In Rural Ecuador, Undergraduates Make a Difference

By Elena Conis

What do you do with students with big ideas? You give them money.

And that's exactly what the Center for Occupational and Environmental Health (COEH) did to help a group of Berkeley undergraduates realize their dream to make a difference in the lives of Shuar indigenous villagers in Ecuador. The dream was born when Lia Marshall, now a senior majoring in public health, volunteered in the province of Pastaza and was asked by the local people to continue collaborating with them on development projects.

Undaunted by the enormity of the request, she mobilized a multidisciplinary team through the Cal Undergraduate Public Health Coalition in fall 2005. They designed a proposal for the COEH Student Award program to address malnutrition, safe water, sanitation, and other health needs of the Shuar community. COEH faculty reviewing their project were enthusiastic, but let the students know that they were trying to accomplish too much in their summer field work.

Three months later, after successfully shepherding a scaled-back project focused on water and sanitation through the rigorous human subjects protocol process, five students (Marshall, Karis Miyake, Timothy Morrison, David Reynoso and Celeste Wong) set off for Amazonian Ecuador. Buoyed with excitement and their $5,000 award to pay for travel and project expenses, they set off not knowing they were in for a physical, mental, and emotional marathon.

Working with local health officials, they hiked from village to village (10 in all), conducting surveys to assess current water usage and sanitation practices. On the way they slogged through knee deep mud, spent a day lost in the jungle, played and danced with the children, revised their methodology to overcome the initial distrust of the villagers, and learned that providing clean water would both meet an expressed need of the villagers and have the most impact on community health. The students promised to come back with practical interventions for improving their water.

Lia Marshall (second from right) and colleagues hike through the jungle to reach villages where they conduct surveys as part of their project to bring safe water to Shuar villagers in the Pastaza province of Ecuador.

Since their return to Berkeley, the students have been analyzing their data, making multimedia presentations, and seeking more funding for the next phase of their project—to adapt, test, and implement appropriate technologies to reduce widespread water-related illnesses among the 1,000 villagers in the Shuar communities.

Their receipt of another $5,000 award, as one of the first 25 winners of a new initiative by UC Berkeley aimed at helping students with "Big Ideas," has enabled them to make a second trip to extend their previous work. In this follow-up project, the students will first communicate to the communities the results of last summer's needs assessment and environmental health survey. They will then work with community members to conduct pilot studies to assess the feasibility of six different methods for decontaminating water. Finally, they will evaluate the efficacy of these methods by measuring levels of *E. coli* bacteria as an indicator of the quality of the primary water source in each community.

The campus put up $100,000 in seed money for the Big Ideas initiative and posted the winning projects on its new web site, Big Ideas@Berkeley Marketplace, where alumni, friends, foundations, and corporations interested in the ideas can donate to the projects. The aim is to mobilize additional financial and in-kind resources to support student ideas.

The COEH-funded Ecuador project has not only attracted more funding, but also more students, now working on two projects. One will continue their focus on safe water for the Shuar communities, and the other will tackle the nutritional issues they originally proposed, but had to postpone. They hope to raise $20,000 and attract donations of frequent flyer miles so that as many of the students as possible can travel to Ecuador to contribute to their goal of empowering the Shuar people with the skills and knowledge needed to achieve and sustain a reduction in morbidity and mortality from waterborne diseases.

More information on the projects can be found at the Big Ideas web site: bigideas.berkeley.edu.

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If you would like to support projects such as these, please make your check payable to the "School of Public Health Fund" and indicate "student-initiated field projects" in the memo line. Send it to External Relations and Development, School of Public Health, UC Berkeley, 417 University Hall #7360, Berkeley, CA 94720-7360. Contributions can also be made at egiving.berkeley.edu/urelgift/public_health.html. (Indicate the fund name in the "Specific instructions for this gift" box.)

Letter from the Field

Children with swollen bellies and skin rashes from parasites bathe in the Amazonian river. Their mother stands next to them washing the family's clothes while the two youngest kids of 11 fill their *poma* (plastic bottle) with water for drinking and cooking. Twenty meters upstream sits the community's one *letrina* (outhouse), which consists of a hole through which feces and urine flow directly into the river. Witnessing scenes such as these the prior summer first inspired our Cal Undergraduate Public Health Coalition to further investigate the water usage and sanitation practices of these Shuar communities and to conduct a needs assessment to determine the communities' other environmental health concerns.

After an eight hour trip from Quito, our technical assistant tells us to get off the bus. There are no signs—just a small path that leads up to a house in the jungle where his mother and 10 siblings live. This will be our home for the next seven weeks.

In the first 10 days, we conduct pilot studies with the nearby community of San Ramon. Making many five-hour roundtrips to the nearest city, Puyo, we revise our surveys and prepare for an intense five weeks of research. Working with the director of health for the District of FENASH, we plan our route to 10 Shuar communities within the district.

The mud sucks our black rubber boots as we make our first trip into the interior. Five hours later while entering Shakap, we see this community's primary "water source." A trickle leads into a large puddle, which is surrounded by rocks with detergent marks and a wooden board for bathing. This site foreshadows what we will later find in other communities—most people use one water source for everything—drinking, cooking, bathing, and washing.

Our time in the communities had been packed with challenges and obstacles to overcome, which ranged from dealing with community politics, working in extreme environmental conditions, to adapting to a new culture. However, from these experiences we also learned an incredible amount, including how to design, revise, and conduct culturally appropriate surveys and research. We gained practical experience in earning the confidence of communities, respecting cultural practices without compromising research methods/results, and working around local conflicts.

We also enjoyed an amazing cultural exchange. From attending graduations, baptisms, and *clausuras* (end of school year ceremonies) to drinking *chicha* (fermented yucca) and eating mainly yucca, platanos and *papa china* (starchy "vegetables"), we were fully immersed in the culture. Playing soccer with each community and dancing with the Shuar in their many community celebrations brought us even closer to the people.

—Lia Marshall