



### July 18 - 19, 2008 Nittany Lion Inn State College, Pennsylvania



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Co-Sponsored By:







#### AGENDA

#### Friday, July 18, 2008

7:30 - 9:00 A.M.	Registration (Outside Assembly Room) Continental Breakfast & Exhibit Setup (Faculty Staff Club)
9:00 - 9:25	Welcome & Announcements (Assembly Room) Amy Wolfe, Trout Unlimited Scott Roberts, PA DEP Paul Swartz, Susquehanna River Basin Commission
9:25 - 10:10	Guest Speaker <i>Tim Palmer</i> - "Rivers of America"
10:10 - 10:30	Break & Networking/Exhibits (Faculty Staff Club)
10:30 - 11:00	Restoring the Bennett Branch of the Sinnemahoning Eric Cavazza, P.E., PA DEP
11:00 - 11:30	Fishery Resources of the West Branch Susquehanna River Watershed Jason Detar, PA Fish & Boat Commission
11:30 - 12:00	A Primer for Brook Trout Conservation, Protection, and Restoration in the West Branch Susquehanna Watershed Using the Conservation Success Index (CSI) <i>Rebecca Dunlap, Trout Unlimited</i>
12:00 - 1:30	Lunch (Alumni Lobby/Alumni Fireside Lounge)
1:30 - 2:00	Effects of Clearfield Creek and Moshannon Creek on Water Quality of the West Branch between Clearfield and Karthaus Allison Fang & Dr. Arthur Rose, Penn State University Carl Undercofler, Clearfield Co. Senior Environment Corps
2:00 - 2:30	The Role of Land Conservancies with Respect to AMD Reneé Carey, Northcentral PA Conservancy
2:30 - 2:45	Break (Faculty Staff Club)

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# AGENDA

# (continued) Friday, July 18, 2008

2:45 - 3:15	Linking the Burden of AMLs to Community Health Dr. Brian Schwartz & Ann Liu, Geisinger Center for Health Research and Johns Hopkins Bloomberg School of Public Health
3:15 - 3:45	Economic Benefits Analysis for AMD Remediation in the
	West Branch Susquehanna River Watershed Evan Hansen, Downstream Strategies
3:45 - 4:15	Wrap Up and Panel Discussion - Another Opportunity for Q&A Moderated by Michael Smith, PA DEP All presenters will participate
4:15 - 6:00	Exhibit Hall Social and Awards Ceremony (Faculty Staff Club) Accompanied with Good Food, Cash Bar, & Great Networking!
6:00	Bus Leaves for State College Spikes "Going Green Environmental Series" Baseball Game Bus will return everyone to Nittany Lion Inn after game

# Saturday, July 19, 2008

7:30 - 9:00 A.M.	Buffet Breakfast for Registered Tour Participants (Penn State Room)
9:00	Tour Departs for Bennett Branch AMD Projects Lunch and morning/afternoon refreshments provided
5:00 P.M.	Tour Returns to Nittany Lion Inn Dinner on your own

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### Friday - Guest Speaker Biography



**Tim Palmer** 

Mr. Palmer, a native of southwestern PA who now resides in Oregon, is an award-winning author of 19 books about rivers, conservation, and adventure travel, as well as a renowned photographer of America's natural landscapes.

Excerpts from Mr. Palmer's Personal Statement on www.timpalmer.org:

My life's work has been to encourage better care for the earth with all its life forms, its land, and its waters. This goal has defined my existence ever since college when I directed Earth Day at Penn State in 1970.

At first I pursued this goal through a career in planning. With a grant from Trout Unlimited, I put a watershed protection plan to work along Pennsylvania's Pine Creek. Then I worked for 8 years as a county planner, instituting progressive land use policies in the north central portion of the state.

I have served on the Board of Directors of two important national conservation groups: American Rivers in the 1980s and River Network from 1995 to 2004. I have also helped many other smaller groups with media advice, political strategy, and as a special guest at donor events from cocktail parties to river expeditions. I have helped groups in Canada as well. I've spoken at national and provincial conferences there and advised Canadian leaders on river conservation policy. I have also testified on behalf of conservation groups to the U.S. Congress in Washington and at field hearings, to the Pennsylvania State Legislature, and at many public hearings held by various public agencies in Pennsylvania, California, Idaho, Oregon, and elsewhere.

My writing, my photography, and my adventure travel are all dedicated to conservation, and each project I undertake is designed to reach people with an inspiring message to motivate them to care about the fate of our earth.

Through 30 years of working as a writer and photographer, I have had numerous magazine articles and 19 books published about the environment, the outdoors, and adventure travel. In my writing, I like to introduce the reader to places and issues through my travels and adventures. I find that in the context of my personal exploring, I can best describe the distinctive character of landscapes and how their natural systems work. I can also explain and analyze environmental threats and highlight peoples' efforts for better stewardship.

### Presentation Summaries & Presenter Biographies

#### Restoring the Bennett Branch of the Sinnemahoning

#### Eric E. Cavazza, P.E. PA DEP

Since 2004, the Pennsylvania Department of Environmental Protection, Bureau of Abandoned Mine Reclamation has been working with many partners to restore water quality and reclaim abandoned mines in the Bennett Branch Sinnemahoning Creek. The primary water quality problems in the watershed are the result of uncontrolled and untreated discharges of acid mine drainage (AMD) from abandoned mine lands (AML) that have severely degraded the water quality in the lower 33 miles of the Bennett Branch and many of its tributaries. The primary mission of the Bennett Branch Restoration Project is to develop and implement a detailed mine drainage abatement and abandoned mine reclamation plan with a goal of restoring water quality in the main stem of the Bennett Branch, improving water quality in the AMD impacted tributaries, and maximizing the reclamation of AML throughout the watershed. The restoration work is being pursued in conjunction with the PA Wilds initiative which advocates economic development and tourism throughout north-central Pennsylvania. Much work is currently underway or has been completed, and much work still needs to be done. This presentation will focus on the background of the Bennett Branch Restoration Project, the restoration efforts to date, and the work planned for the future.

Mr. Cavazza manages the design of projects to eliminate health & safety or remediate environmental problems associated with abandoned mining operations throughout the Commonwealth. He has twenty-four years service with PA DEP - 9 in Planning and Project Development, 15 as Design Section Chief and the last few months as Acting Chief of Division of Acid Mine Drainage Abatement. He holds a B.S. in Mining Engineering and a M.S. in Environmental Engineering both from Penn State University and is a registered Professional Engineer.

#### Fishery Resources of the West Branch Susquehanna River Watershed

#### Jason Detar PA Fish & Boat Commission

The West Branch Susquehanna River flows 240 miles from its headwaters near Carrolltown, Cambria County, to its confluence with the Susquehanna River in Northumberland, Northumberland County. The watershed contains about 12,000 miles of flowing water and drains an area of nearly 7,000 square miles. While the watershed harbors some of the Commonwealth's most exceptional fishery resources, significant portions of the West Branch mainstem and tributaries are impaired, mostly due to acid mine drainage (AMD) and agricultural impacts. Over 1,200 miles of streams have been identified as impaired by AMD alone. While some sections of the upper and middle portions of the mainstem have shown improvement, considerable reaches continue to suffer from water quality impairments and subsequently support limited fish populations. The lower 35 miles of the mainstem (Williamsport to the mouth) largely recover from the AMD impairments and support a quality warmwater fishery. The large tracts of state forest and state game lands that compromise much of the northern portion of the watershed provide strongholds for wild

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trout resources. This presentation will provide an overview of the fishery resources in the West Branch Susquehanna River watershed, species distribution within the mainstem, and future fishery-related initiatives.

Jason is the northcentral Area Fisheries Manager with the Pennsylvania Fish and Boat Commission and he has been with the Commission since 2004. Before coming to the PFBC, Jason earned a B.S. in Wildlife and Fisheries Science from Penn State University and a M.S. in Biology from Tennessee Tech University.

### A Primer for Brook Trout Conservation, Protection, and Restoration in the West Branch Susquehanna Watershed Using the Conservation Success Index (CSI)

#### Rebecca Dunlap Trout Unlimited

Brook tout (*Salvelinus fontinalis*) historically inhabited nearly every coldwater stream and river in Pennsylvania. Despite their historical range, scientists estimate that only 1% of Pennsylvania's subwatersheds that once contained this important fish remain intact. Trout Unlimited, as part of its West Branch Susquehanna Restoration Initiative, is utilizing the Conservation Success Index (CSI) to determine priority areas for conservation, protection, and restoration of brook trout populations in the West Branch Susquehanna watershed. The CSI integrates state and federal fish population data with publicly available spatial data to provide a quantitative framework for assessing the status and threats to brook trout populations. Applied at the subwatershed scale, the CSI provides accessible information at various geographic scales that can help identify data gaps, analyze threats to population and habitat, and prioritize conservation actions for stakeholders.

Becky serves as Project Manager for Trout Unlimited's West Branch Susquehanna Restoration Initiative, one of TU's four regional restoration programs in the nation. Through this West Branch initiative, Trout Unlimited is acting as the lead catalyst toward the comprehensive and coordinated cleanup of AMD throughout the watershed, which will result in the restoration of coldwater streams and the ultimate recovery of the West Branch Susquehanna River basin. Becky has a B.S. in biology from Mansfield University and M.S. in biology from the University of North Texas.

### Effects of Clearfield Creek and Moshannon Creek on Water Quality of the West Branch between Clearfield and Karthaus

#### Allison Fang and Dr. Arthur W. Rose, Penn State University Carl Undercofler, Clearfield County Senior Environment Corps

Chemistry and flow at the mouths of Moshannon and Clearfield Creeks and of the West Branch of the Susquehanna at Clearfield and Karthaus have been measured at least monthly starting in August 2007. Concentrations of acidity, Fe, Al and Mn at some sites vary seasonally by a factor of 2 to 5, and flows

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vary by more than a factor of 10, so repeated sampling over a year is required to obtain valid averages and comparisons. Concentrations decrease with increased flow, but because of the large flow increases, the loads (mass/day) increase with increased flow. Significant differences occur between water from opposite banks on Clearfield Creek and at Karthaus, owing to incomplete mixing of tributaries, so a single sample at a location is not representative. In contrast to previous studies, Clearfield Creek is net alkaline at its mouth, but Moshannon Creek is strongly net acid, and appears to be the largest source of acidity in this section of the West Branch. The data will allow estimates of the improvement in the West Branch resulting from removal of loads from acid sources in the tributaries.

Allison Fang received a B.S. degree in Geosciences in the hydrogeology option from Penn State University in 2008 and will enter graduate work at Temple University in the fall.

Arthur W. Rose is Professor Emeritus of Geochemistry at Penn State, and Technical Chair of the Clearfield Creek Watershed Association.

Carl Undercofler retired from Penelec in 1993 with the hopes that he would fish many of the tributaries of the West Branch as he had as a kid. When he found that many of his favorite fishing streams were no longer thriving with fish, Carl set out to find out why and see what he could do about it. Since that time, he has become a member of many different watershed groups, as well as, the Clearfield County Senior Environment Corps. He has been involved in working to restore the West Branch in some way or another since as far back as 1970. He also serves as an Associate Director for the Clearfield County Conservation District.

#### The Role of Land Conservancies with Respect to AMD

#### Reneé Carey Northcentral PA Conservancy

Land conservancies, or land trusts, are a partner that can work with watershed groups and communities in many ways. This presentation will provide an overview of some of the tools land trusts can use when working with watershed associations, and also provide information on the land trusts at work in the West Branch watershed. Conservation easements and acquisitions to ensure public access are two types of projects land trusts typically work on. Opportunities exist for partnering these tools with AMD projects to secure permanent public access to streams. How can these partnerships be formed, and who are the potential partners?

Reneé has been with the Northcentral Pennsylvania Conservancy since 1994, serving as the Executive Director since 1998. She holds a Bachelor's in General Arts and Sciences from Penn State, and currently serves on the board of the Pennsylvania Land Trust Association and the Pennsylvania Forest Stewardship Committee.

### Linking the Burden of AMLs to Community Health

#### Dr. Brian Schwartz & Ann Liu Geisinger Center for Health Research and Johns Hopkins Bloomberg School of Public Health

The leader in coal production for decades, Pennsylvania has since suffered from the accumulation of waste associated with past mining and processing operations. Over 5,000 documented abandoned mine lands (AML) covering nearly 184,431 acres and more than 5,000 miles of waterways damaged by acid mine drainage (AMD) reflect the severe toll on the physical landscape. Research on neighborhood effects and health suggests morbidity and mortality are higher in disadvantaged areas lacking in economic and social resources, even after controlling for individual-level risk factors. Because the environment plays an essential role in determining the health of human populations and nearby ecosystems, and given that large segments of the population of Pennsylvania continue to reside near AML, this epidemiologic study aims to assess the impact of the burden of AML on the health of surrounding communities. The burden of AML is indexed by four main metrics: physical hazards, aesthetic quality, toxic contamination and reclaimed status. Community health is characterized by social disorganization, physical disorder and economic deprivation. This study first evaluates the linkages between AML exposure and community health at the place level (an "ecologic" study), and in the future will evaluate associations of AML with individual health outcomes (e.g., cardiovascular diseases) in a multilevel framework, using health data from the Geisinger electronic health record.

Ann Liu (M.P.H.) is a second-year doctoral student in the Department of Environmental Health Sciences at the Johns Hopkins Bloomberg School of Public Health. She is currently studying the impacts of the burden of abandoned mine lands on community health with her adviser Brian Schwartz in partnership with the Geisinger Center for Health Research. She received her Master's of Public Health in 2006 from Yale University where she investigated the environmental determinants of West Nile Virus activity in the state of Connecticut.

Dr. Schwartz (M.D., M.S.) is a Professor in the Division of Occupational and Environmental Health in the Department of Environmental Health Sciences in the Johns Hopkins Bloomberg School of Public Health. He is jointly appointed in the Department of Epidemiology in the School of Public Health and in the Department of Medicine in the School of Medicine. He also co-directs the Environmental Health Institute in the Geisinger Center for Health Research in Danville. He received a B.S. degree in chemistry from Tufts University, an M.D. degree from Northwestern University Medical School, and an M.S. degree in clinical epidemiology from the University of Pennsylvania School of Medicine. He completed a residency in internal medicine at the Hospital of the University of Pennsylvania, and then was a Mellon Foundation Scholar in Clinical Epidemiology and a fellow in General Medicine there. He completed a fellowship in occupational and environmental medicine at the Johns Hopkins School of Hygiene and Public Health, then joined the faculty there as an Assistant Professor.

### An Economic Benefit Analysis for AMD Remediation in the West Branch Susquehanna River Watershed

#### Evan Hansen Downstream Strategies

Cleaning up impaired waters across the West Branch Susquehanna River watershed will cost millions of dollars, but these expenditures will provide a tremendous boost to the local economy. This report describes and quantifies the local and statewide economic benefits stemming from remediation of the watershed. The most obvious benefit to the local community is that funds are pumped into the local economy to design, build, and maintain treatment systems. Many goods and services are provided by local businesses, jobs are created, and these dollars circulate through the economy as workers spend their paychecks on other local goods and services. Inside the watershed, property values that have been depressed near impaired streams should rise. Drinking water supply options, now limited or more expensive, will expand or become cheaper with cleaner source water. Improved recreational opportunities will lead to increased recreational spending by tourists. Finally, remediation improves the aquatic habitat of streams in the watershed, leading to environmental improvements about which many citizens feel passionately. It is only by considering both the costs and benefits that policymakers and local stakeholders can make the most informed choices possible regarding such a large remediation project.

Downstream Strategies President Evan Hansen received an M.S. in Energy and Resources from the University of California, Berkeley and a B.S. in Computer Science and Engineering from the Massachusetts Institute of Technology. Since 1997, he has consulted on water and energy science and policy through Downstream Strategies in Morgantown, West Virginia. His water resources work has focused on Clean Water Act issues including permits, water quality standards, and antidegradation policy as well as Surface Mining Control and Reclamation Act permits and issues. Clients include watershed and conservation organizations, universities, businesses, and attorneys.