that their time was often the limiting factor in incorporating project-based learning into courses. One recommendation is to create partnerships where project-based learning could be part of community outreach or technology translation with non-government organizations (NGOs) and government contacts. Richard Carbonaro (Manhattan College) gave the example of working with the Saw Mill River Coalition, and incorporating the project into a freshmen engineering class. Other examples included students working on a drought emergency plan for the NYC water supply system (Manhattan College) and students evaluating dredging options for the Hudson River (RPI) in their engineering project design courses.



## ***(G) Incorporating Environmental Research into the Curriculum***

### Facilitators:

**Stuart A. Bell**  
*Vassar College*

**Michelle A. Rodden**  
*SUNY at Ulster County Community College*

**MICHELLE RODDEN:** This was a lively discussion group. It was divided on a lot of issues. First, should research be discovery or inquiry based? Opinions were down the middle. Should it be small groups, one on one, or large group to one faculty? Again, opinions were divided. Seems that whatever faculty is more comfortable with, that is what works for them and is what they opinionated to everyone at the discussion. Ideas that came out related to research were as follows:

- Website Resources - there are certain research web sites that are key and contain a lot of information. For example USGS and NYS DEC. It is recommended that the Consortium add a link to site for research.
- Research into non-science major courses. Courses related to science for non-majors, began to discuss humanities and other courses, how to cross boundaries.

Research is important. Finding students who want to be a scientist, and working with those students. Non-science majors have to do research. We want them to leave scientists. Where is the trust in science? One of things we felt as a group, is we are not providing that information to those who are not scientist. We are failing them. Need to reach out to non-science people. Research is discovery, and you can fail. We give students experiments, we know what the results are going to be, they are nice exercises in a box and we know what the outcomes are supposed to be. We want them to experiment and know it's okay to fail. You can learn from failure. A high priority for the Consortium should be a component to reach out to non-science people. Humanities, English, etc.

## ***(H) Integrating the Humanities and the Hudson: Research Opportunities and Initiatives for Faculty***

(Information not available)



## ***(I) Sharing Faculty Expertise Through Guest Lectures, Innovative Lab Exercises, Field Trips, and Other Mechanisms***

- Guest Speakers – The Consortium can solicit and compile and keep current a list of guest speakers and who would be willing to travel.
- Field Sites – The idea of posting a list of favorite field sites or experiences on the Consortium web site. Places people have gone to, or what they have done. One person mentioned wells at IES, and used as experience to take students to see how to pump ground water, how it affects other wells, etc. These various field sites and facilities can be made available and compiled on the web site for member reference. Experts in particular areas to meet classes at field sites to augment the experience.
- Workshops – The Consortium could develop and sponsor, organize and administer, name courses dealing with areas outside of our expertise. If we want to get students on the River, such a workshop could increase level of comfort in doing things. Perhaps someone willing to do soil analysis, or a half-day workshop on environmental economics, politics, or history. This series of workshop would increase level of comfort as instructor and help bring in the interdisciplinary concept. Consortium can solicit people to sponsor these and then act as a clearinghouse in organizing workshops.

## ***(J) Starting and Sustaining Constructive and Mutual Conversations between “The Two Cultures”***

(Information not available)



## Conference Posters

The purpose of the poster session was to describe the current status of environmental programs at colleges and universities in the Hudson Valley, and provided opportunities for collaborations between and among institutions.

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### **Bard Center for Environmental Policy: An Overview of the Master of Science Program and its Dual Degree Options**

Presenter: Jennifer Phillips

Institution: Bard Center for Environmental Policy

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### **A Proposal for a "River Summer"**

Presenters: Stephanie Pfirman, Barnard College  
John Cronin, Pace, Rivers & Estuaries Center

Synopsis: We propose development of a summer field course along the Hudson River, drawing together the faculty and students in the recently established Environmental Consortium of Hudson Valley Colleges and Universities. Starting in the Adirondacks and culminating 5 weeks later in Manhattan, the River Summer will focus on an integrated, interdisciplinary analysis of the development of the Hudson watershed. Each week relocating another step downriver, teams of faculty from diverse institutions -- research universities to liberal arts and community colleges -- will lead week-long intensive field experiences.

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### **Environmental Challenges in Urban Settings: Ecological Perspectives in Community Health**

Presenter: Anahi Viladrich

Institution: CUNY - Hunter College

Synopsis: This poster will present some of the challenges faced by research designs and community health programs, targeting the complex liaisons between the physical and the social environment and their impact on the health of minority urban dwellers in NYC. By relying on specific case examples (e.g., asthma and social isolation), the poster will examine an ecological perspective aimed at integrating risk factors and determinants of health derived from diverse risks factors than integrate social conditions with changing urban geographies.

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### **Developing High-resolution Climate Records for the New York Area and Sediment Transport Model for the Hudson River for the Past 7,000 Years**

Presenter: Stephen Pekar

Institution: CUNY - Queens College

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## **Ecology in Context: Research and Training Opportunities at the Institute of Ecosystem Studies**

Presenter: Alan R. Berkowitz

Institution: Institute of Ecosystem Studies

Synopsis: IES has offered 10-12 undergraduate students intensive, mentored research experiences for the past 17 years. Students pursue individual projects of their own design, while also participating in seminars, case studies, workshops and activities to expand their research skills and their appreciation for the social, political, economic, intellectual and personal contexts of science. Program features, sample student projects and student outcomes will be highlighted.

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## **Population ecology of butterfly weed (*Asclepias tuberosa*) in Westchester County**

Presenter: Yourha Kang

Institution: Iona College

Synopsis: Butterfly weed is a milkweed plant known for its bright orange colored flowers, its ability to attract butterflies as a food source, and its production of secondary metabolites that have been used as traditional medicines. Unfortunately, native stands of the plants are disappearing in New York State such that the plant is now protected under New York State law. In light of the rapid disappearance of wild butterfly weed in New York State, a research project involving undergraduate students was started at Iona College in conjunction with Alison Beahl of the Westchester County Parks Department to gain a better understanding of the butterfly weeds growth, reproductive habits, distribution, and genetic diversity. The research is composed of a field component, where a survey of the plant s distribution has been conducted at Marshlands Conservancy in Rye, NY; it also has a laboratory component, where genetic analysis has been performed on leaf samples of butterfly weed from Marshlands Conservancy and from other areas of Westchester County. The results from the project (which is on-going) are presented here.

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## **Textbooks Addressing Science, Technology and Society**

Presenter: Jerome S. Levkov

Institution: Iona College

Synopsis: Exhibit of textbooks we use at Iona College in the courses we offer on Science, Technology and Society (STL). The books are:

- "Integrated Science: The Energy Code" by L. S. Campisi, W. Rosenberg, and V. A. Stanionis
- "As the Earth Turns: Perspectives on Environmental Issues in the 21st Century" by J. S. Levkov
- "Exercise Science" by W. Rosenberg

The above are published by the Kendall/Hunt Publishing Company.

▪ "Laboratory Manual for the Sciences: An Integrated Approach" by V. Stanionis and the science faculty of Iona College. Published by John Wiley & sons.

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### **Environmental Engineering at Manhattan College**

Presenter: Kevin J. Farley  
Institution: Manhattan College

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### **Microbes & Environment: Senior Research Projects in Manhattanville College**

Presenter: Anna Yeung-Cheung  
Institution: Manhattanville College

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### **Environmental Science and Policy Curricula at Marist College**

Presenters: Richard Feldman and Zofia Gagnon  
Institution: Marist College

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### **How Healthy is the Hudson River?**

Presenter: Neil Fitzgerald  
Institution: Marist College

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### **Merck-Sponsored Interdisciplinary Environmental Research at Marist College**

Presenter: Michael Tannenbaum  
Institution: Marist College

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### **Using the Hudson River as a Theme to Model the Integration of Math, Science and Technology in Theme-based Courses for Pre-Service Elementary Education Teachers**

Presenters: Gregory Brust and Lynn Maelia  
Institution: Mount Saint Mary College

Synopsis: Mount Saint Mary College offers a series of courses for elementary education pre-service students that integrate science, mathematics and technology. These courses stress mathematical concepts, the process of science and the interdisciplinary nature of mathematical and scientific knowledge. Two of the three courses in the sequence are theme-based, incorporating many fields of mathematics and science into courses with themes such as The Hudson River and Energy.

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### **A Course about the Hudson River**

Presenter: Sr. Mary Ann Garisto  
Institution: College of Mount St. Vincent

Synopsis: An integrated course for Juniors which focuses on environmental ethics through the study of the Hudson River. The ecology and history of the river will be explored in the light of the effects and implications of human activity. Students will research solutions for the future of the river and develop an awareness of the problems involved in reconciling economic and social demands with ecological balance.

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### **Environmental Studies at The College of New Rochelle**

Presenter: Faith Kostel-Hughes

Institution: The College of New Rochelle

Synopsis: The Environmental Studies Program at The College of New Rochelle is designed to be multidisciplinary, including courses in the sciences, humanities, and social sciences, to reflect the many dimensions involved in environmental issues. Students in this program can choose between a BS track or a BA track, depending on their career goals. There is a strong emphasis on experiential learning in this program. Students take many field trips and are expected to participate in internships during their time at CNR. Students may apply for a research scholarship to work with a faculty member on an environmentally-related project. This year's scholarship recipient, Shonda Gaylord, is working with Megan Skrip, honors student, and Dr. Kostel-Hughes on non-native earthworms in local forests.

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### **An Overview of Environmental Programs at Pace University**

Presenter: Donna Kowal

Institution: Pace University

Synopsis: Summary of environmental programs offered at Pace University, highlighting courses and projects of interest.

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### **Environmental Programs at Ramapo College**

Presenter: Howard Horowitz

Institution: Ramapo College

Synopsis: Ramapo College has two environmental majors – Environmental Studies and Environmental Science. The former is more oriented towards public policy, the latter is more oriented toward lab science. Outstanding environmental field programs in various regions will be described, and efforts to formally incorporate sustainability into the college educational mission will be discussed.

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### **Teacher Training Institute: Plans for 'Building One' of the Rivers and Estuaries Center of the Hudson**

Presenter: Patti Dunne

Institution: Rivers and Estuaries Center on the Hudson

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### **Environmental Geochemical Major at SUNY-New Paltz**

Presenters: Shafiul Chowdhury and Alvin Konigsberg

Institution: SUNY at New Paltz

Synopsis: Description of this new major and overview of career opportunities in the geosciences.

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### **Ecological Anthropology: Where the Humanities and Sciences Meet**

Presenter: Lourdes Giordani

Institution: SUNY-New Paltz

Synopsis: The poster will outline the overall content of Ecological Anthropology, an undergraduate course at SUNY-New Paltz. The course emphasizes how humans and the cultures that they create both fashion and are fashioned by their environment. It explores subsistence strategies among food collectors and food producers, indigenous systems of knowledge, human-induced environmental changes, management of common-property resources, conservation of biodiversity, and resource sustainability from a cross-cultural standpoint. In addition, the course also focuses on various theoretical perspectives employed in the study of human-environment interactions. As it blends knowledge from the humanities and sciences (natural and social), the course is of interest to anyone concerned with the future of our natural environment, the comparative study of cultures, economics, public policy, the natural sciences, sociology, anthropology, and history. The poster will highlight topics covered, exercises for students, and a variety of resources (e.g., videos, websites, and journals) that can be employed to strengthen a course like this one.

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### **Rockland Community College - Environmental Education**

Presenters: Susan Golz and Frank Votava

Institution: SUNY - Rockland Community College

Synopsis: Description of three courses; Science Lecture Series Speakers; Student Research Topics; Community Projects

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### **Ulster Community College Environmental Program Since 1975**

Presenter: Michelle A. Rodden

Institution: SUNY Ulster County Community College

Synopsis: In September of 1975, Ulster County Community College accepted the first student into its 2-year degree environmental program titled Water Quality Monitoring, and funded by the USEPA. The need for environmental Technicians arose from the Federal Water Pollution Act of 1972, as well as other legislation. Since then, the environmental degree program has evolved and adapted at UCCC and its path will be presented. Future plans will also be highlighted.

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### **Earth Science and Society: A New Environmental Major Blending Geology and Geography**

Presenters: Jill Schneiderman and Mary Ann Cunningham

Institution: Vassar College

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### **The Environmental Science Institute at Vassar College**

Presenters: Stuart Belli

Institution: Vassar College

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**Vassar College Environmental Studies Student Projects**

Presenters: Stuart Belli

Institution: Vassar College

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**A Course Designed Around Environmental Issues: The New Zoo**

Presenters: Anne Pike-Tay and Jeffrey Cunx

Institution: Vassar College

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**Crossing the Lawn with C.P. Snow: A "Course-Intersection" Approach to Teaching the Relationship of Science and Public Policy**

Presenters: Pinar Batur

Christopher Smart

Stuart Belli

Christopher Roellke

Susan Kuyper

Institution: Vassar College

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**Assessing the Synthetic Organic Chemicals in Sports Bras and Textile Policy Recommendations**

Presenters: Ryder Pearce

Catherine Waddell

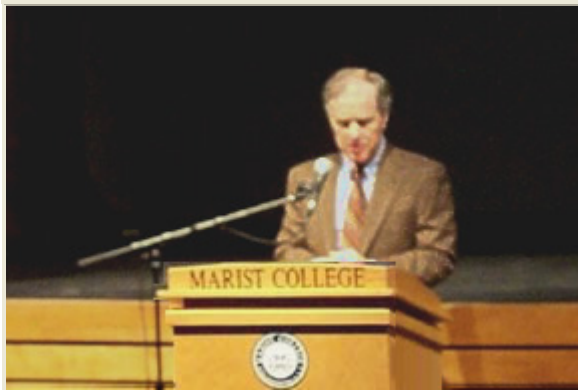
Pinar Batur

Stuart Belli

Institution: Vassar College



## Conference Photographs



Dr. Dennis J. Murray  
President  
Marist College



Dr. Michael G. Tannenbaum  
Dean, School of Science  
Marist College



Panel - Enhancing and Expanding  
Undergraduate Environmental Research  
Opportunities

(left to right) Dr. Michael G. Tannenbaum  
(*Marist College*), Ms. Frances F. Dunwell  
(*NYS Department of Environmental  
Conservation*), Dr. Nicholas L. Clesceri  
(*Rensselaer Polytechnic Institute*),  
Dr. John P. Harrington (*SUNY at New Paltz*)



Dr. William J. Focht  
Director, Environmental Institute  
*Oklahoma State University*  
Executive Committee  
*Council of Environmental Deans & Directors*





Education Coordinator for Hudson River National Estuary Research Reserve (NYS DEC)

Jean Valla McAvoy, singer and songwriter, graced attendees on Saturday morning with a beautiful song about the Hudson.



Dr. Judith E. McDowell, Senior Scientist Associate Dean Academic Programs Woods Hole Oceanographic Institution



Breakout Session: Building Research Connections Between Undergraduate and Graduate Programs

(clockwise from front) Jennifer Phillips, Alan Molof, Thomas Lynch, John Harrington, Stephen Pekar, Zofia Gagnon



In a room overlooking the Hudson River, 28 posters were presented by institutions in the Valley





Dinner Cruise Aboard the Rip Van Winkle



Hosted by The Rivers & Estuaries Center and Pace Academy for the Environment



Zywia Wojnar, Margaret Bussigel, Shafiu Chowdhury, John Harrington, Neil Fitzgerald



John Cronin, Lenore and Nicholas Clesceri, Stephanie Pfirman



George and Mary Leou, Jean Valla McAvoy, Stuart Belli, Lucy Johnson



Sr. Mary Ann Garisto, Madeline and Nino Mignone



## Appendix A: Biographies

### Dr. Henry W. Art

Henry W. Art is the Director of the Center for Environmental Studies and the Samuel Fessenden Clarke Professor of Biology at Williams College, Williamstown, MA. At Williams he has taught interdisciplinary courses in environmental studies (planning, agriculture, natural resources, etc) and environmental science, as well as biology courses in ecology and field botany since 1970. His research interests range from the study of the role of past human activities in shaping contemporary landscape dynamics to ecosystem patterns and processes of maritime forests. He is the past Director of Williams College's Hopkins Memorial Forest and has written books on woodland ecology and native plants for the general public in addition to his professional writing.

### Dr. Nicholas L. Clesceri

Dr. Nicholas Clesceri has been an environmental engineering professor and researcher at the Rensselaer Polytechnic Institute for more than 35 years. As Program Director of environmental engineering at RPI, Dr. Clesceri has assisted a number of sister institutions in initiation of undergraduate degree programs in environmental engineering. He recently returned to RPI after serving as the NSF Program Director of environmental engineering, Division of Bioengineering and Environmental Systems.

Dr. Clesceri served on the Environmental Advisory Board (EAB) of the U.S. Army Corps of Engineers, where he and other EAB members advised the Chief of the Corps on environmental matters relating to Civil Works Projects. On one such activity, in which the EAB visited the U.S. Military Academy (USMA) at West Point, discussions were held with USMA faculty on the advisability of formal education in Environmental Engineering. The ABET undergraduate degree in environmental engineering that was established at USMA seemed particularly appropriate because of the role future Corps officers would play in environmental decision-making in their careers.

In 1999, Clesceri was appointed by New York Governor George Pataki to serve as member and chairman of the Technical Advisory Committee (TAC) of the (New York City) Watershed Protection and Partnership Council. In this capacity, he works closely with technical staff from New York State's Department of State.

Dr. Clesceri earned his B.S. in Civil Engineering from Marquette University and his M.S. and Ph.D. in Civil/Sanitary Engineering from the University of Wisconsin/Madison. He was PHS/WQO Postdoctoral Research Fellow at the EAWAG/ETH in Zurich, Switzerland. He has served on the boards of several organizations, including the Association of Environmental Engineering (now AEESP). He is a registered Professional Engineer in the State of Wisconsin, and is a Fellow of the American Society of Civil Engineers.



## Mr. John Cronin

For more than 30 years, John Cronin has dedicated himself to protection of the American environment.

A Time Magazine “Hero for the Planet,” he has also been praised as: “a unique presence on America’s major waterways” by the Wall Street Journal; “equal parts detective, scientist and public advocate” by People Magazine; and a “hero in one of the great success stories of the modern environmental movement,” by the Knight Ridder Newspapers.

Much of John Cronin’s career has been dedicated to the restoration of New York’s Hudson River. He served as the nation’s first full-time riverkeeper on the Hudson where he was responsible for bringing to justice more than one hundred polluters and establishing far-reaching management and enforcement practices for one of the nation’s premier estuaries.

As managing director of the Rivers and Estuaries Center on the Hudson he is directing the planning for a global research and education institute created by New York Governor George E. Pataki. As director of the Pace Academy for the Environment at Pace University, John has turned his attention to making higher education a major presence in environmental policy and decision-making.

A writer and award-winning documentary filmmaker, Cronin co-authored The Riverkeepers, with Robert F. Kennedy, Jr., published by Scribner. He has been a frequent contributor on environmental policy to the Op Ed page of The New York Times. He wrote and co-produced “The Last Rivermen” which was named one of the outstanding documentary films of 1991 by the Motion Picture Academy Foundation.

He has been the subject of two books and numerous print and broadcast documentaries and profiles. His regional and national environmental work have brought him many honors including the American Fisheries Society William E. Ricker Award, the Thomas Berry Environmental Award, and an Honorary Juris Doctor from Pace University School of Law.

## Ms. Frances F. Dunwell

Fran Dunwell is Hudson River Estuary Coordinator at the NYS Department of Environmental Conservation (DEC), where she directs implementation of the Estuary Action Plan released by Governor Pataki in 1996 and recently updated. The Estuary Program’s goal is to restore the Hudson’s extraordinary natural heritage through programs founded in science and implemented in ways that support the quality of life of the Valley’s citizens. It has been supported to date by \$195 million from a variety of funding sources (for more information on the program go to <http://www.dec.ny.gov>). Dunwell also represents DEC Commissioner Crotty on the Hudson River Valley Greenway and National Heritage Area Board of Directors and on the Hudson-Fulton-Champlain Quadricentennial Commission. Dunwell has worked for 30 years as a river conservationist, and has written the award-winning book, The Hudson River Highlands. She has a Master’s degree from the Yale School of Forestry and Environmental Management and a BA in anthropology from Kirkland College, now Hamilton.



## Dr. Kevin J. Farley

Kevin Farley is a Professor of Civil and Environmental Engineering at Manhattan College. He received his B.E. in Civil Engineering and his M.E. in Environmental Engineering from Manhattan College, and his Ph.D. in Civil-Environmental Engineering from MIT. His research focuses on the fate and bioaccumulation of toxic chemicals in surface waters and sediment. Current projects include studies on the speciation and cycling of arsenic in lakes and reservoirs (NIEHS/EPA Superfund Basic Research Program), the development of a “unit world” model for metals in aquatic environments (EPA Center for Metals in the Environment), and contaminant fate and bioaccumulation modeling of PCBs, dioxins, and mercury in New York Harbor sediment and biota (Hudson River Foundation). Dr. Farley has served on the National Research Council Committee on Remediation of PCB-Contaminated Sediments, on EPA scientific review panels for the Chesapeake Bay Eutrophication Model, the Lake Michigan Mass Balance Modeling Study, and the Hudson River PCB Superfund Reassessment Study, and on expert panels for the American Geological Institute and the Delaware River Basin Commission. Dr. Farley also serves as a consultant for HydroQual, Inc., is a co-director of the Manhattan College Institute of Water Pollution Control, and is a recipient of the American Society of Civil Engineers Wesley W. Horner Award and several School of Engineering “Outstanding Teacher” awards.

## Dr. William J. Focht

Dr. Will Focht holds four positions at Oklahoma State University in Stillwater, Oklahoma:

- Director of the Environmental Institute,
- Director of the Oklahoma Water Resources Research Institute,
- Director of the Environmental Science Graduate Program, and
- Associate Professor of Political Science.

Before transferring to the Political Science Department, he was Assistant Professor of Geology. He holds a Ph.D. in Environmental Science, an M.A. in Political Science, a B.E. in Civil Engineering, a B.S. in Zoology, and completed coursework toward an M.S. in Microbiology.

Dr. Focht teaches graduate courses in environmental policy, environmental risk analysis, public policy analysis, environmental management, and community relations. His research interests lie in watershed management, environmental site assessment, stakeholder participation in environmental decision-making, public policy legitimation, social trust, and environmental justice. He has participated as principal or co-principal investigator in research project funded by the US Environmental Protection Agency, National Science Foundation, US Department of Energy, US Department of Agriculture, US Geological Survey, US Air Force, National Institute for Environmental Health Sciences, National Council for Science and the Environment, and the Integrated Petroleum Environmental Consortium.



Before coming to OSU in 1994, Dr. Focht served nine years as a senior environmental engineer with the US Environmental Protection Agency in Atlanta, Dallas, and Washington, DC. His 20-year career in the environmental profession also includes stints with environmental consulting firms in Ohio, North Carolina, Tennessee, and Florida.

Dr. Focht is a member of the Executive Committee of the Council of Environmental Deans and Directors (CEDD) and co-chair of its Curriculum Committee. He directs CEDD's study of environmental curricula at higher education institutions.

#### Dr. John P. Harrington

John P. Harrington is the Dean of Science and Engineering at SUNY New Paltz. Prior to moving to SUNY New Paltz, he was chair of the Chemistry Departments at the University of Alaska and University of South Alabama. In addition, he has been a summer principal investigator at the Marine Biological Laboratory in Woods Hole for many years. His research interests have involved biophysical studies of oxygen transport proteins utilized by marine and terrestrial organisms, as well as investigations of red cell sickling associated with mutational human hemoglobins. Present research interest involves the use of invertebrate acellular hemoglobins as models for the design of an artificial oxygen delivery system.

#### Dr. Judith E. McDowell

Judith McDowell is a Senior Scientist in the Biology Department at the Woods Hole Oceanographic Institution. Her research interests focus on the physiological ecology of marine animals and the effects of chemical contaminants on the marine environment. She received her B.S. degree in Biology from Stonehill College (cum laude) in 1969, and her M.S. and Ph.D. in Zoology from the University of New Hampshire in 1971 and 1974, respectively. Dr. McDowell holds the positions of Director of the Woods Hole Sea Grant Program and Associate Dean at WHOI. She has participated in numerous national and international committees and workshops dealing with marine pollution, including the National Research Council, Committee on Oil in the Sea: Input, Fates, and Effects, and the International Council for Exploration of the Seas, Advisory Committee on the Marine Environment.





## Dr. Dennis J. Murray

During his 25 years as President, Dr. Dennis J. Murray has transformed Marist from a small local college into a nationally recognized leader in higher education. The College's rising reputation for teaching, research, and service has attracted significant external recognition and support. Marist is now ranked among the best 357 colleges in the country by The Princeton Review, which also named the College's School of Management one of the best 143 business schools worldwide. Marist has been named one of the country's "100 Most Wired Colleges" by *Yahoo Internet Life* and one of the nation's leading colleges to encourage character development by the John Templeton Foundation.

Dr. Murray has forged numerous community and corporate partnerships that have greatly benefited Marist students. Early in his tenure at the College, he recognized the important role that information technology would play in enhancing the teaching and learning process. Thanks to a longtime partnership with the IBM Corporation, Marist has become one of the nation's most technologically advanced liberal arts colleges. Today, this sophisticated computing environment is helping Marist students gain the knowledge and skills they will need to be competitive in the 21<sup>st</sup> century.

Dr. Murray has had a long commitment to protecting and preserving the history and environment of the Hudson River Valley. He is a member of the Franklin and Eleanor Roosevelt Institute, the Greenway Conservancy for the Hudson River Valley, and the City of Poughkeepsie Waterfront Advisory Committee. He established the Hudson River Valley Institute at Marist College, which serves as the academic arm of the Hudson River Valley National Heritage Area. He was also a member of the leadership team that brought the Rivers and Estuaries Center to Dutchess County.

Dr. Murray's significant contributions to the fields of education and community service have been recognized with numerous awards, including the Franciscan Award from the Sisters of St. Francis, the Americanism Award from the Anti-Defamation League, the Eleanor Roosevelt Val-Kill Medal, and the Community Service Award from the Community Foundation of Dutchess County.

A native Californian, Dr. Murray received a bachelor's degree in political science from California State University, Long Beach and his master's in public administration and Ph.D. in public administration from the University of Southern California.

## Dr. Stephanie Pfirman

Professor Stephanie Pfirman, a specialist in the study of environmental changes in the Arctic, is chair of the Department of Environmental Science at Barnard College, which she joined in 1993. Her publications have focused on the trajectory and origin of Arctic sea ice, analysis of contaminant transport in the Arctic environment, and the use of digital data in Earth science instruction.

Professor Pfirman was the first chair of the National Science Foundation's Advisory Committee for Environmental Research and Education (AC ERE). Under her leadership, in January 2003 the AC ERE produced "Complex Environmental Systems: Synthesis for Earth, Life and Society in the 21st Century," a ten year outlook in environmental research and education for the National Science Foundation. Before this, she chaired NSF's Office Advisory Committee to the Office of Polar Programs. From 1993 to 1997 she participated in US delegations to meetings of the international Arctic Monitoring and Assessment Programme, and was nominated to serve as a Key National Expert



representing the US in preparation of the State of the Arctic Environment Assessment. In 1994 and 1995 she was a member of the Advisory Panel to the US Congress Office of Technology Assessment's Russian Nuclear Contaminant Assessment Project.

As Environmental Science department chair at Barnard, Pfirman has developed new courses in Polar Exploration, Climate, Energy Resources, Oceanography, and Data Analysis, revised the curriculum and established new majors, expanded the faculty, established links with related departments at Columbia University, acquired new instrumentation, and obtained grants to move the department into renovated facilities. Within the Columbia University community, she co-developed the 1996 opening of the Human Habitat at Columbia University's Biosphere 2 Center, in Oracle, Arizona, and chairs the Columbia University's Earth Institute environmental education committee.

Prior to joining Barnard, Dr. Pfirman worked at the Environmental Defense Fund from 1990 to 1993 as senior scientist and co-developer of the award-winning traveling exhibition "Global Warming: Understanding the Forecast" developed jointly with the American Museum of Natural History, and now housed inside Biosphere 2. From 1986 to 1989 she was research scientist and coordinator of Arctic programs for the University of Kiel and GEOMAR, Research Center for Marine Geoscience, Germany. Dr. Pfirman was a staff scientist for the US House of Representatives, Committee on Science, Subcommittee on Environment from 1984 to 1986. From 1978 to 1980 she was an oceanographer with the US Geological Survey in Woods Hole, Massachusetts.

Dr. Pfirman received her Ph.D. in 1985 from the Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution Joint Program in Oceanography and Oceanographic Engineering, Department of Marine Geology and Geophysics, and a BA in 1978 from Colgate University's Geology Department.

#### Dr. Jill S. Schneiderman

Jill Schneiderman's interests include geology and environmental issues, feminism, and history of science. In 2003, Jill was a Fulbright fellow at the Centre for Gender and Development Studies, University of the West Indies in Trinidad and Tobago where she pursued research on women and water resources on the island. Along with departmental colleagues Yu Zhou and Meg Stewart, Jill is a co-PI on Vassar's first grant from the U.S. Environmental Protection Agency. Under the auspices of the grant, Jill and her colleagues in the geology and geography department at Vassar are assembling a GIS-based environmental inventory of the mid-Hudson valley. That group, along with Vassar geographer Mary Ann Cunningham, has also received a Technology for Teaching grant from Hewlett-Packard to pioneer the use of tablet PCs in the field for mapping environmental changes. Jill's geological research focuses on recent sediments in the Yangtze delta. She is also collaborating with colleague Kirsten Menking and others from the Paleontological Research Institute on a study of a sediment core from the Hyde Park mastodon site.

With regard to curriculum, funded by an NSF grant, she developed and taught a first-in-the-nation interdisciplinary course on Geology and Environmental Justice. In the course students examined the geology behind environmental problems across the globe and investigated the race, class and gender issues that inform them. She also teaches Earth History, Sedimentology, and Feminism and Environmentalism at Vassar.



She has been a Smithsonian Postdoctoral Fellow working on Nile delta sediments and a Congressional Science Fellow in the Senate Minority Leader's office during the 104th Congress working on science, technology and environmental issues. She is editor of *The Earth Around Us: Maintaining a Livable Planet* (Westview Press, 2003), a collection of essays on the geology behind environmental issues. The book was named one of the most important and thought-provoking science books of the year 2000 by Discover magazine.

## Dr. Michael G. Tannenbaum

Mike Tannenbaum, a biologist, joined the Marist community as Dean of the School of Science in August, 1998. A native of New York City, Dr. Tannenbaum received his undergraduate degree from Cornell University and his Ph.D. in Zoology from Clemson University. He has held academic positions as R.C. Edwards Research Fellow at Clemson, Assistant Professor of Biological Sciences at Marshall University, postdoctoral fellow at The University of Texas Health Science Center at San Antonio, Visiting Scientist at Colorado State University, and, from 1988-1998, Associate Professor of Biology at Truman State University (formerly Northeast Missouri State University) in Kirksville, Missouri. He was also Convener (Chair) of the biology discipline at Truman from 1993 to 1996.

Dr. Tannenbaum is dedicated to the student-centered approach to learning, and has a strong background in the outcomes assessment process. He was nominated twice for Educator of the Year at his former institution, where he received the William O' Donnell Lee Advising Award in 1995-96. A strong advocate of undergraduate research, Dr. Tannenbaum is a long time member and current President-Elect of the Council on Undergraduate Research. He also has authored successful grant proposals to the National Science Foundation and the Merck/AAAS Undergraduate Science Research Program. His publication credits include a number of papers and presentations with undergraduate co-authors, whom he also has involved in on- and off-campus presentations at symposia and other venues. His research efforts, and those of his students, have been in the area of physiological and nutritive ecology, and focused on adjustments in behavior and function made by small wild rodents in response to stress-provoking environments. Dr. Tannenbaum contributes to his profession in a variety of leadership roles in national organizations (such as the American Society of Mammalogists and Sigma Xi), and he has been an invited speaker at several institutions and professional meetings across the country. He also maintains a strong interest in pre-medical advising, as well as academic program review and assessment.

Dr. Tannenbaum's primary teaching interests are in introductory biology and animal physiology, with a strong commitment to using technology, investigative learning strategies and history of biology in his classes. His hobbies include cooking, photography, and reading detective novels and about American history. He also enjoys traveling and spending time near the ocean. He and his wife Karen have two children.



Presentations referenced in this archive are currently unavailable. If there is a particular presentation/s you would like to view, please send an email to [info@environmentalconsortium.org](mailto:info@environmentalconsortium.org) with "Archive Presentation Request" in the subject.



**Environmental Consortium**  
of Hudson Valley Colleges & Universities

[www.environmentalconsortium.org](http://www.environmentalconsortium.org)

