

Teaching Backward; Learning Forward

Zoologist Loren Smith, a newly appointed Regents Professor, merges hydrology, soil sciences, ecology and meteorology to teach students about ecosystems.

Sometimes it's better to teach backward, says OSU zoologist Loren Smith.

Naturally, many instructors teach students about organisms first and then their ecosystems.

"We want to teach in ways that excite students, and that approach is often the most interesting for them," Smith says.

However, a better approach for learning, he says, is to teach students about ecosystems first, then about the organisms that inhabit them.

Smith, head of OSU's zoology department, has spent more than 30 years turning it around. He merges sciences of hydrology, soil, ecology and a bit of meteorology in his research and teaching.

That's because organisms are the sum total of their adaptations to their environment.

"If I know about the environment of a certain area, then I can tell you what types of species of animals we will have there and how well they're doing," Smith says.

That approach is part of what makes him one of the world's top experts in wetlands. And it's part of why in 2010 he was named a College of Arts and Sciences Regents Professor, the highest promotion OSU faculty can receive.

He also won the Environmental Law Institute's 2011 National Wetland Award for Science Research, an honor the Washington, D.C., based policy group uses to laud wetland stewards.

"It's a great honor to receive the Regents Professorship, and the wetlands award," Smith says. "The fact I was nominated by my peers means a great deal to me."

Smith has published more than 170 articles, the bulk of which are on Great Plains wetlands called playas.

He has documented how playas act as filters for pollutants, fight flooding, support biodiversity and recharge aquifers, including the Ogallala Aquifer located beneath the Great Plains and providing irrigation for agriculture and drinking water for millions of people. Playas also are the anchor points for delicate ecosystems relied upon by thousands of migratory birds, amphibians, insects and other organisms.

He uses his research to inform high-level policymakers crafting better conservation programs. Smith is evaluating U.S. Department of Agriculture conservation programs in the Great Plains with colleagues at OSU and Texas Tech University. He also has had projects with the Environmental Protection Agency and the U.S. Fish and Wildlife Service.

Scott McMurry, an OSU zoology professor, nominated Smith for the Regents Professor position. They have worked closely together. After Smith was hired at OSU in 2007, McMurry was hired.

"I've always been just real impressed with the guy," McMurry says. "He has a strong work ethic, a strong commitment to his role as a scientist, not only in producing a good product but one that's useable by society. He just epitomizes a good boss. He leads by example."

Smith's graduate students say their thesis adviser is a huge asset to them.

Doctoral student Ben Beas says he has never had a professor as demanding as Smith, nor one who required as much of a background in ecosystem services and other sciences. Smith expects stellar results.

"It is an honor to work for him," says Beas, whose research focuses on how wetland restoration affects ecosystems. "I feel incredibly fortunate to be studying under the guidance of Dr. Smith."

Additionally, the skills and attention to detail he demands, as well as his experience with large government projects, make Smith's former students hot commodities in the job market. Beas hopes to work as a government researcher in conservation once he finishes his doctoral degree in September.

Jessica O'Connell, another of Smith's doctoral students, transferred to OSU from Tulane University to study larger-scale wetland ecology and work on Smith's USDA project evaluating the government's conservation efforts. The work will be invaluable to her in the future because she hopes to work in coastal wetlands conservation. She also has been able to expand her doctoral thesis on how land usage affects soil's ability to store carbon.

"He gives me the freedom to be creative," she says. "He has allowed me to infuse some big ideas into my doctoral research that I wouldn't have been able to do with another professor."

Smith, a fellow of the Society of Wetland Scientists, has a master's from South Dakota State University and a doctorate from Utah State University.

Smith lives near Stillwater with his wife of 34 years, Janiece, who is a development coordinator at the OSU Foundation. His son, Clayton, graduated in May 2011 from OSU's Center for Veterinary Health Sciences, and his daughter, Jessica, graduated in 2009 with a degree in business from the OSU's Spears School of Business. She works for Chesapeake Energy in Oklahoma City. ☞



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— Regents Professor Loren Smith, zoology department head

