



Creating Lasting Value:
A Survey of EPA Minority Academic Institutions (MAI)
Fellows From 1990-2001

Prepared by
the Environmental Careers Organization (ECO)

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Highlights

This survey of former Minority Academic Institution (MAI) undergraduate fellows found that over 90% consider their EPA MAI Fellowship and internship support to be “very helpful” or “most helpful” in their professional and personal development.

48% of Fellows contacted are pursuing careers as environmental professionals.

“It paid for me to go to school. The last year I had a full scholarship and I had a chance to do the Summer internship in Atlanta with EPA. And in doing that, I fell in love with the environment. When ECO and EPA came into my life, it was a blessing.” – Marlisa Stewart

Fully 74% of respondents pursued graduate degrees after their MAI Fellowship.

“Without the EPA program, I wouldn’t be in the Ph.D. program. There aren’t a lot of fellowships out there for students in environmental research. Definitely the most helpful impact on my professional development!” - Sacoby Wilson

Of the Fellows contacted, 65% became environmental professionals or pursued advanced environmental degrees or worked as environmental professionals after graduation.

“It was tremendous. It helped me in several ways – to hone in on what I wanted, to work in a professional atmosphere, meeting so many people. It was a catalyst. It actually was the reason that I went on from Environmental Sciences and specialized for a Ph.D. in Environmental Health.” - Girvin Liggins

MAI Fellows in environmental careers include:

- Leadership Development Coordinator, National Wildlife Federation
- Environmental Specialists, US Environmental Protection Agency
- Environmental Health Inspector, Anne Arundel County, Maryland
- Financial Manager, US Environmental Protection Agency
- Environmental Specialist, Missouri Department of Resource Conservation
- Environmental Health Specialist, Center for Disease Control
- Marine Biologist, University of Delaware

Fellows contacted expressed how their EPA MAI undergraduate fellowship provided substantive value that went beyond financial support and professional internship experience:

“My ECO internship helped to solidify what I wanted to do with my career; opened many doors for me; and helped me to broaden my knowledge and scope of environmental issues.” - Na’taki Osborne

“To get an EPA fellowship was a real blessing- and it was an ego shot in the arm. I felt that if I can do this, I can do anything...I’m walking, talking, living proof that you can find your niche.... And the MAI program really helped.” - Priscilla Stotts

“When I saw I could combine my love for environmental sciences with public health. I knew that was it – that was what I wanted to do.” Girvin Liggins

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Executive Summary

The purpose of this survey was to contact former EPA Minority Academic Institutions (MAI) Fellowship recipients from the years 1990 - 2001 to document their career progress and professional development, and to determine what proportion of the former Fellows are pursuing environmental careers. Results of the survey describe the specific beneficial outcomes, according to former Fellows, of the fellowship sponsorship and EPA internship experience. From feedback provided in the surveys, this report also provides recommendations for the staff and partners of EPA to make informed decisions about where efforts towards improvements can be directed.

The survey addressed the following:

- Impact of EPA MAI Fellowships on Fellows' professional development
- Proportion of Fellows pursuing environmental careers after their Fellowships
- Proportion of Fellows continuing on to graduate studies
- Extent to which Fellows achieved professional status in an environmental field
- Barriers encountered in pursuing environmental careers
- Additional services needed by Fellows for environmental career development
- Improvements to the program or internship which would be beneficial

An interview methodology was employed to meet the survey project goals. Interviews were conducted by telephone using a survey developed for this project. In cases, where telephone contact was not possible, surveys were sent via email, and postcards mailed to others for whom no current telephone or email contact information was available. Interviews were conducted during the Fall and Winter of 2002.

Results of the interviews yielded the following compelling information regarding the EPA MAI Fellowship program overall, and the Internship component in particular:

90% of respondents rated the Fellowship as "very helpful" or "most helpful" in their professional development.

Respondents reported the following specific benefits from the EPA MAI Fellowship:

- **Allowed full-time attention to studies, due to the significant financial support**
- **Helped to explore a variety of environmental courses, e.g., Environmental Law**

- Graduate School - "the Fellowship pushed me" onward
- Working with government employees & making professional contacts
- Experience with professionals in environmental disciplines
- Mentoring - passing on experiences & learning to other students; advising them

Respondents cited the following benefits of the EPA/ECO internship:

- Opportunity to pursue interests in a 'real world' setting
- Conducting significant, interesting or timely research with professionals in the field
- Developed working relationships with professionals in the environmental disciplines
- Encouragement to pursue student's area of interest in graduate school
- Living in a new place - exposure to Washington, DC or other areas
- Career fairs & exposure to many environmental professions & paths

Identification of areas for improvement and additional services needed are briefly addressed, based upon comments by Fellows in the course of survey interviews.

In addition to these results, the survey identified reasons why some students did not enter or are no longer in the environmental field. Among these were:

Medical school (higher earnings)

Not finding environmental work after earning a BA or Master's

"Burned out" in grad school in area of interest

Interested in working more directly with people than with theory or in laboratories

In summary, several alumni have achieved prominence and significant career advancement in environmental careers since their undergraduate fellowships. **Of Fellows surveyed, 48% became environmental professionals (plus others who were then changed careers). Also, 42% of Fellows surveyed pursued graduate degrees in the environmental field.** National-level support by EPA clearly helped this group of racially diverse students develop a vision and basis of action for their environmental careers.

The guidance received and real-world internship experience at EPA dramatically increased students' awareness of the work of national level environmental pollution prevention, research, and remediation, and its value to the country and communities; as well as the range of national laws and compliance goals, and the extent to which they have been implemented. Importantly, it brought them into contact with technical and managerial professionals currently working in the field in a

hands-on context. The Fellowship began the work of students developing their own strategies to realize an environmental career.

Indeed, EPA's MAI Fellowship program made a significant difference in the lives and careers of students. The support and encouragement provided by EPA stimulated Fellows to become more aware of careers in the environmental field, to deepen their interest in specialized areas in the field, to be more likely to attend graduate school and enroll in an environmentally-related degree, and to pursue careers as environmental professionals.

Meet The Fellows: EPA MAI Alumni Today

Na'Taki Osborne National Wildlife Federation

2002 MS Environmental & Occupational Health, Emory University
1996 BA Chemistry, BS Civil & Environmental Engineering, Georgia Tech

Environmental Pioneer in Community Leadership

Na'Taki Osborne is an environmental engineer by educational training, but is committing her life to being a social change engineer. Her commitment to social change is rooted in her own experiences growing up near "Cancer Alley", the 85-mile strip of land between Baton Rouge and New Orleans, Louisiana which houses over 134 chemical hazardous waste facilities and is identified by toxicologists as having the highest rate of incidence of cancer, miscarriages, and birth defects in the country. Her mother's diagnosis with breast cancer was her impetus to get involved in the environmental justice movement.

A 1996 graduate of Spelman College, where she majored in Chemistry and Civil and Environmental Engineering (at Georgia Tech), Na'Taki received her master's in Environmental and Occupational Health from Emory University's Rollins School of Public Health in May 2002. She is employed by the National Wildlife Federation as its only Sustainable Communities Organizer where she manages an initiative that addresses water quality and environmental justice issues in the most polluted watersheds of Atlanta, GA.

She co-founded the Center for Environmental Public Awareness (CEPA), a non-profit, community-based organization that develops environmental education and leadership development training for community groups, students, and technical professionals. Through CEPA, she coordinates and helps deliver environmental awareness and training programs nationwide to communities, engineering and science students, and technical professionals.

Na'Taki was recognized as a 2001-2003 Environmental Leadership Program (ELP) Fellow. She is also a 1998 recipient of an Environmental Protection Agency Special Appreciation Award, 1997 Michael Schwerner Activist Award, and President Clinton's 1997 President's Service Award (Category: Environment), among other honors. Ebony Magazine recognized her as one of 30 Top Leaders of the Future under age 30 in its January 2001 issue.

Her ECO internship assignment was at Region 4 of the US Environmental Protection Agency in the Summer of 1994 where she worked in the Waste Management Division and the South Superfund Remedial Branch and assisted remedial project managers with reviewing, researching, and compiling data on environmental justice/injustice issues concerning people who live near Superfund hazardous waste sites.

Na'Taki shares, "My ECO internship helped to solidify what I wanted to do with my career; opened many doors for me; and helped me to broaden my knowledge and scope of environmental issues."

Marlisa Stewart
US Environmental Protection Agency

2000 BS Biology, Grambling State University

Environmental Scientist at US EPA in Communities & Environmental Justice

Marlisa Stewart graduated two years ago with a BS in Biology from Grambling State University. Now she works at the US EPA on issues of Environmental Justice, Communities & Children's Health.

As a winner of an EPA Minority Academic Institutions Fellowship, she received a two year scholarship and an ECO Summer Internship at EPA. Marlisa speaks highly of her fellowship experience, "If it wasn't for the Fellowship, I wouldn't have gotten to go to Atlanta & gotten my foot in the door with the EPA. People saw it on my resume & it opened doors. My grades can speak for themselves, but sometimes the right words or contacts can make a difference."

Stewart's 1999 internship as an ECO Associate with the U.S. Environmental Protection Agency in Harris County gave her an opportunity to interact with leaders and communities on environmental justice issues. For her internship she identified environmental justice contacts from different divisions, organized and charted complaints; and identified community grassroots organizations and environmental justice issues in their communities. Her work also involved identifying TRI, RCRA and Superfund sites in Region 4.

Of her Fellowship, Stewart says, "It paid for me to go to school. The last year I had a full scholarship and I had a chance to do the Summer internship in Atlanta with EPA. And in doing that, I fell in love with the environment. Because I was just a Biology major interested in med school. It's kind of funny, because I kind of stumbled onto this environmental thing in my life. When ECO and EPA came into my life, it was a blessing."

Following her internship, Stewart was hired into EPA's rotation program, working at four different offices in two years. This training program gives new hires a better perspective on aspects of EPA in which they are especially interested. She worked in the Office of Children's Health in Washington, DC; with the Office of Strategic Environmental Analysis on their web site; with SuperFund, going out to different sites, and in the Environmental Justice Regional Field office, as well as her home office in Air and Radiation. Besides program activities, she recruited college students for two years, delivering presentations at Notre Dame, University of Illinois, USC, and at career recruiting events.

Stewart plans to apply her experience to continued work at EPA in Children's Health and Environmental Justice, serving as a liaison to integrate the efforts of both areas.

She currently participates in the ECO Alumni CARE Program, serving as a mentor and sharing her experience with current Associates interning in environmental careers.

Michael “Brandon” Jones
Ph.D. Researcher, University of Delaware

2003 Ph.D. Marine Science, University of Delaware
1994 MS Marine Science, University of Delaware
1991 BA Biology, Lincoln University

Broadening Kids’ Horizons & Keeping Economically Vital Fisheries Flourishing

As an ECO Associate, Brandon participated in an EPA operation in Alaska’s Brooks Range, discovering suitable temperatures for wastewater filtration in wetlands. Studying performance characteristics at varying temperatures, he and other researchers found, interestingly, that once the wetlands freeze, the ice serves as an insulator, allowing filtration to continue even during coldest months without sunlight. Such field work provided him early “real-world” exposure, and the chance to work with science professionals.

Brandon describes his EPA Fellowship & ECO internship as “very helpful in integrating life experience” during his undergraduate education.

In 1991, he received a B.A. in Biology from Lincoln University in Pennsylvania. After graduation, he taught biology, environmental studies, and research to motivated magnet high school and gifted students.

One of Brandon’s favorite experiences since his EPA MAI Fellowship days, was connecting kids in the classroom with scientists conducting research live on the ocean floor. This highlight of his career came in Summer 2001, when 180 classrooms, representing 13,000 students, signed up to take part in “Extreme 2001: A Deep-Sea Odyssey”. The mission’s Chief Scientist, Dr. Craig Cary of the University of Delaware, called on Jones to serve as Educational Coordinator for the journey. His environmental field work and educational experience teaching high school students prepared him for the role.

Launched from a ship floating 12 miles off the coast of Costa Rica, the submersible, “Alvin,” famous for its use in the discovery of the wreck of the Titanic, carried the scientists more than mile deep, to explore hydrothermal vents on the floor of the Pacific Ocean. For the “Phone Calls to the Deep” program, Brandon facilitated communication between 40 classrooms and scientists in the submersible, through a live conference call.

He also interviewed crew and scientists, photographed the voyage, and served as a reporter on board the ship Atlantis; sending daily pictures, journal entries, dive logs, etc. to the web site for the classroom students to see.

In 1994, continuing his own education, he earned an M.S. in marine biology-biochemistry 1994 from the University of Delaware Graduate College of Marine Studies (CMS).

Currently he is in the final year of his PhD program at the College of Marine Studies. In the University’s labs, he enjoys connecting his passion for water and what lives in it with real-world fisheries research on the local blue crab populations.

Today, Brandon investigates factors, such as physical features, tides, etc., that affect the transport of blue crab larvae into a nursery. Using these, he is able to estimate what the adult catch might be two years down the line. Because of the importance of blue crabs to the local economy, local television and print news media have carried stories featuring the lab's work. Given that "blue crabs are the number one fishery in Delaware," Brandon notes the value of "how we can better manage our fisheries [and] help managers or fisherman to predict a large year class or catch," and its significance for the local economy.

Brandon Jones is a member of the American Society for Limnology & Oceanography (ALSO), and has presented poster sessions to this organization, including a talk in June, 2002. He hopes to someday teach minority students at a university or in a non-formal setting e.g. at aquariums or in government, stimulating their interest in marine biology.

Curry Jones
US Environmental Protection Agency

2001 MPH Public Health, University of Washington
1994 BS biology, Wiley College

Combining Environmental Science and Public Health to Guide Policy

Curry Jones has been an Environmental Protection Specialist at US EPA Region 4 since 2001, working for the EPA Standards Monitoring and Total Maximum Daily Loads (TMDL) Branch in Atlanta. Prior to that, he was an Environmental Protection Specialist at US EPA Region 10 in Seattle's TMDL program for 8 years.

"The EPA Fellowship provided me with an opportunity to take my courses in chemistry and biology and relate them to environmental science. It opened up the door for me to get experience outside of college, and I got to go to another area in another part of the country. And it helped me get a job."

He describes working with the Nez Pierce Native American tribe, a significant landholder in Idaho: "They're very interested in protecting natural resources. Tribal custom is that they use water, trees, fish, etc., and a lot of tribal symbols are related to how they manage their land.

"So learning water resource management from a tribal side has helped, since the decisions we make as a federal agency affect everybody.

"We would go out in the field and collect and jointly analyze data. The state and EPA and the tribe collaborated to make water quality improvements. It was a process that brought stakeholders to the table together to do the analysis and help make the decisions."

Curry refers to his internship as an opportunity to be involved with the connection between science and policy as well. "The internship with EPA allowed me to take scientific information and translate that into policy, and how to shape public policy. With that, when I

went back for my MPH, it was easy for me to see how to apply the science, and how it could be used for public policy.

He credits the EPA MAI fellowship and ECO internship with his career progress. “Without this opportunity I wouldn’t be in the position I am in now. Every chance I get, I am trying to recruit students to get involved with ECO.” He is currently working with his alma mater, Wiley College, which just started up an Environmental Science curriculum, encouraging them to involve more minority students in environmental careers.

Tonia Herman

Graduate Researcher, Environmental Health Sciences

2003 Ph.D. Biomedical Sciences, East Virginia Medical School

2001 MS Biology, Old Dominion University

1999 BS Chemistry, Norfolk State University

Applying Environmental and Biomedical Sciences for Human Health

“It [the Fellowship] really helped me tremendously...It provided me the opportunity to go do research in a laboratory. It also provided me with the opportunity to focus on what I really wanted to do, because when I first came to school, I had to work. Once I got the fellowship, I could focus on my studies in my area of interest.”

"My ECO internship experience was the most interesting learning experience of my scientific career. This internship taught me what becoming a scientist all about. I am currently working in the area of reproduction.”

As an EPA/ECO intern in 1998, Herman researched, designed, and performed experiments using aquatic insects in a biological lab for the EPA’s Division of Environmental Science and Assessment. She later became an intern project advisor. Of her internship she recalls, “I got a paper out of it, so that was helpful. I learned how to purge ammonia out of sediment. The EPA has a standard method, and we were trying to come up with a better method. It gave me background in the scientific method – how to come up with hypotheses and test them.”

Referring to her EPA internship experience, Tonia notes, “Where can I start? The whole idea of working on a project – I had to learn to write like a scientist – the introduction, methods section, etc. I also had to present my findings at the end. It provided me the opportunity to do research in a laboratory. So I got a head start because these are the kinds of things that required of a scientist. And it’s a different atmosphere than a class. I worked with a really good group of people and they were very helpful. It also helped in terms of how to interact with my communications skills and how to interact with professionals in the field. And – I got to go to Washington and do things that I had never done before, plus meeting new people.”

“My name is on an article published from my internship, and also on an abstract presented to the American Society of Cell Biology [on] how to purge ammonia out of sediment.”

Tonia has also co-published an article in the *Journal of Andrology*, “Binding of Protein DD/E to the Surface of Rat Epididymal Sperm Before Ejaculation and After Deposition in the Female Reproductive Tract.”

She notes, “My long-term goal is to bring together biomedical and environmental sciences, possibly looking at how compounds in the environment affect the reproductive system or cell signaling, or how compounds in the environment affect how cells communicate. Cancer can also be affected by this type of signaling in a cell.”

William Harrison
Ph.D. Researcher, Virginia Tech

2002 Ph.D., Chemistry Virginia Tech
1998 MS Chemistry, Hampton University
1995 BS Chemistry, Winston-Salem State University

Conducting In-Demand Fuel Cell Research

William Harrison, a former MAI Fellow graduated with a Ph.D. in December, 2002. He researches fuel cell improvements by conducting mass spectroscopy and polymer evaluation experiments. He is working on developing an alternate proton exchange to produce fuel cells more cheaply. Currently, he notes, the proton exchange membrane is a costly polymer, costing around \$700-1000 per square meter (produced by DuPont, Dow & Asian companies.)

For the last two years he has been working on these proton exchange membranes with funding from the National Science Foundation, Department of Energy, General Motors, Motorola, testing proton conductivity to invent a more cost-effective membrane.

Of his work as a graduate research assistant at the Research Materials Institute at Virginia Tech, he says, “It’s been exciting -- it’s taken me all around the United States for different presentations to researchers at other schools and conferences.”

He also had the opportunity to work at Los Alamos Labs with research experts in the proton membrane exchange field. “We actually used organic chemistry learned in classes for experiments with protein exchange membranes.” Working on catalysis he was able to contribute his area of expertise, “they were suggesting improvements, and I was the only synthetic polymer [participant].”

For the Research Materials Institute, Harrison has delivered presentations to the American Chemical Society on ‘The Synthesis and Characterization of Sulfonated Poly (arylene ether sulfones) Copolymers As Proton Exchange Membrane in Fuel Cells.’

His work on polymers has been published by the American Chemical Society Polymer Preprints, American Chemical Society, Electrochemical Society, Macromolecular Symposia, and the Journal of Polymer Science.

As an undergraduate MAI Fellow, he engaged in an EPA/ECO internship with the EPA in Raleigh. Of the experience, he recalls, “It exposed me to new instrumentation – gas

chromatography with the environmental research group there, learning new technology and meeting professionals. I experienced professional meetings. It was an opportunity to talk with people in a non-academic setting.”

Harrison appreciated that the Fellowship “gave me the opportunity, from a monetary standpoint, to focus on my coursework. Then I did undergrad research which I know was valuable at the time for graduate studies.”

Asked about his future plans, Harrison indicates he will likely pursue research in a government lab, and would like “to actually synthesize a new material to have different variations of a polymer ...to characterize it and have it evaluated by others and to have a real world application that has [positive] attributes for the environment.”

As a leading edge researcher, he is being pursued by prospective employers, interested in applying his expertise to fuel cell research and development. “Got a call from NASA the other day to give a presentation,” says Harrison, of the space agency interested in applied fuel cell technology. “If you think about not having to recharge a battery for a year! It’s applicable for the spaceship.”

Adriana Sola
Voter Registration, Fulton County

2002 BS Natural Science, Spelman College

Aspiring Lawyer for Environmental Justice

As a 2001 EPA/ECO intern, Sola worked closely with the Water Management Division (WMD) Environmental Justice (EJ) Coordinator and the WMD and EJ working group to integrate environmental justice principles throughout the Water Division at US EPA.

“The Summer internship,” she says, “exposed me to and made me aware of issues within the Environmental Justice field. [...] The research I conducted prepared me for the publications and presentations I’ve done.”

As an undergraduate, Sola’s research was co-published as, “Bioremediation of Metals from an Acid Mine Drainage at Cave Creek Coal Valley” in *Bioremediation Research*.

She took part in the campus Environmental Task Force, which initiated and sponsored recycling programs. The Task Force also held panel discussions with students on career education and environmental justice within the community.

She has applied to law school, to major in Environmental Law starting Fall, 2003.

As to her future plans, Sola would like to apply the principles and practices of environmental and social justice to areas of environmental policy and development.

Sacoby Wilson
Ph.D. Researcher, University of North Carolina

2004, Ph.D. Environmental Health, University of North Carolina, Chapel Hill
2000, MS Environmental Health, University of North Carolina, Chapel Hill
1998, BS Biology/Ecotoxicology (Environmental Science), Alabama A&M University

Addressing Environmental Health Problems in Commercial Hog Farming

“Without the EPA program, I wouldn’t be in the Ph.D. program,” notes Sacoby. “There aren’t a lot of fellowships out there for students in environmental research... There are NSF fellowships, but the EPA addresses more fields, so you can pull in more sociology, and more are community related... Definitely the most helpful impact on my professional development!”

As an EPA intern, Wilson conducted a risk assessment of potential carcinogenic effects of ozone precursors for EPA’s Region IV office in Atlanta, GA. He recalls, “I enjoyed my ECO internship experience, and got to go to the Olympics in Atlanta as well.”

Addressing how the EPA undergraduate MAI fellowship contributed to his professional development, he says, “I really got an opportunity to apply what I had learned as an undergrad about risk assessment. And now I’m using the experience to help develop my dissertation plan. I’m assessing population exposure and using GIS; looking at population exposure to air pollutants released from hog farms in east North Carolina.”

Following his EPA internship, in 1997, in a position funded through the Office of Civilian Radioactive Waste Management (OCRWM) scholarship program, Wilson utilized computer modeling at Yucca Mountain to evaluate net infiltration data, to assist with porosity/saturation data in borehole studies. In this role, he also assisted in various geological projects as part of a USGS/Department of Defense team.

Wilson graduated from Alabama A&M University in 1998, with a BS in Ecotoxicology/Biology and went on to receive a Master’s in Environmental Health in 2002 from the University of North Carolina (UNC).

As a graduate researcher, he participated in the Duke Prostate Cancer Screening Project, incorporating patient history into a database, and examining screening data to assess demographics of participants and sustainers.

In the Epidemiology Department of UNC, he maintained a computer database of the observed human health effects associated with possible exposure to the microbe *Pfisteria*. In the Research Education Support (RES) Program, he carried out plaque assays for *Polio* and *Hepatitis A*, and performed microbial assays on the effects of bacteriophages on *E. coli*.

At the UNC, he is co-President of the Minority Student Caucus, a member of the Dean’s Council and the Alumni Association Governing Student Board. He is also the recipient of many honors and awards, including EPA STAR Master’s and STAR Ph.D. Fellowship, a

Truman Scholarship, a Morris K. Udall Scholarship, a NASA space scholarship, a Thurgood Marshall scholarship, and was a member of the USA Today All-Academic Team.

Currently he is pursuing a PhD in Environmental Health at UNC. Besides extensive graduate research work, Wilson has conducted numerous presentations and poster sessions on community and global environmental justice and assessment of health and environmental justice issues related to the swine industry. In 2002, he was lead author of “Environmental Injustice and Mississippi Hog Industry” in *Environmental Health Perspectives*.

Addressing industrial agricultural waste, Wilson utilizes geographical information systems (GIS) to conduct spatial analysis and modeling of air pollution released from industrial swine farms, and assessment of the exposure risks for host and neighboring communities.

He is a member of the American Public Health Association, North Carolina Environmental Justice Network, Sierra Club, the Association of American Geographers, the Society of Risk Analysis, Air & Waste Management Association, Water Environment Federation, American Water Resources Association, and the Soil and Water Conservation Association.

For the future, Sacoby wants to combine his passion for environmental justice with his research experience in environmental health, and is “interested in getting into community and county-based environmental justice research.”

He serves as group leader and mentor for undergraduate students in the UNC RES program, assisting in the implementation of student enrichment, and encouraging students to be aware of the opportunities available. “I’ve always stuck to jobs in the environmental field, so I try to impart that to students interested in doing internships & county work.”

Jeanine Avent

Intel Corporation; Graduate Student, Green Building

2004, MS Construction Management (Green Building), Arizona State University

1994, MS Materials Engineering, North Carolina State University

1992, BS Chemistry, Spelman College

Green Building Engineer Wants to Power Homes from Household Waste

Jeanine Avent is combining her engineering undergraduate degree with her passion for building; and studying ways to optimize environmental performance of residences and municipalities.

“I have always wanted to build – ever since high school – but was discouraged because of being a woman. But I finally decided to go back and try it.”

She is currently pursuing a Master’s in Green Building Construction, with an emphasis in energy efficiency, and studying advances in the conversion of household and municipal waste into energy. She is interested in using waste to power houses or office buildings. She notes, “It’s been tried experimentally, and so far individual homes don’t generate enough

waste to power such a system. But I think the efficiency can be increased.” Such a solution would address the dual problems of excess landfill use & greenhouse gases; while simultaneously delivering a source of cleaner energy.

For some time Avent had been a business analyst at Intel Corporation, helping to develop a database used to track waste from the company to a treatment plant, “sort of a ‘Cradle to Grave’ type thing. We stored Material Safety Data Sheets (MSDS’s) and Toxic Release Inventory (TRI) reporting as well.”...“We established functional specifications for it to operated on Environmental Health & Safety (EHS) workstations. I worked with environmental managers at all of our Intel sites.”

Also a professional Environmental Engineer, Avent recently received a Division Recognition award for her contribution to the large database application that is now used throughout the entire company of 50,000 people.

Avent still keeps in touch with her mentor from the summer intern program. For her 1992 internship, she established toxicity test procedures for testing water quality & conducted tests to measure toxicity of a marine habitat. Of her EPA internship, Avent recalls, “It broadened my view of what could be done in the environmental field.”

Girvin Liggins **County Environmental Health Department, Maryland**

1998 MS, Environmental Health Sciences, University of Michigan
1996 BS, Environmental Science, Universtiy of Maryland Eastern Shore

Monitoring Community Environmental Health

“When I saw I could combine my love for environmental sciences with public health. I knew that was it – that was what I wanted to do.”

In his professional role as a county Environmental Health Specialist, Girvin Liggins investigates compliance and complaints related to residential and commercial properties, campgrounds, youth camps, food service facilities, foster/adoptive homes, mobile home parks, and exotic bird facilities.

He also performs well water sampling, lead paint sampling, swimming pool inspections, school inspections, and HAACP plan reviews to determine compliance with state and county codes or regulations.

In addition, Liggins conducts field inspections in the enforcement of all related codes, laws and regulations, and follows up with legal action as necessary.

Asked about his MAI Fellowship, Liggins recalls, “It was tremendous. It helped me in several ways – to hone in on what I wanted, to work in a professional atmosphere, meeting so many people. It was a catalyst. It actually was the reason that I went on from Environmental Sciences and specialized for a Ph.D. in Environmental Health.”

As part of the EPA fellowship, he co-published a paper with one of the university advisors at the University of Maryland in *Ecotoxicology and Environmental Safety* in 1997, “Toxicity of Metolachlor Filtrate from Wetland and River Sediments.”

Following graduation, he received the Fogarty International Minority Research Traineeship in 1997, then delivered a presentation on malaria at the University of Maryland at Baltimore the Summer before graduate school.

During graduate school, a trip to South Africa provided hands-on opportunities for studying respiratory health and environmental risk factors among residents of Durban. Liggins applied geographical information systems (GIS) to develop sampling schemes, administered questionnaires and conducted spirometry tests. For the local municipality, he delivered analysis and follow-up reports and prepared fact sheets and brochures.

Following his return, his master’s thesis on Lead in Dust from Primary Schools in South Central Durban, South Africa reflected findings from his firsthand international work.

He is currently in contact with an active network of environmental professionals through the School of Public Health and at his workplace, as well as through CASA (Central Atlantic States Association of Food and Drug Officials) and the National Environmental Health Organization (NEHA).

Gregory Crawford
US Centers for Disease Control

1996 BS Biology and Environmental Science, Wiley College

CDC Supporting States’ Efforts to Reduce Asthma Effects and Improve Air Quality
A Project Officer at the Centers for Disease Control (CDC), Crawford provides technical assistance to states and in developing and implementing statewide asthma plans, asthma surveillance systems, asthma intervention implementation and building asthma related partnerships/coalitions. He also helps to build partnerships with states and other national organizations with experience in asthma to help disproportionate/minorities communities who are currently experiencing high rates of mortality from asthma.”

Having worked previously at EPA, Crawford notes, “Working in the Air Division with EPA and what they do with asthma gave me the knowledge and interest to be able to pursue work in Public Health.”

At EPA, as an Environmental Scientist working in the Air, Pesticides and Toxics Management Division, he served as the coordinator for the Federal Executive Board's Clean Air Initiative, the national standing committee on air quality, reviewing existing standards. “In the Air Division, I worked on ozone and particulate matter air quality issues that ultimately affect people diagnosed with asthma,” Crawford recalls.

Crawford experienced the direct benefits of the MAI Fellowship: “It allowed me the opportunity to learn about the different areas of environmental protection. I wouldn’t have gotten the in-depth knowledge if I wasn’t awarded the Fellowship.”

Upon graduation Crawford was hired by the US EPA as an Environmental Scientist with the Air, Pesticides & Toxics Management Division. “The [MAI] opportunity automatically opened up doors. They offered me a position before I graduated.” he recalls, “It was extremely helpful.”

As an EPA professional, he also worked with interns in the ECO program, and observes how “the program has encouraged students to continue to pursue environmental careers.”

Tim Smith

US Environmental Protection Agency

1998 BS Environmental Science, University of the District of Columbia

1998 AAS Water Quality Mgt., University of the District of Columbia

1995 AA Management, University of Maryland

Working With Business and States to Assure Underground Storage Tank Safety

MAI Fellow Tim Smith works for the EPA as an Environmental Protection Specialist, where he serves as a primary point of contact in the Office of Underground Storage Tanks. As he explains, “We’re involved in implementation of 1998 Underground Storage Tank Regulations which affect owners and operators of businesses, such as gasoline service stations. They have to comply with the regulations for underground tanks, piping, release detection, spill overflow protection, corrosion protection and leak protection.”

Speaking to state officials, Tim has recommended “Implementing Pay for Performance” in underground remediation. This refers to establishing end points and milestones to be met – not for quantity of soil, but for completion of e.g., a 25% or 50% milestone. “It’s in line with the agency’s performance-based approach for cleanup, in contrast to using a time and materials approach,” Smith says, “with “pay for performance”, contractors have an incentive to accomplish clean-up faster (rather than using more hours to do the same amount of work). They get paid, and then get additional projects.”

And there’s still a lot of work – since the 1998 regulation, “there are still about 700,000 that haven’t complied. But 1.2 million have– we’re getting there.”

Of his EPA internship, he recalls, “That was my first experience with the EPA – It put me in touch with those individuals who establish policy for the nation. I don’t think that without that connection with ECO, I would have found that exposure.”

As an EPA/ECO intern, Tim performed literature searches, reviewed methods submissions packages for completeness of documentation, edited methods and assisted in preparing documents related to commitments to environmental monitoring.

Smith worked with Scientific Applications International Corporation (SAIC) as an Environmental Scientist, co-developing an EPA manual – Solid Waste 846 -- and helping to validate it. “It’s a compilation of physics and chemistry analytical test methods for testing soil, water, and air, e.g., for finding mercury in soil. Chemists and labs use it for analysis.”

To those considering next career moves, Tim recommends “working for EPA, who establishes policy for the nation. If you’re looking for a position to impact the nation as a whole – EPA is your ending point; you’ve arrived. If you’re in a private company, you need to follow policy – I’ve landed at the top in my opinion.”

Priscilla Stotts
Missouri Department of Natural Resources

1997 BS Environmental Science, New Mexico Highlands University

Promoting Citizen Involvement In Missouri River & Stream Conservation

Stotts trains and works with 2000 volunteer conservationists, and manages a database of all the data collected from streams across Missouri. Stotts is also preparing for the 2004 Lewis and Clark Bicentennial celebration and will have study opportunities and hands-on activities on the river bank for the festivities.

Following graduation, she became an Environmental Specialist, coordinating Stream Team, a collaborative program to promote citizen awareness and involvement in river and stream conservation. Stream Team program provides opportunities for citizen education, stewardship and advocacy, in connection with rivers in their area.

“As the Stream Team Coordinator for the state of Missouri, I get to teach, using my degree in the sciences” she says. She travels, delivering presentations to volunteers, students and interested members of the general public.

She feels very fortunate to be doing the work of Stream Team, and concludes, “Overall, I would rate the EPA fellowship as having *the most helpful* impact on my professional and personal development.”

“To get an EPA fellowship was a real blessing- and it was an ego shot in the arm. I felt that if I can do this, I can do anything....I’m walking, talking, living proof that you can find your niche if you have faith in yourself. And the MAI program really helped. Some non traditional students -- older people like me, a housewife -- didn’t have much confidence. But I just whizzed through school and got honors.”

“The Fellowship got me networking – I got to meet a lot of people, and that helped me get the job I have now.”

Carmen George
Graduate Student, Environmental Health

2003 Master's Candidate, MS Environmental Health, Colorado State University
2001 BS Environmental Science, New Mexico State University

Keeping Clean Water Available to Rural Communities

A Native American concerned about the health effects of clean versus contaminated water, Carmen George is currently pursuing a Master's degree in Environmental Health.

In November, 2002, Carmen presented research, "An Exposure Assessment of New Mexico Drinking Water," to explore the link between drinking water contamination and high incidence of kidney cancer.

During her EPA/ECO internship in 2001, she participated as a team member with higher grade professionals in all aspects of the Regional Environmental Monitoring and Assessment Program for EPA to determine the condition of the Bay and a sub-area.

The internship taught George about professional-level fieldwork, including monitoring.

"That's one of the things the people hiring looked at – and that's why they wanted me to join them - it helped me get another position."

She would like to stay involved with an active network of environmental professionals, such as ECO alumni after graduation.

Jonathan Webb
Science Teacher, Graduate Student

2003 MS Public Health, George Washington University
2000 BS Biology, Virginia Union University

Emphasizing Disease Prevention for Public Health

As an MAI Fellow, Webb studied biology and applied his knowledge from courses, working with EPA as an intern in 1999, capturing fish with nets and using the data to develop a fish index. He also measured physical parameters such as salinity and dissolved oxygen to assess habitat quality.

He emphasizes the practical value gained from his EPA experience, saying "It prepared me for the research aspect of the work and introduced me to work in the environmental fields."

Webb is currently interning with the Department of Public Health in Washington, DC, as part of his Master's program in Public Health at George Washington University. He is interested in a career in public health, focusing on disease prevention.

Approach

Survey Background

This survey attempted to determine the outcomes, in terms of professional development, of the EPA MAI Fellowships awarded between 1990 and 2001. During this period, approximately 197 undergraduate students attending minority academic institutions, e.g., historically black colleges and tribal colleges, received EPA MAI undergraduate fellowship support. At the time of the fellowships, their majors ranged from Biology to Computer Information Systems, and each expressed interest in the possibility of an environmental career. Included as part of the Fellowship was the opportunity to work as an intern within an office of the US EPA. The internship portion of the Fellowship was facilitated by ECO, formerly CEIP.

This is the first comprehensive attempt at follow-up with the former Fellows since their graduation from college. As such, it presents a unique window into the experiences of these former fellows since their graduation.

Survey Instrument

In the interest of making an accessible survey for the range of respondents - i.e, those whose internships might range from 1 to 10 years ago, and whose professional experience might range from 0 years (for those still in graduate school) to 10 years, a short 10-question format was agreed upon (See Appendix A: Survey Form).

Survey questions were developed by ECO in consultation with EPA, to cover a wide range of questions with former Fellows. The survey addressed the following questions:

- What impact did EPA MAI Fellowships have upon the Fellows' professional and personal development?
- What proportion of Fellows pursued environmental careers after their Fellowships?
- Did the EPA MAI Fellowship encourage Fellows to pursue graduate study in an environmentally-related discipline?
- To what extent have Fellows achieved professional status in their chosen industry following their participation in the MAI Fellows program?
- What barriers have Fellows encountered in pursuing environmental careers?
- What additional services do Fellows need?

- What improvements in the Fellowship program or internship component would be beneficial?

Survey Method

The survey was conducted primarily through telephone interviews. Interviews would typically require one or two calls and possibly scheduling, and would last 15 - 30 minutes, depending upon the extent of professional experience and interest in participation.

Survey questions sent via email was used as the next available option. Postcards were sent to those former Fellows for whom no current telephone or email was available.

Given that many of these students had not been in contact with EPA nor ECO since their Fellowship experience, only partial up-to-date contact data was available. Contact information was provided by the Environmental Careers Organization and Alumni Finder, an online search service.

Data Analysis

Of the 197 Fellows who received EPA MAI Fellowships, 31 or 16% responded to the survey. The results of their professional progress is summarized in the table below:

Summary Table of Fellows in Survey Sample

Name	Degree	Profession/Industry	Environmental Career
MAI Environmental Professionals			
Na'Taki Osbourne	MS	Wildlife Conservation Leader, MS Env. Health	yes
Marlisa Stewart	BS	US EPA Environmental Justice Professional	yes
Brandon Jones	Ph.D.	Ph.D. Candidate, Marine Biologist	yes
Curry Jones	MPH	EPA Environmental Specialist	yes
Tonia Herman	Ph.D.	Ph.D. candidate, Environ. Health Educator	yes
William Harrison	Ph.D.	Fuel Cell Research Pioneer, PhD	yes
Adriana Sola	(JD)	JD Environmental Law applicant	yes
Sacoby Wilson	Ph.D.	Ph.D. Environmental Health	yes
Jeanine Avent	MS	MS Candidate, Green Bldg. Management	yes
Girvin Liggins	MS	County Environmental Health Specialist	yes
Gregory Crawford	BS	CDC Program Officer, formerly at EPA	yes
Tim Smith	BS	EPA Environmental Specialist	yes
Priscilla Stotts	BS	Missouri Statewide Stream Team Coordinator	yes
Carmen George	MS	MS Candidate, Environmental Health	yes
Jonathan Webb	MS	MS Candidate, Public Health	yes
Medical Professionals			

Melissa Marshall	MS	Master's in Biomedical Sciences	partial
Karma Pace	Ph.D.	Ph.D. Molecular Biology	partial
Gene Elliot	MS	MS Biology Candidate, Nat'l Genome Research	no
Tanik Jenkins	DDS	Dentistry	no
Latasha Burgess	MD	Medicine	no
Anthony Jase	MD	Medicine	no
Rhonda Walton	MD	Medicine	n/a
Other Professionals			
Jaimie Jackson	MS	MS Marine Science, 7 th Grade Teacher	partial
Crystal Wall	MS	MS Marine Science, Medical Billing Clerk	partial
Joy Willis	MA	2 nd Grade Teacher, MA Psychology	no
Tanisha Simpson	(MS)	Info Systems Integrator, Applying for MS MIS	no
Kellye Brown	no BA	Business Owner	no
Susan Jolley	BS	HVAC Dispatcher	no
Lisa Atkinson	BS	Mathematics	n/a
Family/Home-Based			
Lori Thorn	BS	Full-time Mom; formerly Env. Health Specialist	partial
Tanya Smith-McNeal	MS	Full-time Mom, MS Industrial Technology	no

Table 1: Percentage of Fellows Pursuing Environmental Careers

Environmental Professionals	Medical Professionals	Other Professionals	Full-time Parenting	Total
48%	23%	23%	6%	100%

While 48% of respondents are (or are preparing to be) environmental professionals, 65% actively engage in or have done professional environmental work during their careers.

Table 2: Percentage of Fellows Pursuing Graduate Degrees

Environmental MA/MS	Environmental Ph.D.	Total Environmental Grad Degrees	MD/DDS	Other Grad.	Total ¹ Grad Degrees
29%	13%	42%	23%	10%	74%

96% of all Fellows surveyed completed their Bachelors degrees. After graduation, a remarkable 74% continued on to receive (MA, MS, JD, or Ph.D) advanced degrees. Advancing their education further, 16% pursued (or are enrolled in) Ph.D. degrees.

¹ Total (74%) and sum of parts (75%) is different due to rounding.

A total of 42% of all Fellows surveyed went on to obtain advanced degrees in environmental fields. Several noted that their experiences as an EPA MAI Fellow contributed to their choice of graduate degree. Of those choosing environmental careers, 27% also pursued a Ph.D.

Table 3: Distribution of Fellows by Employer Type²

Full-Time Student	State/County	University/ Non-Profit	Private Company	Federal	Other
26%	23%	19%	16%	16%	10%

Distribution of Environmental Professionals

From the survey sample’s diverse group of minority academic institutions graduates, many of those in environmental professions chose fields where applied science has social influence.

The most popular areas of focus for environmental professionals surveyed were working in fields such as Environmental Health, Environmental Justice, Air Quality, Environmental Policy, Enforcement, and Inspection. They are especially concerned with health, communities (especially those of color), environmental justice, safe drinking water and air, i.e., how a healthier environment is associated with healthier communities of people.

A number of former Fellows became educators, Science Teachers, Grade-School Teachers or Agency-based (non-formal) Environmental Educators, conducting outreach and small group education. Most of those in Federal positions also conduct outreach and education to groups.

Some former Fellows conduct research and education in a field setting, e.g., marine or riparian, and work to understand, communicate, and improve how humans impact and are interdependent with the ecosystems and organisms they study.

Others are advancing emerging technologies, such as Fuel Cell Research, (Energy Self-Sufficient) and Green Building, hoping to identify and derive greater benefit from existing resources.

² Data reflects some graduate students also working at University research labs.

Results: Value of EPA Fellowships

90% of Fellows rated the EPA MAI Fellowship as “very helpful” or “most helpful” in their professional development

Results of the survey describe the specific beneficial outcomes, according to former Fellows, of the fellowship sponsorship and EPA internship experience. From feedback provided in the surveys, this report also provides recommendations for the staff and partners of EPA to make informed decisions about where efforts towards improvements should be directed.

In summary, the *primary areas of value* provided by the EPA MAI Fellowships most-often cited by former MAI Fellows were:

- Having the opportunity to work with environmental professionals at the EPA**
- Exposure to real-world research and laboratory work,**
- Stimulation of interest in graduate school, and**
- The stipend allowing time to delve deeply into academics.**

What Fellows Say: The Value of the EPA MAI Fellowship

“If it wasn’t for the Fellowship, I wouldn’t have gotten to go to Atlanta & gotten my foot in the door with the EPA. People saw it on my resume & it opened doors. My grades can speak for themselves, but sometimes the right words or contacts can make a difference.”

Marlisa Stewart
US EPA

Respondents reported the following specific benefits from the EPA MAI Fellowship:

1) Contact w/ professionals in environmental disciplines

“The opportunity automatically opened up doors. Of course, once you get there you have to interest them in hiring you.”

“It provided me the opportunity to do research in a laboratory. So I got a head start because these are the kinds of things that required of a scientist. And it’s a different atmosphere than a class. I also had to present my findings at the end.” 2) **Helped to explore and apply environmental courses**

“It provided me with the opportunity to take my courses in chemistry and biology and relate them to environmental science. It opened up the door for me to get experience outside of college, and it helped me get a job.”

“It was a wonderful opportunity that exposed me to lab research and environmental sciences. It also opened my eyes to different opportunities available in the environmental – at one point I was even thinking about environmental law.”

3) Allowed full-time attention to studies, due to the significant financial support

“The Fellowship gave me the opportunity, from a monetary standpoint, to focus on my coursework. Then I did undergrad research which I know was valuable at the time for graduate studies.”

“It really helped me tremendously. It also provided me with the opportunity to focus on what I really wanted to do, because when I first came to school, I had to work. Once I got the fellowship, I could focus on my studies in my area of interest.”

4) Graduate School - "the Fellowship pushed me" onward

“Overall, the fellowship was great – it focused and pushed me into going to graduate schools by putting me into an environment where I was doing research in the graduate department.”

“It was tremendous. [...] It actually was the reason that I went on from Environmental Sciences and specialized [pursuing a Ph.D.] in Environmental Health.”

5) Working with environmental professional & making career contacts

I worked with a really good group of people and they were very helpful. It also helped in terms of how to interact with my communications skills and how to interact with professionals in the field.”“It got me networking – I got to meet a lot of people – that helped me get my job that I have now.”)

6) Mentoring - passing on learning to other students; advising them

“Going to Hampton, there were a lot of people after me in the program, so when it was time for them to do their internship, they asked me to help review their choices – I was in a mentorship role.”

“Without this opportunity I wouldn’t be in the position I am in now. Every chance I get, I am trying to recruit students to get involved with ECO.”

An ancillary benefit of the EPA MAI fellowship, mentioned by professionals who did not pursue environmental careers, was a deeper interest in sharing and applying their understanding of environmental science in their chosen field.

For example, one Fellow, Jaime Jackson, continued her education to receive a Master’s in Marine Science. Though she did not pursue an environmental career afterwards, she nonetheless shares the value of her education with her 7th grade students. “I’m more environmentally conscious than 95% of the people that I come into contact with.

She notes, “I still have a huge interest in oceanography and science and a respect for it – a body of knowledge that I pass to the kids.”

What Fellows Say: Value of the Internship Component

1) Opportunity to pursue interests in a 'real world' setting

“Where can I start? The whole idea of working on a project – I had to learn to write like a scientist – the introduction, methods section, etc. I also had to present my findings at the end. It provided me the opportunity to do research in a laboratory. So I got a head start because these are the kinds of things that required of a scientist. “I learned to do a risk assessment, and the whole process with site characterization, exposure assessment, risk characterization. I learned how to apply the ROI approach too.”

2) Developed working relationships with environmental professionals

“The Ph.D.’s I worked for -- I kept in contact with them.”

“I was able to meet influential people and figure out some career options.”)

3) Conducting significant, interesting or timely research in the field

“The research I conducted prepared me for the publications and presentations I’ve done.”

“I learned how to purge ammonia out of sediment. The EPA has a standard method, and we were trying to come up with a better method. It gave me background in the scientific method – how to come up with hypotheses and test them.”

4) Encouragement to pursue student’s area of interest in graduate school

“It was the internship that made me hone in on what I wanted.”

“The Summer internship exposed me to and made me aware of issues within the Environmental Justice field.”

“Working in the Air Division with EPA and what they do with asthma gave me the knowledge and interest to be able to pursue work in Public Health.”

5) Living in a new place - exposure to Washington, DC or other areas

“The Summer working at the EPA was an awesome experience -- to go somewhere that I had never been and live there for three months, working with Ph.D.’s that worked for the government!

“I learned with EPA, and got to go to Brooks range in Alaska – [it was] different terrain and an integrative life experience.”

6) Career fairs & exposure to many environmental professions & paths

“It helped me understand the legal issues and the intricacies of environmental laws and the complexity of regulating environmental issues and how much and how many people violate the rules.”

“It allowed me to learn [about] types of research the EPA does and some of the reporting before I got a job elsewhere. It broadened my view of what could be done in the environmental field.”

Stated Reasons why not/no longer in the environmental field

Barriers cited by two former Fellows not pursuing environmental careers included not finding work in the environmental field or in their chosen geographical area. However, *no barriers were mentioned* by former Fellows actually pursuing environmental careers.

In addition to the requested survey responses, the interviews yielded identified reasons why some students did not enter/are no longer in the environmental field.

- 1) Medical school (higher earnings)
- 2) Not finding environmental work after earning degree (teaching K-12 instead)
- 3) “Burned out” in grad school in area of interest
- 4) Wanting to work more directly with people than with theory or in labs

Areas of Improvement & Services Needed

Identification of areas for improvement and additional services needed are briefly addressed, based upon comments by Fellows in the course of survey interviews.

One former Fellow encouraged “ECO/EPA to do a rotation where graduates can be in the water division and waste division, etc., and see how EPA is working to protect the country.” Another said that every graduate should do co-op employment at EPA following graduation, with mentorship specific to the student’s interests.

Improvements most mentioned include: career assistance upon graduation, mid-career decision support, access to mid-career job opportunities, and meeting other (former) Fellows.

Encouragement for ongoing participation in professional networks and ongoing contact with EPA and ECO were also of interest.

Conclusion

The impact of EPA MAI Fellowships on Fellows' professional development was overwhelmingly positive and significant. According to the Fellows surveyed, 90% found their MAI Fellowships to be "very helpful" for their professional career development.

The proportion (48%) of Fellows pursuing environmental careers after their Fellowships demonstrates the effectiveness of the program in involving these students in environmental careers. Most cited unparalleled opportunities and exposure to the profession as Fellows.

An extraordinary proportion of Fellows continuing on to graduate studies. This suggests, perhaps, that the Fellows are a well-identified, motivated group to begin with, and several cite how the Fellowship and internship experience propelled them onward to discover and cultivate their own areas of interest.

Besides having a high likelihood of continuing on to pursue graduate degrees, the MAI fellows persevered into their professions, employed at the community, county, state, or national level; and in academia, government, and programs, according to their interests.

The leading areas of value, according to former Fellows were: Having the opportunity to work with environmental professionals at the EPA, exposure to real-world research and laboratory work, stimulation of interest in topics for graduate school, and the stipend which provided freedom to delve deeply into academics.

Additional services requested by former Fellows for environmental career development include: Meeting other MAI fellows, career assistance and/or mentorship upon graduation, encouragement for ongoing participation in a professional network, mid-career decision support and access to mid-career job opportunities.

In summary, the EPA Minority Academic Institutions Undergraduate fellowships clearly succeeded in providing these students with an impetus to excel as undergraduates, to pursue graduate school, to participate in environmental careers, and to apply cross-disciplinary approaches in their environmental work.

Appendix 1: Survey Form

Name:

Notes:

1) What industry are you currently employed in and what type of work are you doing?

2) What do you consider to be the greatest highlights, successes, achievements of your professional career to date?

3) On a scale of 1 to 5, how would you rate the value of the EPA Fellowship and the impact that it had on your professional and personal development?

4)a. What sort of opportunity did the EPA Fellowship provide you with?

b. In what way did the summer internship during your Fellowship provide real world experience or professional growth opportunities?

5) Did you pursue higher degree in education after your EPA undergraduate fellowship?

6) Have you published any articles, presented papers/posters, or been a speaker at professional meetings/conferences, or been recognized in any way in your field?

7) Any additional personal and professional stories would you like to share?

8) Any other comments would you like to make?

9) Are you currently in touch with an active network of environmental professionals?

What Former Fellows Say about their Environmental Protection Agency Minority Academic Institutions (MAI) Fellowship Experience:

“Without the EPA program, I wouldn’t be in the Ph.D. program. There aren’t a lot of fellowships out there for students in environmental research.”

Sacoby Wilson, Ph.D. Candidate
University of North Carolina

“If it wasn’t for the Fellowship, I wouldn’t have gotten to go to Atlanta & gotten my foot in the door with the EPA. People saw it on my resume & it opened doors. My grades can speak for themselves, but sometimes the right words or contacts can make a difference.”

Marlisa Stewart
US EPA

“It really helped me tremendously...It provided me the opportunity to go do research in a laboratory. This internship taught me what becoming a scientist all about. It also provided me with the opportunity to focus on what I really wanted to do, because when I first came to school, I had to work. Once I got the fellowship, I could focus on my studies.”

Tonia Herman, Ph.D. Candidate
East Virginia University

“The EPA Fellowship provided me with an opportunity to take my courses in chemistry and biology and relate them to environmental science. It opened up the door for me to get experience outside of college, and I got to go to another area in another part of the country. And it helped me get a job.”

Curry Jones
US Environmental Protection Agency

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