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2-5-2017

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Recommended Citation
Romero, A. 2017. Gosnell studies and communicates ecological concerns. College Talk (8):1-1. 5 February 2017. (URL: http://www.aromerojr.net/Publications/935.Gosnell.pdf).

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Gosnell studies and communicates ecological concerns

Dr. Aldemaro Romero Jr.
College Talk

Scientists who study environmental problems know that the more you work in the field, the more insight you gain into how to solve problems. In other words, the more field experience you have, the deeper your understanding of nature.

One scientist who has had a lot of field experience is Dr. Stephen Gosnell, and his interest in the environment began when he was still a child. "I had interest really early. I grew up in rural South Carolina in a very small town called Landrum. I was outside on a regular basis, playing in the streams and creeks around me," says Gosnell.

Although he initially majored in engineering, he ended up earning a bachelor's degree in biology at Clemson University in his native state. "I was really interested in how species respond to the environment, why we see such diversity among mountain streams or among vast swatches of the earth, why we see differences and what maintains those differences."

After Clemson, he moved west, entering the master's program at the University of California in Santa Barbara. "I lived five blocks from the ocean, and from my office on campus I could look out my window and see the ocean. The classic work on the west coast with the sea stars and the snails that is familiar to anyone who takes a basic ecology course—that was my backyard," he said.

Gosnell ended up earning a doctorate from UC Santa Barbara and now is an assistant professor in the Department of Natural Sciences in the Weissman School of Arts and Sciences at Baruch College of the City University of New York.

Despite moving from coast to coast, he has never lost his focus on studying coastal systems like estuaries, "places where the ocean meets the land, really diverse communities that provide a lot of resources for us such as food. Estuaries are great places for an ecologist who wants to match up basic ecology questions and applications to put his or her work together."

Photo by Yulia Rock.

Dr. Gosnell at work with students.

For him, to really understand changes in the environment, "we have to take advantage of data that's been collected over the years, to look at larger resources such as satellite imagery. Half my work is hands-on science, half of it is thinking about these bigger-scale questions, such as what drives diversity among different continents with rain forests."

Gosnell is someone who really enjoys teaching. "I teach conservation biology and always start off the first day of classes telling students that it's different from ecology, which is different from biology. That conservation biology is a value-laden, crisis-driven field. If you look at the history of the field, it arose as an independent study because of the realization that there were multiple parts of the earth, coastal systems, marine systems, terrestrial base systems, that were in trouble, that had a lot of issues, and we needed to use science to address them."

Although some scientists would like to restore ecosystems damaged by humans, this is not always possible. "I think restoration ecology is an ideal. We'd love to get systems back to where they were, but that's not always possible."

As any scientist knows, our planet has always been changing, but this does not mean we can ignore what we have been doing to the earth. "We have to look at the rate of change, and that's what's concerning now. Species have always gone extinct, but now the data suggests that they're going extinct at a much, much quicker pace than we've seen at most other times in the history of the world," says Gosnell.

He says that removing some species, such as predators, from the environment has been misguided. "It's not that we take the predators away and we're safer. I mean that was the original idea with getting rid of these species, but it doesn't work that way. We've made major changes that trickle down; it's the idea that everything changes—a trophic cascade we call it in ecology. When you remove predators, things will happen because you've taken out this major player in the system."

When asked whether or not we have gone too far toward destroying our planet and cannot undo all that damage, he sees the glass half full. "I am still an optimist. I think we've definitely seen improvements in local conditions here in New York, improvements in protection across the United States. There've been improvements globally in accords that limit fossil fuel emissions. Yet people need to see what we're doing. It's getting better, but these are long term changes, so even if we stop now, some of these systems are already on a trajectory to keep changing for 50 years to a few centuries," says Gosnell.

For him the real question is: "What is the world going to look like and what do we want the world to look like in a hundred or two hundred years? And I think we've passed the point where the world is going to look different."

Gosnell is not the kind of professor who lives in an ivory tower. He knows that in order to have a healthier planet we need to educate future generations, and that is why he visits local schools to carry his message. To young people science should not be presented as something complicated. "If we can't explain what we do to children, it's not the children's fault. It means we're not explaining it well enough, and it's important that we help find the next generation and mentor them. It's been nice to work with the high school students and the undergraduate students here at Baruch in doing that type of work."

Aldemaro Romero Jr. is the Dean of the Weissman School of Arts and Sciences at Baruch College of the City University of New York. The radio show on which these articles are based can be watched at: https://vimeo.com/195486700
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