downstream

A NEWSLETTER FOR FRIENDS OF WILLIAM & MARY AND THE ENVIRONMENT

what's inside?

2007:1

from the director

We've had another phenomenal year. Thanks to continued funding from the Mellon Foundation, we have implemented our new 200-level classes, which include a whole new suite of integrative offerings that cover topics from global environmental governance to biogeochemical functions in watersheds. We've also successfully launched our new 1-credit ENSP250 seminars that are based around an annual spring speaker series. William and Mary can now boast one of the most comprehensive and innovative undergraduate Environmental Science and Policy programs in the nation.

It's difficult to pick one particular highlight from last year, but for me it was seeing the 200+ people cram into Andrews 101 to hear the awe-inspiring delivery of Bob Watson, Chief scientist at the World Bank and former Chair of the Intergovernmental Panel on Climate Change, explain the science behind climate change as part of the ENSP250 speaker series. This was quickly followed up by fascinating policy-oriented talks from Dan Reifsnyder (Director of the Office of Global Climate Change in the US State Department) and Cristina Figueres (negotiator of the U.N. Framework Convention on Climate Change and the Kyoto Protocol for Costa Rica). Their respective positions were in stark contrast to each other, which was great for our students to witness and try to understand. The whole series was capped off by the award-winning New Yorker magazine journalist Betsy Colbert who provided excerpts from her award-winning series on the humanistic and social effects of global climate change.

In association with these talks, over 130 students enrolled in 1-credit discussion seminars that met in small groups with faculty. The students and faculty had a fantastic time and learned a great deal. My sincere thanks go out to all the faculty who hosted these seminars (as overloads on top of their usual duties). It's the passion and commitment of the students and faculty that make this program so exciting to be a part of.

In other notable news, Timmons Roberts stepped down as Director (hence I am writing to you) and received a prestigious sabbatical fellowship to study at Oxford University for a year. Don't fear, Timmons will be back with us soon, and ready to jump back into action.

Our graduating students also climbed the pinnacle of greatness. At graduation, we awarded four annual prizes. The award for academic excellence in the Science track went to Danielle Morgan; and the academic excellence prize in the Policy track was awarded to Alexis Jovanovic. Emily Thompson was the winner of the Joy Archer Environmental Research Award (see Emily's article later in this Newsletter). And the inaugural Lauren Burns Environmental Outreach Award was presented to the amazing and tireless Jess Mackow. It's hard to single out particular students for awards from such a strong program, but all these award winners were extremely deserving. Congratulations to all.

We've also started to reach out to alums in a more concerted way. Our re-launched website (www.wm.edu/environment) has tales from several alums, as does this Newsletter. We would love to hear from all of you. You inspire our current students, help recruit majors, and can also provide sage advice and contacts for internship and career opportunities. Please contact us if you can.

Have a great 2007, and reduce your carbon footprint!

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> 'William and Mary can now boast one of the most comprehensive and innovative undergraduate Environmental Science and Policy programs in the nation.'

A Journey through the small and big environmental institutions

By David Gordon '09 and
Jennifer Roy '08

Little Kenya
BIG WORLD

You know you have reached Tumo Tumo, a small agricultural town in the foothills of Mt. Kenya, when the crude paved road turns into a sticky clay path and the van driving you to your destination slows to a crawl in an attempt not to veer off the steep winding road to the valley below.

Past the woman carrying straw and verdant gardens surrounded by coffee trees (quite a contrast to the previous days sojourn through the city of Nairobi) awaited an excited community ready to greet us and open a new understanding of what it means to be a steward of the environment.

Our group, including Professor Maria Ivanova and recent William and Mary graduate Sarah Wyatt (06) traveled to Tumo Tumo to meet a local chapter of the larger Green Belt Movement, a Kenyan-based environmental NGO. Led by Nobel Peace Prize winning Wangari Maathai, this grassroots political movement helps reforest the 98% deforested Kenyan landscape while empowering women by promoting environmental conservation, community development and civic awareness.

We were greeted by an enthusiastic community ready to share their stories, hopes and homes. Over the course of three days, we became part of a family; living under the same roof and participating in daily chores. Although we were often captivated by Tumo Tumo's exotic surroundings and remarkable culture, the Green Belt staff managed to convey the shear importance of a healthy environment led by active community stewardship. In Kenya, stewardship may come at a price: Julian, a leader of the area's group, lost a tooth while fending off thieves, intent on cutting down the thousands of trees planted by the Movement in an attempt to make a quick dollar by selling the wood.

The personal nature of community environmental governance was quite a contrast from our experiences only a few days earlier in the sprawling United Nations compound in Nairobi, the nation's capital. T-shirts, muddy sandals and Kikuyu sing-alongs were replaced by suits, clipboards and formalities. As part of an ongoing project to better understand Global Environmental Governance, the system of institutions in charge of the stewardship of our global commons, we attended the 12th meeting of the United Nations Framework Convention on Climate Change (UNFCCC).

Amid the hustle of the convention's crowded breezeways, we attended planning sessions and informal meetings. Not content to merely observe, we engaged the participants of the Convention. Surveys in hand, we interviewed a broad spectrum of business leaders, government officials, and technical experts. Through our interviews we gathered a variety of perceptions on the strengths and weaknesses of the current system of global environmental governance which will influence our ongoing research.

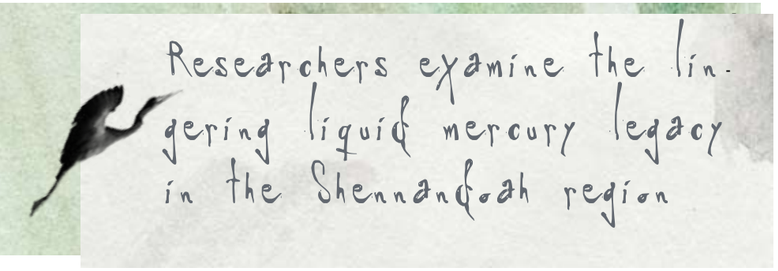
This experience was made possible through the support of the Reves Center, the Charles Center and the Monroe Scholars fund.

W&M team tackles QUICKSILVER

By Mikaela Howie and Dan Cristol

The South Fork of the Shenandoah River, and its major tributary, the South River, have an invisible problem.

From 1929-1950 liquid mercury leaked into the South River as it meandered through an industrial section of Waynesboro, near Charlottesville, Virginia. It wasn't until 1977 that the problem came to light, and this once famous small-mouthed bass fishing paradise was closed to human fish consumers. But liquid mercury, once it sinks into the river bottom, doesn't go away willingly. While humans can read the warning posters and avoid eating the toxic fish, herons and otters don't have that option.



Since 2005, Associate Professor of Biology and ENSP affiliate Dan Cristol has been assessing the effects of mercury contamination on birds in the Shenandoah Valley with an army of Masters and undergraduate researchers. The William & Mary group works with the South River Science Team, an association of academic, industry and government researchers examining all aspects of the lingering mercury legacy in the South River. For several years the Science Team has been examining soil, water, fish and invertebrates to better understand the mercury problem. Cristol's team is the first to examine mercury levels in the region's birds.

In 2005, undergraduates Ravi Jefferson-George and Sean Koebley joined Masters candidates Rebecka Brasso and Ariel White (who both recently received their degrees). Living together with Professor Cristol in a crowded ski cabin atop Massanuttan Rebecka, they enticed a tree swallow population to breed along the South and Shenandoah Rivers by setting up over 200 nest boxes. They monitored the success of the resulting nests and took tiny blood and feather samples to determine mercury loads. Because swallows eat insects that have grown up in the rivers' contaminated sediments, they are an excellent "biomonitor" for the effects of mercury on birds.

After achieving varying levels of boating skills, the crew located and sampled the existing population of Belted Kingfishers. Kingfishers eat nothing but fish and would be expected to bear the full brunt of mercury contamination. Both of these efforts found greatly elevated mercury levels in the birds eating from the river, but the biggest surprise was when the effort turned to the land. Forest birds living along the river, such as wrens, vireos, and flycatchers, had mercury levels as high or higher than swallows and kingfishers.

In the summer of 2006, Masters students Anne Condon and Scott Friedman joined the effort, along with undergraduates Kelly Hallinger, Rachel Fovargue, Jack Reese and Adrian Monroe, and Thomas Nelson Community College intern Maryse Leandre. Living in a chaotic townhouse in Fisherville, and joined in the field sporadically by colleagues from the Virginia Institute of Marine Science and Virginia Tech, the now seasoned crew amassed the biggest data set on mercury contamination in birds ever gathered. Sampling of over 30 species of forest birds, as well as huge numbers of kingfishers, mallard ducks, screech-owls and swallows, revealed the first known case of mercury leaving a contaminated river and entering the terrestrial food chain. Because noone has ever looked before, it's not certain yet whether this phenomenon occurs at many other of the 2000 mercury-contaminated rivers in the US.

In addition to the core research, funded generously by grants from DuPont and NSF, most of the students developed independent research projects. For example, Anne Condon followed bluebirds after they left their nests, using miniaturized radio-tracking devices, and found that once their baby feathers stop growing, mercury levels rise dramatically. Scott Friedman mastered a safe but disgusting technique to pull food items out of the throats of baby forest birds. He then ran his collection of hundreds of spiders, bugs and caterpillars through a mercury analyzer, and is constructing a mathematical model to determine if differences in diet can explain mercury levels. Kelly Hallinger recorded the songs of advertising male birds from contaminated and reference sites, and with Dan Zabransky and Katie Kazmer is using sound analysis software to determine whether mercury, a known neurotoxin, causes males to sing weaker songs. Adrian Monroe followed up on our discovery that tree swallows were commonly nesting a second time on our study sites, something that these migratory birds are not supposed to do. Rachel Fovargue is pursuing her interest in mercury to museum collections, where she will sample feathers from century-old specimens to look at historical trends in mercury pollution.

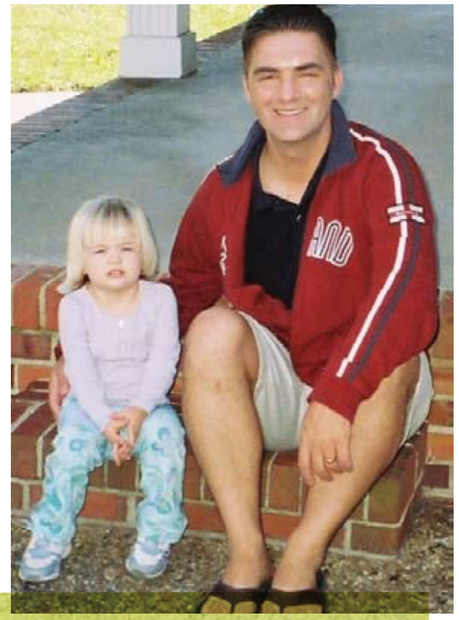
Besides the fact that the quicksilver will still be coursing through the avian food web of the Shenandoah Valley,

NEWS

GO EAST, YOUNG MAN, GO EAST

PROFILE
Asstistant Professor of History, Andy Fisher

As an Oregonian whose research focuses on the American West and modern American Indian history, I never imagined I would end up teaching in Tidewater Virginia. I'm happy to be here, though, especially because of the bright students and the accomplished but affable colleagues I get to work with in the History Department and the Environmental Science and Policy program.



Prof. Andy Fisher with daughter Amy

My involvement with the program reflects my interest in environmental history, which grew out of my early research into Indian subsistence practices and reserved rights on public lands. Through treaties with the U.S. government, many tribes retained the right to continue hunting, fishing, and gathering at traditional locations both on and off their reservations.

My first article, published in 1997, examined a unique agreement between the Forest Service and Indians affiliated with the Yakama Nation to preserve tribal access to prized huckleberry fields in the Cascade Mountains of southern Washington State. The agreement remains in effect today, but the resource itself is now threatened by commercial pickers and forest encroachment, which has increased dramatically since the 1930s due to federal fire suppression policies.

Last summer, I attended a meeting between local forest service personnel and members of the Yakama tribal council to discuss better ways of managing the fields and keeping trespassers out of the reserved area. Although I'm hardly an expert on prescribed burning or law enforcement, I believe that education through teaching and publication is a key to creating productive dialogue and raising public awareness.

Last fall, thanks to funding from the Charles Center and the Environmental Science and Policy program, I was able to bring Carol Craig, a friend and contact from the Yakama Nation, to the College to speak to my students and a small group of environmental majors about her 30 years of work with salmon recovery in the Pacific Northwest. Carol currently works as a public information manager for the tribe's Office of Fisheries Resource Management.

Salmon, which are sacred to the region's indigenous peoples, have suffered greatly from decades of overfishing, habitat destruction, pollution, and dam building on the Columbia River and its tributaries. Carol used to work for the Columbia River Inter-Tribal Fish Commission, which harmonizes tribal traditions with the best available science in order to put salmon back in the streams and provide a more hospitable environment for their propagation and migration.

My students greatly appreciated her insider's perspective on the issues they'd been reading about in class, and she enjoyed the chance to visit a different part of the country. She especially welcomed the opportunity to pose with John Smith—whose statue overlooks the equally polluted James River—and thank him for 400 years of "progress" in environmental stewardship. I meant to take her to visit the shad hatchery operated by the Pamunkey Tribe, but we got lost and had to abort the mission so that she wouldn't miss her plane. Evidently, I'm still learning my way around these parts.

DOCTORATE IN ECOLOGY MAKES ENST 101 IMMORTAL

Emily Thompson found her passion at WM

I've often heard the statistics about the large percentage of college graduates whose careers are unrelated to their undergraduate majors. A college education is valued for refining thinking and communication skills necessary for success in most careers, and, for some people, a four-year affair with their subject of choice is enough for a lifetime. I can't explain the phenomenon, but I can tell you that I am an exception.

I began building my career during my very first semester at William and Mary when I took ENST 101, the introductory course for the Environmental Science and Policy track. The academic decisions I made over the next four years were influenced by both the material I learned in ENST classes and by the guidance I received from the department's interdisciplinary group of professors.

By graduation, I had finished majors in Biology and Environmental Science, studied abroad for a semester taking field ecology courses, and interned in environmental research for three summers. I was unsatisfied with only four years of these experiences, and imagined my future filled with more classes and field work. Consequently, my life post-WM is an extension of my life as an undergrad, and I'm still expanding on the knowledge base I acquired as a William and Mary student.

I'm a first-year grad student in the Department of Ecology and Evolution at SUNY Stony Brook, where I'll be a student for another six years. I decided to go straight for the Ph.D. after undergrad, without taking a year off and without getting a Master's. I am currently taking classes, teaching undergraduate biology labs, and planning my dissertation. The interdisciplinary approach of the Environmental Science track required that I learn not only the principles of ecology (the biological component and my primary interest), but also those of geology, chemistry, math, and even sociology and philosophy. I gained a 360 degree view of environmental issues that facilitates my success today as a student, teacher, and researcher.

As a teacher, I've had the opportunity to sneak in environmental examples while covering basic topics in biology. For example, while lecturing about pH and buffers, I explained to my students how limestone foundations in lakes and soils can buffer the effects of acid rain. I remember struggling with chemistry only three years ago and wondering how any of it was important for my planned career. Now I am in a position to motivate environmentally-concerned students like me, while of course trying not to irk all of the premeds.

Emily Thompson

As for my own research, I'm in the process of writing a review paper on exotic forest pathogens and plan to spend my summer in California working in a lab that studies an introduced fungal disease attacking pine trees. After finishing my doctorate, I plan to remain in school and become an ecology professor, ensuring the immortality of my undergrad academic life!

'95

Wendy Walsh (Smith): "I'm in my 8th year with the U.S. Fish and Wildlife Service in New Jersey. My job involves reviewing projects in north Jersey and making recommendations to minimize impacts on wildlife. In this capacity, I'm involved with the wetland regulation process, NEPA, civil works projects, endangered species, and migratory birds. Areas I often work include NY Harbor, the Meadowlands, the Central Passiac, and the Highlands. I'm married with a 2-year old daughter."

'02

Marian Carroll: "Most recent job is with the Virginia Department of Conservation and Recreation. I am a stormwater compliance specialist, inspecting erosion and sediment controls on construction sites in the Potomac Watershed region."

Marisa Guarinello: "I am in my first year of an MS program at the Graduate School of Oceanography at the University of Rhode Island. My research will concern the ecosystem functioning of one of RI's coastal lagoons. I also work part-time for EPA-New England's Superfund program, preserving a connection to my previous years of employment with the Superfund headquarters office."

Mary Shockley: "Working as a naturalist in Arlington, VA; hoping to attend graduate school in environmental science in 2007; engaged!"

Jeff Soltess: "I am Sergeant in the US Marine Corps, at the tail end of my enlistment. I am currently a Marine Security Guard (MSG) protecting US Embassies, having spent the last three years in La Paz, Bolivia, Athens, Greece, and am finishing my final months in Santo Domingo, Dominican Republic. I am engaged to wonderful woman, and we are the proud parents of a 7 month old little girl, Sofia Rose."

Beth Sturiano: "After graduating from W&M with a secondary concentration in Environmental Studies I served in the Peace Corps, doing environmental education and community development in Jamaica from 2002-2004. I'm now studying at the School of Public and Environmental Affairs at Indiana University's Indianapolis campus, where I'll graduate this May with a Master of Public Affairs, concentration in nonprofit management, and a Master of Arts in Philanthropic Studies. I hope to work on environmental issues in the nonprofit sector upon graduation."

'03

Melanie Biscoe: "May 2005: Graduated from Duke's Nicholas School. Two weeks later: Moved to DC to work for RTI International. Since: I've been writing environmental assessments for USAID's malaria control programs in Africa. In 2006 I traveled to Mozambique, Madagascar, Ethiopia, Tanzania, and Rwanda for this purpose. It's quite an interesting job, being part of the President\'s Malaria Initiative (PMI), especially working on Indoor Residual Spraying campaigns. If you need to know anything about IRS, the DDT Debate or malaria vector control in general, look me up!"

Elizabeth Vonhof (Ketchum): "I am currently in my last semester of a Master\'s in Public Policy (specializing in Environmental Policy) at the University of Maryland. I am also working part-time with the Bureau of Land Management\'s Division of Planning and Science Policy. Prior to attending Maryland, I worked for two years at EPA\'s Office of Underground Storage Tanks. In personal news, I got married at the Wren Chapel in May 2004 to another W&M alum, Marco Vonhof. We are now enjoying apartment living in Arlington, near Pentagon City."

Stephanie Ford-Molvik: "In 2005, I graduated with my Masters in Public Health from Eastern Virginia Medical School. This past fall, I started working on my PhD in Emerging Infectious Diseases at USUHS in Bethesda, Maryland."

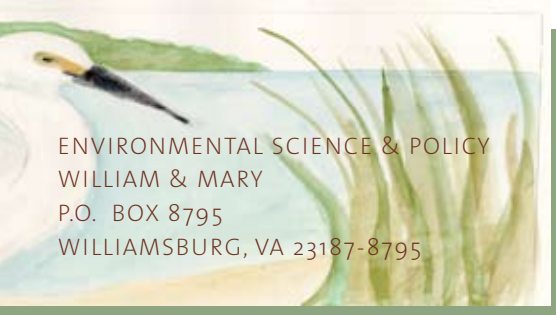
'04

Suzanne Ankrum:"I am currently working as the program coordinator for Virginia Conservation Network - a network of over 100 environmental organizations working to protect the Commonwealth\'s air, lands, and waters as guaranteed by Article XI of the Virginia Constitution. At VCN, a nonprofit, my work varies from tracking legislation and opportunities for public participation to coordinating policy workgroups that bring experts from around the state together to develop a cohesive environmental policy. I also coordinate a citizen advocacy program - Legislative Contact Teams - with the Virginia League of Conservation Voters. You can find my organization online at www.vcnva.org."

Melissa Pensa: "I am currently in my third year of medical school at the University of Connecticut. I plan to pursue a career in general surgery and will be applying for residency programs within a year. In my spare time, I am working with a cancer epidemiologist to study the biological differences in breast cancer in African American vs Caucasian women in CT. Running and cooking continue to be my sources of sanity. I have become recently interested in the Slow Food Movement and hope to create a website in the near future that serves as a nutrition and eating guide for the public."

'05

Owen McDonough: "I am currently a Ph.D student in the BEES (Behavior-Ecology-Evolution-Systematics) interdisciplinary graduate program at the University of Maryland (of the approximately 50 Ph.D students, 5 of us are WM Alums!) My studies focus on stream ecosystem processes and functions with the goal of restoring impaired running-water networks and their watersheds."



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