

# BIOrhythms

Washington University Biology Department Newsletter

December 2010

*Winter is  
nature's way  
of saying,  
"Up yours."*

*~Robert Byrne*

## Helpful Links

Biology Home Page  
Biology Course Listings  
Faculty Listings

*BIOrhythms is a publication of  
the Washington University  
Biology Department for  
Undergraduate Majors*

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articles/info*

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New Major: **Environmental Biology**

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## **Announcing New Major: Environmental Biology**

The new Environmental Biology major, designed by a group of dedicated faculty, deans, and students has recently been approved by the faculty of the College of Arts and Sciences. Many undergrads are asking about what this new major will entail. This article will introduce you to the new major and answer some of these questions. I spoke with Eleanor Pardini, Assistant Director of Environmental Studies and Research Scientist and Lecturer in Biology, and learned a lot about how the new major will function. Dr. Pardini will be teaching BIO 381: Introduction to Ecology this spring. She also does field research on invasive plants in Missouri and on rare plants in California at Point Reyes National Seashore. See <http://news.wustl.edu/news/Pages/21005.aspx> for more details about her research on endangered native lupine species.

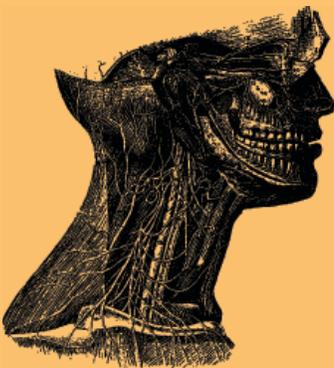
Current sophomores, juniors, and seniors that are interested in the field of environmental biology may choose any of the following three majors: (1) Environmental Studies – Ecology/Biology track, (2) Biology – Ecology and Evolution track or (3) the new Environmental Biology major. The Environmental Studies major and Ecology track of the Biology major will be phased out by 2013, but current sophomore, junior and senior students can still follow these majors. Freshman entering Wash U in fall 2010 are able to choose to major in Biology or Environmental Biology. Environmental Biology has the same number of required, core math and science credits as the Biology major, but with a slightly different focus: it requires only one semester of physics, has a different emphasis in chemistry and requires more earth science than the Biology major. Students interested in evolutionary biology can declare Biology or Environmental Biology depending on particular coursework that suits their interests and future goals. Both require the same core courses that provide access to upper level electives that can be chosen based on their specialized interests.

Students should consult their four-year academic advisors before deciding which major to declare and they should pick the one that has the coursework most appropriate to what they want to do beyond a bachelor's degree. The new Environmental Biology major provides the depth in science coursework, including the —cont'd on p. 4

## Biology Club Field Trip to see *Bodies: The Exhibition*

The Biology Club has organized a field trip to see *Bodies: The Exhibition* at St. Louis Galleria on Friday, December 17th. The tickets will be subsidized to \$5/person and we will have a limited number of tickets. We do not have the final details of the event worked out yet but please send an email to [wubioclub@gmail.com](mailto:wubioclub@gmail.com) if you want to join us! We will get back to you with more info soon.

To learn more about this exhibit visit: <http://www.bodiesthe-exhibition.com/stlouis/the-exhibition.html>



## Faculty Spotlight: Tiffany Knight



*Tiffany Knight, right, with biology student, discussing the invasive plant *Lespedeza cuneata*.*

Dr. Tiffany Knight grew up near the Everglades in South Florida. She was inspired to become a plant ecologist while working with Dr. Tom Miller at Florida State University. She spent summers doing field research on Saint George Island and then pursued her PhD at the University of Pittsburgh, which has a really good program in mathematical population ecology. After that, Dr. Knight worked with Dr. Bob Holt (a theoretical ecologist), at the University of Florida, and a second postdoc at the National Center for Ecological Analysis and Synthesis in Santa Barbara, CA. Dr. Knight came to Wash U in 2005 as an Assistant Professor in the Department of Biology and Environmental Studies, and was promoted to Associate Professor with tenure in 2010. She is also the new director of Environmental Studies and is passionate about educating the next generation of environmental leaders.

Dr. Knight's course Introduction to Environmental Biology is open to freshman-seniors. This is a new course, approved by the Biology Department and Arts & Sciences curriculum committee, replacing ES 110. It's open to non-majors, designed for freshmen to be the first in the Biology course sequence, i.e. pre-BIO 2960 and 2970. The course, which has not been assigned a number yet, will be offered in Fall 2011 and focuses on four major environmental problems that need to be solved over the next few decades: global climate change and energy; how to feed the world without destroying the environment; environmental change and human health; and biodiversity conservation. She also teaches BIO 4170: Population Ecology, a smaller-sized advanced course that focuses on analyses of demographic data and future population projections. This course has a weekly lecture, discussion, and computer lab using MATLAB. It is open to juniors, seniors, and graduate students and is offered in odd years in the fall.

The Knight Lab studies the population ecology of plants with a focus on rare and invasive species, and addresses questions related to the causes and consequences of their abundances and distributions such as: Why are some species rare, while their closely related congeners are widespread? How does dispersal ability and density dependence determine the population abundance and spread of invasive plants? In particular, the Lab focuses on the role of interspecific interactions between plants and pollinators, herbivores, seed predators and competitors on the long term rates of plant population growth. The research team also studies how these interactions, particularly plant-pollinator networks, have changed through time as a result of changes in our landscape use and climate. Study sites include the Tyson Research Center near St. Louis, Missouri and surrounding natural areas in Missouri and Illinois, Point Reyes National Seashore in Northern California, several military bases on the Hawaiian Islands (Oahu and Hawaii), and villages near Bangalore, India.

Dr. Knight has always been interested in the natural world, but did not realize one could make a career out of trying to understand how it works until she was an undergraduate. More recently, she has become passionate about applying a general understanding about factors that influence rare and invasive species, and applying that knowledge to global environmental problems. In her free time, she loves hiking, wine tasting, watching bad TV, and spending time with her 3 month old baby boy.

To learn more about Tiffany Knight and the Knight Lab, visit the website at: <http://biology4.wustl.edu/faculty/knight/>.

## Environmental Biology: Some Students' Perspectives



Last year when students came together to discuss the current environmental studies major and what the potential new majors should look like, the general theme from students about the environmental studies biology/ecology track was that it lacked a strong background in the sciences. Students felt that the major offered a broad interdisciplinary study of the social sciences, geosciences, and biology through its electives, but lacked a core, in-depth scientific understanding in biology, chemistry, and math. The new environmental biology major has improved upon the previous environmental studies major by providing an in depth study of the sciences and math. The major allows for students to gain a comprehensive understanding of different areas of biology from micro and cell biology to ecology and evolution, while still having the flexibility to focus on specific interests within the study of environmental biology. The well-rounded and in depth education in the biological, chemical, and earth sciences, will allow for Wash U students to be competitive candidates in the growing environmental fields that require students to have a comprehensive understanding of a wide range of scientific disciplines. The new major also provides students interested in the social sciences with a strong scientific background, to have the tools to understand and create effective and much needed environmental policies based on science. One of the most important improvements of the new major is that it is part of the biology department. This allows students in the major to take advantage of the bountiful opportunities the biology department provides, including access to great professors and research opportunities. The environmental biology major provides students with the knowledge, skills and opportunities to become leaders in environmental fields.

—Jeremy Pivor



Going into my junior year of college, I thought I had my undergraduate academics all planned out. I was a double major in the environmental studies program (biology/ecology track) and anthropology. However, I always had the feeling that I was missing some important classes and areas of study that were not provided by the environmental studies program. Also I had, in my mind, too much crossover between my anthropology and environmental science classes. The old program taught mainly through a social science/anthropological approach and I was really looking for more variation in my coursework. I knew that I needed more core science classes because I'm looking into going into a career in some form of wildlife ecology or conservation work.

The new environmental biology major offers just that. It gives me and other students more options when selecting courses, and provides a stronger base in important science classes. The new major also gives me the different approaches to my coursework that I was looking for, with a strong emphasis in research and the utilization of primary sources in the classroom. Since I am a student that has graduate school in my future, the need for core science classes is very important to being successful in my endeavors. Finally, the full departmental support from the biology department rounds off the positive attributes of the environmental biology major. —Kyle Vickstrom

*Dear Biology Majors,*

*This spring and summer a team of Washington University undergraduates is being assembled to genetically engineer microbes towards entry into the 2011 iGEM competition. This is an exciting summer research opportunity in Bio and Genetic Engineering at WashU that is an outstanding research and leadership addition to any C.V. with a chance to design and present student based research. Students in biology, as well as from all science and engineering disciplines are welcome and encouraged to apply to the team.*

*Please attend the informational session on Thursday December 9th at 6:00pm in Whitaker 318 or visit the website: <http://2010.igem.org/> Team: WashU to learn more.*

*Best Regards,  
WashU iGEM*

## Course Spotlight: BIO 2351: Plants of Missouri

Did you know that undergrads can take University College courses? This is a great option for the student that has trouble fitting his/her classes into a daytime schedule. I am currently taking BIO 2351: Plants of Missouri taught by Dr. Peter Hoch. Though the class won't count toward your major it's the perfect elective for the student interested in learning more about local flora. You will learn how to use and create plant identification keys, visit the world famous Missouri Botanical Garden's Herbarium and have the opportunity to take field trips to Tyson Research Center and Shaw Nature Reserve to practice identification. Students are encouraged to bring specimens each week for the class to identify. The course teachings focus on Missouri's plant communities and natural divisions as well as broader themes such as biological processes, plant evolution, agricultural history and human impact on the landscape, both ancient and modern. Overall I found the course to be fascinating with a much richer variety of topics than I expected. The optional field trips and class meeting at the Herbarium were highlights of the semester, in particular being able to see a specimen collected by Charles Darwin himself! Homework consists of weekly readings from books and articles (copies handed out in class). There are three exams and one project, most likely a paper. Students choose their own topics for the project, which are then approved by Professor Hoch and he is very flexible and open-minded about this, even encouraging art projects as possibilities. I have thoroughly enjoyed and highly recommend this course to all types of students. —*Erin Gerrity*



*Plants of Missouri students take field trips to Tyson Research Center (above) and Shaw Nature Reserve (below) to learn about natural divisions of Missouri and practice identifying wildflowers.*



### Do You Have...

An announcement you'd like to make?

An interesting story or fun fact you'd like to share?

A professor or course you'd like to suggest for a spotlight?

We want your input! Send ideas and information to:

[gerrity@biology2.wustl.edu](mailto:gerrity@biology2.wustl.edu)



**New Major: Environmental Biology cont'd**—Principles of Biology sequence, that allows access to upper level biology courses and opportunities to get involved in faculty research through BIO 200/500. Many Biology faculty members are conducting environmentally-oriented research and have opportunities for students to get involved. Environmental Biology also provides a good foundation for graduate school or careers in natural resources and science education/science outreach. The entire Biology Department helped design the new major. The department is excited because they believe the new major offers the breadth and depth of coursework required to prepare students for the future and offers a specialized option for students particularly interested in environmental careers.

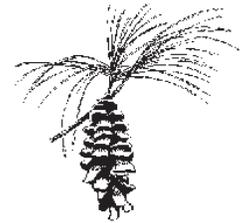
Students that would like more specific information about the new environmental biology major can visit our website ([www.enst.wustl.edu](http://www.enst.wustl.edu)) or contact Tiffany Knight—Director of Environmental Studies and Associate Professor or Eleanor Pardini—Assistant Director of Environmental Studies and Research Scientist. Students can go to McDonnell Hall, Room 434 to declare Environmental Biology as their major. —*Erin Gerrity*

## Volunteer Opportunities

**K-12 Connections:** is a great way to learn about volunteer opportunities assisting K-12 field trips to WU and other locations, one-time volunteer projects in schools, and other opportunities to support K-12 students and discover public schools in St. Louis.

K-12 Connections seeks to connect Washington University students, staff, and faculty with volunteer opportunities in high-needs urban school districts in the St. Louis area. Volunteers are trained and “on-call”: as opportunities arise in schools, you'll be notified and can sign up for anything that works in your schedule—there is no minimum commitment. Throughout the year, you are encouraged to attend specialized workshops and training sessions to learn more about St. Louis schools and about effective involvement in high-needs districts. By signing up for the K-12 Connections listserv, you'll also be informed about special events or public lectures being held on campus related to urban education. For more information go to: <http://communityservice.wustl.edu/k12/>.

# Biology Department Calendar



## Links to General Calendars and Regular Events:

Washington University Record Calendar: <http://record.wustl.edu/calendar>

Biology Department Seminars, Mondays, 4:00pm, Rebstock 322, check the website for topics/schedule: <http://wubio.wustl.edu/events?tid=8>

Evolution, Ecology, & Population Biology Seminars, Thursdays, 4:00pm, Rebstock 322, check the website for topics/schedule: <http://wubio.wustl.edu/events?tid=3>

History & Philosophy of Science Seminar Series: <http://wubio.wustl.edu/events?tid=12>

Plant Lunches: most Tuesdays at noon (1st Tuesday of month @ DDSPC, others @ McDonnell 212): <http://wubio.wustl.edu/events?tid=10>

Donald Danforth Plant Science Center (DDSPC), Weekly Seminar Series—Wednesdays, 4:00pm, AT&T Auditorium, check the website for topics: [http://www.danforthcenter.org/the\\_center/events/seminars\\_symposia/](http://www.danforthcenter.org/the_center/events/seminars_symposia/)

Division of Biology and Biomedical Sciences (DBBS), all lectures and seminars: <http://dbbs.wustl.edu/dbbs/website.nsf/SDN>

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## December 2010

10th Last day of classes

13th Reading Period Begins

16th FINAL EXAMS begin

22nd December 2010 degree date and Last day to file Intent to Graduate for May 2011



## January 2010

18th First day of classes



## February 2010

1st Last day to add/wait/change SP10 course

2nd Last day to drop/D SP10 Courses

7th Last day to change option on a course to "P" or "A" (pass/fail or audit)