Teaching, research and tours took NKU Biological Sciences faculty, students and alumni around the world last year, and next year promises to be even more exciting (see details on p. 9).

NKU’s emphasis on Study Abroad and experiential learning resonates throughout the department, and the experiences don’t stop once a student graduates. Dr. Miriam Kannan and her sister Anita Steinetz spent months planning an Ecuador and Galapagos Island expedition for BioSci alumni.

“All of us on the trip extend our many thanks to Anita and Dr. Kannan for this trip of a lifetime,” said Joan Arnold of the Biology Alumni Association.

Highlights of the trip included visits to a cloud forest and a Giant Tortoise breeding center, snorkeling with sea lions, a challenging hike to Cascada Verde, and bountiful birding. “We were fortunate to see both the Blue-footed Boobies and albatross mating rituals,” said Arnold.

Undergraduate Abbey Bailes got her overseas feet wet, literally, on a trip to Belize for Ecology and Geology of Coral Reefs. “There was an eight or nine foot nurse shark swimming around us. It was really cool.”

Dear alumni and friends, how time flies while you’re having “fun!” This year is my final year as departmental chair. NKU has instituted an eight-year limit and this will be my ninth (one year as interim chair in ’03 and chair from ’05-12). The Hippocratic Oath states “do no harm” and I hope I have been able to extend it to my service to the department (at least doing less harm than good). It has been my honor to try to facilitate the academic desires of the faculty and students. There have been many changes during that time including the retirement of Elienor and Tom Rambo and Jerry Warner. We hired seven new faculty members (and are in the process of searching for a new Microbiologist). We have grown from 296 majors in 2003 to currently over 425, a 44% increase. We have established a fantastic record of undergraduate research, with over 88 students doing research projects during the past academic year, a great asset to retention, to admission...
New Faculty

Dr. Kirsten Schwarz, an urban ecologist, joined the Department of Biological Sciences this fall. She developed a curiosity for nature as a child, spending hours in the family garden with her grandfather. His background as an immigrant from Germany got her thinking about how an individual's life experience influences their ideas about nature and ecology. This curiosity developed into a view of nature that recognizes humans as important components of ecosystems - a perspective that has guided her educational and career choices. Dr. Schwarz received a BA in Human Ecology from College of the Atlantic. In college, she struggled with how to integrate her interest in both the social and biogeophysical sciences - two strongly disciplinary fields. She discovered a place for both in the growing field of urban ecology. She received a PhD in Ecology and Evolution from Rutgers University.

Her graduate work, which focused on understanding the patterns of lead contamination in soil, was part of the Baltimore Ecosystem Study, a long-term research project that strives to understand cities as ecosystems. For the past two years, Dr. Schwarz has been a postdoctoral researcher at the University of California, Davis working on research projects addressing human-environment interactions. Her research is rooted in ecology but extends across many disciplines - integrating ecology, social justice, public health, geospatial analyses, and science communication. She is currently looking at how urban tree canopy is distributed in relationship to race, income, and education in cities across the US. She is also actively working on research addressing potential tradeoffs between growing healthy food in cities and soil lead contamination. Dr. Schwarz is looking forward to teaching introductory environmental science classes as well as developing new classes on urban ecology. At NKU she will continue research on human-environment interactions in urban systems - focusing on soil lead contamination in the greater Cincinnati region - and is excited to have students directly involved in her ongoing research. When not pondering human-environment interactions, she can usually be found in the yoga studio, walking her dogs, or hiking in the woods.

New Staff and a New Chair

Alumnus Jeffrey Steller was hired as a Laboratory Technician for the Microbiology Prep Lab. “I’m really excited to be at NKU because I grew up nearby (in Fort Thomas) and have watched the university grow in size and prestige. I really enjoy facilitating teaching and getting to be a part of our continued growth.”

Associate Professor Kristi Haik was named Chair of Biological Sciences and will begin her duties in 2013. Dr. Haik currently serves as Interim Director of the Center for Integrative Natural Science and Mathematics, was past director of Project SOAR and a member of the Presidential Search Committee.
A Friend of the Family: Meet Dr. Carol Swarts

Dr. Carol Swarts did not earn a degree from NKU and has never been an official member of the faculty, but her loyalty to Biological Sciences and the university is legendary.

“She is a friend of NKU, and especially of Biological Sciences, with a true interest in seeing students succeed,” said Dr. Richard Durtsche, who has known Dr. Swarts for many years and enjoyed her company on his field courses to Costa Rica. “She jumps right in and is one of the students. She is one amazing woman.”

Dr. Swarts said she came to NKU “through the back door,” when she married Dr. Frank Sinton Milburn. One of her first contributions to NKU was establishing the Frank Sinton Milburn Outstanding Professor Award after his death. “Part of the joy of succeeding is giving something back, and I wanted to do something special in his memory.”

She also established a summer research experience for NKU undergraduates at the University of Nebraska Medical Center where she earned her medical degree at a time when she and her female classmates were told “We don’t have any women in medical school.” Fifty years later, I still rub it in their noses,” she laughed.

“I’m like a hog on ice. I’m pretty independent,” she said, revealing her farm girl roots that took her and her family from Nebraska to Minnesota, South Dakota and Washington. “We were gypsies.”

The travel bug bit hard in her youth and just keeps biting. Dr. Swarts declares her home base is “Delta Airlines.” Her travels have taken her on missionary work in the Congo, radiation oncology clinical work in Alaska, and locally to the leadership of St. Luke’s Hospitals as its first female president. But she has never forgotten NKU.

“Part of what makes NKU unique is the undergraduate research that’s promoted. Most universities don’t do that for undergraduates, and I think that attracts some really fantastic students.”

“Her kindness has opened many doors of opportunity for students that might not have been there otherwise,” said Dr. Durtsche.

“Dr. Swarts has been a pioneer and role model throughout her life,” wrote Dr. Debra Pearce in a letter nominating her for an NKU Honorary Degree. “She is the epitome of lifelong learning.”

Dr. Swarts received her Honorary Degree in 2011 and delivered the May Commencement address. Her advice to the graduates is well worth repeating. “Do no harm. It’s one of the tenets in medicine, but it’s also one of the tenets in life. We are not here to destroy.”

Indeed, she has followed the advice she found in her favorite poem from Will Allen Dromgoole, “The Bridge Builder.”

“An old traveler was heading home and had a chasm to cross with a roaring river. His friend was with him, and they made it over, but he stopped and started repairing the bridge. His friend said why are you doing that? He said there are others coming after us who are young and inexperienced. I’m building the bridge for them.”

A bridge-builder and a dear friend. That is the story and legacy of Dr. Carol Swarts.
Going Global (cont. from p.1)

She said the course co-taught by Dr. Denice Robertson and geologist Dr. Sarah Johnson was a tremendous experience and opportunity. Bailes hopes to pursue graduate school in marine biology and greatly appreciated the extra attention students received from their instructors.

“The faculty are amazing. They want you to understand and appreciate everything you’re doing while you’re doing it.”

Even if they ask you to swim through a cave? “It definitely builds trust!” said Bailes. “It’s pitch black, but if they say it’s okay, you know they’re going to be there for you.”

Bailes said the corals she saw were too beautiful to describe, but the greatest benefit was being able to conduct field research alongside the experts. “To collect the data and run your own analysis, it hit home for me. I was able to get a better understanding of what was going on.”

Recent graduate Helen Garber was able to travel to Costa Rica twice in courses led by Dr. Richard Durtsche with assistance from Drs. Greg Dahlem and Miriam Kan nan. “You are getting hands-on irreplaceable experience in the field,” said Garber. “Less than 5% of college students study abroad.

“My experiences in Costa Rica have broadened my view of the world, not only in a personal sense, but in a biological and cultural sense as well. The country has so much more to offer in terms of diversity of where you can visit, the food you can eat, the people you can visit with (with un pequeño understanding of Latin Spanish). You can find a little bit of everything, if you can get over fears such as spiders (like I did) or flying in a small plane.”

Greaves Scholar presents at international genetics meeting

Megan Glassford, who received a Greaves Scholarship to study factors that affect understanding of genetics concepts in undergraduate courses, traveled to the International Congress of Human Genetics in Montreal to present her research findings. Glassford’s research mentor is Dr. Bethany Bowling, and her co-authors were NKU undergraduates Shonna Barnes and Sarah Borgman.
The Unshakeable Molly Brown: Wild Times for New Grad

It didn’t take long after graduation for Molly Brown to come face-to-face with her favorite gray wolves. As an undergraduate she developed a proposal to help reduce wolf depredation on Western cattle ranches and then managed to wrangle a spot on a conservation team monitoring reintroduced wolves in the Blackfoot Clearwater wildlife management area of Montana.

Her summer job also brought her up and close and personal with bears, bighorn sheep and a “huge male mountain lion not 20 yards from me! I was riding home when I turned to check on my dog Luke and caught a flash of tan. I called my dog over and grabbed my camera. The cat just watched the whole time, but didn’t get up at all. So cool!”

Up next for Molly are doctoral studies at Utah State where she will be monitoring a significantly smaller species -- the sage grouse.

Chair’s Message
(cont. from p.1)

...to professional schools, to graduate school, and to job applications! Our students presented at professional meetings throughout the United States and in Puerto Rico, winning numerous awards and accolades for their work. The University has transformed itself with new construction throughout the campus. Thankfully, at the heart of all these changes there remains our dedication to our students and providing them with the best educational opportunities that we are capable of. I will be returning to teaching full-time; to paraphrase MacArthur, “old chairs just fade away.” As chairs we are restricted to teaching one course per semester, and that was always my favorite time of the day. I look forward to once again having the classroom as my primary responsibility. Our new chair, starting July 1, 2013 will be Dr. Kristi Haik. She has been a fantastic colleague and is a very talented member of our department. I am confident the transition will be a smooth one and I know she will bring a new vitality and a wealth of new ideas to accompany the vibrant new faculty that have joined us in the past nine years. Please join me in welcoming Dr. Haik to her new position and Dr. Kirsten Schwarz, our new Environmental Scientist (see p.2).

Did You Know?

Project SOAR received a $600,000 renewal from the National Science Foundation, which will support 68 STEM scholars over the next four years.
No Research Drought for NKU Wetland Warriors

Environmental Science faculty member Dr. Kristy Hopfensperger has put 16 undergraduates to work at more than a dozen research field sites from Northern Kentucky to North Carolina since joining the faculty in 2009. Dr. Hopfensperger’s local field sites include the St. Anne Wetlands Research and Education Center where she looks at greenhouse gas emissions from seasonal ponds with different levels of invasive honeysuckle. “We’re looking at these ephemeral ponds that were not very ephemeral this year. They’re just dry.”

It was a similar story at the Five Rivers Metro Park in Dayton where Dr. Hopfensperger was invited to join a major collaboration studying a wetland constructed over a former agricultural site which will be used for storm water mitigation. “Every time we’ve been there, it’s been bone dry. All the trees they planted are dead. It’s a wetland with dry, cracked earth.”

Despite those setbacks, Dr. Hopfensperger and her students have collected enough data for multiple manuscripts, grant applications, and presentations. At Moock Creek in Wilder, they are collaborating with NKU’s Center for Applied Ecology to understand what happens to an ecosystem once active honeysuckle removal ends. “We’re doing the soil chemistry to compare plots where honeysuckle was removed and control plots that still have a ton of honeysuckle.”

At the Timberlake Observatory for Wetland Restoration in Tyrrell County, North Carolina, Hopfensperger and her collaborators are studying a constructed wetland that is impacted by both sea water intrusion and runoff from nearby agricultural areas. The team found that sedges, rushes, and grasses were more efficient at delivering oxygen to the soil than other types of plants in the wetland.

In addition to the wetlands work, Dr. Hopfensperger is working with Drs. Richard Durtsche (NKU) and Ishi Buffam (University of Cincinnati) to measure greenhouse gases emitted from plant communities used on green roofs. She has also examined the difference in earthworm communities in previously glaciated and unglaciated forests. “The earthworm project was a side project just for fun,” explained Dr. Hopfensperger, who clearly will never let a few dry months slow down the flood of research coming out of her NKU lab.
Rob Spaulding conducting stereological analysis of striatal sections from mouse brains.

Departmental Award winner Robert Spaulding conducted research in the Haik laboratory on the toxicity of nanoparticles using a lipid and rat model of the blood-brain barrier. During his time in the Haik lab, Rob has also contributed to projects related to models of Korsakoff’s syndrome and Parkinson’s disease. Among his accolades, Rob most recently received the Best Undergraduate Poster Award at the 2011 Regional IDEa Meeting in New Orleans.

βββ 2012 National Convention
Cellular & Developmental
3rd Place Poster: Osniel Gonzales
Microbiology
2nd Place Oral: Virginia Shelley
Organismal
3rd Place Oral: Amy Clippinger
2012 District Convention
1st Place Oral: Amy Clippinger
3rd Place Poster: Katherine Elson
2011 KAS Undergraduate Research Competition
Ecology & Environ. Sciences
1st Place Oral: Molly Brown
Health Sciences
1st Place Oral: Megan Reynolds
2nd Place Poster: Beris Dizdar
Microbiology
3rd Place Oral: Samantha Kaiser
Psychology
1st Place Oral: Amy Clippinger
Zoology
1st Place Oral: Mitch Mercer
3rd Place Poster: Katie Bachman

2011-2012 Commencement
**ECOS:** ECOS was extremely busy and productive during the year. They participated in hosting speaker Eric Reece, author of Lost Mountain, and also hosted a follow-up movie, Coal Country. Another successful annual Chili Cook-off in December earned the club much needed funds for the Earth Day celebration. In the spring, ECOS participated in the national Recyclemania Contest and doubled the amount of NKU recycling!!! Lastly, ECOS hosted a successful and sunny Earth Day celebration for the entire campus out on the plaza, with live music and over 20 vendors from the region who came to talk with the NKU community about the environment. The faculty advisor is Dr. Kristy Hopfensperger, email: ecos@nkuedu

**BIOTA:** While BIOTA originated as a club for students planning to become biology teachers, its membership is diverse with students interested in a variety of careers wanting to build their communication and leadership skills. Community outreach is the focus of the club. This past year BIOTA continued its involvement in Elementary Science Day. In March the group raised funds through a bake sale to give to local Campbell County families that had lost their homes from tornadoes. They also participated in Reforest Northern Kentucky and served as judges in the regional Science and Engineering Fair of Northern Kentucky. The 2012-13 officers are Trent Roberts-President, Gabriella Sevilla-Vice President, Sarah Borgman-Treasurer, Vicheth Kong-Secretary.

**βββ:** The Mu Iota chapter presented their undergraduate research at the 2011 Kentucky Academy of Science meeting at Murray State University. During 2012, members presented at the βββ district convention in Athens, GA and the national convention in Puerto Rico. βββ participated in a weeklong camp called ELL Fun With Science Camp. Other volunteer activities included: Relay for Life, canned food drives, bake sales, Redwood, County Market, and The Cincinnati Zoo. The 2012-13 officers are: President- Ginny Shelley, VP- Amy Clippinger, Secretary- Melissa Oehrle, Treasurer-Katie Bachman, Historian- Alexus Rice, Webmaster-Bobby Seilhamer.

**HPC:** It was an exciting year to be in HPC! The fall semester marked our 20th anniversary as a sanctioned organization here on campus. We provided meals to the Hosea House, and the Ronald McDonald House of Cincinnati. On campus we conducted our annual clean-up day and participated in events such as Fresh Fusion. In the fall semester we visited the UK Colleges of Medicine and Pharmacy, and the UC College of Medicine. We learned about a vast range of health professions and topics including: anesthesiology, physical therapy, health care ethics, UC research, pharmacy, military scholarships, dentistry, and local MD and osteopathic administration. For the 2012-13 academic year we look to new leaders in Austin Brown (President), Kelsey Carnahan (Vice President), Christina Basinger (Secretary) and Matt Woeste (Treasurer).
Alumni Updates

Ana Liza Hernandez (’09) completed the MS in Marine Biology at the Virginia Institute of Marine Science, having published her findings in the journal *Coasts and Estuaries*. She now works as an Estuarine Response Analyst.

Zachary Copfer (’06) is a microbiologist turned visual artist, completing the MS in Fine Art at DAAP. His work fuses the two fields. Rather than using paper, he “grows” photographs with bacteria.

Cassie Metze (’11) is currently working toward the Doctor of Physical Therapy degree.

Scott Bessler (’06) completed the MS in Physiology at the University of Alabama and continues to study the physiological ecology of amphibians and reptiles.

To Our Alumni

Thank you for your generosity toward our department! We hope you will continue to support us. We also hope you enjoy this issue of *The Biologist*, it is written with you in mind, so that we can keep in touch. **Please take a moment and tell us where you are and what you are doing.** You will find contact info on page 12. We look forward to hearing from you!

To join the Biology Alumni Association email list, contact: jmalvt67@gmail.com Like us on Facebook: NKU Biology Alumni.

UPCOMING STUDY ABROAD OPPORTUNITIES!!!

Dr. David Thompson (pictured crossing the famous Swilcan Bridge - Old Course St. Andrews) will be offering a Summer 2013 course in Scotland on the relationship of golf and the environment. Bring your clubs!! Interested? Email: thompsonel@nku.edu

Dr. Dick Durtsche & Dr. Greg Dahlem (pictured releasing sea turtles in Punta Marenco) will be offering Costa Rican Natural History during the spring 2013 semester. Interested? Email: durtsc@nku.edu or dahlem@nku.edu

Dr. Denice Robertson (pictured exploring a reef near Carrie Bow Caye) will be offering the Ecology and Geology of Coral Reefs during the summer 2013 intersession in Belize. Interested? Email: robertsonde@nku.edu

Alumni Events

Black & Gold Day-Oct 27 & Nov 10 “Entomological Excursion “ at the Cincinnati Zoo with Dahlem - tentative for Nov
Commencement-Dec 15 & May 11 NKU Athletics event with Thompson - TBD
Alumni Party at Skyline Tavern - Feb 22 @ 6 PM
“Birds, Blooms, & Bugs” with Walters, Whitson & Dahlem - Apr Plant & Bulb Exchange - May Planning Meeting - July/Aug
** For more info on events email: jmalvt67@gmail.com **
**Selected Publications & Presentations** (* indicates undergraduate author)


**Dursche RD**, **Boyle RL**, 2012. St. Anne Wetlands Education and Research Center (Melbourne, KY): preliminary findings of research activities and potential for future collaborations and outreach activities. ESA Ecological Research and Education Network Meetings.

**Dursche RD**, **Bachman K***, Carnahan K*, **Cross SE***, 2012. Measurement of the mechanisms of digestion in tadpoles along the developing gastrointestinal tract. World Congress of Herpetology.


*Calliphysalis* - a new monophyletic genus described by Dr. Whitson
To Bethany Bowling, winner of the NKY Chamber of Commerce Rookie Volunteer of the Year Award for chairing the 3rd Annual Kentucky Girls STEM Collaborative Conference.

Chris Curran received $400,000 for her research on genetic susceptibility to PCB-induced motor dysfunction.

Rick Boyce is the current chair of the Vegetation Section of the Ecological Society of America.

Kristy Hopfensperger received $28,000 from the US EPA for her studies on sustainable water resources and infrastructure adaptation to climate and socioeconomic changes.

Joe Mester served on the Board of Advisors and helped construct an online study guide for the text Fundamentals of Microbiology.

Miriam Kannan was named a 2012 Cincy Magazine Outstanding Educator.

To Lindsey Walters for her election to the Council of the Wilson Ornithological Society.

Dick Durtsche received over $10,000 from Lafarge Gypsum to estimate the impact of brownfield restoration by examining amphibian populations.

Dave Thompson was supported by the NKU Office of Education Abroad for an expository trip to Scotland to develop a 2013 CCSA study abroad course.

Erin Strome received $26,000 from KBRIN for her research on nutrient metabolism genes in relation to genetic modifiers in cancer.

Greg Dahlem worked with the Ohio Biological Survey to conduct a survey of the Sarcophaga of Ohio.

NKU Emeritus Professor Jerry Carpenter was one of a trio of researchers who identified a new species of brittle star on San Salvador Island, Bahamas.

To Project SOAR which received a $600,000 NSF S-STEM grant to continue through 2017.

Miriam Kannan and Kristi Haik won NKU SPARK Awards for their commitment to diversity.

Dianne Wilson, from the Kristy Hopfensperger lab, was awarded the 2011 Water for People Young Innovator Award.

Dave Thompson was named to the Board of Advisors for the McGraw Hill Introductory Biology Prep Course Project.

Lindsey Walters received an NKU International Faculty Travel Award to attend the North American Ornithological Conference in Vancouver.

Dick Durtsche and Patrick Schultheis examined the biology of fly fishing in the Great Smoky Mountains National Park.

The world’s first known cave brittle star
We want to hear from you!

Contact us at: thebiologist@nku.edu

Please include: Contact Information / e-mail / Class year
What’s new? (degree completion, promotion, special recognition,
change of job, civic involvement, family, research, travel, etc.)

For current activities check out the following websites:
βββ: http://access2.nku.edu/bbb/
BIOALLIANCE: http://www.nku.edu/~bowlingb2/Bio_alliance.html
BIOTA: http://www.nku.edu/~bowlingb2/BIOTA.html
ECOS: http://envsci.nku.edu/ecos/
HPC: https://sites.google.com/site/hpcnku/Home

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Please donate to help our students and biology programs!

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