CEA-CREST Quarterly

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Robles to give diversity talk at Ecological Society of America Conference

Carlos Robles, CEA-CREST program director, will give a talk at the 89th Annual Ecological Society of America (ESA) Meeting in Portland, OR, August 1-6. Robles will address the recognized and unrecognized merits of diversity; and the challenges and opportunities of promoting diversity in science, as reflected in the developing identifications of aspiring minority students.

This year's ESA conference will revolve around *Lessons of Lewis & Clark: Ecological Exploration of Inhabited Landscapes*. The theme sets the stage for a conference filled with sessions dealing with ecology-related land management and policy issues challenging government agencies and scientists today in northwestern landscapes.

ESA is a nonpartisan, nonprofit organization of scientists founded in 1915 to promote ecological science by improving communication among ecologists, raising the public's level of awareness of the importance of ecological science, increasing resources for ecology research, and ensuring the appropriate use of ecological science in environmental decision-making by enhancing communication between the ecological community and policy-makers. Please refer to www.esa.org for more information about ESA and this year's meeting.

Featured Partner: Californian Cooperative Ecosystem Studies Units

Cooperative Ecosystem Studies Units

The Californian Cooperative Ecosystem Studies Units are part of a national network providing research and educational assistance to federal land management, conservation and environmental research agencies.

This unique undertaking joins government agencies and environmental research groups in a common mission – to share expertise and find answers to some of California's most pressing environmental questions.

Cal State L.A. is one of only three California State Universities invited to participate in this initiative that also includes several UC campuses and numerous federal agencies.

The CESU enables government agencies to collaborate with university researchers, which allows greater work expansion for all involved, and prevents researchers from duplicating efforts when they could instead work together and save time, money and energy.

It will not only look at environmental sciences in the future, but at social and cultural sciences as well, broadening the range of involved disciplines. "The potential exists for very diverse and unusual collaborations. Everything from pollution studies to California history," says **Carlos Robles**, Cal State L.A. technical representative for the Californian CESU.

This collaborative effort benefits Cal State L.A. students because they will not only be involved in groundbreaking research, but they will also have the opportunity to enter internships and take part in summer trainee programs that will increase their employment opportunities after they graduate.

Already, Professor **Hong-lie Qiu** has received Cal State L.A.'s first CESU project through the National Park Service Santa Monica Mountains National Recreation Area for a small GIS study to compile water quality data.

For more information on the Californian CESU and other cooperatives, please refer to www.cesu.org

2004 Environmental Science Conference - Postscript

On May 28, CEA-CREST held its Fifth Annual Environmental Science Conference at the Sheraton Pasadena Hotel, Pasadena, CA.

This year's conference was particularly stimulating with exciting scientific sessions addressing marine conservation and management, disturbance and ecosystem function, and watershed analysis.

The keynote address by **Robert Gottlieb**, professor and director of the Urban Environmental Policy Institute at Occidental College, neatly tied together the sessions with water and land use policy in southern California.

The student poster competition garnered various exceptional entries from Cal State L.A. students in the environmental sciences. Congratulations to biochemistry major **Mary Elizabeth Lee** who won best undergraduate poster and biology major **Demian Willette**, who won best graduate poster.

Next year's conference will be even more exciting with many more opportunities for idea exchanges and collaboration-building between senior scientists, industry professionals and students involved in environmental science research.

What are students and faculty doing this summer?

During the summer, many of us plan elaborate vacations to rest and get away from "the daily grind" of work or school. For some of our CEA-CREST faculty and students, summer is the time to get ahead on or finish pending projects, to start new ones and gain new experiences.

Patrick Krug (assistant professor of biology) is planning a two-week research cruise in the Bahamas on board the Research Vessel Seward Johnson II, run by Harbor Branch Oceanographic Institution.

Antonino Monterrosa (undergraduate, civil engineering) will work on his first publishable article on *The Effects of Moisture on Montmorillonite and Silica Gel*. "This is a very important personal achievement that I have planned since I transferred to Cal State L.A.; and hopefully it will be the first of many more to come," says Monterrosa.

Paul Moya (graduate, biology) will finish analyzing his collected mussel samples, and will return to Bamfield, BC, at the end of August to conduct one last run of experiments for completion of his thesis project. He will join **Carlos Robles**, **Neshan Sarkisian** (undergraduate, biology) and **Kwasi Connor** (graduate, biology) who are researching the physical factors affecting the growth rate of the mussel *Mytilus Californianus* on the coast of Vancouver Island, BC.

Hong-lie Qiu (associate professor of geography) will go with several Cal State L.A. students, including **Mari Rosales** (graduate, biology) and **Malikka Karteron** (graduate, geography), to Xinjiang, China, to continue research on Lop Nur, a former terminal lake of the Tarim River within Tarim Basin.

Carolina Reyes (graduate, biology) will attend the Summer Geobiology Course at Wrigley Marine Science Center in Santa Catalina Island, CA. The six-week course offers intensive interactions between biology and earth science. She will get hands-on training in modern geobiology research methods and participate in research groups to solve current environmental questions.

Tina Salmassi (assistant professor of biology) will be at JPL and Cal State L.A. working on reduced phosphorus, and her lab group will take two trips to their main field site, Hot Creek in Mammoth, CA.

Demian Willette (graduate, biology) will continue monitoring and sampling slug larvae in the water column and measuring the tidal flow regime at Cabrillo wetland and Upper Newport Estuary. Additionally, he will perform with the Hae Kyung Lee and Dancers dance company on June 25 and 26 at Cal State L.A.'s State Playhouse. "Ecology and Dance, an idyllic combination," says Willette.

Welcome aboard

Roman Barco (undergraduate, biology) joined CEA-CREST as an undergraduate in fall 2003. He completed his undergraduate degree in winter 2004 and was admitted to CEA-CREST as a graduate fellow in spring 2004. He continues working under the mentorship of **Tina Salmassi** establishing flow-through bioreactors for arsenic removal from drinking water, isolation of thermophilic-arsenite-oxidizing bacteria and the development of a novel colorimetric method to measure phosphite in water samples. He will also join **Crist Khachikian**'s lab to study biofilms in lakes and their possible role in the cycling of phosphorous and arsenic. Barco plans to work in the applied microbiology field because he is extremely interested in the idea that microorganisms can be beneficial to humankind in ways that have yet to be discovered.

Humberto Nation (graduate, geology) was admitted to CEA-CREST spring 2004 and is working with **Barry Hibbs**. His interest in environmental science has taken him from conducting atmospheric research as an undergraduate to his current work in hydrogeology. He currently studies the sources and fate of nutrients and trace elements in Newport Bay wetlands. After completing his M.S. at Cal State L.A., he plans to obtain a Ph.D. in environmental science and geochemistry.

Neshan Sarkisian (undergraduate, biology), who joined CEA-CREST in spring 2004, is working with **Carlos Robles**. Sarkisian has a particularly strong interest in conservation biology. He plans to pursue a Ph.D. in zoology, and conduct conservation research in the Amazon. He currently conducts marine research, measuring wave velocity in the intertidal zone of the California coast to determine mussel growth and settlement.

Rose Santilena (undergraduate, geology) was admitted to CEA-CREST in spring 2004 and is working with **Laura Rademacher**. Santilena is very interested in hydrogeology and would like to identify sources of water pollution to improve water quality and preserve local wildlife in affected areas. She is studying the effects of recent fires in the San Bernardino Forest on the watersheds of that region.

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Faculty spotlight: Crist Khachikian

Crist Khachikian joined the Department of Civil Engineering in fall 1999. His research focuses on the behavior of chemicals in the environment. His lab is currently working on projects dealing with the transport and fate of polycyclic aromatic hydrocarbons (PAHs) in urban environments to understand how PAHs enter lakes and what reactions and processes affect their fate.

Q: Why did you choose this field?
A: I got involved with this type of research as an undergraduate at UCLA and found both the research topic and the process fascinating and exciting.

Q: What are your current research projects?
A: We are studying the deposition of PAHs and nutrients on urban soils and at Lake Pyramid, CA using a microlayer sampler. We are also interested in the biogeochemical cycling of phosphorus in the waters of Hot Creek, Mammoth, CA.

Q: What do you like best about your work?
A: That I can combine field work with lab work. I get to work with enthusiastic and energetic undergraduates and train them to become better scientists and engineers. I also enjoy working with faculty and student chemists and biologists at Cal State L.A.

Crist Khachikian and Roman Barco (CEA-CREST graduate fellow) collecting samples at Lake Pyramid with the microlayer sampler.

Q: What is the future of your research?
A: To continue doing what we're doing!

Crist Khachikian and Caryl Becerra (former CEA-CREST graduate fellow) analyzing soil samples in the environmental engineering lab.

Q: What is your mentoring philosophy?
A: I provide a lot of guidance at the beginning to ensure we all understand problems we are studying and decide how to approach the problem (i.e. designing experiments, using equipment, etc.). After students get going with their projects, however, I let them explore the finer details and encourage them to lead parts of their efforts on their own. I find that this approach helps them build confidence to ask interesting research questions that lead to experiments designed to answer those questions.

Q: What can you tell us about your CEA-CREST students?
A: My CEA-CREST students over the past year have been **Scarleth Ramirez** and **Antonino Monterrosa**. They are enthusiastic, hard-working, and very curious. I find working with students such as these to be one of the most rewarding experiences at Cal State L.A.

Undergraduate student: Antonino Monterrosa

Q: Why did you come to Cal State L.A.?
A: I wanted to form part of a motivated and self-determined lab group, but found few universities that could offer me the tools and opportunities to prepare me for such a highly competitive task.

I am fortunate to have met Dr. **Crist Khachikian** while I was still at Pasadena City College as a Math, Engineering and Science Achievement (MESA) student. Dr. Khachikian gave me the opportunity and guidance to explore all the opportunities and projects available in his laboratory. I knew that the camaraderie and state-of-the-art equipment in the lab were a rare combination.

This convinced me that Cal State L.A. was the place for me to successfully carry out a challenging research project in a setting that would prepare me for graduate school.

Q: Why did you choose this field?
A: I always wondered where waste from products we use ends up, how scientists determine pollution levels in the air and water, and how these pollutants affect us. When I began analyzing different soil types in the laboratory, I realized that I was dealing with part of the path through which pollutants travel.

I began quantifying the amount of water different soils uptake, and was fascinated to discover that this is one of the many creative methods scientists use to determine contaminant amounts in soil, which varies depending on its physical characteristics. This, along with other experiences and numerous engineering courses, has paved the way for my career in environmental engineering.

Q: What is your goal?
A: To share my discoveries with the scientific community, by publishing articles during my undergraduate career, and then continue my education in graduate school.

Antonino Monterrosa measuring soil samples in the environmental engineering lab.

Q: What can you tell us about your advisor?
A: Dr. Khachikian is one of the wisest, most creative, and intelligent professors that I have encountered in my academic life. He constantly pushes me to the limits by giving me projects that require much creative and critical thought. He prompts me along by asking the same questions worded differently, and asks me to always consider *all* possible alternatives before proceeding further with my current experiments.

He encourages his students to keep up-to-date on current porjects by reading the latest publications, and is always available to answer questions. I'm very lucky to have an advisor who understands my background and sees my potential to overcome many obstacles and succeed with my career goals.