# Table of Contents

Introduction to ESC – *A Message from the Director* .................................................................................................................. 3  
ESC Members & Focus Area......................................................................................................................................................... 4  
ESC Financial Synopsis......................................................................................................................................................... 9  
ESC Active Awards......................................................................................................................................................... 10  
ESC Member Publications .............................................................................................................................................. 14  
ESC Activities..................................................................................................................................................................... 17  
  North America Forest Biology Workshop – July 12-15, 2004 ................................................................. 17  
  Distinguished Ecologist Lecture Series – Fall, 2004/5 .................................................................................. 19  
  Sponsored Graduate Student Research & Travel Grants Summary ........................................................................... 20  
  1st Annual ESC/BRC Graduate Research Forum – February 25, 2005 ...................................................... 21  
  Research Experiences for Undergraduates .................................................................................................................. 22  
  Air Pollution Workshop – April 25-28, 2005 ........................................................................................................... 23  
**Ecosystem Science Center – Contact Information** ........................................................................................................ 24
The Ecosystem Science Center has just completed its first full year, and this report details our accomplishments. With the support of Michigan Tech University’s administration, we banded together to promote ecosystem science, with a special emphasis on promoting the involvement of graduate and undergraduate students in the research process. We are off to a great start!

Our research activity and expenditures rank us as one of the top centers and institutes on campus. More importantly, we were able to initiate what I hope will become long-standing activities: a graduate student research forum, as well as research and travel grants for graduate and undergraduate students. Many of our graduate students also traveled to professional meetings such as the annual meeting of the Ecological Society of America. We also supported the Distinguished Ecologist Lecture Series, the North American Air Pollution Workshop, and the North American Forest Biology Workshop. We hosted a National Science Foundation Research Experience for Undergraduates Site – Ecosystems in Transition, which brought 10 bright undergraduate students to campus from all around the country for a summer research experience. All of these activities enriched our professional lives, and furthered our research and educational goals.

We are spreading the message – well deserved – that Michigan Tech is a great place to learn about ecosystems – a national university of choice, when it comes to the Ecosystem Science Center and its faculty, staff, and affiliated students. We hope you enjoy this report, and if you have any questions, please don’t hesitate to contact me.

Sincerely,

Dr. Kurt S. Pregitzer

Director, Ecosystem Science Center
906.487.2396
kspregit@mtu.edu
Kate Bradley, Research Scientist – Post-Doctoral Scholar

Research Interests
Ecosystem ecology: Studying aboveground interactions between plants & insects; Belowground links between plants, soil microorganisms, & nitrogen availability; Responses of soil microorganisms - particularly arbuscular mycorrhizal fungi - to global changes, including increased N, CO₂ & O₃; How changes in soil microbial community function and/or composition may affect future dynamics of plant communities; How altered lignin biosynthesis in aspen trees affects composition and functioning of soil microbial communities; Consequences of microbial responses on soil carbon storage.

Andrew Burton, Research Associate Professor

Research Interests:
Forest responses to global change factors
Belowground processes
Carbon and nutrient cycling
Physiological ecology of tree roots
Undergraduate involvement in research

Jennifer Eikenberry, Assistant Research Scientist

Research Interests:
Operate and maintain the analytical equipment for sample analysis in the labs, including the Isotope Ratio Mass Spectrometer (IRMS), Gas Chromatograph (GC), High Pressure Liquid Chromatograph (HPLC), Total Organic Carbon analyzer (TOC analyzer), Elemental Analyzer (EA), and Total Nitrogen analyzer.

David Flaspohler, Associate Professor

Research Interests:
Avian Ecology: evolution of nest site selection and breeding strategies, effects of nest predators and parasites on breeding strategies.
Conservation Biology: forest fragmentation, maintaining viable populations in managed forest landscapes, amphibian habitat associations and monitoring, application of conservation biology to management.
Community and Population Ecology: interactions of temperate and tropical forest birds, habitat selection, predator-prey interactions.
**Alex Friend**, Project Leader – USDA Forest Service

**Research Interests:**
Ecosystem science, with a specialization in tree physiological ecology, and a focus on root physiology, nutrient acquisition, and carbon allocation as they are affected by soil N, atmospheric CO₂, tropospheric O₃, organismal interactions, and other environmental variables. Phenomena of ongoing exploration in these realms are physiological plasticity, compensatory processes, cost-benefit analogies using plant carbon, homeostasis & sensitivity to environmental variation, and scaling & hierarchical variation in processes. Common applications of this are: forest ecosystem management, global change biology, and phytoremediation.

**Robert Froese**, Assistant Professor - Biometrics

**Research Interests:**
Quantitative problems in forestry and ecosystem science. Of particular interest is the application of models to real world problems, specifically how the distance between basic sciences and natural resources management may be bridged by building more sophisticated models that remain accessible by managers. Such models must use commonly available inputs or inputs that are easily imputed, but must also be demonstrably tied to underlying biophysical theory. Forest vegetation simulation modeling. Site quality estimation using methods based on tree physiology. Applied statistical tools to support quantitative resource analysis and modeling. Measurement error statistical models.

**Christian Giardina**, Research Ecologist – USDA Forest Service

**Research Interests:**
Biotic and abiotic controls on belowground carbon allocation and cycling in forests.
Global change impacts on plant function.
Plant biochemical controls on plant-soil interactions.

**Shekhar Joshi**, Associate Professor – Plant Molecular Genetics

**Research Interests:**
Tree Species identification using DNA barcodes.
Dave Karnosky, Professor – Forest Genetics and Biotechnology

**Research Interests:**
Genetic aspects of air pollution and climate change.
Influences of CO₂ and O₃ on gene expression and gene regulation.
Forest genetics/biotechnology of yield.
Larch breeding and control of flowering in larch.
Micropropogation and genetic engineering of fast-growing trees such as *Larix*, *Pinus* and *Populus*.

John King, Assistant Professor – Ecosystem Science

**Research Interests:**
Using an ecophysiology approach to examine how forest productivity is influenced by resource availability as influenced by environment and global change.
*Specific interests include:* how atmospheric chemistry affects ephemeral plant tissue chemistry, decomposition, and carbon and nutrient cycling in forest soils; how the changing atmosphere will affect the forest hydrologic cycle; and carbon allocation and storage in forest ecosystems.
Tropical forest ecology, conservation, and sustainable development.

Erik Lilleskov, Research Ecologist – USDA Forest Service

**Research Interests:**
Application of a mixture of molecular genetic, physiological, stable isotopic, ecosystem analytic and statistical tools to investigate the relationship between ecosystem attributes and microbial community structure and function. The focus to date has been on mycorrhizal fungi, the dominant microbial functional group in many forest ecosystems. Recent work has focused on the mechanisms that structure mycorrhizal communities at the stand level--examining the spatial structure of ectomycorrhizal fungal communities and, through experimental lab and field studies, determining the effect of small-scale alteration of nutrient availability on mycorrhizal community dynamics.

Wendy Loya, Research Scientist – Post-Doctoral Scholar

**Research Interests:**
Research interests span the disciplines of biogeochemistry, climate change science, ecosystem ecology, soil science, microbial ecology and natural resource management. Research is aimed at understanding how changes in the environment affect ecosystems, particularly the cycles of carbon (C) and nitrogen (N), which play an integral role in the structure and function of natural systems. The majority of work has primarily involved experimentation to understand how increases in levels of CO₂ and O₃ in the atmosphere, increases in N deposition, and warmer temperatures will alter ecosystem level C and N fluxes between the atmosphere, plants, and soils in both northern forests and the arctic tundra.
Linda Nagel, Assistant Professor

Research Interests:
Silviculture and forest vegetation dynamics. Ecophysiology of forest stand structures. Management of invasive species.

Rolf Peterson, Professor

Research Interests:
Ecology and population dynamics of mammals, carnivore ecology, predator-prey relationships, wolf-prey dynamics and other ecological studies at Isle Royal National Park.

Kurt Pregitzer, Professor; Director

Research Interests:
Ecosystem science designed to understand how ecosystems function: investigating ecosystem processes at a variety of spatial and temporal scales, plant-microbe interactions in the rhizosphere, as well as the landscape, consequences of management activities and altered atmospheric chemistry. Current investigations focus on global change issues, including carbon cycling, atmosphere-plant-soil-water interactions, and understanding the consequences of nitrogen deposition.

Andrew Storer, Assistant Professor

Research Interests:
Forest insect ecology. Insect/fungus/plant interactions in forest ecosystems. Impacts of exotic species on forest ecosystems. Interactions among fire, insects and disease on forest ecosystems. Urban forest health.
John Vucetich, Assistant Research Professor

Research Interests:
Demographic and genetic aspects of population biology, conservation of endangered and recovering species, ecological modeling, trophic interactions, and wildlife biology.

Chris Webster, Assistant Professor

Research Interests:
Animal interactions, plant community ecology, ecology of invasive species, forest stand dynamics, ecological restoration, and silviculture.

ESC Staff

Jessica Bibbee, Associate Director  jlbibbee@mtu.edu
Trish Burton, Administrative Staff  trish@mtu.edu
<table>
<thead>
<tr>
<th>FY04 ESC Financial Synopsis</th>
<th>ESC</th>
<th>Centers/Institutes at MTU (15 total)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Awards:</strong></td>
<td>24</td>
<td>237</td>
</tr>
<tr>
<td><strong>Award Amount:</strong></td>
<td>$3,060,687</td>
<td>$15,841,583</td>
</tr>
<tr>
<td><strong>Number of Projects:</strong></td>
<td>30</td>
<td>255</td>
</tr>
<tr>
<td><strong>FY04 Expenditures:</strong></td>
<td>$2,577,161</td>
<td>$15,841,583</td>
</tr>
</tbody>
</table>

Additional information can be found at The Office of the Vice President of Research, MTU.
<table>
<thead>
<tr>
<th>Name PI, Co-PI(s)</th>
<th>Sponsor Name</th>
<th>Project Title</th>
<th>Awarded Amount</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregitzer, K.</td>
<td>US Dept of Agriculture</td>
<td>Using Stable Isotopes to Determine the Rate and Fate of Canopy CO2 Flux in the Aspen FACE Experiment</td>
<td>$65,000</td>
<td>7/1/2002</td>
<td>9/30/2005</td>
</tr>
<tr>
<td>Pregitzer, K., A. Burton</td>
<td>National Science Foundation</td>
<td>Nitrogen Saturation: Mechanisms and Consequences of Altered Ecosystem Metabolism</td>
<td>$810,000</td>
<td>9/1/2003</td>
<td>8/31/2006</td>
</tr>
<tr>
<td>Name PI, Co-PI(s)</td>
<td>Sponsor Name</td>
<td>Project Title</td>
<td>Awarded Amount</td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>King, J.</td>
<td>US Dept of Agriculture</td>
<td>Forest Ecophysiological Responses will Influence Regional Water Supplies due to Altered Atmospheric Conditions in the Near Future</td>
<td>$450,000</td>
<td>8/1/2004</td>
<td>7/31/2007</td>
</tr>
<tr>
<td>Name PI, Co-PI(s)</td>
<td>Sponsor Name</td>
<td>Project Title</td>
<td>Awarded Amount</td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>----------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Pregitzer, K.</td>
<td>US Dept of Agriculture</td>
<td>Soil Carbon Cycling and Storage in Response to Elevated Tropospheric CO2 and 03 at the Aspen FACE Experiment</td>
<td>$39,000</td>
<td>7/1/2005</td>
<td>6/30/2010</td>
</tr>
<tr>
<td>Pregitzer, K.</td>
<td>US Dept of Agriculture</td>
<td>Stable Isotope Analysis to Elucidate the Physiological Basis of Silvicultural Treatment Response in Great Lakes Pine Ecosystems</td>
<td>$35,000</td>
<td>8/2/2005</td>
<td>9/30/2009</td>
</tr>
<tr>
<td>Name PI, Co-PI(s)</td>
<td>Sponsor Name</td>
<td>Project Title</td>
<td>Awarded Amount</td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>----------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Pregitzer, K.</td>
<td>University of Michigan</td>
<td>Ecosystem Response to Elevated Tropospheric CO2 and O3 is Regulated by Plant - Microbe Interactions in Soil.</td>
<td>$269,358</td>
<td>1/15/1994</td>
<td>8/14/2005</td>
</tr>
<tr>
<td>Peterson, R., J. Vucetich</td>
<td>National Science Foundation</td>
<td>Long-Term Trophic Interactions of Wolves and Moose on Isle Royale</td>
<td>$194,014</td>
<td>8/1/2004</td>
<td>7/31/2010</td>
</tr>
<tr>
<td>Peterson, R.</td>
<td>National Science Foundation</td>
<td>LTREB: Multi-Level Trophic Dynamics of Wolves, Moose, and Vegetation</td>
<td>$6,000</td>
<td>8/15/1999</td>
<td>7/31/2004</td>
</tr>
</tbody>
</table>

**Cumulative Awarded Amount for Active Projects** (30 Projects, 85 Years combined): **$7,584,260**
ESC Member Publications


John King organized the 18th North American Forest Biology Workshop, hosted by School of Forest Resources and Environmental Science, Michigan Technological University, July 10-15, 2004. The event was sponsored in part by the Tree Physiology and Genetics Working Groups, SAF.

Invited Speakers

*An Overview of the Forested Ecosystems of the Northern Lake States*
Dr. Dennis Albert, Michigan Natural Features Inventory, Ecology Program Leader

*Gradients of Management Intensity in the Context of Natural Disturbance*
Wayne Bell, Ontario Ministry of Natural Resources, Ontario Forestry Research Institute

*Forest Management Opportunities for Increasing Carbon Sequestration*
Dr. Richard Birdsey, Northeast Research Station, USDA Forest Service

*The Case for Contextual Forest Management in the 21st Century*
Dr. Thomas Crow, USDA Forest Service, WFWAR

*Natural Disturbance Regimes in Great Lakes Forests*
Dr. Lee Frelich, Department of Forest Resources, University of Minnesota

*Integrated Assessment of Two Decades of Land Cover, Forest, and Socio-Economic Change in the Midwest*
Dr. Eric Gustafson, North Central Research Station

*A Century of Watershed Lessons and Emerging Information Needs*
Dr. George Ice, NCASI

*Copper Mining Industry Use of Forest and Aquatic Resources of the Keweenaw*
Dr. Larry Lankton, Department of Social Sciences, Michigan Technological University

*Fine Hardwood Tree Improvement - An Approach to Individual Tree Selection*
Dr. Charles H. Michler, Hardwood Tree Improvement and Regeneration Center, USDA Forest Service, North Central Research Station, Purdue University

*N Deposition and Forest Function*
Dr. Knute Nadelhoffer, University of Michigan Biological Station, University of Michigan

*Forest Productivity in a CO2 Enriched Atmosphere*
Dr. Richard Norby, Environmental Sciences Division, Oak Ridge National Laboratory
Silvicultural Approaches for the Matrix: 
Balancing Ecological and Production Goals at Multiple Scales
Dr. Brian Palik, North Central Research Station

Ozone and Forest Productivity: State of Science and Risk
Dr. Kevin Percy, Natural Resources Canada, Canadian Forest Service-Atlantic Forestry Centre

Exploiting the Pre-European Settlement Forest: Michigan's Enduring Ecological Legacy
Dr. Kurt Pregitzer, School of Forest Resources and Environmental Science, Michigan Technological University

Tree Improvement in the Lake States - Current Status - Future Opportunities
Dr. Donald Riemenschneider, North Central Research Station

CO2 Recycling in Trees
Dr. Robert Teskey, Warnell School of Forest Resources, University of Georgia

Functional Genomics and Forest Tree Improvement: A Case Study on Resource Allocation
Dr. Chung-Jui Tsai, School of Forest Resources and Environmental Science, Michigan Technological University
Distinguished Ecologist Lecture Series – Fall, 2004

Michigan Technological University, the USDA Forest Service - North Central Research Station, the Ecosystem Science Center, and the Graduate School supported the Distinguished Ecologist Lecture Series with the following objectives:

- to provide students, faculty and researchers at MTU and NCRS with opportunities to hear prominent ecologists discuss their research,
- to provide graduate students with a unique seminar experience, and
- to provide leading ecologists with an opportunity to learn more about research being conducted at MTU and the NCRS.

Each fall semester, the Distinguished Ecologist Lecture Series will host internationally recognized ecologists. Each visit by an ecologist will include: delivering the Distinguished Lecture, leading a graduate seminar on a topic of the ecologist's choice, meeting with students and faculty, touring MTU and NCRS research facilities, and attending social events. Below is a list of the Distinguished Ecologist who visited the MTU campus in Fall of 2004:


**Interests:** the ecology, physiology, and biochemistry of microbial processes important in nature and of value to industry; ecology, physiology and biochemistry denitrification; the fate and impact of genetically engineered microbes, so that their success or risk in nature can be better predicted.


**Interests:** Ecosystem and plant ecology; grassland ecosystems; ecology of large mammalian herbivores; conservation biology; research since 1974 in Serengeti National Park.


**Interests:** understanding what controls ecosystem metabolism-the exchange of carbon and water between forests and the atmosphere; understanding how changes in climate, land use, and disturbance will affect forest productivity and the role of forests in the global carbon cycle.


**Interests:** Restoration ecology; wetland ecology; reestablishment of rare plants; interactions of native and exotic species; adaptive management.
### Sponsored Graduate Student Research & Travel Grants Summary 2004-05

#### GRADUATE STUDENT TRAVEL GRANTS

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Advisor</th>
<th>Meeting</th>
<th>Status</th>
<th>Granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinzia Fissore</td>
<td>Christian Giardina</td>
<td>American Geophysical Union Fall Meeting</td>
<td>Poster Accepted</td>
<td>$500</td>
</tr>
<tr>
<td>Brian Beachy</td>
<td>Andrew Storer</td>
<td>Ecological Society of America Annual Meeting</td>
<td>Poster to be submitted</td>
<td>$500</td>
</tr>
<tr>
<td>Lingli Liu</td>
<td>John King</td>
<td>37th Air Pollution Workshop</td>
<td>Talk accepted</td>
<td>$500</td>
</tr>
<tr>
<td>Justin Rosemier</td>
<td>Andrew Storer</td>
<td>54th Annual North Central Forest Pest Workshop</td>
<td>Talk submitted</td>
<td>$500</td>
</tr>
<tr>
<td>Jessica Hancock</td>
<td>Christian Giardina</td>
<td>ESA Annual Meeting</td>
<td>Poster submitted</td>
<td>$500</td>
</tr>
<tr>
<td>Jessica Metzger</td>
<td>Andrew Storer</td>
<td>Entomological Society of America Annual Meeting</td>
<td>Poster to be submitted</td>
<td>$500</td>
</tr>
<tr>
<td>Matthew Powers</td>
<td>Linda Nagel</td>
<td>ESA Annual Meeting</td>
<td>Talk submitted</td>
<td>$500</td>
</tr>
<tr>
<td>Alan Talhelm</td>
<td>Kurt Pregitzer</td>
<td>ESA Annual Meeting</td>
<td>Attended</td>
<td>$500</td>
</tr>
</tbody>
</table>

**Total $3,500**

#### GRADUATE RESEARCH GRANTS

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Advisor</th>
<th>Study</th>
<th>Items</th>
<th>Granted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph Bump</td>
<td>Rolf Peterson</td>
<td>Predators, prey carcasses and nutrient subsidies</td>
<td>Supplies, services, travel</td>
<td>$750</td>
</tr>
<tr>
<td>Justin Rosemier</td>
<td>Andrew Storer</td>
<td>Impacts of beech bark disease on native small mammal</td>
<td>Travel</td>
<td>$750</td>
</tr>
<tr>
<td>Cinzia Fissore</td>
<td>Christian Giardina</td>
<td>Abiotic controls on soil carbon decomposition and formation...</td>
<td>Supplies, services, personnel Travel</td>
<td>$750</td>
</tr>
<tr>
<td>Emmanuel Opuni-</td>
<td>David Karnosky</td>
<td>Conservation and restoration of mahogany in plantation forest</td>
<td>Travel</td>
<td>$750</td>
</tr>
<tr>
<td>Frimpong</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brian Beachy</td>
<td>Andrew Storer</td>
<td>Impacts of an exotic disease complex on forest biodiversity</td>
<td>Travel</td>
<td>$750</td>
</tr>
<tr>
<td>Laura Kruger</td>
<td>Rolf Peterson</td>
<td>Identifying sources populations of little brown bats ...</td>
<td>Supplies and services</td>
<td>$750</td>
</tr>
<tr>
<td>Peter Hurly</td>
<td>David Flaspohler</td>
<td>Forest herb recovery and the legacy of the white-tailed deer</td>
<td>Supplies and personnel</td>
<td>$750</td>
</tr>
<tr>
<td>Michelle Manarolla</td>
<td>David Flaspohler</td>
<td>Influence of Lake Superior shoreline housing development on breeding...</td>
<td>Supplies and travel</td>
<td>$750</td>
</tr>
<tr>
<td>Jessica Hancock</td>
<td>Christian Giardina</td>
<td>Effects of altered lignin biosynthesis on Aspen</td>
<td>Travel</td>
<td>$750</td>
</tr>
<tr>
<td>Alan Talhelm</td>
<td>Kurt Pregitzer</td>
<td>Carbon Storage in Northern Hardwoods forest under N deposition</td>
<td>Travel and sample processing Sample processing</td>
<td>$750</td>
</tr>
<tr>
<td>Linda van Diepen</td>
<td>Kurt Pregitzer</td>
<td>A study of nitrogen cycling within <em>Acer saccharum</em> dominated forest using a ...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total $8,250**
ESC co-sponsored the first graduate research forum in the School of Forest Resources and Environmental Science, alongside the Biotech Research Center. Altogether, a total of 36 masters and PhD graduate students submitted abstracts along with their posters.

The Graduate Research Forum provided an opportunity for students to share their ideas and results with each other and faculty. Posters covered a wide variety of research topics in the areas of Carbon and Nutrient Cycling and Storage, Biotechnology and Molecular Genetics, Population and Community Ecology, Wildlife, Insects and Diseases, among others.

ESC and BRC each gave a four awards, based on who submitted the best poster. Criteria included, but were not limited to, scientific validity, overall appearance, information flow, etc.

**ESC presented the following awards:**
- Grand Prize ($500) – Lingli Liu
- Merit Award ($100) – Sarah Brodeur
- Merit Award ($100) – Justin Rosemier
- Merit Award ($100) – Michele Manarolla

The **Graduate Research Forum** will continue to be held on an annual basis.
Research Experiences for Undergraduates

The ten-week Research Experiences for Undergraduates (REU) program is sponsored by a grant from the National Science Foundation (NSF) through the Ecosystem Science Center. Ten undergraduate students from California, New York, Massachusetts, Illinois, Wisconsin, Michigan, and the UP spent the summer of 2005 at MTU’s School of Forest Resources and Environmental.

The REU students worked with faculty mentors to study ecosystem responses to man’s activities, and performed research related to current environmental issues in forest ecosystems. During their stay, the REU students learned how to design experiments and communicate results, developed and conducted an independent research project, and presented their research findings at a symposium sponsored by MTU. They also explored career possibilities in ecology and environmental science, and attended the Ecological Society of America’s annual meeting in Montreal in August.

Students selected for the 2005 REU program included:

- Kathryn Amerell (UW Stevens Point),
- Reid Andress (MTU),
- Chris Doogan (Southern Illinois Univ),
- Justin Hanisch (MTU),
- Nicholas Jensen (UW Stevens Point),
- Hazen Kazaks (UC Berkeley),
- Tara Novak (Carroll College, WI),
- Frances O’Donnell (Harvard),
- Claudia Pingatore (UC Berkeley), and
- Katie Temple (RPI).

ESC members who served as faculty mentors during the 2005 program included Andrew Burton (also REU Director), Kurt Pregitzer, Chris Webster, Linda Nagel, Andrew Storer, John Vucetich, and Erik Lillskov and Christian Giardina from the US Forest Service North Central Station.
Research conducted by the REU students covered a wide range of topics:

- the spread of invasive plant species along trails,
- restoring the yellow birch component of northern forests,
- life-history of native coaster brook trout populations,
- the C storage potential of coarse woody-debris in forests removed from management, and
- genetic and environmental regulation of leaf phenolics.

During the summer of 2004, ten of the thirteen students participating in the program were supported by NSF funds through the Ecosystem Science Center. Two of these participants, Rita Koch from UW Stevens Point, and Janet Frederick from MTU, will be entering graduate school at MTU this fall, with ESC member Andrew Storer as their advisor. Additional information on the REU program is available on the web. Abstracts of the student research performed in 2004 are also available.

---

**Air Pollution Workshop – April 25-28, 2005**

Refer to the June 2005 Aspen FACE Newsletter, for more coverage:

Dave Karnosky, Aspen FACE Director, acted as Program Co-chair for the 37th Air Pollution Workshop this Spring in Banff, Alberta, Canada.

The session which Dave chaired focused on interacting stresses, as a result of Aspen FACE research. He also presented information regarding his research at the Ozone Gradient Study and Gene Expression Research. In addition to presenting his research, Dave acted as the Workshop's AV and computer specialist.

Other ESC affiliates also attending the Workshop and presenting Aspen FACE research were John King, and Lingli Liu, MTU graduate student.
Ecosystem Science Center – Contact Information

Dr. Kurt S. Pregitzer
Director, ESC
906-487-2396
kspregit@mtu.edu

Michigan Tech