Department of Biology Senior Fellows
2006-2007 Academic Year

Andrew Bishop

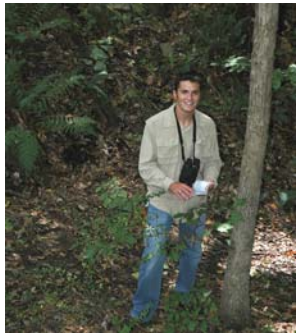
As aspiring scientists and biologists, we have the opportunity to observe the world with an objective eye. While looking through this objective eye piece, our ultimate goal is the pursuit of knowledge and understanding – a process which we call learning. We approach each day as an opportunity to learn something new about the world around us. With the pursuit of knowledge as a goal, and a lifelong one at that, we as individuals are offered the chance to question everything. Not only is the ability to question an extraordinary adventure, but the opportunity to potentially answer that question and ask another results in a satisfaction that remains unparalleled.

It is this adventure that has always drawn me to the field of biology. Even at a young age I always knew that I preferred the sciences over history. In fifth grade my class had the opportunity to do a frog dissection. The methodical way we went about the dissection and the facts we learned while do so solidified my passion for biology. My passion had been sparked by a simple dissection project. As the years progressed I no longer depended upon the classroom for my science education. I began to question everything about the world around me. More often than not the question lingered, remaining unanswered. It was not until my senior year of high school that many of my questions were answered. However, these answers only led to more questions. After my senior year of high school I decided to try my hand at laboratory research. I conducted research at the Indiana University School of Medicine. This experience introduced me to the world of research – a world that was driven by persistent questioning. Once at Denison University I immersed myself in the science departments, both biological and physical. The variety of classes that I took were exploratory and helped hone my interest in biology. I discovered that I loved everything microscopic. It opened the door to an amazing world of microorganisms that function together using a variety of mutualistic, symbiotic and parasitic lifestyles.

Originally, my intent has always been to attend medical school upon graduation. While this remains my primary goal, the classes that I have taken at Denison and the three research opportunities I have been a part of have sparked my passion for questioning everything. As a result, I am also potentially pursuing MD/PhD programs. Upon completion of medical school, currently, I hope to specialize in internal medicine with a focus on infectious diseases.

I feel that as a senior I should impart some sort of advice to those young aspiring scientists. I implore each individual to take every opportunity to question, whether it is in class or in your daily life. By taking charge of your own education you will develop a life long passion for learning. One who never stops learning, never stops growing. "Only those that can see the invisible can do the impossible." - Dadaji

Jon Horn

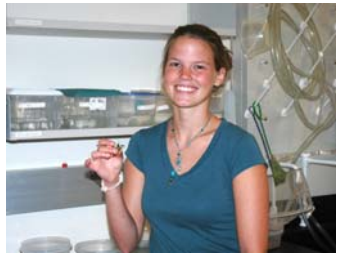


Life, it surrounds us. From the most miniscule bacteria to the 100-ton megafauna of the world's oceans, there is nothing that has shaped human beings more. Life has turned barren earth into an intricate and hospitable place, where there is no single square inch that lacks some form of it. Every biologist has encountered a different set of experiences in his or her lifetime that has led him or her to the study of life. For me, interaction with nature and other "aminals" came at a very young age. Born as the son of a 3rd generation dairy farmer, I developed an appreciation for the value of living organisms and stewardship of the land before I ever understood what cable television was. As with all other living things, I adapted to a cable-less environment and spent my free time OUTSIDE. Some of my favorite childhood memories are riding on my family's Oliver 1850 with my father planting and harvesting crops. This experience taught me the understanding of plant life cycles and how humans have been able to reap the benefits of this resource by its life history traits. Additionally, a 600-acre playground complete with several creeks, ponds, and all types of deciduous forest gave me a grasp for what organisms thrive under different conditions. I was also lucky enough growing up to have an older brother who loved nature as much as I did – with 600 acres of natural resources at our fingertips we couldn't go a single day without having our jeans washed!

Since those childhood days, I have picked up other outdoor hobbies. Hunting, fly-fishing, and archery are the most notable, leading me to interests in freshwater ecology and entomology, and wildlife management. In high school, biological courses taught by Mr. David Spreng at Mohican State Park sparked my interests in animal physiology, ornithology, and dendrology. As a result, even today I find that I struggle to narrow my interests to accommodate for limited research time. After all, every one of the many fascinating facets of biology intertwine to make the world around us, how can a biologist choose just one?

As I prepare to move on to the next level of schooling, I have acquired significant knowledge and skills from my time at Denison that will be tools for building my future. The biology faculty have provided me with the skills required to ask research questions, and to devise ways of examining them. Summer research projects in wetland ecology and ornithology under the keen eyes of Dr. Spieles and Dr. Schultz, respectively, have further honed these skills. With this collection of robust experiences under my belt I can honestly say I have the utmost confidence that my education will stack up against other undergraduates' entering graduate school, if not surpass them.

Meg Richardson



What biology means to ME

The only thing I was sure of when I came to Denison my freshman year was that I wanted to be a biology major. Actually, trivial as it sounds, one of the reasons I came to Denison was because I wanted to explore the huge biological reserve. Since middle school, science has pretty much been the only subject that has truly interested me. This is not really surprising considering the fact that I grew up an only child in a 25-acre wood, and much of my childhood was spent outdoors exploring nature. Also, we got approximately three TV channels at my house, and so my favorite programs became *Nature*, *NOVA*, and *Scientific American*, which aired on PBS. From lions sprinting after gazelles, to weird-looking robots built for deep-sea exploration, to the cosmos and the Milky Way, I loved it all. Like so many other scientific-minded individuals, learning and discovery quickly became my chief motivations.

Since coming to Denison I have developed my love of biology both inside and outside of the classroom. I have tried to integrate my love of the environment and animals with my curiosity and fascination over more microscopic matters. By choosing to live at Denison's Homestead, an alternative living community, I am able to live out my environmental ideals while learning about and being close to nature. At the same time, as a biology major, I gain knowledge in different settings like the classroom and laboratory. I really get the best of both worlds because whenever I leave my little sanctuary in the woods, I know that Talbot Hall (and more biology fun!) await me on the top of the hill.

Although I spent a summer in Australia learning about the tropical rainforest, and my current research is with crayfish, my biology career plans right now are taking me towards Optometry school, which I plan to enter in fall 2007. Finally, I would like to thank the biology faculty for this honor. I know I would not be where I am now without all of their help, and I feel so incredibly lucky to have had such great teachers throughout my time at Denison. Go biology!☺

Kate Seymour

Although I did not realize it at the time, my entire childhood was one big biology lesson. Growing up in an extremely rural part of central Kansas, I learned a lot about the biological world. There were anatomy lessons from the annual chicken butchering day, plant biology lessons from our enormous garden and chemistry lessons in the jam and soap making processes. While my early science education did not come from the classroom, my high school science classes sparked my interest immensely.

I attended a very small high school and had the same teacher for all my science classes; luckily for me, he was wonderful. I remember especially enjoying a semester-long cat dissection project. After these experiences, I was intrigued about college level biology and during my first semester at Denison, I fell in love with the biology department. I was fortunate to have the opportunity to work closely with several professors as a laboratory TA and I was easily persuaded to try research.

I spent one summer at Miami of Ohio doing aquatic ecology research in a zoology lab. My responsibilities included weekly 3:00 am fish-catching escapades, conducting spider fights in a mini arena and electro-shocking bluegill. I created a personal research project and traveled to Canada to attend the annual Ecology Society of America meeting. This summer I stayed at Denison and did microbiological research with Dr. Weingart. I appreciate that it was a completely different research experience than my previous summer and I am very excited about the possibilities of our discoveries. I would advise all students in the biology department to take advantage of the opportunity to research with our wonderful faculty.

After graduation, I hope to attend medical school and eventually work as a family practice physician or pediatrician. I want to thank Denison and this department for the wonderful education and opportunities outside of the classroom that they have provided.

Katie Sparks

Growing up I never thought of research as an exciting vocation, and I never really took a good look at the world around me. I had never even seen a tadpole in real life until I decided that Dr. Geoff Smith's research sounded pretty cool and asked him for a summer job. After that, ecology and I became fast friends. Everything was new to me and I loved everything I learned in my bio classes. As time wore on I began to narrow my interests, and Ecology and Evolution have emerged as my main academic passions. Dr. Warren Hauk has since helped me develop my interest in plant evolution and ecology, and my research lately has been on the genetic relationships of ferns. I also got a chance to research radish ecology at Michigan State University's Kellogg Biological Reserve this summer, in Dr. Jeff Conner's lab, which was equally exciting. While I'm still trying to figure out where to go from here, my long-term goal is a PhD. in ecology. I would love to teach people about the mechanisms that make the world work in the sometimes crazy ways it does. My hope is that my research and actions will have a positive effect on the plants and animals around us.

Senior Fellow Awards in the Department of Biology are based not only upon excellent academic performance and service to the department, but also the positive attitude and contributions brought to the classroom, research lab and the general environment of the major. The Biology Faculty view Senior Fellows as students who pursue biology for its own virtue and provide excellent role models for other students.

Laurel Symes

Our most distant ancestors were biologists. Even if biology is now broader than finding food, fiber, and medicine and avoiding being eaten, it is a tradition that I am grateful to join. In the midst of an ever more technological society, our survival is still linked to our interactions with the biosphere. To me, being a biology major does not simply mean that I study biology. It is inextricably linked to who I am and to how I relate to the world. It is a way to understand how things came to be, how they interact, and what role we play in this system.

In my life, I have lived in a number of places and spent time in many more. As I traveled through the short grass prairie of North Dakota, the arid expanse of central Texas, the pine barrens of New Jersey, the tropical rainforest, and the tropical dry forest, the familiarity drops away, but the similarities begin to emerge. Each new place used to seem strange and unfamiliar, but as I study the biology of a place, I begin to see similarities in addition to differences. Even when the flora and a fauna of a place are entirely different, the same principles and constraints still shape the community. Knowing even a fraction of the natural history and a handful of dominant species makes a place feel less alien and more welcoming. Learning the names and characteristics of the things around me has causes me to become more aware of where they live, how they interact, and to think about how they evolved. Walking through various natural environments, my mind, unasked, provides a litany of names: *Anax junius*, *Enallagma signatum*, *Paraponera clavata*, *Toxicodendron radicans*, *Acer rubrum*, each identifying something familiar, but about which we know only a fraction of what there is to be know and understand.

I have asked 'why' questions for as long as I can remember. Why is the sky blue? Why is this plant dying? Why do I get a fever when I am ill? Why do ants always walk along the same paths? My training at Denison has taught me the answers to many of these questions, but more importantly, it has taught me how to seek the answers to questions that no one has answered before.

Elaine Binkley

I was fortunate to have a high school biology teacher who sparked my interest in the subject. Whether it was by reading excerpts from *The Hot Zone* or proudly displaying his trilobite belt buckle, he was able to show that biology is not "boring" or "dry" but is a fascinating and dynamic field of study. While my high school experience helped to spark my interest in biology, my experiences as a distance runner further solidified my choice of a major. One of the things that I have always loved most about distance running is being able to be outside and experience nature. You can run the same path through the bio reserve every day yet see that plants, animals, and environment are constantly growing and changing.

Denison has helped me to grow enormously not only in my understanding of areas of biology, but also in my ability to think and ask questions about science. From waking up at 5:00 in the morning to go watch birds feed for Ecology and Evolution, to constructing origami chicken embryos in Developmental Biology, my experiences as a biology major have been both challenging and fun. I hope to continue to be able to learn about and to apply biology in the future by working as a physician.

I would encourage anyone, regardless of your future career choice, to keep an open mind when choosing which classes to take. When I signed up for plant biology during my freshman year I doubted that it would be very exciting and was just taking it to get the requirement out of the way. However, it turned out to be one of the most fascinating classes I have taken and gave me an entirely different perspective when thinking about other areas of biology. Similarly, when I started doing research with Dr. Romano, I did not even know what a sea urchin was much less have any idea what sort of questions you could ask about them. Yet they have become the focus of my senior research and are far more complicated than I ever would have thought. Take time to step back to appreciate not just the incredible complexity and order that exists within biological systems, but also the beauty involved in developing the tools and experiments that we use to learn about things that we cannot even see without a microscope.

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Katie Dean

From the moment I had my very first biology class where I watched my fifth grade teacher's sleeping albino snake, I was hooked. As I sat deeply intrigued by this abnormality, I never could have imagined that this fascination with the workings of the world around me would parlay into the obsession I now possess. I consider all the years of my childhood spent climbing trees, capturing unsuspecting tadpoles, and observing my twenty-four-pound calico cat hunt birds as the launching pad to my biological career.

While I once considered vinegar and baking soda volcanoes the height of scientific sophistication, over the course of my education, I have come to realize how much there is to learn and how much more remains undiscovered. In that sense, biology has provided me a lens to observe what a complex, puzzling and beautiful world we live in. From studying heterozygous advantage to whale species with vestiges of hipbones, from assaying protein functionality in my senior research to witnessing first hand the devastation of species due to destruction of rainforest in Australia, it never ceases to amaze me how ever-changing and eternally fascinating this field of study is. Everyday I leave Talbot with a new and more expansive understanding of how the world around us works on both the micro and macro scale.

With all the information I have learned and all the experiments I have witnessed during my brief four years here at Denison, perhaps the greatest lesson I have learned is that "knowledge is of no value unless you put it into practice" – Anton Chekhov. As students we are often made to believe that it is what happens inside the classroom that counts. However, I have found that the true measure of an education is how it is used.

With that understanding, I hope to use my biology degree and the critical thinking and observation skills it has bestowed on me in my continuing education in medical school and beyond.