



EARTH bananas at the Whole Foods flagship store in Austin, Texas. For more on how EARTH is expanding its U.S. presence see the article on page 2.

OUR MISSION:

Prepare leaders with ethical values to contribute to the sustainable development of the humid tropics and to construct a prosperous and just society

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Of Clams, Nemertines and other Macroinvertebrates

EARTH Professor studies river water quality through its living organisms

What can clams tell us about the purity of fresh water? And what are nemertines and Chironomus midges? They sound like the villains in a fairy tale, but to EARTH Professor Bert Kohlmann they are anything but villainous. In a collaborative project between EARTH University and the School of Biology of the University of Costa Rica, Professor Kohlmann and fellow researchers have been studying how freshwater organisms such as these can act as bio-indicators of water quality in Costa Rican rivers and streams.

To be sure, experts can perform chemical and physical analyses of water quality, but using the organisms already present in the water as bio-indicators presents certain advantages, according to Kohlmann. "Biomonitoring programs offer quick and affordable methods to indicate the presence and severity of an adverse environmental impact. Biological information can be expressed numerically and the analysis can be undertaken by groups of people who are not necessarily biologists or professionals in the field.

"One of the major advantages of biomonitoring with macroinvertebrates, such as clams, is the possibility to detect changes in water quality that occur at the time of sampling, as well as changes that have occurred within a longer period before sampling, due to the sedentary lifestyle and long lifespan of these organisms. By comparison, chemical and physical analysis might be more accurate, but these only reflect the actual conditions of the water body at the time of sampling."

Rivers and streams in Central America have traditionally served as waste removal systems. In Costa Rica, population density has been concentrated along riverbanks of the central high valley, while only a few people tended to live downstream. As a result, the problem of water pollution was not always apparent in secluded lowland regions. "The reality," according to Kohlmann, "is that progressing deforestation and increasing urban growth and agriculture reduce the aquifer recharge. Changes in land use, particularly near the water source, can adversely affect the water quality." Growing populations and extensive petrochemical use in agriculture are making water quality a critical regional concern.

Professor Kohlmann's work falls under the umbrella of the sugar cane bio-fuel research project at EARTH funded by the U.S. Department of Energy. Sugar cane farms and mills are

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"Generally a high diversity [of invertebrate communities] indicates a high water quality," says EARTH Professor Bert Kohlmann (left), on how freshwater life can be used to monitor water quality.

Photo showing the incredible abundance of the Chironomus midge, an indicator of very high organic pollution. Approximately 100 midges per leaf!



PRESIDENT'S CORNER

Welcoming Back EARTH Alumni

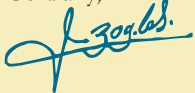
On September 22 and 23 we held our Sixth Alumni Congress on the EARTH University campus, welcoming 36 alumni from Bolivia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Paraguay. On September 22, we held a dinner at my home where I had the opportunity to thank our alumni personally for their contributions during these two decades and for their support with EARTH Plants the Future.

For many of our alumni it had been more than five years since their last visit to EARTH, and as a result we dedicated time to showing them new initiatives at the University such as the Produced by Us program, our response to climate change, the Carbon-Neutral Office and the current focus of our commercial activities. In addition, a group of Faculty gave talks on different topics of professional development and the Foreign Trade Corporation of Costa Rica delivered a presentation and organized a networking activity on business development and exportation.

During the meeting, the alumni agreed to create an international alumni association, which will consolidate the associations of each country and support the work of EARTH's Alumni Office. A meeting has been scheduled in Ecuador in November to follow-up on this agreement and we are pleased by the leadership and interest our alumni have taken in working together to strengthen their connection with EARTH.

It is worth mentioning that the alumni also participated in the 2020 visioning process, where they made important contributions. They all agreed that the vision, philosophy and values of EARTH need to be maintained. They recommended reviewing the curriculum to ensure that our academic program remains current; reinforcing leadership, teamwork, social and environmental commitment; and ensuring that entering students share the values that make EARTH's education so unique.

Cordially,



Dr. José A. Zaglul, University President

EARTH BRAND

EARTH UNIVERSITY EXPANDS ITS PRESENCE IN U.S. MARKET

EARTH University is expanding its presence in Whole Foods this year, with new products that support research and scholarships at EARTH. Aside from the famous EARTH Banana, you can now find EARTH Pineapples, Coffee and Flowers in Whole Foods throughout the USA.

The pineapples are sustainably sourced from growers in Costa Rica. Part of the proceeds help cover EARTH tuition costs while another portion funds pineapple research led by EARTH professor Ramon Leon. Professor Leon is writing a best practices report to help growers throughout the humid tropics engage in practices that increase productivity while conserving natural resources.

EARTH Coffee is produced in partnership with the Coopedota Cooperative in northern Costa Rica. EARTH graduate Hortensia Solis returned to her home region and works with Coopedota to implement more efficient environmental practices. With Hortensia's help, water use was reduced to 60 percent of previous levels, and coffee quality increased dramatically. You can find out more about Coopedota by visiting <http://www.coopedota.com>.

Finally, the EARTH Costa Rican Lily is available in select Whole Foods. The lily is grown at a Rainforest Alliance certified farm in Costa Rica. EARTH students will participate in hands-on research, learn about flower cultivation and are implementing a community development plan to help workers and their families decrease their environmental footprint.

EARTH Pineapples in a Whole Foods in Boston, MA.



EARTH graduate Jorge Quintanilla helped develop EARTH coffee for Whole Foods.



MEET A TRUSTEE

Kathleen Colson Bringing Hope to Northern Kenya.



Kathleen Colson is the Chair and Executive Director of the BOMA Fund, a grassroots micro-finance organization that focuses on rural economic empowerment of the pastoral nomadic communities in northern Kenya through a grants based training and mentoring program. She has been organizing and leading safaris to Africa for over 25 years as well as working and fundraising on behalf of numerous conservation and humanitarian causes in Africa. In 2005, Kathleen founded the BOMA Fund with the goal of promoting

small-scale, grassroots initiatives for northern Kenya that works to diversify sources of income for those most affected by drought and ethnic conflict. Kathleen has served on EARTH University Foundation's Board of Trustees since 2007.

How did you come to found the BOMA Fund and what has been your greatest achievement there?

A friend from the region asked me to help. The pastoral nomadic communities, marginalized by the Kenyan government, have suffered for years from extreme drought, poverty and neglect. The region is a conflict zone as ethnic groups battle over limited resources. At BOMA, we believe we have a humanitarian obligation to economically empower those most vulnerable. Because of the security concerns, we are one of the only ones working in the region but to date we have started 260 business groups of 5 people each through our REAP program of grants, training and mentoring. We have been able to improve the nutrition of 1300 adults who can also feed, educate and provide healthcare for 5600 children.

How did you first come to know about EARTH?

We were introduced to EARTH by a friend. I was shocked that I had never heard of the school and its focus on developing ethical, trained leaders who return to their home communities to make a difference. BOMA's region lacks for leaders with the skills to solve the problems of food security, energy and water issues. I was impressed with the rate at which students return, the entrepreneurial program and the focus on ethical behavior. Everyone that knows me knows about EARTH. I've hosted dinners in my home and brought potential donors and connectors on Amigos trips to campus. My husband and I sponsor one scholarship. In all, we have five outstanding students from northern Kenya who are at EARTH and I hope that we will eventually have a core group of 10 to 12 graduates who will return home, be creative problem solvers and lead their communities out of poverty.

Kathleen Colson often visits northern Kenya with her work for the BOMA fund.



What do you see as the greatest challenge affecting northern Kenya?

The magnitude of the poverty in northern Kenya is overwhelming. I know some of our EARTH students, growing up, regularly suffered from malnutrition and the diseases that come with extreme poverty. I now refer to the pastoral nomads of northern Kenya as some of the first climate change refugees in the world. Their main source of nutrition and income, livestock, is no longer sustainable because of the extreme droughts. Our greatest challenge is creating social and economic change in an area that has little infrastructure and challenging security issues from within but also from destabilizing regional neighbors like Sudan and Somalia.

What do the missions of the BOMA Fund and EARTH University share in common?

We share a passion for the leadership development of young people who will become agents of change. My work at BOMA is challenging but my work with EARTH is hope. I could not do one without the other – knowing that we are investing in the future is what keeps me going. It is the greatest privilege of my life to be associated with the people at EARTH University. Their dedication and commitment to build leaders who will bring change to communities that suffer from poverty and environmental challenges is humbling.

What advice would you give to a recent EARTH graduate from Kenya who hopes to return to Africa to improve social and environmental conditions in his/her community?

Politics is not the only answer to creating change in Kenya. My hope is that our graduates will create change through the use of their technical skills and become job creators and ethical role models in their communities.



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THE CAMPUS BUZZ

EARTH FACILITATES INTERNATIONAL VOLUNTEERISM IN 25 COMMUNITIES IN LIMON

From June 29 through August 10, a group of 65 young men and women from the United States volunteered in 25 communities near EARTH as part of a collaborative project between Amigos de las Americas and EARTH's Community Development Program. Amigos de las Americas is a non-profit organization that offers high school and college students in the United States opportunities to volunteer in hundreds of communities throughout the Americas, promoting leadership and commitment to service while benefiting communities in need.

As part of this partnership, EARTH provided training to volunteers on its campus, and EARTH students and staff provided on-going support to the volunteers throughout the course of the project. In the communities, Amigos volunteers focused on fostering leadership among children and teens in the implementation of gardening and environmental conservation projects to benefit their families and communities. The partnership benefited 42 families from the 25 participating communities who acted as hosts to the volunteers.

ENVIRONMENTAL LEADERSHIP STRENGTHENED IN COSTA RICA THANKS TO AN AGREEMENT WITH MUNICIPALITIES

On Saturday, August 28 EARTH University signed an agreement with two Costa Rican government agencies to promote best practices for integrated solid waste management and carbon footprint reduction as a means for promoting sustainable development. The signing was held in the community of Guácimo and included the participation of the President of the Republic, Ms. Laura Chinchilla.

The partnership was conceived after one of the agencies, the Institute for the Development of Municipalities, contacted EARTH about bringing representatives from the different municipalities in Costa Rica to EARTH's campus to learn about the University's environmental practices. This led to discussions on potential areas for collaboration. Throughout the project, EARTH will work with 20 Costa Rican municipalities on environmental awareness, training and implementation programs.

STUDENTS ORGANIZE ENVIRONMENTAL COMPETITION

In September 100 children from five primary schools in EARTH University's region participated in the environmental competition, "Solutions for my planet," a graduation project developed and organized by students Johanny Pérez, from the Dominican Republic and Tania Pérez from Nicaragua, both of the Class of 2010. This competition aimed to promote environmental awareness among children and encourage students and their teachers to work together to solve the environmental problems facing their schools and communities.

As part of "Solutions for my planet," Johanny and Tania trained two teachers in each school in topics related to agriculture and sustainability, alternative energy, climate change and bio-digesters. The teachers then trained their students, who were later required to share the information with 20 people in their community. With this training, the students and teachers developed proposals to address the environmental problems facing their communities and each school selected one project to be presented at an awards ceremony held on September 29 at EARTH University. This initiative helped earn Johanny Pérez the title of Caribbean Climate Champion by the British Council, a program that recognizes young leaders dedicated to finding sustainable solutions to climate change and impacting their communities.

EARTH'S BANANA PRODUCTION VERIFIED CARBON NEUTRAL

Reaffirming EARTH's leadership in sustainable banana production, in July, the consulting firm KPMG Mexico verified the production process of EARTH bananas as carbon neutral. The verification covers all aspects of the production on the University's campus, including crop management, harvesting and packing. In October 2007, following EARTH's declaration as a carbon neutral campus, the University began an inventory of the greenhouse gases emitted by its banana production, evaluating the use of fossil fuels, nitrogen fertilizers and electricity and proposing a reduction and mitigation of greenhouse gases produced. EARTH University has been committed to developing practices and technologies that make its banana farm more sustainable. The Institution's efforts to reduce the use of agrochemicals and protect biodiversity were key factors in the inventory of its greenhouse gas emissions.

Of Clams, Nemertines and other Macroinvertebrates *continued from page 1*

often located along the banks of rivers, causing water contamination. Kohlmann states, "The project is primarily generating, among other things, a field-guide based on the local river water macroinvertebrate fauna for rapid and cheap ecological appraisals. This field-guide is intended to be used by the sugar industry for self-monitoring of their agricultural activities and self-reduction of their pollution practices. But it is also designed for governmental and community use, so that they are able to evaluate river water quality in any part of the dry tropics of Costa Rica."

So what are the results that Professor Kohlmann and his team have obtained so far? "At the present time, we have been able to sample the Tempisque river basin in its totality. This has helped us produce a biomonitoring map indicating the water quality at each sampled location.

One can clearly see the existence of good water qualities where rivers flow through undisturbed areas, and a lowering of this same quality, when they flow through human impacted zones." The team has also started editing an eight page folding field guide. They have recorded over 140 different taxa to date in the Tempisque river system and have discovered the first giant freshwater clams in Costa Rica.

In the future, Kohlmann hopes to conduct similar research in the highlands of Costa Rica. "This area has the majority of the population, as well as the most acute and pressing river pollution problems. To date we have sampled the humid and the dry tropics. By sampling the tropical mountains we would be covering the totality of the Costa Rican territory. We would also like to publish a booklet with all the biomonitoring results generated so far."

CHANGE AGENT

Kenneth Bolívar

Class of 2011



Kenneth grew up not far from EARTH University in the Limon province of Costa Rica. In high school he became interested in studying at EARTH and applied twice to the University. In his first attempt, he was unsuccessful in getting the full scholarship he required, so he applied a second time. **“I had waited a long time; anyone else would have given up, but not me. When they called me to say that I had been admitted with a full scholarship thanks to a donor, it was overwhelming. To tell the truth, it was impossible not to cry from joy.”**

For his entrepreneurial project, Kenneth and five classmates grew cassava for exportation. He admits that, in spite of their success, the experience was not without its challenges. “We faced infestations and weeds, and the climate was difficult.” Nonetheless, the variety of cassava they grew was in high demand and met the requirements for exportation. “We sold the cassava to a business that handled the harvest. We implemented some innovations like traps for insects in order to avoid using chemicals. We also conducted regular monitoring so that we only applied insecticides when the level of damage warranted it.”



For Kenneth, at EARTH, every day presents an opportunity to learn and develop. “One day in the field, I had to remove a concrete pipe from a ditch and I was by myself with a few female classmates. I tried to do it on my own several times but I wasn’t able to get it out. I didn’t ask my friends because I thought that they were perhaps too weak. There I was, completely exhausted, until one of them came to me and said, ‘Friend, unity makes us strong, we have to learn from the ants.’ I accepted their help and was impressed by how we were able to do it. In the end, all dirty and tired, we were able to get the pipe out. That day, I learned a huge lesson: It doesn’t matter the age or the gender; what matters is team work.”

CLOSER TO HOME



EARTH students Evelyn Coc, María Angelica Bonilla and Sofía de los Angeles Brizuela, from the Class of 2011, are doing their third year internships in the U.S. and attended the event.

EARTH PILLARS CELEBRATED WITH BOARDS, SUPPORTERS AND FRIENDS IN ATLANTA

From October 14–16, the Board of Directors, Board of Trustees and EARTH University Foundation Board of Trustees gathered in Atlanta for productive meetings. The highlight of the meetings was the Pillars of EARTH Sustainable Leadership Awards dinner held on October 14, where four Atlanta residents were recognized for their actions and leadership in the areas corresponding to EARTH’s pillars: ethical values, social and environmental awareness, entrepreneurial spirit and technical and scientific innovation. Two more Atlantans, Jane and Dameron Black III, were honored with a Lifetime Achievement Award.

The event, which attracted 200 people, included the participation of EARTH ambassadors, five students currently conducting internships in the U.S. and two graduates. The Mistress of Ceremonies was an EARTH friend and donor, Karen Caplan, President and CEO, Frieda’s Inc. who set the tone for the evening with her humor and charisma. By far, the highlight of the evening was a moving testimony from Haitian student Cean Reginald, Class of 2011, who expressed his commitment to returning to Haiti upon graduation to promote the sustainable development and reconstruction of his country.

Cean Reginald, Class of 2011, awards Jane Black, center, and Dameron Black III, right, the EARTH Lifetime Achievement Award.



EARTH Student Sofía de los Angeles Brizuela awards Ray Anderson the Pillar of EARTH: Sustainable Leadership Award for Ethical Values.

See more photos of the event at www.flickr.com/earthuniversity





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HELP CHANGE TAKE ROOT WHAT IS EARTH?

EARTH University is a private, international, non-profit university located in Costa Rica, dedicated to education in the field of agricultural sciences and the rational use of natural resources. Founded in 1990, EARTH University has approximately 400 students from 26 countries in Latin America, Asia and Africa. In keeping with the University's mission to contribute to the sustainable development of regions in the greatest need, 80 percent of students are granted full or partial scholarships. Since EARTH's endowment only covers a portion of total student tuition, investing in the future of EARTH is the only way to ensure that we can continue to offer financial assistance to qualified youth of modest means.

WHAT CAN YOU DO?

If you are inspired by what EARTH is doing, please consider contributing to EARTH's mission to create a bright and better future; your contribution will make a difference. One way to give is through our Circle of Sustainers Program, which allows you to consider planned giving options that may be right for you. For more information, please contact Liliana Salas-Grip at lsgris@earth-usa.org or by phone at (404) 995-1243.



WILL

Leave a valuable legacy to EARTH that will be cherished for a lifetime by naming EARTH University as a beneficiary in your will. A charitable bequest will help curb estate taxes and allow you to support other beneficiaries.

PLANT A SEED THAT WILL LAST A LIFETIME; BECOME A MEMBER OF EARTH CIRCLE OF SUSTAINERS TODAY.

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UPCOMING EVENTS

December 10:

18th Commencement Ceremony at EARTH University.

December 20:

Holiday Break begins at EARTH University.