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Life Line - The Biology Department Newsletter

Biology and Earth Science

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Life Line March 2014

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Life Line

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March 2014

Greetings Spring 2014

Once again it's been a busy year in the Department of Biology and Earth Science at Otterbein. The New Zoo and Conservation major is in full swing- with students completing their practicum at the Ohio Wildlife Center, and pursuing summer zoo internships around the country (and even in Belize). Dr. Mary Gaubauer has decided that she is ready for a new direction next year (she is emphatically not retiring) and so we have been busy interviewing for her replacement, and, it's the Department's turn in the "Long-term Department Review" rotation and so we have been compiling and writing our self-evaluation.

The Department Review is both the best of times and the worst of times for a Department Chair. There are lots of papers to push, and data to collect and i's to dot and t's to cross and I thank so many of you who graciously helped

in this process by taking the alumni survey last fall, or completing a senior exit survey over the years. The "best of times" for the review comes in finding out that we have actually been doing a pretty good job at educating our students over the years. All metrics that we used to assess learning showed that graduating seniors and alums thought they had gotten a great education.

Of course, as chair, I also have to look for the anomalies and low points and so I note that, while still good, our areas to work on include more lab instrumentation, more oral presentations, more ethics, and more internship opportunities. 58% of our alums continue to work in their field (biology or environmental science) which is appropriate for a liberal arts education, and 55% said that undergraduate research was the single most important aspect of their edu-

cation (other common answers included close student faculty relationships, a specific course, critical thinking, and the well-rounded education). We are proud that over the last 7 years >80% of our graduates have completed a research project, and that we have produced the most senior theses (Honor+ Distinction) at Otterbein.

So I hope you enjoy catching up on everything that is going on in the Department via this year's LifeLine. If you know fellow alums that may not have seen it, please send it on to them too. One thing we learned in the review process was that we have not been very good about keeping in touch with our alums and would love to reconnect with more. Also, if you are reading this electronically, but are like me and would enjoy a paper copy, please contact Donna in the office, and we'll send one right out.

By Hal Lescinsky, Chair

Dr. Svitana's Class is Garbage

Well actually, the full name of the class is Garbage and Other Wastes. During J term, Kevin Svitana taught INST 2401- Garbage and Other Wastes, an Integrative Studies class that looks at something that connects us all, the waste we produce. The class looks at soil and water environments so that students can gain an understanding of the natural processes that affect soils, surface water and groundwater and the interrelationship of these media. Then students evaluate waste disposal and the potential effects various forms of waste disposal can have on soil and water. The class visited the Columbus Jackson Pike wastewater treatment plant to see first-hand how sewage is treated to

become potable water. The class also visited the Solid Waste Authority of Central Ohio's (SWACO) landfill in southern Franklin County. At the landfill facility students were shown how the landfill is constructed, how leachate (a potential source of contamination) is collected and treated, and how the landfill operates overall. Some of the students were amazed as a tractor-trailer loaded with unopened boxes of breakfast cereal dumped its load into the landfill. A third trip to visit the Rumpke recycle materials processing facility in Columbus had to be canceled because of the extreme cold weather. This was unfortunate, because this is a state-of-the-art facility that uses magnets, friction surfaces,



infrared sensors and air blasts to selectively separate different types of recycle materials. The end product at the facility is bales (1 ton units) of plastics, aluminum cans, bimetal cans, paper, and cardboard which are then sold to primary producers for new products.

I Finally Found a Dam I Like

In the summer of 2004 the City of Marysville, Ohio (just north of Westerville) asked me to determine if there were mussels in Mill Creek within city limits. They had recently proposed a new solution to their water quantity problem. The city needed more water as their population was increasing and the solution they came up with was to build an upground reservoir connected to a new kind of dam (they call it a weir). Their new dam was to be an inflatable dam, which only blocks the creek when the balloon-like bellows are filled. Otherwise it is level with the ground (what I would call substrate).

Connected to the construction of this weir and reservoir was the city removing two concrete dams. When all of this was completed in 2009, Mill Creek, for the first time in many years, would be free-flowing from its headwaters to its mouth with the Scioto River. Fast forward to this last summer (2013) and we have just completed the last year of an assessment of the impacts of this weir on the biology of Mill Creek. We looked at how the elimination of the two hard dams and the construction and use of this inflatable weir have affected the mussels, other invertebrates, and fish of Mill Creek. Most of the impetus for the work was to determine the impact the new weir

would have on a federally endangered species of mussel, the rayed-earr (*Villosa fabalis*). What we found is that the weir has not had a negative impact on this mussel (we found living specimens every year including a juvenile this past summer) but it has had a slight negative impact on other species of mussels (especially those that bury completely in the substrate).

In addition, we found that removing the hard dams has opened up the upstream areas to fish migration (we found fish in the reach we sampled that have long been gone from this reach) and invertebrates (from worms and snails to insects and crayfish) have not suffered with the new weir (as measured using the Invertebrate Community Index or ICI). The fact that fish have moved into this reach suggest future good news for the mussels, as most species of mussels employ fish as hosts for their parasitic larvae. Generally, what is good for fish diversity in a reach is good for mussel diversity. Our Index of Biotic Integrity (IBI) scores exceeded Warm Water Habitat criteria as set by Ohio EPA for the stream, with some good enough to meet the Exceptional Warm Water



Habitat criteria.

And so, although I am usually anti-dam because of the damage dams (and the impoundments behind them) do to streams, stream habitats, and the organisms that live in those habitats, if we have to have dams, let them be inflatable. The City of Columbus has heard the call: their next dam will be an inflatable weir (on the Scioto River in Delaware County) and we are removing hard dams from the Scioto and Olentangy rivers too. It is a good time to be anti-dam and pro-weir.

By Michael A. Hoggarth

In Remembrance of Kyle Miller

Otterbein was devastated by the sudden loss of Kyle Miller on March 15, 2014. He was a second year student in the Zoo and Conservation Science program and a former member of the Otterbein track team. Kyle had a clear passion for working with animals and being outdoors; he hoped to travel to Alaska one day. He always had a positive attitude and was professional, polite and friendly. He was clearly dedicated to helping wildlife, especially the technical and policy sides of how to help humans and wildlife coexist peacefully.

Ohio Wildlife Center has a business called SCRAM! (Suburban, Commercial, Residential Animal Control), a non lethal, humane animal

control service. Kyle expressed great interest in this as a future career and was applying to intern with the SCRAM staff. He wanted to make a difference for people and animals, to improve animals' lives by teaching people the natural behavior and biology of our neighborhood wildlife, so we can prevent conflicts and solve them when they arise. Kyle was always so calm and had such kind eyes and a warming smile; he would have been an excellent ambassador for wildlife. It's a tragedy to lose someone so young and passionate. In his honor, Ohio Wildlife Center will be naming the SCRAM internship after Kyle Miller.

By Anna Young and Barbara Ray



Kyle at OWC hospital (he's practicing giving subcutaneous fluids to a preserved opossum.)

A Degree of Hope - Remembering Alima Kasongo

For Alima Kasongo, receiving her diploma represented more than the idea of earning a degree (in Biology). It was a lasting symbol that she attained the thing she wanted most before the cancer inside of her could take it away.

A native of Congo, located in Central Africa, Kasongo and her family moved to the United States in 1996 to escape political turmoil. At the time, she was nine years old and had been recently diagnosed with neurofibromatosis-1, a form of cancer that causes unchecked growth of tissue along nerves, resulting in nerve damage, extreme pain and loss of function.

Throughout the years, Kasongo's health posed challenges for her, physically and emotionally, but did little to suppress her dreams of the future. Her older sister, Talubezie Kasongo, said that Alima had vast ambitions. Alima hoped to one day do research about genetics and gene expression, as well as focus on the issue of child soldiers in their native country of Congo.

Alima arrived in Lawrance's office in the summer of 2013 as a student transferring from OSU into the second semester introductory biology class. She explained that she was battling against neurofibromatosis-1 and made it clear that she was determined to earn her degree while gaining knowledge about the disease to combat its attack on her body. "She never wavered from that goal," Lawrance said.

Alima had enrolled in an experimental trial at the National Institute of Health and would be making several trips to the NIH in Bethesda, Md., for treatment throughout the semester. She expressed concern about missing class, but Lawrance assured her that they would still find a way for her to be an active participant in the course.

Alima managed to attend classes for the first few weeks of the semester, then the challenges of neurofibromatosis made it difficult, if not impossible, for her to be physically present throughout the course.

Even still, Alima and Lawrance didn't let the disease get in the way of education. Alima's classmates often held up Lawrance's iPhone while Alima observed the class from her bed miles away via Skype. Talubezie, played a pivotal role in Alima's education. She drove her to class, sat through lectures and even administered an exam to her in the hospital. Fellow students supported Alima by making cards and

care packages and driving her back to campus for Zumba classes led by Lawrance.

Toward the end of the semester, Alima was admitted to the hospital for a longer-than-usual stay due to complications with the disease. In response, Lawrance made daily trips to the hospital, bringing his lecture notes with him and sneaking in biology lessons whenever possible. Lawrance also connected with some of his own old classmates who worked at the NIH and was able to help Alima learn more about her specific disease. "It was the sense of hope that kept her going," Talubezie said. Most importantly, she wanted to earn her bachelor's degree.

The professor soon realized that her physical state was growing weaker and that time was running out for her to earn her degree. After additional discussions with university administrators, Lawrance was able to make special arrangements for Alima to graduate.

On Dec. 2, 2013 Krendl, Gatti and professors Jennifer Bennett, Jeffrey Lehman and Lawrance gathered to present Alima with her degree. The blue-curtained room at Nationwide Children's Hospital echoed with the sound of voices singing the Otterbein Love Song.

By Lindsay Paulsen

Excerpts from the full story reprinted with permission of the author. Originally published in the Spring 2014 issue of T&C magazine. Photo provided by Talubezie Kasongo.



Alima with her family

Sustainable Aquarium Thriving

The Saltwater tank is thriving and doing exactly what we hoped it would do! It's an enthusiastic stop on Campus tours, many students make a daily pilgrimage to check on Nemo 1, 2, 3, or 4, and we can grab the occasional polyp or sea star for coral reef ecology labs. Todd Melman, from Reef Systems in New Albany continues to advise us, but Chelsea Menke ('14) now does most of the upkeep, utilizing the skills she has perfected as an intern at the aquarium at the Columbus Zoo. If you haven't stopped by in a while, there are some new creatures to see. Britany Byers ('11) a former student in Dr. Lescinsky's INST reef course just donated fish

and coral from her tank, and Eric Witt ('15) has donated several specimens from his personal tank. Although Dr. Lescinsky prefers the hard and soft corals, it is the new fish from Britany's tank that are the real hit with the tours.

The tank ties in well with Dr. Lescinsky's research focus and the coral reef ecology course he is teaching. For example, both Chelsea and Eric are doing undergraduate research projects on reefs, and this spring, the reef course will be performing an experiment using tanks at Todd's coral farm to grow corals in different conditions and test how these conditions affect bleaching in a hard coral, a soft coral, and a zooanthid.



Coral Beauty Angel Fish (*Centropyge bispinosa*) donated by Britany Byers ('11) swims above corallimorphs (*Actinodiscus* sp.) donated by Eric Witt ('15).

Otterbein Zumbathon Aims to Fundraise for Scholarships

Professor Simon Lawrance is known around Otterbein for his biology classes and love for Africa. But on Tuesdays, students and staff will get to know him less for his lectures and more for his dance moves.

After becoming a Zumba — dance fitness program — instructor in 2011, Lawrance found a way to combine his love for Africa and humanitarian work with his passion for dance into a Zumbathon fundraiser. “The very first time I walked into a Zumba class I loved it,” Lawrance said. “The music was so uplifting, the rhythms are amazing and the spirit in the classes is wonderful.”

After spending seven years teaching students about Uganda and Rwanda and taking trips to Africa for his class SYE: Africa, Lawrance could not leave his philanthropy in the country behind. Starting with about 10 students, the first year, the course took over 100 total students to Africa by 2010. Since the conversion from quarters to semesters at Otterbein,

this class has not been available. But Lawrance found a love for these countries that he just could not let go.

“I have never gotten it out of my system and I want to do more, so I came up with the idea of the Zumbathons and a sponsored 100 km walk in Africa next year,” he said.

Now Lawrance, alongside his favorite off-campus Zumba instructor Natalia Kapustin, is hosting and leading a Zumbathon, an hour-long Zumba session, to support the same foundations used in the SYE: Africa class which focus on helping places such as Uganda and Rwanda. During



HPES 1028 class

the Zumbathon, it is suggested that students donate somewhere between one and five dollars and faculty between five and ten.

“There is much need in Africa, but good will and even just a few dollars can do amazing things,” he said. “The funds will be for scholarships for orphans from the genocide who are now young adults at Imbabazi [Orphanage], younger children at an orphanage in Uganda and also the Mountain Gorilla Veterinary Project.”

Lawrance hopes to continue this fundraiser throughout the year by having Zumbathons every Tuesday, offering it to all students from 7-8 p.m. in Towers 310.

By Natasha Shorts

Reprinted with permission of the author. Originally published at otterbein360.com September 2013.

Editor's note: Zumba class is so popular, Dr. Lawrance is teaching it as an official PE course (HPES 1028) this spring semester!

Dr. E. Jean Willis Remembrance

E. Jeanne Willis, Ph.D.
Professor Emeritus of Botany
[February 20, 1928 - September 20, 2013]

Always a source for witty, pragmatic, and honest advice...

As an incoming Otterbein freshman in the mid-1980s, I had convinced myself that a career in medicine was the path to pursue. Unbeknownst to me though, my experiences at Otterbein would open my mind to so many other possibilities and challenge my thinking. Course work that I completed over the next four years in anthropology, economics, psychology,

philosophy, among many others stirred a curiosity for learning and new ideas that has remained with me through the years.

Many notable individuals influenced me during my Otterbein years, but few rivaled the impact of Professor E. Jeanne Willis, (H '76), who the college community sadly lost in September 2013. Then Chair of the Department of Life Sciences, Dr. Willis' wit, pragmatic and honest advice always seemed to push my thinking in ways I never anticipated. I recall vividly the midpoint during my senior year in Dr. Willis' class in experimental biology that I approached her to share that I had decided to change direction and was opting to pursue graduate studies in the biomedical sciences and forego medical school -- a decision she strongly supported and I have never regretted.

Dr. Willis' commitment to Otterbein and her students was ever-present and contributes in no small measure to the reason I never left higher education and have worked on only college campuses in the 25 years that followed.



Dr. Willis with Timothy Cain in 1988

Attending her funeral in September, I was heartened to see so many of us whose lives she had touched. Not only did former Otterbein students from across the years attend, but many of her lifelong Otterbein faculty colleagues — Professors George Phinney, Tom Tegenkamp and Michael Herschler — with whom we all had a chance to reconnect.

Your humor and candor will be missed, but not forgotten... Thank you Dr. Willis!

By Timothy J. Cain, Ph.D. Associate Professor of Biomedical Sciences, Ohio University, Otterbein Class of '88



Professor Emeriti: Dr. Phinney, Dr. Tegenkamp, Dr. Herschler

20+ Years at Pathophysiology

Twenty plus years after giving her first lecture at Otterbein, Professor Mary Gahbauer MB, ChB, MRCP is teaching her last semester. Dr. Lescinsky caught up with her to ask about her experience.

Does 20+ years seem like a long time?

To me it feels as though about five years have gone by, and yet my daughter was in kindergarten when I first came to Otterbein and now has finished graduate school. Relativity is clearly a factor here.

The letters after your name are not familiar?

I grew up and trained in England. MB Ch B is the English MD, and Member of the Royal College of Physicians means I am additionally qualified to consult in hospital internal medicine. I moved to Ohio when I married.

How did you come to work at Otterbein?

When my children were small it seemed a good idea to spend more time at home than medicine allowed. I fell in love with Otterbein for its small size, collegial atmosphere and old-world charm, and wrote (an actual paper letter!) to ask if my experience would be useful for teaching. Fortunately it was, and I taught part-time for several years. Eventually this turned into a tenure-track position, but if I thought that being a full-time college professor was less demanding than being a doctor, I was deluded! Teaching, research, service on administrative committees, and student advising are all very demanding pursuits. However, contact with healthy young people who have all their future before them and are eager to learn and to change the world is refreshing and energizing.

What is the biggest change you have seen in your Otterbein years?

It is the huge change that has overtaken society – the electronic revolution. In my early lectures I gave out tediously copied and collated typed outlines, and relied on acetate overhead images for illustration.

There was no Blackboard, no Internet, no email, and wired-to-the-wall telephones allowed real-time voice communication only! Physiology labs used live animals (not always a popular option) instead of what we do today, which is computerized data collection from electronic transducers placed on students themselves.

I remember my excitement when (in the 1990's in my techy son's bedroom) I realized that it was possible to access journal articles from home! Previous to that we had to go to a physical library, consult the printed *Index Medicus*, find the appropriate tomes of bound journals on the library shelves, and ascend the ladder. Now students can access a world (literally) of information from their fingertips (literally), can let me know hour by hour where their problems in study are – and I can respond in a timely way.

What has been your best experience at Otterbein?

Many things. I am so gratified by our student success in health care. I love to meet my many former students around town in various hospitals; they can be distinguished by the way they pronounce capILLary, rather than CAPillary - this puzzles their colleagues.

I have also delighted to receive email from former students with news about their blossoming careers and families (hint: mgahbauer@otterbein.edu). And our Annual Research Symposium yearly impresses with the scientific achievements of our students. It is no success of mine, but I note with pleasure evidence all over the science building of papers and abstracts presented at national and other meetings of the way in which "science by doing" aka research has burgeoned, thus mentally and professionally preparing our students for real life.

Early on in my career, I had the privilege of being buoyed by the help in various but crucial ways by colleagues in the Natural Sciences and other disciplines, some of whom are now emeriti. I truly appreciated their generosity in helping a foreigner to



Dr. Mary Gahbauer

academic life to orient herself in Otterbein.

Additionally, sabbatical leave has allowed me diverse educational experiences, from spending time in the OR at Grant Medical Center to taking part in classes offered at Otterbein such as Painting. I have had a most enlightening time furthering my liberal arts education - and I was even paid for it.

What has been your biggest challenge?

I believe I overcame it before I arrived. I have heard that there were strong voices against hiring a female, (this in 1989!) but other voices said credentials mattered more than gender...and so I was hired... the rest is pathophysiology.

What was the funniest thing that happened?

Well, that depends on one's sense of humor – if you can overcome problems by a sense of the ridiculous, there are contenders for "funniest"! There were times when untoward things happened while I was interviewing prospective students: a wounded bat limped over the threshold; a mysterious fluid snaked under the door; escaped fruit flies clustered around our heads; the old autoclave brewed up its cleansing stink....., or much worse, the unembalmed horse-leg dissection season opened. Then there was the time when electric power failed whilst a student ascended in the elevator, and she was trapped in dark immobility: our students shouted down the elevator shaft and kept up her spirits with jokes. I generally tried to make jokes of these things, but they did not always seem quite sure that they were amused.

20+ Years at Pathophysiology (cont'd)

What lies in your future now?

I think it is time for my third career. I am drawn to using my experience in medicine and in student advising to help those who are in difficulties in society. I plan to train to be a friend and advocate to persons who are uncomfortable to find themselves swept up into modern scientific health care. In other words, I am going back into hospitals.

Do you have any message for future students?

As a long-standing student advisor and mother of two graduates, I can say: Your undergraduate years are the most free you will ever experience; Your time is your own and you have wonderful resources for investigating the world – use them; Find your strengths and your true interests; Keep an open mind about the values

of others, whilst establishing your own moral stance; Work hard and trust that your professors know their area and can advise you – make a connection with them; You are not in college to get grades – you are in college to get a future, and Otterbein is your springboard!

Dr. Vasiloff to Give Concert in April

My first year and a half on the fulltime faculty has been very rewarding. I love teaching the many wonderful students in anatomy and physiology. In addition, as of last spring, I became the adviser for Otterbein's prehealth honor society (AED). In the short time I have worked with AED, I have been very impressed by the members I have met. I have no doubt that the health of our state, country, and world is in good hands with the quality of young people in our chapter of AED.

To raise awareness of AED on campus, we are having an event on Sunday, April 27th, at 2 pm, in Riley Hall (Music Department Building). Because I write music, a part of the festivities will include a free concert. The formal title of the event is: **"The Music, Poetry, and Humor of Jeff Vasiloff and Friends, Supporting AED and Leukemia Research."** Remember to save the date! **Sunday, April 27, 2014, 2 p.m.**

In addition to the entertainment, attendees will be introduced to the mission of AED. We expect many students to consider joining us. Finally, some physicians, including myself,

will speak briefly about recent breakthroughs being made in the treatment of chronic leukemia at OSU's James Cancer Hospital. This will bring up the topic of bone marrow (stem cell) transplantation and the importance of healthy people registering to become donors. This is one sure way for any healthy individual to give the gift of life to others.

Turning to another highlight of the past year and a half, I was fortunate to be able to present four research abstracts. Two were presented by my students at the Ohio Public Health Association's 2013 Annual Meeting in Dublin, Ohio. One involved racial disparities in the death rates of Ohioans from prostate cancer and breast cancer, while the other involved an outbreak of syphilis in Hamilton County (Cincinnati).

More of the work on syphilis was presented at the annual meeting of the American Public Health Association's (APHA) in Boston by my collaborator from Health and Sports Sciences, Dr. Rob Braun. In one poster, we showed—in contrast to prior predictions—that the demographics and risk factor profiles of those with syphilis in



Dr. Jeff Vasiloff

Hamilton County were much different than those in Franklin County (Columbus). In Franklin County, the majority of cases were in men (men who have sex with men), while in Hamilton County, the cases were distributed equally between men and women.

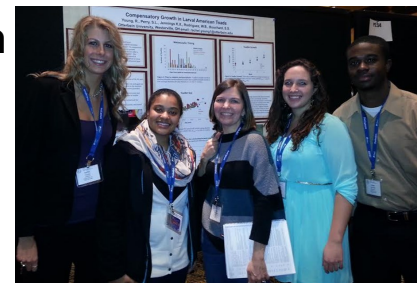
Finally, another poster presented at the APHA annual meeting showed that the likely reasons for the acquisition of syphilis in both Hamilton and Franklin counties had much to do with predisposing and enabling factors for high risk sexual behavior. These included drug use, alcohol intoxication, and use of the Internet to find partners for anonymous sexual liaisons.

By Jeff Vasiloff

Students Present American Toad Research

In January, I went with Dr. Bouchard and three other students in her lab to the annual meeting of The Society of Integrative and Comparative Biology (SICB) in Austin, Texas. We presented a poster on our research examining the effects of crowding and food restriction on the development of American toads from larval to adult stages. Going to SICB was a great experience for me that helped me gain knowledge and skills that I can apply to my senior thesis project next year. I also met many researchers with whom I was able to exchange information, and the connections I made will be great for a job or graduate school, which I plan to attend after I complete my degree at Otterbein. I highly recommend students getting research experience before their senior thesis like I did.

By Samantha Perry



Rachel Young, Whitney Rodriguez, Dr. Bouchard, Samantha Perry, Kadeen Jennings at SICB

Matthew Vieth Studies in Costa Rica

This fall, I studied abroad in Costa Rica for three and a half months with CIEE (Council on International Education Exchange): Tropical Ecology and Conservations. During the first half of my stay in Monteverde Cloud Forest, I took Spanish Language and Costa Rican Ecology classes, as well as a course that explored how humans live in the tropics. During the second half, I had class once a week, and spent the rest of the time carrying out an independent research project. Examining how land transformation impacts the development and mortality of Neotropical tadpoles, *Isthmohyla pseudopuma*. I captured 120 tadpoles and raised them in different environments that simulated deforestation.

My program also allowed me to travel along the Pacific and Caribbean coasts of Costa Rica and into Panama to learn about the local flora and

fauna. During the trips, my professors led our group on different hikes, some as short as 20 minutes and others as long as 14 miles. They pointed out different plant and animals along the way and discussed their natural history. The plants included *Heliconia latispatha*, *Smilax*, and the strangler Fig. We also saw many tropical birds including scarlet macaws, capuchin and howler monkeys, and koatis. My favorite part was when I traveled to a protected island and along the way a Humpback Whale and her calf surfaced and followed the boat for a short time!

The program gave me experience and a newfound confidence in my scientific abilities as well as teaching me the importance of preserving the tropics. I was exposed to different cultures during my homestay and it opened my perspective on the world.

At the end of my program, I stayed



Rearing Tadpoles in Different Habitats

an extra six days in Costa Rica and traveled to different beaches with some friends from the program. These six days were completely different from my study time because I was on my own without guidance from professors. This provided an even greater opportunity to grow as a person and gain even more independence.

By Matt Vieth

Student Research in Panama

The thought of conducting independent research with Dr. Bouchard was daunting at first; little did we know we would be in for the most exciting summer of our lives. We had an incredible opportunity to conduct our senior research at the Smithsonian Tropical Research Institute in Gamboa, Panama. We investigated competition-induced gut length plasticity, food intake and growth in Red-Eyed treefrogs, *Agalychnis callidryas*. Every day, we would walk from

our apartment to our field site located directly next to the rainforest. We encountered organisms of all kinds including leaf cutter ants, tropical frogs, slider turtles, and exotic birds. Occasionally, if we arrived early enough, we were greeted by a troop of howler monkeys in trees directly above our heads. In addition to working closely with Dr. Bouchard, we were also able to work with her colleague, Dr. Karen Warkentin, a well-known researcher and amphibian expert from Boston University. On one special night, Dr. Warkentin took us late night frogging. Sporting our best adventure gear and headlamps, we set out to see the nocturnal action of the Panamanian rainforest. Nighttime in Panama provides a symphony of calls from nocturnal creatures. Upon arrival at the field site, we immediately saw brilliantly colored frog species giving their best calls to attract mates. In the brush, we caught a glimpse of a



Kadeen Jennings and Whitney Rodriguez

sleeping cat-eyed snake, and looking into the pond, we saw the eyes of baby caiman reflecting our lights. The most amazing thing we saw was a large katydid devouring a red-eyed tree frog of equal size. Such predation events are a rare sight even for an experienced frogger such as Dr. Warkentin. The animals we saw were spectacular and it was nothing like the wetlands of Ohio. Going frogging was an unforgettable experience and it taught us that there is always more excitement in the world than meets the eye, you just have to catch it while it's awake!

By Whitney Rodriguez and Kadeen Jennings



Research in the Field

News from the Aviary

Last year we told you about Dr. Anna Young's research with budgies. Since then a complete aviary has been installed and filled with colorful, lively occupants – over 40 of them! Dr. Young and her students continue their research with these birds. Dr. Young's research focuses on male budgies because they are rapid vocal learners, tend to vocalize more in captivity than females, and are much less aggressive. Females fight over nest cavities in the wild, and over perceived nest cavities in captivity (i.e. a food dish they decide to nest in!). Males tend to have dark blue ceres, the area above the beak, and females have pink ceres, but some males also have pink ceres. There are some yellow budgies in Dr. Young's lab now whose sex can't be determined from visual inspection, but their behavior suggests they are female. Working with Dr. Jennifer Bennett, students will be running PCRs of DNA samples from these birds to determine who is a male or a female.

Did you know that in addition to being colorful, the budgies also have UV patches on their heads that they can see but we can't? Senior Kelly Pruchnicki is conducting a study on the function of UV signaling in the budgies by monitoring their behavior after manipulating the size of their UV patches with UV markers or sunblock (photo below). Kelly shares a bit about her research.



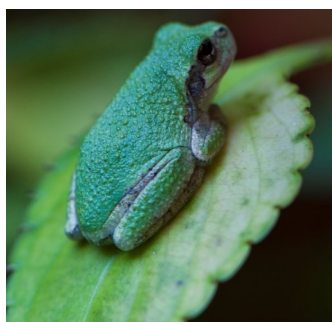
"Budgerigars are smaller members of the parrot family that possess a fourth cone (tetrachromatic,) enabling them to see in the ultra violet spectrum. The study looked at 27 budgies in Otterbein's aviary. Nine birds were used as focals in each color class; blue, yellow and green. Hopefully, through this research, we will establish the significance of the birds' UV plumage and its role in their social standings within the flock."

The aviary has been quite the attraction at the Science Center. The budgies have rotating enrichment provided, check in every month to see the season's latest toys. You can also follow the budgies on Twitter @OtterBudgies or Facebook, **Otterbein Budgies**.



Tom Linkous '70 returns to Otterbein

When Tom Linkous graduated from Otterbein in 1970 he became a biology teacher. Now, just a few short years later he has returned to the classroom, but this time at Otterbein! Along the way he got a graduate degree, worked as an ecologist for the State, and later was named the Chief of the Ohio Department of Natural Resources Division of Natural Areas and Preserves. There he oversaw the State's Nature Preserves, and the Scenic Rivers and Natural Heritage Programs.



Gray Tree Frogs can be quite green.
Image from Tom's photo collection

Now he is back in the classroom each fall at Otterbein introducing new students to Environmental Science with his extensive practical experience and wide range of interests. Who else has an academic specialization in "why (and how) did the animal cross the road"? We are also taking advantage of one of his other interests. Tom is an avid nature photographer and we will be showing many of his images in the 2nd floor Atrium this spring. Stop by and take a look and if you have time, join us for the official opening on Monday, April 7 at 3:00PM.



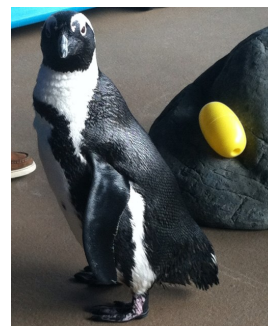
Thomas Linkous,
Biology Class of 1970

Genetic Research on Penguins Continues

Kelly Huth '13, Dr. Lawrance and I traveled to Mystic, CT to the Mystic Aquarium in March of 2013 to present our research on MHC diversity in Mystic's population of African Penguins to the many people at Mystic who aided us in the project. The penguins are endangered in the wild and are part of a special Species Survival Plan in zoos and aquariums across the United States. MHC is one of the most polymorphic regions in the genome and its diversity is imperative to the immune system and its ability to recognize foreign pathogens. By determining the diversity of the *ex situ* penguin population, we can help the Species Survival Plan and prevent the loss of genetic diversity.

While visiting Mystic we were given a full tour including encounters with one of the penguins we studied, and a beluga whale. Currently, Kelly is studying at the University of Florida, College of Veterinary Medicine and I am studying at The Ohio State University, College of Dentistry. Dr. Lawrance continues the research at Otterbein with new students.

By Courtney Kast '13



Wanted: Alumni Reprints

If you are a department alum and have a recent publication, please send us a copy. We are proud of what our students are doing and want to put together a sampling of what you have done for display in the Science Center.



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