



IOWA STATE UNIVERSITY Department of Entomology

January 2006 Newsletter For Alumni and Friends

Bartholomay is New Medical Entomologist



Lyric Bartholomay in the rearing room with thousands of well-fed mosquito larvae.

Lyric Bartholomay

When I entered graduate school at the University of Wisconsin-Madison, my career goal was to work for the Centers for Disease Control, combating emerging vector-borne disease. As my career developed, however, I found that I was inescapably drawn to academia—to the creative process of research, and to the thrill of teaching and learning. As such, I feel truly fortunate to have joined the Department of Entomology at Iowa State University. ISU fosters and promotes top-quality research with excellent resources and facilities and simultaneously maintains an impressive commitment to student learning. And, while pursuing these endeavors, I have the distinct pleasure of fulfilling one of my original goals—contributing to public health by combating vector-borne disease—as the new medical entomologist.

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Wintersteen Named Ag College Dean

Wendy Wintersteen

Editor's note: Dr. Wintersteen became Dean of the College of Agriculture as of January 1, 2006.

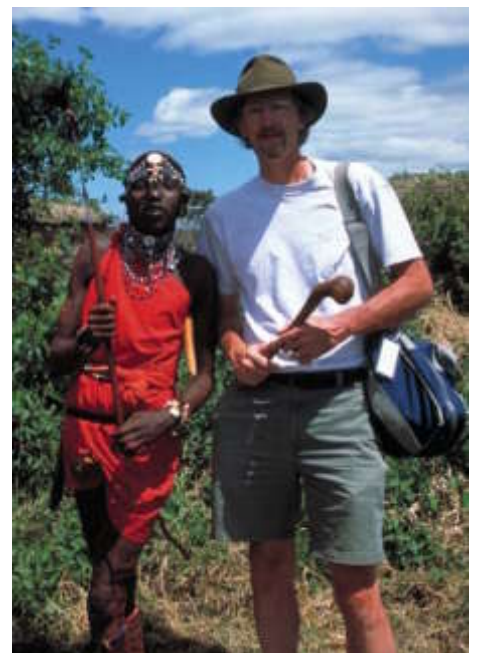
For the past 6 years, I have served as the senior associate dean and the current interim dean of the College of Agriculture (COA), since Dean Cathie Woteki's departure in August. I have become deeply involved in every facet of the COA's operations during this period, as a result of seven budget cuts and reversions that led to the elimination of 44 COA faculty positions and 77 COA



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Safari?

Marlin Rice led a group of 17 Iowa State students to northern Tanzania in June, braving elephants, hyenas and driver ants. See the full story on page 14.



Jennifer Remmers: Military Entomologist in Iraq

Having completed her B.S. in entomology in 1999 and M.S. in medical entomology in 2001 at Iowa State University, LT Jennifer Remmers was commissioned as a naval officer in 2002.

Currently stationed at Pearl Harbor, HI, she works to protect U.S. troops from vector-borne disease. From August 2004 through July 2005, she was deployed to Al Asad, Iraq, as the sole entomologist with the Navy's Forward Deployable Preventive Medicine Unit.

In Iraq, Remmers tackled the creatures that can transmit diseases to the troops or that bite or sting



Jennifer teaches an army field sanitation technician how to survey for sand flies.



them badly enough to require medical evacuation. These creatures include a variety of four-, six-, eight-, and no-legged animals such as mosquitoes, scorpions, camel spiders, feral dogs, cobras, and vipers.

Rabies, malaria, and leishmaniasis also put service men and women at risk. Leishmaniasis, a disease transmitted from dogs and rodents to humans through the bite of a sand fly, is Remmers' biggest concern.

Nearly 2,000 service members have contracted this disease. When left untreated leishmaniasis produces open sores or attacks internal organs.

Remmers provided oversight, education, and expert advice to civilian pest control contractors and military preventive medicine personnel to manage insect pest populations over all of western Iraq.

Often, she conducted extensive spray operations or saved the day by single handily capturing a "deadly" snake.

Additionally, she collected sand flies to monitor the incidence of Leishmania infection and educated the troops on personnel protection, including the use of insect repellents and how to avoid various creatures based on their behavior.



Above: On duty in Iraq (Jennifer is at left). Below: A military entomologist's duties are many and varied. Here Jennifer works with a colubrid snake.



From the Chair's Perspective



Once again, greetings from the Entomology Department at Iowa State University. I saw a few of you at the annual mixer at the rescheduled ESA meeting, but not as many as usual or that I would have liked. Therefore, many of you didn't get a chance to catch up on the news from Ames,

and I assume that what you would all like to hear about is the exciting developments since the last newsletter.

Last year I announced that Dr. Rowley had retired and that we had been given permission to fill the position. Because of the importance of the medical entomology position and the outstanding reputation that it had, we were able to conduct an "open search" and we advertised at all ranks, assistant through full professor, to find the very

best person in the country. I believe that the effort paid off; we were able to hire Dr. Lyric Bartholomay. That a recent Ph.D. graduate could outcompete many with more experience should give you an indication of her outstanding accomplishments and potential (and of our expectations). I ask you, as I did last year for Matt O'Neal, to welcome Lyric to the ISU family and to encourage and assist her when you have the opportunity.

Since the last newsletter, my responsibilities have changed as well. On November 1, 2005, the director of the Leopold Center for Sustainable Agriculture accepted a Senior Fellow position in the center. His responsibilities will be to continue to strengthen ISU's national reputation in sustainable ag. To fill the position, Dr. Jerry DeWitt was appointed to a 2-year term as interim director of the Leopold Center. This shift created a vacancy in the Pest Management and the Environment (PME) program for a coordinator position. The PME program contains the Integrated Pest Management

and the Pesticide Applicator Training activities. Dean Wintersteen asked if I would assume those duties in addition to serving as department chair. The prize in the game of musical chairs was that we would get to hire a new faculty member in corn pest management. This search is getting under way now, and I ask you to think of the very best scientist(s) to nominate and to encourage them to apply. The position will have research, teaching, and extension responsibilities.

Speaking of "Dean" Wintersteen, Dean Kathy Woteki resigned in August of last year. Dr. Wendy Wintersteen, the Senior Associate Dean, was named interim Dean (see related article). She applied for the vacant position and was successful, being named to the Dean's position this past December. Wendy is an entomologist and served as an extension state specialist and ran the PME program before moving into central administration.

That means we have a dean that knows which closet doors to open to find the skeletons.

In last year's newsletter, I listed student recruitment as the high priority in the department, college, and university and announced the creation of a graduate student endowed fellowship in medical entomology and updated you on the status of an undergraduate scholarship that Dr. Coats had created when he was chair. I am extremely pleased to announce that the department received a very nice gift this past year that allowed us to increase the size of the graduate fellowship endowment and to reach a goal of having an endowed undergraduate scholarship fund. These endowments will allow us to supplement a graduate assistantship to attract an outstanding graduate student with preference given to those interested in medical entomology, which will help Lyric establish her national reputation.

The undergraduate scholarship fund will mean that a couple of our very best undergrads will receive tuition remission grants annually from the endowment. This past year, we also awarded two Harold Stockdale undergraduate scholarships to beginning entomology students. When you have

A highlight this past fall was the marking of the 125th year of teaching entomology at Iowa State University.

Chair's perspective, continued from page 3

contact with high school and beginning college students, ask them to get in touch with me to find out how they can apply for scholarship assistance to earn a degree in entomology from ISU.

A highlight this past fall was the marking of the 125th year of teaching entomology at ISU. We marked the occasion with a small celebration that involved dedicating a departmental seminar to an invited speaker who had built a reputation as a notable teacher. Dr. F. Tom Turpin (Ph.D. 1971) came back with his wife Chris to help celebrate. Tom has gained his notoriety teaching entomology to nonscience majors at Purdue University, and he is sometimes known to use somewhat unconventional teaching techniques. He also helped origi-

nate the Bug Bowl at Purdue University. Thanks for coming back Tom, we enjoyed your visit.

The budget continues to remain tight, and after student recruitment and retention, rebuilding the college's budget is the priority of Dean Wintersteen. We will reduce the department's budget again for this coming fiscal year, but we should be leveling off. Having the enthusiasm of the two new faculty in the department and the prospect of hiring another one this year far outweighs the negatives. Join me in celebrating the successes of the department and come by and "set a spell."

Cheers,
Jon Tollefson, Chair

Bartholomay, continued from page 1

The Medical Entomology laboratory has an outstanding reputation for excellence in research and surveillance related to arthropod-borne pathogens. Under the auspices of Dr. Wayne Rowley, the laboratory trained innumerable undergraduate and graduate students who have gone on to successful careers in industry and academia.

Amongst these students are two of my previous mentors, Dr. Laura Chandler and Dr. Bruce Christensen, the latter of whom earned his Ph.D. in Dr. Rowley's laboratory and trained me during my own doctoral studies at University of Wisconsin-Madison. Dr. Rowley's skill in mentoring transferred to the classroom, wherein he is renowned for his talent in inspiring undergraduates to pursue biological research. [At this point, the voice of sarcasm in the back of my mind says "but no pressure, Lyric"]. These are big shoes to fill.

My own research focuses on the interactions, at the molecular level, between mosquitoes and disease agents. As a graduate student and postdoctoral researcher, I was intrigued by high-throughput technologies and methodologies to describe immune responses of mosquitoes to pathogens. ISU has fantastic biotechnology facilities that I will use to continue this line of research in the context of the interrelationship between a mosquito and



the virus(es) it transmits. If we can better understand the molecular and physiological barriers that a virus must overcome to disseminate into various tissues within a mosquito, strategies could be developed to control these interactions and prevent virus transmission. I am also intrigued by studies of

the ecology of vector-borne disease, particularly environmental impacts on mosquito biology and mosquito-pathogen systems. In this way, my experience in molecular medical entomology interdigitates nicely with the existing mosquito population and arbovirus surveillance and research

program established by Dr. Rowley.

I am very grateful to have met with a very welcoming and supportive environment at ISU. My husband, Christian, is also a scientist and has just joined the laboratory of Dr. Jeff Beetham to work with Leishmania parasites. I am thrilled that he's finally "seen the light" and will be working with a vector-borne disease! And, despite two tornadoes in almost as many months, we're very happy to be living in Ames. We're looking forward to watching our daughters Aislinn (age 10) and Ada (age 7 months) grow in the comfort of this small town that will offer them the perspective of a diverse international community.

Lewis Counts Bedbugs on Toes

Those who have heard him speak about blood-sucking ectoparasites may remember Donald Lewis saying 10 years ago that “I can count on one hand the number of bed bug samples sent to the Iowa State University Insect Clinic!” Three years ago, he said, “I can count the number of bed bug samples on two hands.” As of this summer, he’s had to start using toes to keep track of the number of samples.

This slow-but-accelerating increase in reports of bed bugs in Iowa matches what has been reported around the country: bed bugs are on the rise. The reasons for increased sightings of bed bugs in hotels and homes are not known. Some authorities claim bed bugs are arriving as hitchhikers in

the luggage of a rapidly expanding number of international travelers. Others advance an interesting theory that bed bugs are surviving because of our modern pest management practices of cockroach control.

Bed bug numbers started to rise about 15 years ago, and the highly effective cockroach baits started to gain popularity about 15 years ago. The reduced use or elimination of broad-spectrum insecticide sprays may allow bed bugs and other previously controlled pests to enjoy greater survival and success.



Wintersteen, continued from page 1

staff positions. Not surprisingly, the Department of Entomology has shared in these reductions. Throughout this budget turmoil, however, the college has managed to maintain its top five ranking among Colleges of Agriculture with improvements in many areas and increased student recruitment. Undergraduate enrollment increased 10% in the 2005–2006 academic year.

In the role of senior associate dean, I led strategic efforts to restructure the college’s operations and preserve areas of growth and potential. Moreover, I chaired the budget committees to eliminate the historic “block budget” system, which lacked flexibility and coherence with college goals, and impeded the college’s potential for growth. In 2003, the COA department chairs unanimously supported a plan to eliminate the block budget by moving all open faculty positions to the college for use in reversions or for redistribution based on college priorities. This critically important decision has allowed the college to strengthen its ability to respond to key opportunities and needs in research, teaching, and extension. At the same time, departments have the opportunity to bring forward proposals for faculty positions that will strengthen their respective programs.

A friend told me that as senior associate dean, I would be forced to handle the “three Ps”: people,

problems, and personalities. To some degree, I have discovered the truth of this statement. Yet, I have tried to approach all Ps with a sense of collegiality and good humor, while seeking the best outcome for all involved—another type, so to speak, of administrative “integrated pest management.”

As the interim dean, my responsibilities have shifted. Now, I spend much more time interacting with students and student organizations, donors and potential donors, and other administrators. Every day, I am reminded of the gifted students that attend Iowa State University, and the caring alumni who support them with scholarships and donations. Last year, the COA provided \$1 million in scholarship support, a number that impresses me deeply. In November, I sat on the podium with a grad school colleague of mine, John L. Clark, III, who sponsored the Wayne A. Rowley scholarship in Entomology. Listening to John’s comments reminded me of the many professors who instructed and encouraged us, and the impact they made on our lives.

Although I continue to battle with the college’s budget, and short- and long-term challenges, I feel proud to be a graduate of Iowa State University’s Department of Entomology, and I am proud of our faculty and staff.



H.J. Osborn
1882-1897



H.E. Summers
1898-1915



J.E. Guthrie
1915-1919
1921-1922



E.D. Ball
1919-1922

A Brief History of Entomology at Iowa State

Robert E. Lewis

Iowa State College, now Iowa State University, was chartered in 1858, endowed by the Morrill Land-Grant Act in 1862, and opened for students in 1869. From the outset, provision was made for studies in zoology and its related branches in the biological sciences. During the early years, C. E. Bessey was in charge of the work in botany, zoology, and entomology. By 1876, part of the term in zoology was devoted to injurious insects. Early course offerings included General Entomology and Apiculture. Herbert Osborn took charge of entomology instruction in 1880 and developed a course dealing primarily with insects of economic importance. From 1880 to 1882, the course taught by Osborn was called Entomology; from 1883 to 1884, it was called Economic Entomology. In 1885, two courses, Entomology and Injurious Insects, were taught, and from 1886 to

Herbert Osborn took charge of entomology instruction in 1880.

1888, one course dealing with General Entomology and Economic Entomology was offered. In 1885, work in zoology and entomology was set aside as a separate department under Osborn's leadership.

The 1889 catalog contains the first entomology course descriptions for General and Economic Entomology. No course changes were made until 1898 when H. E. Summers succeeded Osborn. Three courses were offered: Course I, Entomology; Course IV, Entomology; and Course IX, Advanced Entomology ("intended for those who expect to pursue entomology as a profession"). Except for the addition of Forest Entomology in 1912, no major changes were made until



P.A. Dahm
1973-1982



H.J. Stockdale
1982-1992



T.C. Baker
1993-1999

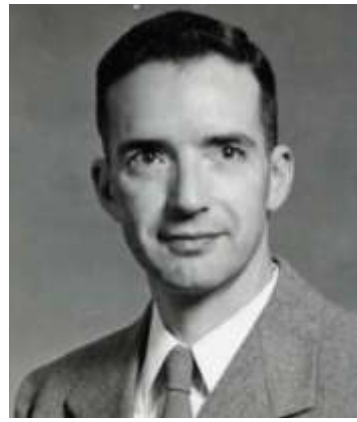




C.J. Drake
1922-1946



H.M. Harris
1947-1960



H.L. Hamilton
1960-1961



O.E. Tauber
1962-1973

1914. At that time, six new courses were added, including one for research credit. By 1918, 18 entomology courses were offered, including three covering research in entomology.

Investigational work on insects was carried out in the Department of Zoology and Entomology before the enactment of the Hatch Act. When the Experiment Station was established, it was separate from the college, and C. P. Gillette became the first station entomologist in 1887. He held this position until 1890 when the station was made a unit of the college. With this merger, Osborn was made the station entomologist and the head of the department. Passage of the Iowa Crop Pest Act established the office of State Entomologist in the state Department of Agriculture in 1898. At this time,

On January 1, 1975, the Departments of Zoology and Entomology were separated.



J.R. Coats
1999-2004



J.J. Tollefson
2004-present

Osborn became the first state entomologist. The office of the State Entomologist was subsequently transferred from the university to the Department of Agriculture in Des Moines about 1965, and it remains there today. From 1962 to 1974, the department functioned partly through three sections: zoology, entomology, and fisheries and wildlife biology, with a professor in charge of each

section. Zoology remained in the College of Sciences and Humanities, whereas entomology and fisheries and wildlife biology were administered by the College of Agriculture.

Over time, administrative leadership of the Department of Zoology and Entomology has been vested in H. J. Osborn (1882–1897); H. E. Summers (1898–1915); J. E. Guthrie, Acting Head (1915–1919 and 1921–1922); E. D. Ball (1919–1922); C. J. Drake (1922–1946); H. M. Harris (1947–1960); H. L. Hamilton, Acting Head (1960–1961) and Chairman (1961–1962); O. E. Tauber (1962–1973); and P. A. Dahm (1973–1974).

On January 1, 1975, the Departments of Zoology and Entomology were separated by action of the State Board of Regents into Departments of Zoology, Entomology, and Animal Ecology. Since then, entomology has remained a separate departmental entity. Administrative leadership has been provided by P. A. Dahm (1974–1982), H. J. Stockdale (1982–1992), T. C. Baker (1993–1999), J. R. Coats (1999–2004), and J. J. Tollefson (2004–present).



History of Entomology, continued from page 7

An overview of entomology at ISU is very much a reflection of the development of the discipline in the United States. Most studies during the latter half of the nineteenth century were focused on insects of economic importance, especially those associated with monocultural agriculture. The study of insect systematics had attracted both professional and amateur attention since pre-Linnaean times and has remained a major preoccupation during the eighteenth and nineteenth centuries.

As the discipline matured, emphasis remained on systematics and economic studies, but the science expanded to include investigations involving insect physiology and toxicology as new chemicals, equipment, and techniques developed. Indeed, J.

J. Yeager and C. H. Richardson, staff members at ISU, were both pioneers in these fields.

As time passed, emphasis on classical subdisciplines in entomology, such as morphology and systematics has diminished, and elements of these subdisciplines have been integrated into studies of biogeography, insect ecology, physiology, and molecular biology.

Robert E. Lewis, professor emeritus, came to the Iowa State Department of Entomology in 1967. An internationally renowned expert in flea systematics, he retired in 1996 but continues to work from his home in Ames.

125 Years of Teaching Entomology at Iowa State

ISU alum Tom Turpin (Ph.D. in 1971) gave a seminar to commemorate the teaching of Entomology at ISU for 125 years. Turpin has been at Purdue University for 34 years and is a past president of the Entomological Society of America. His seminar was entitled "The Pedagogy of Hexapodology." Turpin noted that Bonnet in 1766 wanted to use the term insectology for the study of insects, but instead we are stuck with the term entomology. The approach that Tom used in looking at the pedagogy of teaching entomology was to list his top 10 entomology teachers in the past 125 years. He based his list on teaching approaches that include distance education, tutorial, classroom, and destination. His top 10 teachers were Jean Henri Fabre, H. A. Hagen, John Henry Comstock, Frank Lutz, C. P. Alexander, Donald J. Borror, Larry Pedigo, Thomas Eisner, May Berenbaum, and Milan Busching. Tom related each one of these people with a specific teaching style, whether it was one-on-one or distance education. Suggestions from the



Tom Turpin and Larry Pedigo.

audience for people to add to the list included the cartoonist Gary Larson. As usual, Tom presented a lively seminar that celebrated the 125 years of teaching entomology at ISU.

Entomology Distance Education Courses

Over the years, the department of entomology has remained at the forefront of distance education through the use of appropriate technologies. Here are some of the ways we have been active.

Livestock Entomology

Ken Holscher developed Livestock Entomology as a distance education course in 1999. At that time, the two delivery methods available were

Distance Education, continued from page 8

videotape and Iowa Communications Network (ICN) classrooms. The ICN classrooms allow students at remote sites to view the lectures in real time. Ken began with five students, added a simultaneous classroom section in 2001, and currently has 15 students taking the course from a distance and 38 students on campus, the maximum that the room can hold. Livestock Entomology is unique in being the first and only distance education course in livestock entomology offered in the United States. Holscher has had students from Texas, Florida, and Ohio, and even a prison inmate is taking his course.

Introduction to Insects

Also in 1999, John Obrycki (now at University of Kentucky) and John VanDyk collaborated to introduce two Web-based distance education courses for undergraduate students not majoring in entomology. Introduction to Insects is a survey course that covers insect diversity, biology, and management. Offered experimentally for the first time to eight students, the course went on to be offered annually during both semesters and the summer session. Enrollment for fall 2005 was 59 students. Students from as far away as the Polynesian Islands have taken the course.

Insects and Society

A similar story can be told for the course Insects and Society, which focuses on human interactions with insects. Although the course has been on the books and has been taught by Jim Mertins, Obrycki, and Holscher, a web-based distance education section was added, and enrollment was 60 students in fall 2005. Currently, Holscher offers the class in the classroom in the spring and VanDyk teaches the web-based class in the fall.

Online Learning Journals

Distance education courses can be a challenge for both student and teacher. Students must develop good study habits because there is no set time for the course to take place, and teachers must spend more time interacting with students because most interaction takes place individually.

To encourage students to stay on track, VanDyk requires weekly quizzes and an electronic learning journal (sometimes called a weblog). In addition to teacher oversight of their work, students review each other's journals and may comment on their peers' observations. Students collaborate in small groups to present a final project on a topic of their choice, delivered electronically.

The distance education courses attract a variety of students. Here's a sample post from a student's learning journal:

"I live in rural West Burlington in southeast Iowa. I graduated from Iowa State in 1986 (yes, I know some of you weren't born yet or were still in diapers). I have a secondary education teaching certificate that I am currently not using. I want to hang on to this certification so I need to take 6 credits ever 5 years ... I wanted to learn more about insects so that I could share this knowledge with my 6 and 7 year old boys who LOVE insects."

The content delivery method of the Web-based courses is changing. Five years ago, many students had only dialup access to the Internet; now most have some form of high-speed connection. This change allows the use of more images, movies, and interactive media. Patti (Anderson) Prasifka, Carol Pilcher, Jon Tollefson, and VanDyk recently received a Miller grant to further develop interactive content for several courses.

Collaboration with Other Universities

In spring 2002, Drs. John Obrycki and Bryony Bonning combined forces with Dr. Robert Wiedemann, University of Illinois, and Robert J. O'Neil, Purdue University, to teach a distance education course on biological control of insect pests and weeds. This videoconference-based course attracted 25 students at the three sites and may have been the first specialty course taught by

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Western Corn Rootworms in Europe

Jon Tollefson

The western corn rootworm was discovered near the Belgrade airport in 1992 by Dr. Franja Bacha. At that time, approximately 10,000 hectares was infested, resulting in an estimate that the insect was probably introduced in the late 1980s. This time frame was likely because before the Yugoslav war, there were direct flights from the United States to Belgrade. Since its introduction, the pest has spread throughout European corn production areas. The spread has been a gradual advance through Hungary into Austria, west through Croatia, north into Slovakia, and east into the Ukraine, Bulgaria, and Romania, with point introductions in Italy, France, Switzerland, The Netherlands, and the United Kingdom.

Jon Tollefson, Iowa State University's corn rootworm expert, began attending an annual central European *Diabrotica* meeting in 1996 and has developed research collaborations with scientists in Croatia, Serbia, and Montenegro. In a research project funded by the Croatian Ministry of Agriculture, commercial Croatian corn varieties were screened for resistance to corn rootworm larval



Jon Tollefson conducting Diabrotica management discussions with Croatian farmers and reporters.

feeding in Croatia and the United States. Commercial varieties also have been sent to ISU from the Maize Research Institute in Serbia to be evaluated for tolerance to corn rootworm injury. The evaluations are being conducted in Iowa because researchers there can provide a reliable infestation. The more complex crop rotations in central Europe have limited pest population densities somewhat, making it more difficult to guarantee an infestation in breeding and evaluation nurseries. In contrast, if the rotations retard population buildup, native tolerance in corn may be a viable management tactic for the western corn rootworm in central Europe. In 2003, Jon spent 2 weeks in Croatia on a Ful-

Distance Education, continued from page 9

several instructors at multiple universities, each with students registered locally. A Yahoo® group was used for interaction between instructors and students at all sites. The advantages of teaching by using this format were: 1) providing students with multiple perspectives on biological control issues from different instructors; 2) having a critical num-

ber of students that allowed for interactions, such as debates between teams of students located at each institution; and 3) more effective delivery of specific topics by specialists in each field. This approach could be used to increase the number of specialty entomology courses available to students in the United States.

Bryony Bonning, Professor

Dr. Bonning's conducts fundamental research on insect physiology and insect pathology with the goal of developing novel, environmentally benign alternatives to chemical insecticides for insect pest management. A current focus of her research deals with development of insect-resistant transgenic plants. Insect toxins such as *Bacillus thuringiensis* (Bt) toxins that act within the gut of the insect have been widely used for production of insect-resistant transgenic plants. However, at present it is not possible to use toxins that act within the insect hemocoel for production of insect-resistant transgenic plants because of the lack of a system for delivery of the toxins from the gut into the hemocoel. Bonning's laboratory is examining two potential delivery systems for transfer of toxins from the insect gut into the hemocoel. One delivery system could involve structural proteins of a plant virus that move from the aphid gut into the hemocoel to deliver an intrahemocoelic toxin. This research is being conducted in collaboration with Dr. W. Allen Miller in the Department of Plant Pathology at ISU. A second system for delivery of intrahemocoelic toxins could involve fusion of the toxin to a plant lectin. Lectins bind to glycans in the



Bryony Bonning with Lindsey Ehler, an undergraduate student in the Program for Women in Science and Engineering.

gut, and some of the molecules are transported across the gut epithelium into the hemocoel. This research is being conducted in collaboration with Dr. John Gatehouse in the United Kingdom.



Bonning research group, April 2005. Left to right: David Sandgren, Erica Cromer (undergraduate), Hailin Tang, Narinder Pal, Huarong Li, Wendy Sparks, Bryony Bonning, Sandhya Boyapalle, Zhiyan Liu, Tyasning Nusawardani.



Front row:
John Ernest
(undergraduate),
Hirofumi Kosaki,
Gretchen
Schultz, Vera
Williams, and
Kelsey Prihoda.
Second row:
Fan Tong, Keri
Henderson,
Carrie Dorland
(undergraduate),
and Lindsey
Gereszek. Back
row: Joel Coats
and Dingfei Hu.



Joel Coats, Professor

Joel Coats' activities focus on research, teaching, and advising of graduate students in insect toxicology and environmental fate and the effects of agrochemicals. Specific projects on control of insects are primarily centered around the use of natural products (botanicals) as insecticides and insect repellents. The main projects he is addressing in the environmental part of his research program include persistence, degradation, and movement of the *Bacillus thuringiensis* (Bt) protein toxin from transgenic corn and two veterinary antibiotics as well as some natural and conventional pesticides. Development of analytical methods and non-target bioassays also constitutes a significant portion of the overall program. He currently has eight excellent graduate students in his research group who will someday join the ranks of the alumni of his laboratory; he has graduated 20 Ph.D. students and 17 M.S. students during his 27 years at ISU. Training and mentoring graduate students contin-

ues to be the most rewarding part of his work.

Joel teaches Insecticide Toxicology, Pesticides in the Environment, and Special Topics in Insect Toxicology as well as small portions of Principles of Toxicology, Laboratory Methods in Toxicology, and Natural Toxins. He also serves as Director of Graduate Education in the Department of Entomology and as Faculty Advisor for the undergraduate Entomology Club. He chairs the departmental Student Recruitment Committee and serves on the College of Agriculture Student Recruitment Committee and Economic Development Task Force. Joel has 155 scientific publications, including seven books, 30 book chapters, six review articles, and 112 peer-reviewed journal articles. He holds seven patents for insecticides or repellents. He continues to be heavily involved in professional societies and programming for national and international conferences on agrochemicals. He's having more fun than ever before!



Kenneth Holscher, Associate Professor

Although he was initially hired as a 100% extension entomologist, Ken has seen his responsibilities shift significantly over the past several years. Ken still has major responsibility for extension education programs pertaining to livestock and poultry pest management, public health pest management, and stored grain pest management, and he continues to provide major assistance in urban pest management, pesticide applicator certification training, the Insect Diagnostic Clinic, the Certified Crop Adviser program, and the Iowa Agricultural Aviation Association Fly-In Clinics. However, over the past several years, Ken has taken on a significant teaching load because of vacancies or retirements that have taken place within the department.

Ken is currently responsible for teaching Insects and Society and Pesticide Applicator Certification every spring semester; Livestock Entomol-

ogy alternate spring semesters; and Workshop on Insect Management every summer semester. Livestock Entomology is unique in having both an on-campus section and a distance education section, and it currently represents the only distance education course in livestock entomology offered in the United States.

This past fall semester, Ken also assumed responsibility for teaching a section of Principles of Biology. For the past 25 years as a faculty member in the Department of Entomology, Ken has been actively involved in teaching in the Biology Program.

For many years, Dr. Wayne Rowley taught a section of this course and, upon his retirement, Ken has continued this long-standing tradition.

Marlin Rice, Professor

Marlin continues to provide leadership in field crop entomology with a split extension (75%) and research (25%) appointment. He is beginning his 18th year as executive editor for the award-winning *Integrated Crop Management* newsletter that is jointly written by specialists in agronomy, entomology, and plant pathology. During the past 2 years, he has given invited extension presentations for Purdue University (Indiana Crop Adviser Conference), University of Illinois (Latitude Bridge), Pioneer Hi-Bred Int'l., and Monsanto Co. Additionally, he was invited to speak on biotechnology and maize pests at the 22nd International Congress of Entomology in Brisbane, Australia.

Marlin has advised or co-advised three graduate students during the past 2 years. Megan O'Rourke recently graduated with an M.S. in entomology. The focus of her research was carabid activity-density in a 2- and 4-year crop rotation system in

Iowa. She is now pursuing a Ph.D. at Cornell University. Jeff Bradshaw is nearing completion of his Ph.D. research that is emphasizing management and ecology of bean leaf beetles and Bean pod mottle virus in soybean. David Dorhout began an M.S. program in 2005. He is studying the biology and management of western bean cutworms in field corn. During June 2005, Marlin led a class of 17 students on a field trip to the Serengeti region of Tanzania.

Marlin remains active in the Entomological Society of America, recently completing a 3-year term on the governing board as a representative to Section E (extension). He was elected secretary/treasurer in 2005 and is entering his fifth year as an Executive Committee member. At the North Central Branch meeting in 2004, he was recognized by the students for 4 years of service as GamesMaster for the Linnaean Games.

Of Ants and Elephants

Marlin E. Rice

Northern Tanzania was the location of an International Field Trip in Biology class during June. The class was led by Marlin Rice and Jeff Bradshaw with 16 undergraduate students participating in the 2½-week field trip. The class visited Arusha, Lake Manyara, Serengeti, and Tarangire national parks; Ngorongoro Crater Conservation Area; Oldupai Gorge (formally known as Olduvai); the saline Lake Natron; and Gibb’s Farm.

The class witnessed an abundance of wildlife, including the “big five” (lion, leopard, black rhino, elephant, and Cape buffalo) and thousands of wildebeest, zebra, and gazelle.

One morning before sunrise, the class lifted off in two 16-passenger hot air balloons and drifted across the storied Serengeti plains to witness the wildebeest migration from a slightly different vantage point.

Favorite activities included several walks through the African bush with an armed park ranger brandishing an automatic rifle, or with Arusha warriors with long spears.

The entomological highlight of the field trip occurred as the class was hiking through the rain forest on the eastern slopes of Ngorongoro Crater. A column of tens of thousands of African driver ants, *Dorylus* sp., sometimes called safari ants, were on the hunt in search of prey along our path. Driver ants are highly respected by Africans because they are known to kill humans, usually the infirm or young that cannot escape. Death occurs often by asphyxiation and the ants eventually consume

their prey. Large-jawed and blind, major soldier ants stand guard on the edge of the column ready to deliver a ferocious bite in defense of the colony. Several of the students, plus Marlin and Jeff, broadened their African experience by allowing a single soldier ant to drive her needle-like mandibles deep into a finger. All were



greatly impressed by the strength and pain delivered by such a small creature.

The students were given a written survey with a list of 25 animals at the beginning and end of the class and asked to rank the wildlife based on their pretrip expectations and post-trip observations. As might be expected, the charismatic mega-fauna scored high at the conclusion of the field trip with the elephant, giraffe, cheetah, lion, and hippopotamus ranked 1–5, respectively. The driver ant ranked dead last before the field trip, but it moved into the 22nd position at the end of the trip. One student noted with great appreciation the ant experience and honored the driver ant with a number one ranking, proudly stating, “It was the only one that made me bleed!” Better an ant than an elephant.



Marlin Rice and Jeff Bradshaw in northern Tanzania near Ol Doinyo Lengai (Mountain of God).



Insect Zoo Reaches New Heights

Angela Tague

The popularity of the Department of Entomology's Insect Zoo has continued to soar. From March to the end of 2005, the Insect Zoo presented more than 270 programs, reaching at least 13,000 patrons via one main presenter. Per presenter, this represents a 236% increase in programs given and a 177% increase in patrons contacted.

Many of the 2005 programs were repeat requests by teachers who now incorporate the zoo into their curriculum every year. There also continues to be a high demand for first-time classroom visits. In

addition, the zoo provides a popular educational display for large public events ranging from Learn-a-palooza to county fairs throughout the state. During 2005, presentations were made at the Science Center of Iowa, Ames Library, Bettendorf Family Museum, and the Ames Jaycees Haunted House (to name a few). Requests by nontraditional venues such as nursing homes also have been popular, proving learning can and should be a lifelong pursuit.

Geographically, the Insect Zoo reached border to border, making visits from Boone to Bettendorf, Coon Rapids to Cedar Rapids, Iowa City to Forest City, and Shenandoah to Maquoketa. The miles have accumulated, as well as the impact.

Establishing professional relationships both on and off campus has been another pursuit of the Insect Zoo. These newly forged relationships are helping to increase the zoo's colonies while strengthening future collaborations. On campus, the zoo is participating in the College of Agriculture's Science with Practice program, is a "client" for both Art and Design and Marketing practicum students, and is supporting a variety of independent study projects.

Looking forward to 2006, the Insect Zoo will continue to aid the citizens of Iowa in becoming more knowledgeable and interested in insects and their relatives and the role that they play in the environment by focusing on their agricultural, ecological, economical, social, and cultural impacts.



Angela Tague shows insects to children at the Science Center of Iowa. The Insect Zoo saw 600 patrons in just a few hours that day.

Did you know?

The website www.soybeanaphid.info was recently unveiled by the new Soybean Aphid Task Force at Iowa State University. This site is supported by the Corn/Soybean Initiative and the Department of Entomology. Matt O'Neal consolidates soybean aphid research and extension information produced at Iowa State University as well as linking the new site to relevant sites within the North Central region.



News from Alums

From Earle Douglas:

After receiving my M.S. in 1952, I entered veterinary school and then practiced in northwestern Iowa for 30 plus years. After retirement in 1987, I am now a Minnesotan living in Worthington, MN. So I have lost track with my fellow students from 1950 to 1952. In particular, I have been trying to locate H. C. Cox of about 1954.

Editor's note: If you have any information, please e-mail Bryony Bonning (bbonning@iastate.edu) who will forward the information.

From David Coyle:

After graduation in 2000, I worked for the USDA Forest Service in South Carolina. Our project focused on improving the productivity of forest plantations. After a 5-week road trip across the western United States, I settled in Madison, WI, where I've just started a Ph.D. in forest entomology under the guidance of Dr. Ken Raffa. I'll be examining the effects of root feeding by invasive weevils on tree growth and health. Fortunately, my field plots are near a lake in the Upper Peninsula of Michigan. I also got married to Tawnya Cary (B.S. in biology from ISU in 1998) on June 10, 2005, at Reiman Gardens in Ames.

Four Iowa Staters on ESA Governing Board

Marlin E. Rice

Four entomologists with ties to Iowa State University currently serve on the Governing Board of the Entomological Society of America (ESA). Three of these individuals are alumni from ISU. Kevin Steffey, on the faculty at the University of Illinois, is past president. He received his Ph.D. from ISU in 1979. Scott Hutchins, employed by Dow Agrosciences, is vice president elect and will serve as president during 2007. He received his Ph.D. for ISU in 1987. Mike Gray, also on the faculty at the University of Illinois, was the section E (extension) representative to the governing board but was recently elected into the presidency line and will serve as president during 2008. Mike received an M.S. in 1982 and Ph.D. in 1986 from ISU. Marlin Rice is on the faculty at ISU and is secretary-treasurer for the society. All four of these scientists also serve on the Executive Committee of the ESA.

The 16-member governing board consists of the elected officers and representatives that oversee the business affairs of the ESA subject to decisions on policy and actions by the membership. Congratulations to all four for "representing" ISU and their willingness to serve the largest professional society of entomologists.



ESA Governing Board members Mike Gray, Kevin Steffey, Scott Hutchins, and Marlin Rice.



Opportunities to Give: Department of Entomology Donations

With the ongoing budget constraints at Iowa State University, the Department of Entomology is increasingly dependent upon the generosity of alumni and friends. To support the department, please fill out this section and return it with your check or money order (made out to ISU Foundation) to the Department of Entomology, Iowa State University, 110 Insectary, Ames, IA 50011. Alternatively, donations can be made online at <https://sws.foundation.iastate.edu/give/online/> (please specify Entomology and the name of the account in the "Other" category).

My support this year is in the amount of _____

Please designate my gift to the area(s) in the amount(s) shown below:

- Entomology Alumni Scholarship for undergraduate scholarships
- Wayne A. Rowley Scholarship in Entomology for graduate and undergraduate scholarships with preference given to those with an interest in medical entomology
- Biosystematics Travel Fund for travel costs associated with biosystematics research
- Fred Clute Memorial Entomology Fund for general support for the Dept. of Entomology
- Entomology Memorial Fund for various expenses, including graduate student travel and awards
- Entomology General Account
- Other

For more information about these funds, please contact us at the departmental address above or call (515) 294-7400. For more information about other gift designations, please contact Richard Bundy, III, at (515) 294-9088 (rbundy@iastate.edu).

Keep in Touch!

Please let us know whether you have information to share with friends and alumni of the ISU Department of Entomology. Items could include job changes, honors and awards, and personal notes. Please direct information to Dr. Bryony Bonning, Department of Entomology, Iowa State University, 418 Science II, Ames, IA 50011-3222; Fax: (515) 294-5957; e-mail: bbonning@iastate.edu.

ISU Entomology Newsletter for Alumni and Friends is produced by the entomology faculty and staff at ISU. This newsletter and previous issues are online at <http://www.ent.iastate.edu/alumni>.

Visit our departmental Web site at <http://www.ent.iastate.edu>.

Mostly Entomological Auction, 2005

The Department of Entomology hosted the second and final online, e-Bay-style auction in November to raise funds for the Entomology Alumni Scholarship. There were 61 items in the auction, including the popular origami butterfly pictures, and a clock decorated with origami butterflies created by Patti Prasifka and the Entomology Graduate Student Organization. These items along with prints of hog and hen sketches fetched some of the highest prices and received the most bids. We had 47 bidders who placed 171 bids. The auction raised \$711 for the Entomology Alumni Scholarship, which has now reached endowment level.

Faculty and Staff Awards

Joel Coats received the Research Award of Merit from the Gamma Sigma Delta Agriculture Honor Society. This award is given annually to one faculty member within the College of Agriculture who has made exceptional contributions in helping Iowa State University achieve its mission in the area of research.

Jerry DeWitt received the 2005 Spencer Award for Sustainable Agriculture from the Leopold Center for Sustainable Agriculture.

Rich Pope received a plaque from the Iowa Certified Crop Advisory (CCA) Board of Directors in recognition of his dedicated service to the Iowa CCA program.

Student Awards

The 2005 Harold Stockdale Memorial Scholarships to freshman undergraduates were awarded to **Aaron Heit** and **Daniel Forbes**. These scholarships for \$500 each were awarded based on promise for a career in entomology.

Awards from Iowa State University

Gretchen Schultz received a Research Excellence Award this year at the M.S. level. This award

is given to the top 10% of graduate students for their research accomplishments. Gretchen conducted research in the laboratory of Dr. Joel Coats. In addition, **Sandhya Boyapalle** received a Research Excellence Award through the Interdepartmental Microbiology Program. Sandhya graduated with a Ph.D. from the laboratory of Dr. Bryony Bonning.

Betsy Matos received a 2005 Teaching Excellence Award through the Department of Horticulture. These awards recognize the top 10% of graduate student teaching assistants.

Other Awards

Keri Henderson, a student in the laboratory of Dr. Joel Coats, received a U.S. EPA STAR (Science to Achieve Results) Fellowship for the duration of her Ph.D. program. The purpose of the fellowship program is to encourage promising students to obtain advanced degrees and pursue careers in an environmental field. Keri also won the Best Student Presentation at the regional meeting of the Society of Environmental Toxicology and Chemistry.

Gretchen Schultz won a President's prize award for the Best Student Paper (M.S. level) at the

Pedigo Honored by ESA

Marlin Rice

Larry Pedigo, University Professor Emeritus, was recently elected a Fellow of the Entomological Society of America. The designation of Fellow recognizes individuals who have made outstanding contributions to entomology. It is the highest honor bestowed by the Society.

For 30 years, Larry has been a national leader in integrated pest management (IPM). He has led the development and use of economic injury levels (EILs). His approach to establishing them has been the primary method used in the United States and abroad. Many major books and Web sites on pest management use his equation $EIL = C/VDIK$.

In addition to his IPM expertise, he was an early leader in sampling methodologies for agricultural pests. A major reference is the Handbook of Sampling Methods for Arthropods in Agriculture (1994),

which he and a former student, David Buntin (Ph.D. 1984) edited. He has published more than 160 refereed papers.

Larry earned his M.S. (1965) and Ph.D. (1967) in entomology from Purdue University.

In 1967, he became an assistant professor at Iowa State University, where he retired in 2001 as a university professor. At the university, he founded and directed a secondary major in pest management and designed and taught six new courses in entomology, pest management, and zoology. He has taught more than 2,000 undergraduates in Fundamentals of Entomology and Pest Management, and wrote the textbook and coauthored the laboratory manual for the course.

Larry's influence on entomology continues beyond his retirement.

North Central Branch of the Entomological Society of America (NCB-ESA) annual meeting.

Ashley Jessick, a summer intern in the Program for Women in Science and Engineering in the laboratory of Dr. Joel Coats, received second place in the

student poster competition at the regional meeting of Environmental Toxicology and Chemistry.

Patti Prasifka won a President's prize (runner-up) in the student research presentation (Ph.D. level) at the annual meeting of the NCB ESA.

Student Awards

The 2005 Department of Entomology Herbert Osborn Awardees for Professional Performance were **Gretchen Schultz** (M.S. category) (right) and **Jeff Bradshaw** (Ph.D. category) (pictured on page 14). Gretchen conducted research with Dr. Joel Coats and Jeff conducted research with Dr. Marlin Rice.

Matt Petersen (below at right) received the Department of Entomology Henry and Sylvia Richardson Research Incentive Grant for 2005. Matt received \$2,500 for research costs associated with the project entitled "A Survey of the Crane Flies (Diptera: Tipuloidea) of Madagascar." Students write research proposals to compete for this grant. Matt will use the funds toward a collecting trip to Madagascar in 2006. Matt is a Ph.D. student in the laboratory of Dr. Greg Courtney.



Gretchen Schultz with her Research Excellence Award.



Vladimir Blagoderov, Rebecca Brown and Matt Petersen at McKenzie Pass in the Cascade Range during the 2005 meeting of the North American Dipterists Society. Greg Courtney hosted the meeting at Malheur Field Station in southeastern Oregon. This year's meeting focused on collecting Diptera from the northern Great Basin and surrounding area, including Malheur National Wildlife Refuge, Steens Mountain, and the Alvord Basin.



World Swim for Malaria: Ames Chapter



On December 10, 2005, Nina Richtman (right), Patti Prasifka (second from right), and Bryony Bonning (second from left) joined Eve Wurtele (Professor, Department of Genetics, Development and Cell Biology) (left) and Barb Wheelock (Physical Therapist, McFarland Clinic) (center) to participate in the World Swim for Malaria to raise funds for permethrin-treated bed nets for use in Africa. The use of bed nets is the most effective way to prevent malaria transmission. Between the five participants, they swam more

than 7 miles and raised \$2,500, the bed net equivalent of saving the lives of 25 children. For more information about this fundraising effort, which will continue until June 2006, please see <http://www.worldswimformalaria.com/>.

Alumni Attend Coyle Wedding

Entomologists at the Coyle wedding (see News from Alums, page 16). Left to right: Betsy Matos-Carrion, postdoctoral research associate, ISU; Rachel Binning, Pioneer Corp., Johnston, IA; Laura Jesse, Ph.D. student, ISU; Matt Murphy, Ph.D. student, University of Iowa; Cloti Tate, Research Scientist, USDA-ARS, Tifton, GA; Dave Coyle, Ph.D. student, University of Wisconsin-Madison; Justin Grodnitzky, postdoctoral research associate, National Institutes of Health, Bethesda, MD; and Andy Alverson, Ph.D. student, University of Texas.

