

United Negro College Fund • Ecological Society of America • Institute of Ecosystem Studies
with support from the Andrew W. Mellon Foundation
Strategies for Ecology Education, Development and Sustainability (SEEDS)

Student Field Trip

April 19 – 22, 2001

Oak Ridge National Laboratory and Great Smoky Mountain National Park

Field Trip Report

April 24, 2001

Twenty-two students (see Appendix A) from eight SEEDS schools, four SEEDS faculty, and two program coordinators (see Appendix B) participated in the first student field trip offered by the program. We visited Oak Ridge National Laboratory (ORNL) on Friday, April 20, 2001 and Great Smoky Mountain National Park (the Smokies) on Saturday, April 21, 2001. The main goals of the field trip were to provide students with an overview of ORNL and the Smokies, expose students to the practical application of ecology at a research laboratory and national park, and expose students to various careers in ecology. There were numerous people who contributed to the field trip in an effort to help us reach our goals. In addition to participating in scheduled activities, some students also enjoyed a hike to an impressive waterfall (Laurel Falls), a shopping excursion in Gatlinburg, and a marshmallow roast at an evening campfire in celebration of Earth Day.

Students arrived in Knoxville, TN on Thursday, April 19, 2001. Many students were able to attend a welcome pizza buffet and become acquainted with students from other SEEDS schools. We traveled to Oak Ridge on Friday morning where we learned more about the Environmental Sciences Division (ESD), participated in a highly informative panel discussion, and toured the Environmental Safety Health and Quality (ESH&Q) labs. Saturday we traveled to the Smokies and learned about an ecologist's research in the park and park management issues from a veteran park ranger. Appendix C contains the field trip agenda. Following is an expanded description of all of our meetings.

Oak Ridge National Laboratory

The US Department of Energy currently oversees activities on the Oak Ridge Reservation (ORR), a government-owned, contractor-operated facility. The ORR was established in the early 1940s as part of the Manhattan Project, a secret undertaking that produced the materials for the first atomic bombs. ORR's role has evolved over time, and it continues to adapt to meet the changing defense, energy, ecological and research needs of the US.

Environmental Sciences Division (ESD)

We received an overview of the Environmental Sciences Division from the Division Director, Dr. Stephen Hildebrand (hildebrandsg@ornl.gov, 865-574-7374). He explained that at ORNL, there are 15 different research divisions; ESD is one of the major research divisions

within that total. ESD was formed in the 1950s when one individual, Stan Arbach, was hired after the war to find out how radioactive materials move through the environment. The field of systems ecology grew out of the work in radioecology that began at ORNL. ESD primarily conducts environmental research and systems analyses to evaluate the effects that energy generation technologies have on the environment and to understand complex environmental relationships. ESD employs approximately 200 individuals, of which about 125 are scientists with advanced degrees. The ORR as a whole employs approximately 5,000 people.

Richard Norby (norbyj@ornl.gov, 423-576-5261), the ESD scientist leading the free-air CO₂ enrichment (FACE) study, brought us to the FACE research field site to present a brief history of CO₂ research at ORNL. He also discussed important global change issues, and summarized findings from the study as it enters its fourth year of exposure. FACE is one of only a handful of studies in the United States examining the growth and physiological response of large trees to elevated CO₂ concentrations. The study is being conducted on a sweet gum tree stand. Building upon a rich history of DOE-sponsored CO₂ effects research on seedlings and saplings grown in pots and open-top chambers, investigators working at the FACE site seek to better understand how a closed-canopy forest, both above- and below-ground, will respond to long-term CO₂ enrichment. Initial results indicate that the sweet gum trees experience greater rates of photosynthesis as a result of CO₂ enrichment.

Stan Wullschleger (wullschlegsd@ornl.gov, 865-574-7839), ESD scientist leading the Throughfall Displacement Experiment (TDE), brought us to the research field site to introduce basic issues surrounding global climate change, describe highlights regarding the results of this catchment-scale manipulation and discuss implications for existing and future forests of the eastern United States. TDE is a large-scale study that is designed to examine the response of a temperate deciduous forest to altered precipitation. The TDE is unique in that the experimental design allows rainfall to be collected on a "dry" plot and passively transferred to a "wet" plot, thus creating soil conditions that mimic both increased and decreased precipitation. The experiment has been running continuously since 1993. Results indicate that seedlings and saplings are the most sensitive to changing precipitation. This indicates that there will be reduced undergrowth to grow into mature trees in the future if conditions are to dry out as a result of global climate change, although the immediate effects on mature trees are small.

Panel Discussion

Dr. Frank Harris (harrisf@ornl.gov, 865-574-4333), Biological and Environmental Sciences Director, welcomed SEEDS students and gave a brief introduction of ORNL. ORNL is a major multi-purpose research facility with an operating budget of around \$600,000,000. In the area of ecology, scientists at ORNL conduct both basic and applied ecological research. In addition, ORNL has state-of-the-art equipment in place to ensure the facility is within state and federal environmental compliance standards.

Dr. Harris also introduced the All Taxa Biological Inventory (ATBI) project at the Smokies, on which Dr. Harris is the President and Chair of the Board of Directors of the non-profit group that runs the project, Discover Life in America. The ATBI project is a grassroots effort among scientists to identify all taxa in the Smokies, as the area has the highest species diversity of anywhere in the northern hemisphere. An effort such as this has never been done before. Scientists believe this is a vital effort because the area is under siege from the 10 million visitors it receives each year, the air pollution, and the encroaching land development. The park service needs to know what species are present in order to understand the effects of such growth. The project was set up a few years ago and it is estimated to take about 10 years to complete.

David Milan, (miland@ornl.gov, 865-241-0009) Management Systems Integration manager, ran the panel discussion. He earned a bachelor's degree from the University of Tennessee Martin and a master's in occupational health from the University of Tennessee. Milan is an American Board of Industrial Hygiene-certified industrial hygienist.

Ten panel members discussed their current responsibilities, educational background, career paths and plans, personal successes and obstacles. Questions asked to the panel including: “what were your highest moments in your career, what would you do differently if you could begin your career again, and do you suggest going straight into graduate school or waiting to develop interests?” are included in the below write-ups.

1. Robert Washington-Allen, Environmental Sciences Division (washingtonra@ornl.gov, 865-241-5159)
Dr. Washington-Allen received an undergraduate degree in zoology from Ohio State University and a PhD from Utah State University where he studied wildlife ecology. He spent two years in the Peace Corps and believes it was an invaluable experience and suggests it to students who are not quite ready to enter graduate school. He is currently involved in field remote sensing and GIS to do environmental impact analyses. Obstacles he faced during his undergraduate career included a lack of time due to his involvement with the track and field team.
2. Rebecca Efroymson (efroymsonra@ornl.gov, 865-574-7397), Environmental Sciences Division
Dr. Efroymson went to LaSalle University for an undergraduate degree in biology and english. She did not have the money to attend medical school and heard that one could be paid to attend graduate school. Dr. Efroymson went to the University of Maryland for a master's degree in marine biology and during that time realized that fieldwork was not for her. She attended Cornell University for her doctorate where she realized she was not particularly keen on lab work either. She spent some time in DC doing policy work and is currently involved in conducting ecological assessments using other people's data.
3. Yvonne Horton, Safety and Health (hortoncy@ornl.gov, 865-576-5067)
Ms. Horton was born and raised in the Knoxville area. She received a master's degree in public health. Ms. Horton conducted research with mice for several years and then entered the safety and health field. She is currently an industrial hygienist who tries to protect workers from anything they might be exposed to. An obstacle that Ms. Horton faced was during her switch from research to safety and health; she entered a field that was mostly men and needed to prove herself. She also considers this experience one of her major successes, as she earned the respect of her co-workers and now considers them some of her closest friends.
4. Keith Joy, Quality Manager (joyks@ornl.gov, 865-574-0795)
Mr. Joy oversees the activities that support science as they relate to quality. He is involved in performance improvement and must deal with a lot of regulations. Obstacles he faces in his career are when he needs to ask people who have been with ORNL for a long time to change their ways in order to improve performance. Mr. Joy becomes frustrated when people are not motivated to do their best. He needs to talk a lot of languages because he is communicating with senior management members and field workers. If Mr. Joy could do something differently, he would not stop going to school.

5. Swati Wilson, Safety and Health (wilsonsg1@ornl.gov, 865-576-6121)
Ms. Wilson is in the Respiratory Protection Program that protects workers from airborne pollutants. She practiced dentistry in India 18 years ago. When she moved to the US, Ms. Wilson went back to school and received a master's degree in public health from the University of Tennessee. An obstacle she faced was when she moved to the US, people did not accept her experience as qualifications and she needed to go through school all over again. Ms. Wilson's highest points are when she achieves the goals she has set for herself. She would also like to become a pilot.
6. Wendell Ely, Plant and Equipment (elywg@ornl.gov, 865-241-4588)
Mr. Ely studied communications in school so he could be in broadcast news and in particular, be an anchor for ESPN. He was hired by ORNL directly from school, which then put the pressure on him to graduate. He currently supports ESH&Q by trying to improve the performance of equipment. His long-term goals are to become a site manager. His personal successes include getting his job. Obstacles he faced included moving to Oak Ridge from North Carolina. If Mr. Ely could do something differently, he would play MBNA basketball.
7. Linda Smith, Environmental Management (smithll@ornl.gov, 865-241-3711)
Ms. Smith received a degree in chemical engineering from Perdue University. She has been with ORNL for 19 years. She decided to enter the field upon seeing a TV documentary of Love Canal when she resolved herself to enter a profession to help people. She is currently measuring air compliance standards for the type and level of air pollutants. A personal success was when Ms. Smith was able to be a section head at ETTP. An obstacle was moving from Gary, IN, a predominantly black city to Perdue University, a predominantly white school. She felt she was successful in being able to handle discrimination and made the decision to allow situations to help her become a better person and engineer. Ms. Smith would continue in school right away if she could do something differently. She had been working on her master's degree for 10 years.
8. Art Stewart, Environmental Sciences Division (stewartaj@ornl.gov, 865-574-7835)
Dr. Stewart came from a poor, rural area in AZ. He went to Northern Arizona University where he did a master's in biology and worked on Lake Powell. He didn't know what to do next, so he went into the Peace Corps in West Africa. By the end of his experience there, he decided to go for a doctoral degree at Michigan State University in aquatic ecology. He did a post doctorate fellow at ORNL. Obstacles he faces are trying not to spread himself too thin with all of the interesting things going on at ORNL. A success was when he was able to jump through the bureaucratic loops at ORNL in order to get a fellow researcher on site.
9. Myint Thein, Radiological Protection (theinm@ornl.gov, 865-574-6655)
Dr. Thein is from Burma. He studied chemistry there and taught. He decided to obtain his doctorate degree in the US from the University of Arkansas because an offer came from a world famous professor in nuclear chemistry. He went into teaching upon completion of his degree and then obtained a position at ORNL. He has been there for 17 years. He is currently running a program in radiation protection for ORNL. Dr. Thein suggests that in order to succeed, one must define their goals and work toward them; obstacles can be overcome if one is willing to put in the effort. He also suggests seeking out a professor/mentor who is willing to help and advise along the way. Dr. Thein would also like to teach and conduct research at a university.

10. Katatra Day, Environmental Justice Specialist, NEPA Department and former Tuskegee University SEEDS student (daykc@oro.doe.gov, 865-576-0835)

Ms. Day works for the Department of Energy in the NEPA (National Environmental Policy Act) Department. The DOE serves as a liaison for those who are going through the NEPA process. Ms. Day is the assistant manager for black employment at DOE. She received a bachelor of science from Tuskegee University, with an emphasis in policy and environmental science. Obstacles Ms. Day faced included having to know a lot about many different regulations, being asked to develop a web page although she had no prior experience in that area, moving from a predominately black school to a predominately white area, and being young when many of the people she is working with are older. Ms. Day suggests that one should be passionate about one's work because it makes no sense to spend the money and time on obtaining a degree if one is not going to enjoy the work to which that degree leads. She believes that HBCU graduates need to put 150% into their work because their schools are not as valued as some majority institutions.

Mr. Milan provided an overview of the themes that emerged during the panel discussion including: the need for passion in one's work, the importance of mentors to help one through their career, obstacles can be overcome with diligent effort, the value of caring about issues so that one wants to make a difference in the world through one's work, the importance of education, and the importance of developing relationships with people in the field.

Environmental Safety Health and Quality (ESH&Q)

Both the work carried out at ORNL during the war effort and subsequent work has involved radiological and hazardous materials. The main focus of the ESH&Q directorate is to ensure the protection of ORNL employees and the public against these materials. They do this by monitoring ORNL's impact on the environment and ensuring compliance with federal and state statutes and DOE regulations on the grounds.

Bioassay Lab

The bioassay lab is involved in monitoring both short- and long-term effects of occupational activities on worker health. In particular, the lab tests bioassay (urine) samples of ORNL employees to determine whether employees have been exposed to radioactive isotopes. Tests normally come in below allowable levels. Benito Gonzalez lead us through the testing process and then we entered the counting lab, where Roger Myers showed us the alpha spectrometers that count isotopes in samples.

Environmental Management (EM)

Karen Downer explained that the Environmental Management Group serves as ORNL's liaison with regulators. There are 70 people employed in the group that mainly interpret and translate requirements, manage all aspects of the permitting processes and operations for newly generated waste, and monitor and report on the environmental impact of ORNL operations. Ms. Downer gave us the 1998 Annual Site Environmental Report for the Oak Ridge Reservation. Regarding employment with the EM group, she indicated that people who have had a few years experience with regulatory agencies are attractive, as they have a strong grasp of the regulatory process.

Respirator Facility

The respirator facility provides ORNL employees with the technical support and equipment to protect workers from airborne pollutants such as asbestos. There are nine different kinds of masks and employees must take a fit test in which a person tries on a mask that is connected to a computer and air levels are measured inside the mask to determine the proper fit.

Great Smoky Mountain National Park

Meeting with Dr. Robert Keller – Cades Cove

Dr. Robert Keller (Robert-Keller@utc.edu, 423-755-4794) is a professor at the University of Tennessee at Chattanooga. He has conducted research in the Smokies for over six years. Dr. Keller did his dissertation work on the affects of the European wild boar on the park's plant and animal population. The boar was introduced in the park in the 1940s. Currently, he is studying small mammal populations in riparian areas of Cades Cove. Cades Cove in a limestone rich area and thus has a plant community that is unique to that area.

The areas Dr. Keller is studying consist of two fields that are intersected by a stream. One of the fields had been burned and the other field had been mowed in an effort to allow native species to regenerate instead of the exotic grass species that had been there. His hypothesis is that diverse vegetation as a result of burning and mowing that enables native species to regenerate in the area will result in a diverse animal population. To test his hypothesis, Dr. Keller has set out Sherman live traps along the stream edge in both fields because the edges are where most small mammals will be found.

We went out to the study plots with Dr. Keller and his student assistant Matt to check traps. We found two white-footed mice (*Peromyscus leucopus*) on the edge of the field that had been burned. Dr. Keller anesthetized the mice with halothane; weighed them with a Pesola scale; measured their foot, body, ear, and tail; brushed them with a toothbrush to check for ectoparasites such as ticks; and then gave them an ear tag. All of this information was recorded in his field book. He released the mammals in a hidden area so they have protection during the time they are reviving. Dr. Keller replicates these methods often over several field seasons to ensure reliability.

Dr. Keller explained that he is not seeing the trend that his hypothesis suggests. To date, few small mammals have moved back in to the regenerating fields. There appears to be a trophic disorder, but it is not clear what it is. This appears to have also impacted the failed reintroduction of red wolves to the Smokies, as one of their potential food sources is unavailable.

Meeting with Ranger David Carney – Sugarlands Visitor Center and hike to Cataract Falls

Ranger Dave (865-436-1714) explained that Great Smoky Mountain National Park is the most visited of the national parks with over 10 million visitors a year. Some days, as many as 8,000 people pass through the Sugarlands Visitors Center. The Smokies are unique in the vast amount of species diversity; there are more tree species in the park than in northern Europe. It is the most diverse park in the country. The park covers an area of approximately a half million acres.

The area was originally inhabited by the Cherokee Indians who called the mountains *Shaconage*, meaning “blue, like smoke.” The Cherokee were forcibly removed in the 1830s as white settlements became established. The park was established in 1934 because commercial logic threatened to destroy the forests. Only 20% of old growth stands are left. The Smokies were among the first national parks assembled from private lands. Many groups in Tennessee and North Carolina raised the money to buy the private lands to donate to the federal government. Throughout the year, 250 rangers are employed at the park, that number doubles in the summer.

Much of Ranger Dave’s talk focused around species diversity in the park, the affect of exotic species, and reintroduction of native species. The impact of exotic species in the park has at times been devastating. The introduced Chinese chestnut tree carried a blight that completely wiped out the American chestnut tree. There is currently an American Chestnut Foundation that has crossbred both chestnut trees to make a 78% pure American chestnut that is resistant to the blight. In addition, exotic dogwoods have been introduced that carry a fungus that is killing the native dogwoods.

The European wild boar was introduced in the 1940s and is, in effect, a 350-pound wild pig. The boar has had far reaching affects on the vegetation structure in the park, which also impacts the animal population. The boars are consuming the food source of other animals and also reducing ground cover, which opens animals up to predation. There are about 250 wild boars left in the park. Rangers hunt them in the evening after the park is closed in an effort to exterminate them.

Air quality is also a problem in the park because it is situated near several major metropolitan areas. The affects of acid rain have been detected in the park. Streams are losing their buffer quality as they become more acidic.

Native species that have been successfully reintroduced include peregrine falcon, river otters, and coyotes. The park tried unsuccessfully to reintroduce the red wolf for nine years. The park service just released 28 elk on the east side of the park; eight of the elk were pregnant. They were held in a pen for three months before their release to become acclimated to the area.

The incredibly rich species diversity of the Smokies, due in large part to the amount of precipitation and elevation changes that enable many different types of life zones, make the park a unique and valuable area. The evident anthropogenic/human impacts such as the introduction of exotic species, visitor traffic, and air pollution from surrounding metropolitan areas make it vitally important to identify all the existing taxa in the park. This is what the All Taxa Biological Inventory (ATBI) project is trying to accomplish. The information gained from the ATBI project will be of great help to the park service in trying to manage the park's natural resources.

Appendix A
SEEDS 2001 Student Field Trip
Participating Student List

ALCORN STATE UNIVERSITY

1. Amii Johnson
4374 Hwy. 37 South
Vicksburg, MS 39180
601-631-0613
amii19@hotmail.com

2. Brandi L. McClain
607 Barron St.
Winona, MS 38967
662-283-1227
treace00@bet.com

3. Yoby C. Allen
719 Tom Bibbs Rd.
Winona, MS 38967
662-283-2525
cheniece_31@hotmail.com

FLORIDA MEMORIAL

4. Sherly Auguste
830 NE 145 St.
North Miami, FL 33161
305-945-7480
augu2895@hotmail.com

5. Tameka Nunn
18101 NW 7th Ave. Apt. 202
Miami, FL 33169
305-651-6366 (3088)

6. Fredrena Byrd
2911 NW 162 St.
Opa-locka, FL 33054
305-624-1097
FredrenaB@aol.com

PAINÉ COLLEGE

7. Mertica E. Black
3530 Kingston St.
Jacksonville, FL 32254
904-924-9478
Blackm73@hotmail.com

8. Dana Marie Jackson
9680 Beacon Avenue South
Seattle, WA 98118
206-721-0560
jackson_dana@hotmail.com

9. Tasha Brown
1235 15th St., BG Hall #219
Augusta, GA 30901
706-821-8587
sweet3beehive@yahoo.com

HAMPTON UNIVERSITY

10. David Paulk
337 Fieldcrest Drive
Fairlawn, OH 44333
757-728-6470
theuncannypaulk@hotmail.com

LEMOYNE OWEN COLLEGE

11. Torsha White
2525 Selman Ave.
Memphis, TN 38112
901-327-4705/246-4705
torshawwhite@hotmail.com

12. Andre L. Williams, Jr.
6945 Waters Bend Cove
Memphis, TN 38141
901-363-6124
andre.williams@lycos.com

13. Tammara Bell
6027 King Way Walk
Lithonia, GA 30058
770-498-3513
Tam2cutz@aol.com

OAKWOOD COLLEGE

14. Kimberly Anderson-Blencowe
PO Box 22651
Huntsville, AL 35814
256-852-3340
kimblencowe@hotmail.com

15. Ryan Manning
1585 SW Andalusia Dr.
Fort St. Lucie, FL 34953
561-336-7670
romanning@oakwood.edu

16. Jonathan Elysee
Oakwood College
Edwards Hall
Suite b3-3b
Huntsville, AL 35896
jdelysee@oakwood.edu

RUST COLLEGE

17. Sundra Joy King
1104 Lucedale St.
Jackson, MS 39209
601-948-8870
king_sundra@hotmail.com

18. Melody Sipp
PO Box 599
Coldwater, MS 38618
melsipp@netscape.net

19. Shameca Wilson
1035 W. Woodward Ave.
Holly Springs, MS 38635
662-252-1825
Shameca99@hotmail.com

TUSKEGEE UNIVERSITY

20. Jacquai Y. Harris
1353 Kappel Dr.
Dellwood, MO 63135
314-522-1705
loveyvette@hotmail.com

21. Luanna Prevost
1213-J Logan St.
Tuskegee, AL 36088
334-727-9759
lbprevost@hotmail.com

22. Yasmeeen Qadim'asil
3208 Valleydale Dr., SW
Atlanta, GA 30311
404-505-1864
yqzoo@hotmail.com

Appendix B
SEEDS 2001 Student Field Trip
Participating SEEDS Faculty and Coordinators

FACULTY

Dr. Alex D.W. Acholonu, Alcorn State University, Professor, Department of Biological Sciences, 1000 ASU Drive #843, Alcorn State, Mississippi 39096. Phone: (601) 877-6236, FAX (601) 877-2328, E-mail: acholonu@lorman.alcorn.edu

Dr. H.K. Chaudhari, Florida Memorial College, Department of Natural Sciences and Mathematics, 15800 NW 42nd Avenue, Miami, Florida 33054. Phone: (305) 626-3696, FAX (305) 628-7288, E-mail: chaudhri@fmc.edu

Dr. Stanley Abell, Associate Professor of Biology, Department of Natural Science, Math and Computer Science, LeMoyne-Owen College, 807 Walker Avenue, Memphis, Tennessee 38126. Phone: (901) 774-9090 ext. 417, FAX (901) 942-6245, E-mail: Apollo510@aol.com

Ms. Doris Wilson, Instructor of Biology, Department of Science and Math, Rust College, 150 Rust Avenue, Holly Springs, MS 38635. Phone: (662) 252-8000, ext. 4210, FAX (662) 252-8871, E-mail: dwilson105@hotmail.com

COORDINATORS

Ms. Melissa Jurgensen-Armstrong, Undergraduate Education Program Leader, Institute of Ecosystem Studies, 181 Sharon Turnpike, Box R, Millbrook, NY, 12545. (845) 677-7600 x 322, FAX (845) 677-6455 E-mail: Jurgensen-ArmstrongM@ecostudies.org

Mr. Jason Taylor, Education and Outreach Program Coordinator, Ecological Society of America, 1707 H St., NW, Suite 400, Washington, DC 20006. (202) 833-8773 x 208, FAX (202) 833-8775, E-mail: jason@esa.org

Appendix C

United Negro College Fund • Ecological Society of America • Institute of Ecosystem Studies
with support from the Andrew W. Mellon Foundation
Strategies for Ecology Education, Development and Sustainability (SEEDS)

Student Field Trip

April 19 – 22, 2001

Oak Ridge National Laboratory and Great Smoky Mountain National Park

Agenda

Field Trip Goals:

- (1) To provide students with an overview of Great Smoky Mountain National Park and Oak Ridge National Laboratory,
- (2) To expose students to the practical application of ecology at a research laboratory and national park, and
- (3) To expose students to various careers in ecology.

Thursday, April 19, 2001

3:00 – 8:00 PM Registration and check in at Quality Inn in Knoxville, 6712 Central Avenue Pike, Knoxville 37912, 865-689-6600

8:15 PM Quality Inn Atrium – welcome, introductions, field trip overview and pizza buffet

Friday, April 20, 2001

7:00 – 7:45 AM Breakfast in breakfast area (near the lobby)

8:00 AM Vans depart for Oak Ridge National Laboratory (ORNL)

9:00 – 9:30 AM Security check in at ORNL

9:30 - 10:00 AM Environmental Sciences Division Overview presented by the Division Director, Dr. S. G. Hildebrand

10:00– 12:00 noon Field Site Visit at Walker Branch Watershed TDE* and the FACE** Site (tour group to be split up)

*TDE - The Throughfall Displacement Experiment (TDE) is a large-scale study that is designed to examine the response of a temperate deciduous forest to altered precipitation. The TDE is unique in that the experimental design allows rainfall to be collected on a "dry" plot and passively transferred to a "wet" plot, thus creating soil conditions that mimic both increased and decreased precipitation. As part of the TDE tour, the group will be introduced to basic issues surrounding global climate change and hear highlights regarding the results of this catchment-scale manipulation. Implications for existing and future forests of the eastern United States will be discussed.

**FACE - The ORNL free-air CO₂ enrichment (FACE) study is one of only a handful of studies in the United States examining the growth and physiological response of large trees to elevated CO₂ concentrations. Building upon a rich history of DOE-sponsored CO₂ effects research on seedlings and saplings grown in pots and open-top chambers, investigators working at the FACE site seek to better understand how a closed-canopy forest, both above- and below-ground, will respond to long-term CO₂ enrichment. While visiting the FACE site, researchers will present a brief history of CO₂ research at ORNL, discuss important global change issues, and summarize findings from the study as it enters its fourth year of exposure.

12:15 – 12:30 PM Welcome to ORNL by Dr. Frank Harris, Biological and Environmental Sciences Director, and introduction to the All Taxa Biodiversity Inventory Project at the Smokies, on which Dr. Harris is the President and Chair of the Board of Directors of the non-profit group which runs the project, Discover Life in America.

12:30 - 1:30 PM
Panel Members

Lunch in ORNL Cafeteria with Panel Discussion Group

- Katatra Day – Environmental Justice Specialist, NEPA Department and former Tuskegee University SEEDS student
- Art Stewart, Environmental Science Division
- Rebecca Efroymsen, Environmental Science Division
- Robert Washington-Allen, Environmental Science Division
- Swati Wilson - Safety and Health
- Wyndell Ely - Plant and Equipment
- Linda Smith - Environmental Management
- Mynt Thein - Radiological Protection
- Yvonne Horton - Safety and Health

Panel Introductions

- Current Responsibilities
- Educational Background
- Career Paths and Plans
- Personal Successes and Obstacles

Open Discussion, Suggested Topics

- Communication Skills - oral and written
- Delayed Gratification
- Flexibility
- Interviewing Skills
- Corporate Etiquette
- Computer Skills
- Professional Competition

1:30 – 3:00 PM Environmental Safety Health and Quality (ESH&Q Tours)

Three groups will tour 3 different areas to gain knowledge for the type of activities conducted in and services provided by ESH&Q. Each group will consist of approximately 12 people. Each group will spend approximately 30 minutes at each location.

| Group | <i>Destination 1</i> | Destination 2 | Destination 3 |
|--------------|--|--|--|
| A | 3550 Respirator Facility | 4500 Bioassay Lab | Cafeteria CR Environmental Management (EM) |
| B | 4500 Bioassay Lab | Cafeteria CR Environmental Management (EM) | 3550 Respirator Facility |
| C | Cafeteria CR Environmental Management (EM) | 3550 Respirator Facility | 4500 Bioassay Lab |

3:30 PM Vans depart for BridgeMont Camp and Outdoor Center near Great Smoky Mountain National Park, 3620 Katy Hollar Rd., Sevierville, TN 37862, 865-453-8841.
6:00 PM Dinner at BridgeMont

Saturday, April 21, 2001

7:45 – 8:15 AM Breakfast at BridgeMont
8:30 AM Vans depart for Cades Cove

9:30 – 11:30 AM Meet with Robert Keller, University of Tennessee at Chattanooga and learn about the work of an ecologist who studies the interaction of plants and animals in the park. We will check Dr. Keller's small mammal monitoring plots and learn about his research methodologies and also hear about the All Taxa Biodiversity (ATBI) project at the Smokies.

12 noon – 12:30 PM Picnic lunch in the park
1:00 – 3:00 PM Sugarlands Visitor Center – Meet with Ranger David Carney and hear about the reintroduction of native species to maintain natural ecosystems, managing the Smokies natural resources, and more about the ATBI project as we walk in the park.
3:00 – 3:30 PM Student field trip evaluations and questionnaire
3:30 PM Driving students have the option to depart
3:30 – 5:00 PM Optional hike in the park
6:00 PM Dinner at BridgeMont

Sunday, April 22, 2001

7:00 – 7:30 AM Breakfast at BridgeMont
7:45 AM Vans depart for Knoxville airport

Note: If for some reason you get separated from the group during our travels this weekend, please call Dr. Chaudri's cellular phone at 954-668-6500.