

**Internships
Needed**

Do you work in an organization that could serve as a learning environment for an undergraduate Biology major?

You receive extra help plus the enthusiastic energy of a student eager to learn while the student learns practical application of the concepts they are learning in class.

A definite win-win!

Contact our Academic Support Team by calling the main office to learn more!

How to reach us:



970-491-7011

To donate:



Welcome from the Chair: *Dr. Dan Bush*



This is my last newsletter greetings as Chair of the department of Biology. I have recently accepted the position as Vice Provost of Faculty Affairs here at CSU. I'll still be spending much of my time looking out for the interests of faculty, except now I'll be responsible for all the faculty on campus. It has been a lot of fun leading this department.

While I've been chair we've hired ten new colleagues with a net increase of six new faculty. Competitive grant support is at an all time high, and the international stature of the faculty is reflected in scores of invitations to speak at international meetings and to join the editorial boards of highly rated journals. Further evidence of the strength of the department is illustrated in this newsletter's stories about the achievements of Drs. Bedinger, Wall, Knapp and Webb.

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BUMPER CROP OF GRADUATES

We're so proud of our students who have worked so hard to attain their graduate degree from CSU. Please join us as we honor and congratulate them!

Ph D

Lindsay Parrie Zoology
Helen Sofaer GDPE
Julian Torres Dowdall Zoology
Broox Boze GDPE
Charles Stone Zoology
Chris Mayack GDPE
Wiebke Tapken Botany
Stormy Lindblom Botany
Thomas Wilding Zoology

MS

Molly Womack Zoology
Michael De Miranda Zoology
Todd Green Zoology
Alicia Link Zoology
You Soon Baek Botany

WELCOME FROM THE CHAIR CONTINUED

In addition to our accomplishments with research, the department continues to emphasize our commitment to teaching excellence. We count among the faculty many teaching award winners and each of us promotes undergraduate research experiences in our labs. Our small-college atmosphere and emphasis on research and internship experience continues to attract more majors every year. At last count, we had the most majors on campus, with over 6% of the undergraduate population!

It has been a real honor and pleasure to be Chair of this dynamic and dedicated group of scientists and educators. I will keep my lab running while Vice Provost (I had two grants funded last year) so I'm glad to say I'll still be walking the halls of our building. Nevertheless, I'll miss my daily interactions with my many friends and colleagues in the department.

Alumnus Appreciates Professor's Influence

We love to hear from former students, and this is a special case: a former student wrote to thank a professor in a department different from his major.

Kurt Frieauf has been a Geology Professor now for 20+ years, but he remembered fondly his experiences with Dr. Brent Reeves. In a letter to Dr. Reeves he said:

One of the things that impressed me most about you was your willingness to engage with me in spite of my status as a non-biology major... I was 20-year-old kid, but you treated me as an adult *and as a fellow scientist*. That meant a lot to me.

Your influence on me manifests in my willingness to devote myself to students from *other* majors.... I am often told by students from other majors that I care more about them than the faculty in their own programs. I know that I'm making a positive difference in people's lives. I credit people like you for modeling that behavior for me when I was young. Your actions and philosophy still ripple outward o people you'll never meet 25 years later.

Thank you for that.

How about you? What story or experiences in the Department of Biology are you willing to share? Please email your story/photo/remembrance to debradev@colostate.edu. We will print the most interesting in this newsletter!



Dr. Brent Reeves

RESEARCH KUDOS FOR OUR PROFESSORS

Wild Tomatoes could unlock secrets of the fungus behind the Irish potato famine



Wild tomatoes could help researchers design potatoes resistant to the fungus that caused the Irish potato famine and still threatens potato crops around the globe.

The tomatoes you see in the grocery store were bred to be plump and delicious. Wild tomatoes, though they are smaller than tomatoes bred for consumption, have genetic resistance to disease that has been bred out of modern day tomatoes. Working with wild tomatoes will yield important information that can translate to breeding fungus-resistant potatoes.

Dr. Patricia Bedinger

Dr. Patricia Bedinger has received a \$5.8M National Science Foundation grant for this research. For more, please visit: <http://www.today.colostate.edu/story.aspx?id=6852>

University Distinguished Professor appointed to White House panel reviewing US presence in Antarctica

Two planes, one ship, one Zodiac raft and three days travel transported Biology Professor Dianna Wall to an icy end of the earth where she helped evaluate the U.S. research presence in Antarctica as part of an exclusive 5 member panel.

After their visit this past February, the group will make recommendations for a long-term strategy for managing research and its ecological impact at this remote site.

Wall, as a terrestrial ecologist, is a regular visitor to Antarctica with 21 research seasons under her belt. She was honored by having one of the Antarctic Dry Valley named in her honor. She is standing in front of it in the picture to the right.

For more, please visit: <http://www.today.colostate.edu/story.aspx?id=6853>



Dr. Diana Wall

Dr. Alan Knapp leads national drought study on grasslands



Dr. Alan Knapp

Dr. Alan Knapp will lead a national team that will experimentally impose severe drought in Great Plains grasslands and evaluate how the landscape responds – the first large-scale project of its kind.

The National Science Foundation has awarded \$3.7 million to Alan Knapp, a biology professor and senior ecologist with the Graduate Degree Program in Ecology at Colorado State and principal investigator on the project. He will team with Melinda Smith at Yale University, who will soon join the Colorado State Biology faculty; Scott Collins at the University of New Mexico; and Yiqi Luo at the University of Oklahoma.

The project is an outcome of a research working group supported by Colorado State's School of Global Environmental Sustainability. The project will encompass six grasslands in four states.

For more, please visit: <http://www.today.colostate.edu/story.aspx?id=6971>

MATH IN THE BIOLOGICAL CONTEXT



Dr. Colleen Webb

When you see a room full of computers, it might be difficult to imagine that this is a room housing biological research. Yet, in the lab of Dr. Colleen Webb, computer models help define and predict how diseases in wildlife can impact humans.

As an undergraduate on scholarship from the AF-ROTC, choices for a major were limited, but for Webb, math seemed like the best choice at the time.

An aspiring private pilot with ambitions to serve in the Air Force after graduation, her plan was derailed by a knee injury. It was difficult at the time to imagine that a math major would actually have a career in biology, but attending a psychology seminar changed her perspective. The lecturer was a primate research ecologist who had both undergraduate and graduate degrees in math. The connection between math and biology was now clear, and a new direction was equally clear.

Now, she uses that math background to do mechanistic epidemiological modeling of disease in wildlife. As she says, "Fundamentally, we look for diseases and/or pathogens that occur in wildlife that can spill over into humans and/or domestic animals. We look at pathogens and investigate what it is that allows the disease to persist or transmit. If you understand that, you can do simulations to model what is occurring, and potentially predict what might happen with the disease in other populations or in response to control programs.

Some of the diseases studied so far include plague in prairie dogs and/or rodent hosts, rabies in bats, avian influenza in water fowl and bovine tuberculosis in cattle.

The importance of this work can hardly be understated. There are many concerns about emerging wildlife diseases in US and foreign animal disease introduction that could spread to domestic animals. Results of her work can help refine disease management by determining risk assessment and predicting potential economic damage .

Mechanistic Epidemiological Modeling

It's difficult to observe the process you want to study.

With the modeling approach, we can't observe the pathogen, but we can observe outcomes (such as measuring antibodies to a specific disease) and go backwards to determine mechanisms for how the disease progresses throughout the population. This can help predict what might happen under various circumstances.

Once the model is complete we can use the results to predict how a disease might spread and to determine:

- Potential hot spots
- Suggestions for surveillance (where to look)
- Suggestions for policy formation (if there is an outbreak – do we control disease spread?)
- Where to stockpile vaccines



Photo by Mary Ashby