



Reiman Butterfly Wing Takes Flight

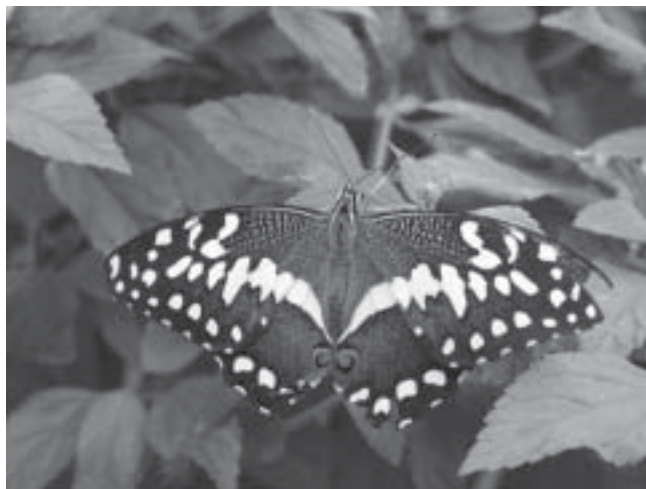
Entomology recently took flight at ISU in the Christina Reiman Butterfly Wing, part of the newly opened Conservatory Complex at the Reiman Gardens. This 2,500-sq ft glass-enclosed space contains 800–1,000 individual butterflies from more than 50 species. The exhibited species are both native to the United States and exotic, arriving in weekly shipments from all over the world. The butterflies arrive as chrysalides and are displayed in three, side-by-side, custom-designed emergence chambers (Percival-Scientific). The great diversity in form and coloration among the various pupae can be observed as well as the emergence of the adults. Visitors to the Gardens are fascinated as they stand in front of the emergence cases and watch a newly eclosed individual expand its crumpled wings and take shape as a beautiful adult.

Butterflies are transferred from the emergence cases to the Wing where they spend their lives in flight, delighting visitors from infants to retirees.

The colors on the wings of the various species are extremely rich and visitors continue to comment that photos don't do them justice; one must see them live.

The butterflies are provided an abundance of flowering plants as well as artificial nectar.

Continued on page 3



The Reiman Gardens Conservatory Complex houses about 1,000 butterflies. The unique architecture of the Butterfly Wing is a new landmark at Iowa State.



Inside:

West Nile Virus	4
Web courses	5
Woody Hart retires	6
Elliot Krafstur retires, sort of ...	7
Insect Zoo	8
Faculty activities ..	9
Alumni News	12
Awards	13
Sumerford joins Corn Insects Unit	13
Photos from ISU mixer at ESA meeting	15
Alumni Visits	16
Scholarships	16

New Writing Course Gets Word Out about Science



Julie Todd, technical editor for ISU Extension Entomology's Pest Management and the Environment Program, is teaching a new Special Topics in Research course (Ent 590E) this spring, subtitled *Communications in Biological Sciences*.

This graduate level course introduces future faculty, professional staff, and communications specialists to writing skills and resources needed to convey science information to both technical
Continued on page 2



Writing Course, continued from page 1

and nontechnical audiences. Multimedia routes of information transfer are highlighted, including newspaper and radio, extension materials, peer-reviewed journals, and the Web. English, entomology, agronomy, genetics, microbiology, and veterinary medicine students are taking the course, which was full soon after it was announced.

Julie also gets the word out about science outside of the classroom. Since 1997, she has worked with ISU faculty, staff, and extension communications specialists to produce educational materials on pesticide use and safety and integrated pest management. In addition, Julie travels nationwide to present seminars and workshops on science writing, and she edits pharmacology journals (400 pages weekly),

entomology and medical/veterinary books (one or two per year), and presubmitted manuscripts, proceedings, and theses through her freelance business, *Technically Correct Scientific Editing Services*, which she started in 1995. Julie was an editor for *Journal of Agricultural and Urban Entomology* for 7 years (1995–2002) and has been an editor for *Journal of Economic Entomology* since 1996.

Julie is a self-trained editor with a formal education in biological sciences. She has a B.S. in biology and an M.S. in ecology, both from Kent State University, and a Ph.D. in entomology from The Ohio State University.

Message from the Chair

As 2002 draws to a close, I am reflecting on the exciting year we've had in the Department of Entomology. We had another round of budget cuts, but we remain enthusiastic about our programs and optimistic about our future. We had our Comprehensive Review earlier this year, and our teaching, extension, and research programs received very high marks. Our department has highly capable and dedicated faculty and staff, as well as an impressive group of talented and diligent graduate students, who contribute in many ways, including inviting, sponsoring, and hosting two seminar speakers this year. Our undergraduate majors have also shown a lot of energy and creativity, especially in their Insect Horror Film Festival each fall and the VEISHEA display each spring; the Insect Zoo ably assists in both events.



Two new facilities have been constructed and are now being used. The Christine Reiman Butterfly Wing is a breathtaking all-glass structure that is the "jewel of the Reiman Gardens." It is a 2,500-sq ft butterfly flight house, with tropical plants, a water feature, and 800–1000 magnificent butterflies, mostly from the tropics and subtropics, featuring 50–80 different species at any given time. Under Greg Courtney's guidance, Mary Harris, Curator of the Butterfly Wing, has developed a spectacular experience in lepidopteran beauty and biodiversity, with

permits for more species than any other butterfly house in the United States. Nathan Brockman, an alumnus of our undergraduate program, is the rearing specialist for the Butterfly Wing.

Our other new structure can't be called breathtaking, but it's practical and valuable: the addition to the Insectary greenhouse has been built to replace the old (1929) screenhouse attached to the greenhouse. It currently functions as a headhouse for the greenhouse, rearing/quarantine facility, and has a large storage area; it also houses many of our incubators and freezers.

In 2001, we dealt with the retirements of Larry Pedigo and Woody Hart, two long-time stalwarts of our faculty. This year, Elliot Krafur retired. We have started the search process to hire a teacher/researcher who will have responsibilities similar to those of Larry Pedigo. We're looking forward to a new faculty member in the summer. Two new entomologists have been hired this year by the USDA–ARS unit: Doug Sumerford and Tom Sappington are providing additional insect expertise to our nucleus of entomology on Pammel Drive.

We have had visits this year by several distinguished alumni. We always appreciate the opportunity to catch up on the news with our alums and we enjoy sharing our department's current events. Come see us if you have a chance or at least drop us a letter or an e-mail message to tell us what's going on in your life. Best wishes for the New Year.

Joel Coats, Chair



Butterfly Wing, continued from page 1

Bananas, melons, and other fermenting fruits are available for species that prefer such fare. In addition to nectar plants, the Butterfly Wing houses a variety of lush tropical plants on which the butterflies perch and roost.

Months of planning and preparation went into making the butterfly exhibit a success. Mary Harris joined the department as Curator of the Butterfly Wing in January 2002 to oversee the completion of construction and subsequent operation. Harris, an entomologist specializing in biological control of floricultural pests, completed her doctorate at the University of Georgia, masters in IPM from the University of California at Riverside, and bachelors in biology from UCLA. Her research area combined with experience coordinating seasonal butterfly exhibits made her ideal for the newly created position of curator.

One of the first tasks Harris undertook was to develop the permit application for the USDA-APHIS Plant Protection and Quarantine office. The Christina Reiman Butterfly Wing can boast the most extensive species list ever submitted and approved by APHIS. Harris was busy before the November 3 opening overseeing the interior landscape design and plant selection for the Butterfly Wing, developing the display window and emergence cases, selecting butterfly breeders to supply chrysalids, surveying other exhibits for interiorscape pest control methods, and arranging numerous public speaking engagements.

More than 7,000 visitors have passed through the Butterfly Wing during its initial month of operation, and the exhibit is becoming a “must see” destination when visiting Ames.

If you happen to visit the Christina Reiman Butterfly Wing around 10:30 AM., you likely will meet Nathan Brockman. He may be releasing emerald swallowtails, flying handkerchiefs, and scarlet



Mary Harris, curator, and Nathan Brockman, insect rearing specialist, with a wide assortment of pupae.

mormons—all exotic butterflies that emerged from their chrysalids a few hours earlier. Nathan is the Gardens’ insect rearing specialist, overseeing the handling of the chrysalids received from around the world. Teresa McLaughlin, director of Reiman Gardens, observes that Nathan is “one of the few people she has met who really loves his job.”

Nathan has been a budding entomologist since age 6 and says he still has specimens he collected at that time. At age 10, with the assistance of his grandmother, he set up his new ant farm.

As Nathan attended junior high and high school he progressed through keeping bees and crickets as pets, to preying mantids and hissing cockroaches. He decided that the ISU Entomology program was ideal for him and became the sole freshman undergraduate entomology major when he entered ISU in 1996. His first entomology course was Introduction to Entomology with John Obrycki. How did Nathan like it? “Oh, I had a ball!” During his junior and senior years Nathan began working in the department’s Insect Zoo. Eventually, Nathan was overseeing all of the insect cultures that comprise the zoo, stepping in full-time upon graduation in 2000.

Nathan started as the rearing specialist for Reiman Gardens in January 2002. Experience, enthusiasm, and a gregarious nature result in Nathan being extremely well suited for his current position. When recently asked which aspect of his job he liked the most, he replied that he “gets to play with insects all day.”

Did you know?

The first U.S. courses in insect physiology and insect population management were taught at Iowa State University.



As the Crow Flies: The Spread of West Nile Virus

Iowa currently ranks 10th in the nation in the number of human cases of West Nile virus (WNV) per 100,000 people. Wayne Rowley's laboratory here at ISU is currently conducting research on various aspects of WNV.

WNV swept across the United States in 2001 and 2002 like an out-of-control brush fire. The first West Nile virus isolate in Iowa came from a dead crow collected in Walcott (Scott County) on September 10, 2001, just 1 day before the infamous 9/11 terrorist attack. Iowa was the only state west of the Mississippi to report WNV activity in 2001. The virus was again found in a dead crow in Scott County the week of July 13, 2002. Once the virus began to move across the state, it did so with unprecedented speed. No arthropod-borne disease has ever exploded in an epidemic and epizootic with the speed WNV did last summer. Six weeks after the first positive crow, all but a few counties had recorded positive birds.

Nationwide, the virus was reported in all of the lower 48 states, except for five Rocky Mountain states, by mid-October. At last count, the Centers for Disease Control (CDC) was reporting more than 3,500 human cases with 199 deaths.

Every county in Iowa reported WNV activity in

2002. There were 1,039 cases in horses. The Iowa Department of Agriculture estimated that about 50% of all equine cases resulted in death or euthanasia. (Nationwide, mortality rate in horses in 2001 was 32.9%.) There were 50 human cases and two deaths in Iowa. The CDC estimates that less than 1 in every 150 people bitten by an infected mosquito develops a clinical case of WNV. The 50 cases in Iowa may not seem like a lot, but if there were 150 cases for every laboratory case, then there were 7,500 people in Iowa who were bitten by an infected mosquito.

Rowley and his students and postdocs found WNV in a pool of *Ochlerotatus (Aedes) trivittatus* collected in an urban neighborhood in Waterloo on August 8. Rowley's group also found pools of *Culex pipiens* and *Culex tarsalis* infected with WNV in Scott, Carroll, Sioux, and Woodbury counties. In addition, 9 of 11 sentinel chicken flocks seroconverted for WNV with a total of 31 of 100 birds becoming positive. One in every 80 *C. pipiens* mosquitoes collected in Carroll County on September 15 was positive for WNV. Both of the human deaths occurred in individuals who lived within a

short distance of where these mosquitoes were collected in Carroll County.

Iowa's *Culex* mosquito populations were at or near an all-time low. Extremely dry weather in fall 2001 resulted in few overwintering *Culex* females, and an unusually dry and cool May and June kept the few mosquitoes that did overwinter from producing large numbers of mosquitoes in June and July. In contrast, parts of Illinois had record numbers of mosquitoes and hundreds of cases of WNV.

Rowley's medical entomology laboratory has several projects underway to evaluate the vector potential of *Ochlerotatus*, *Culex*, and *Aedes* species. Rowley's group is also examining the role of nonavian hosts for WNV, such as swine, cottontail rabbits, and deer mice, in the natural history of this virus. Grants from the CDC and the Iowa Department of Public Health support this research.



Wayne Rowley conducts research on West Nile Virus.

Did you know?

The department has had the highest number of refereed journal publications per research full-time employee (FTE) per year for any department within the College of Agriculture. Mean number per faculty per year for the period 1999–2000 was 3.0.



Web Courses Allow Eating in Class

“You may eat during class—just try not to get the keyboard greasy,” advises a page from one of two Web-based distance education courses the department now offers.

Aimed primarily at undergraduate nonmajors, Introduction to Insects (Ent 201) debuted in spring 1999 with 10 students as an experimental course. John Obrycki and John VanDyk, who developed the course, intended it as a broad overview of entomology for students who had little background in the biological sciences. “If there’s one take-home message from this course, it’s that not all insects are bad,” said VanDyk. “Most students come into the course with the attitude that insects are inherently bad and icky. We try to change that.”

Since its initial offering, the course has grown

consistently to an enrollment of 58 students in fall 2002. It is offered every semester and once in summer.

Obrycki and VanDyk teamed up again in fall 2002, when they offered a Web-based version of Insects and Society (Ent 211) for the first time. The course covers the relationship between humans and insects with a historical perspective and includes a section on forensic entomology.

The interactions among class members take place on an electronic bulletin board where everyone can read and respond to comments on issues covered in class, such as GMOs, integrated pest management, and West Nile virus. Reference materials are available electronically using the ISU library’s e-Reserve program.

Courtney Leads Field Trip to Pacific Northwest

In August, Dr. Greg Courtney led a group of 13 students on an ecology and evolutionary biology field trip to the Pacific Northwest. Participants included entomology graduate student Laura Jesse, graduate students from the Departments of Agronomy, Animal Ecology, Botany, Forestry, and Zoology/Genetics, and Dr. John Nason, Department of Botany.

The interests of the group were diverse and included aquatic biology (freshwater and marine), botany, entomology, forestry, geology, herpetology, ornithology, and mammalogy. The course focused on

the landforms, geology, flora, and fauna of the Pacific Northwest, with emphasis on the northern Great Basin (southeastern Oregon), Oregon’s Cascade Range, and the central Oregon coast. Pretrip meetings during spring semester provided an opportunity for class discussions about Pleistocene geology, ancient forests, invasive species, coastal fisheries, intertidal zonation, and other topics relevant to the Pacific Northwest.

The trip itself was during the first 2 weeks of August, an ideal time for seeing the high desert, alpine mountains, temperate rainforest, marine intertidal systems, and other habitats. The itinerary had the group reaching the northern Great Basin in 2 days, after an overnight stop in Wyoming’s Snowy Mountains. Great Basin destinations included Steens Mountain, Malheur Wildlife Refuge, and the Alvord Desert. After the xeric scenes of the Great Basin, the group traveled farther west to the Cascade Range. Among the area’s highlights were Newberry National Volcanic Monument, Crater Lake National Park, Three Sisters Wilderness, and H.J. Andrews Experimental Forest. They then continued to the Oregon coast and Hatfield Marine Science Center, which was the base for trips to marine intertidal areas, bird rookeries, and other coastal features.



Students search for aquatic and riparian creatures on Steens Mountain, Big Indian Gorge, Oregon.



Elwood Roy “Woody” Hart Retires

by Harold S. “Sande” McNabb, Jr., Emeritus University Professor of Forestry and Plant Pathology

Dr. Elwood R. “Woody” Hart was born in 1938 in northeastern Iowa. After graduating in biology from Cornell College in Mount Vernon, Iowa, he taught science in secondary schools in Manchester and Cedar Rapids for 5 years, with a year in between schools to earn a masters degree in science education at Texas A&M University. Texas lured him back when he returned to College Station for further graduate studies in entomology. He completed his Ph.D. with a dissertation in systematic entomology in 1972. During this period he studied in Costa Rica, Europe, and had two summers in Mexico. His postdoctoral research the following 2 years, also at Texas A&M University, was on the southern pine beetle in east Texas, with this research being his introduction into forest pest management.

Woody arrived in Ames in fall 1974 to begin an assistant professor of entomology position with teaching responsibilities in introductory entomology, insect morphology, and a general education course on insects. He also had advising responsibilities with committee assignments related to curriculum development and advising. I met Woody during the next year when I approached him concerning the possibility of a two-quarter sequence of courses in forest pest management where he and I would lead a truly cooperative, integrated teaching endeavor. Although he knew that his “plate was already full,” he did not want to lose his interests in forest pest management or his contacts with students interested in tree-related problems. Our initial course was taught during winter quarter, 1976–1977. My sincere thanks go to Woody for tolerating a forest pathologist and sharing an educational philosophy that has enabled two very different people to teach and share

a glorious experience together for 22 years. Since I retired, this shared experience has been greatly missed.

During the years we taught together, we both received national recognition from our respective professional societies for our efforts. When we began the semester schedule, Woody joined me in helping Dr. Mon-lin Kuo in presenting the Wood Preservation and Deterioration course to wood products students. In 1993, Woody received the Louis M. Thompson Award for Scholarly Achievement in Teaching from the College of Agriculture, both for

his teaching excellence and his leadership in designing and implementing new college communication requirements. In addition to the many hours that Woody spent with students, he developed an outstanding research program that included the mentoring of numerous graduate students to their M.S. and Ph.D. degrees. Within a few years, he became associated with the woody biomass for energy program with alders and poplars, becoming the world author-

ity on the cottonwood leaf beetle, *Chrysomela scripta* E., by the time he retired January 31, 2002. He was a member of the research team that made the world's first field planting in July 1989 of a genetically engineered woody plant, their transformed poplar selection with the potato proteinase inhibitor II gene. Although cooperating fully within the woody biomass group, Woody also formally became a member of the forestry faculty as professor of forestry in 1989. Woody has represented our research group nationally and internationally at many conferences, seminars, and meetings.



Woody at his retirement in March 2002 with the Forestry Faculty plaque and the Margaret Ellen White Graduate Faculty Award.

Continued on page 7



Woody, continued from page 6

From his research on urban tree problems, he became one of the leaders in the development of the plant health concept for urban landscapes by adapting and expanding the integrated pest management approaches used in forestry. For 6 months in 1985, Woody spent his faculty improvement leave at the University of California, Berkeley, evaluating urban elm stands for release of introduced parasites of the elm leaf beetle.

During the past few years Woody has worked closely with the Department of Natural Resources to upgrade the forest pest surveys and increase training of field personnel in problem diagnoses and solving. His consulting efforts with this state agency will leave an additional legacy for Iowa's landscape.

I must not finish these written words about a dear friend and colleague without mentioning his favorite hobby, collecting old motorcycles and reconstructing them. Oh, yes, he rides them, too, as any student or faculty member knows from his stories! With their new home, he now has the space to really be that motorcycle mechanic. When not enjoying this hobby in Ames, Woody and Nancy will be enjoying their four sons and their wives, four grandsons, and four granddaughters in Ames and throughout these United States. Woody—daily, we will miss your humor, your help and concern for others, your practical approach to problems, your motorcycle stories, and just you. Thanks for returning to Iowa over 27 years ago. You have made our lives and thousands of others much richer than they would have been otherwise.

Krafsur Retired...and Rehired

Elliot Krafsur, Professor of Entomology, retired from the department on August 1, 2002, after 26 years of service. Elliot has published more than 120 papers on insect genetics, demography, and medical and veterinary entomology. Two of these publications were printed in *Nature*. Elliot's most recent research dealt with the ecological genetics, breeding structures, and reproductive biologies of Diptera and Coleoptera, including genetic methods of population suppression involving both national and international collaborations. He received funding from U.S. Department of Agriculture and the National Institutes of Health to support his research, and indeed retired in a blaze of glory, having been awarded a \$1.4 million grant from the National Institutes of Health last September. This funding will be dedicated to study of tsetse flies in Africa in collaboration with Oxford University, United Kingdom, and the University of Stellenbosch, South Africa. Hence, having moved to West Virginia, Elliot will be temporarily rehired in the spring as an affiliate professor for this project.



After receiving his B.S. and M.S. degrees from University of Maryland, Elliot served as Insect Physiologist for the U.S. Army Biological Laborato-

ries, Ft. Detrick, from 1964 to 1967, and then as Medical Entomologist/Parasitologist for the U.S. Naval Medical Research Unit in Ethiopia, where he worked on malaria epidemiology and *Anopheles* bionomics. In 1969, Elliot received a National Science Foundation fellowship to work with Dr. George Davidson at the London School of Hygiene and Tropical Medicine, University of London, and pursued his Ph.D. on *Anopheles* mosquito cytogenetics. He moved to the University of Oxford in 1972 where he studied the epidemiology of lymphatic filariasis in Tanzania as a Wellcome Trust Research Fellow. From 1974 to 1976, he worked for the U.S. Department of Agriculture on the screwworm eradication program in Mexico and Texas, and he continued to serve as consultant for screwworm and Mediterranean fruit fly eradication programs in subsequent years.

During the course of his career, Elliot has (thus far) trained 10 graduate students, 2 postdoctoral researchers, and numerous undergraduate students, all of which have played an important role in his research program. He taught insect genetics, morphology and evolution, and aquatic entomology at the graduate level, and general entomology at the

Continued on page 8



What's New with the Insect Zoo?

Mark 2002 as another successful year for the Department of Entomology's Insect Zoo, which reached 80,000 people, averaging 6,600 per month. Specifically, more than 3,000 visitors at VEISHEA and more than 28,000 at the Farm Progress Show in Alleman, IA, visited the Insect Zoo display.

The zoo's largest audience continues to be elementary and secondary school groups located statewide. The zoo also has worked in cooperation with a number of organizations such as Reiman Gardens, the Science Center of Iowa, Blank Park Zoo, the Des Moines Botanical Center, University of Northern Iowa museums, and the state Boy Scout organization.

In October, the Insect Zoo hosted the first "Halloween Trek Through the Trees," which is destined to become an annual event. It was a great time for everyone who braved the snow and rain. The theme was "An Insect Safari" and the children loved stalking the gigantic critters through the woods before visiting the indoor display. Volunteers did a great job with the kids and were happy to work for cookies and cocoa. The zoo staff appreciated the cooperation of the Ames Izaak Walton League and the many volunteers who helped with the hike.

The Insect Zoo also has initiated various cost recovery methods, which have become particularly important with recent economic cutbacks. Due to program and display revenue, the Insect Zoo has been able to defray at least some travel and insect care costs. These funds—and the continuing support of the Department of Entomology and Iowa State University—have allowed the zoo to develop new and innovative programs and displays for students, educators, and the public. With the recent opening of the Christina Reiman Butterfly Wing at Reiman Gardens, the Insect Zoo looks forward to establishing cooperative efforts to further enhance educational

Krafsur, continued from page 7

undergraduate level. In addition to contributions that Elliot has made in both teaching and research, Elliot will be missed for his breadth of knowledge and his wry sense of humor. In West Virginia, he will be closer to his son Edwin, and will no doubt have more time to indulge his passions for classical guitar, lute, gardening, model building, the Potomac (fishing), and the history of the area.



The Insect Zoo was on hand to give youngsters close encounters with insects at the Farm Progress Show.

and outreach programs. Because of the popularity and interest in both Reiman Gardens and the Insect Zoo, there is potential to develop graduate and undergraduate curricula in insect husbandry and outreach.

If alumni are interested in touring the Insect Zoo, or in volunteering at displays and programs, please contact Nanette Heginger, Insect Zoo coordinator, by e-mail at insectzoo@iastate.edu.

We're hiring!

The department is poised for growth and we're looking for a few good people.

A search process is underway in the department for three new faculty members, including a biocontrol entomologist, a chemical ecologist and a soybean entomologist.



A Selection of Current Faculty Activities within the Department

Jeffrey K. Beetham (Assistant Professor)

Many diseases of humans and animals are transmitted by the bite of an infected insect. Important among these insect-vector diseases are those caused by protozoan parasites. These parasites are single celled and are much more similar genetically, biochemically, and evolutionarily to the higher organisms that they infect than they are to other microbes such as bacteria and viruses. This similarity increases the difficulty in finding methods to prevent or treat the protozoan-caused diseases.

Work in my laboratory focuses on the protozoan parasite *Leishmania*. This parasite infects mammals and other vertebrates, causing a collection of diseases that vary in severity from the self-healing to the potentially fatal. One research focus is on how the parasite survives the vertebrate immune response that arises immediately upon entry of the parasite into the animal. Another focus is to understand how the parasite is able to

reduce or increase the presence of specific proteins at times when the parasite is ready to infect an animal. One expectation is that systems by which *Leishmania* survive the immune responses of the host, or that allow regulated expression of specific proteins, have potential utility in new disease prevention strategies. Another expectation is that the understanding gained from these studies will extend to related protozoa that are responsible for a wide range of diseases in mammals and other vertebrates as well as in plants.

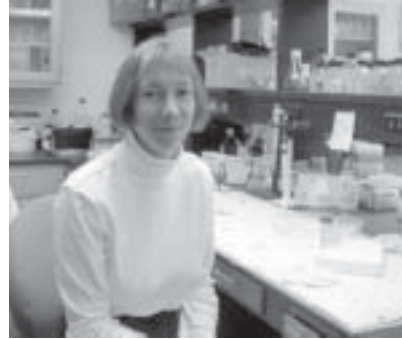


Bryony Bonning (Associate Professor)

The goal of Bonning's research program is to identify novel approaches to insect pest control. Current projects include development of aphid-resistant transgenic plants and optimization of

recombinant baculovirus insecticides for control of lepidopteran pests.

Baculoviruses are arthropod-specific viruses that have been studied extensively both as protein expression vectors and as insect pest control agents. Baculoviruses are being developed as environmentally benign alternatives to chemical pesticides for management of



certain insect pests. To enhance their insecticidal efficacy, baculoviruses have been genetically engineered with genes encoding insect-specific toxins that are active within the hemocoel of the insect. On infection of the insect host, the toxin is produced as the virus replicates, and the infected insect dies from the effects of the toxin delivered by the virus. Research in the Bonning laboratory includes genetic modification to enhance both host range and insecticidal properties of baculoviruses, and risk assessment of the engineered baculoviruses.

Another area of emphasis deals with investigation of juvenile hormone esterase (JHE) binding proteins. JHE helps to regulate the titer of juvenile hormone and, hence, larval development in insects. JHE is cleared from the hemolymph by athrocytes via receptor-mediated endocytosis and is degraded in lysosomes. The Bonning laboratory uses both the tobacco hornworm, *Manduca sexta*, and the vinegar fly, *Drosophila melanogaster*, as model systems for the study of JHE binding proteins. Disruption of the intracellular trafficking of JHE has potential as a novel insecticidal approach.

Joel Coats (Professor)

The Coats toxicology laboratory focuses its research program in two main areas: plant-derived insecticides and insect repellents, and environmental fate and effects of pesticides. Studies on the natural



A Selection of Current Faculty Activities within the Department, cont.

products have included monoterpenes, sesquiterpenes, glucosinolates, cyanohydrins, and isoflavonoids. Research projects address toxic mode of action, selectivity, spectrum of activity, quantitative structure–activity relationships, and insect repellency. In the environmental fate and effects group, much of the work is related to phytoremediation of pesticide residues in soil and water. New topics include environmental fate and effects of Bt toxin and veterinary antibiotics in soil and water.

Greg Courtney (Associate Professor)

Research in the Courtney laboratory is focused on aquatic entomology, insect systematics, and arthropod biodiversity. Most projects are aimed at describing arthropod biodiversity and elucidating phylogenetic relationships of insects, with emphasis on Diptera; morphology, phylogeny, biogeography, and historical ecology of aquatic insects; and phylogenetic congruence of different character data (larval, adult, chromosomal, molecular, and ecological). Research on aquatic insects is focused on morphological and ecological adaptations of insects in unusual habitats (torrential streams, subterranean waters, and plant-held aquatic habitats); mechanisms of reproductive or ecological isolation in aquatic insects; the structure and function of aquatic insect communities; and use of aquatic insects as indicators of water quality. The Americas and South- and Southeast Asia (especially Nepal and Thailand) are geographical focal areas for several current projects including a multiyear survey of aquatic insects in northern Thailand, a biologically threatened area in the Indo-Burma “Hotspot.” Other Courtney projects include supervision of ISU’s Insect Zoo and Reiman Garden’s new Butterfly Wing, which includes initiation of a graduate program focusing on insect husbandry and the effective use of arthropods in educational programs.



Kenneth H. Holscher (Associate Professor)

Holscher has responsibility for the development of extension education programs pertaining to livestock

and poultry pest management, public health pest management, and stored grain pest management. Holscher also provides major assistance in support of extension education programs related to urban pest management, youth and 4-H entomology, the Insect Diagnostic Clinic, the Certified Crop Adviser program, and both commercial and private pesticide applicator certification training. Information is disseminated through individual clientele contacts and through presentations at meetings, workshops, conferences and field days, live video conferences, preproduced videotapes, live and preproduced radio and television tapes, extension fact sheets, training manuals, newsletter articles, and popular articles and other newsprint media. In addition, Holscher has responsibility for organizing and conducting Iowa Agricultural Aviation Association Fly-In Clinics to help improve the accuracy and efficiency of aerially applied pesticides and reduce their potential movement into nontarget areas. Holscher is responsible for teaching Insects and Society (Ent 211); Livestock



Entomology (Ent 212); Pesticide Applicator Certification (Ent 283); Livestock Entomology (Ent 372); Workshop on Insect Management (Ent 493); Special Topics (Medical and

Veterinary Entomology) (Ent 590F); and Special Topics (Extension Internship) (Ent 590L). These courses have been designed for both traditional on-campus students as well as off-campus students enrolled in distance education programs.

Russell Jurenka (Associate Professor)

The Jurenka laboratory is involved in the study of pheromone production by female moths. Two main areas of focus include identification of how female moths produce the pheromone and hormonal regulation of pheromone production. In the last year, Jurenka and his students have identified how the gypsy moth produces its pheromone, in collaboration with researchers in Bulgaria and Spain. The gypsy moth is an introduced species in North America that is slowly spreading from the introduction site in



A Selection of Current Faculty Activities within the Department, cont.

Massachusetts and is currently established in Wisconsin and Illinois. The Jurenka laboratory is studying the gypsy moth in hopes of finding ways of



interfering with pheromone production so females cannot attract males for mating. Future research will determine the enzymes that produce the pheromone so that these enzymes can be used to produce chemically pure compounds for mating disruption and monitoring programs. The other major

project is to identify the receptor on pheromone gland cells that binds the peptide hormone that stimulates pheromone production. Jurenka's laboratory has determined that a putative receptor is present in pheromone glands but research is needed to demonstrate that this is indeed the correct receptor. This work may lead to ways of disrupting pheromone production in female moths so that they cannot attract a male and will thus lay infertile eggs.

Elliot Krafur (Professor)

The big news from Krafur's medical-veterinary research spectrum is a substantial National Institutes of Health award to study the ecology, genetics, and physiology of insect vectors. Universities of Oxford and Stellenbosch are subcontractors. The vectors to be studied are tsetse flies, which are not present in the New World, but are confined to sub-Saharan Africa. This research might not sit well with the "boss," the Iowa taxpayer, but the project pays for itself in "overhead" and salaries; therefore, there is no net cost to the state. Indeed, there's a dollar or two profit.

There are three projects currently running in the Krafur laboratory. The emphasis is on tsetse fly and house fly population and evolutionary genetics. Ph.D. student Johnson Odera is doing the tsetse fly work, and M.S. student Matt Cummings is handling the house flies. Many of the "old guys" will remember doing the white can traps, scoring face fly, stable fly, and house fly numbers. Well, that sampling scheme was concluded at the end of 2001 and the

gargantuan pile of data is now under analysis. It's got to be one of the longest time series of population data in existence and will reveal much about regulation of natural fly populations.

Marlin E. Rice (Professor)

Rice has an extension and research appointment. Extension efforts focus on the presentation of applied pest management information at the annual



Integrated Crop Management Conference, Iowa Crop Advantage Series, and Ag Chem Dealer meetings. Rice is executive editor of the *Integrated Crop Management* newsletter, which is published in both print and electronic formats. He works closely with Julie Todd and John VanDyk to get the 25 issues published yearly. The Web version of the newsletter has annually increased in popularity and during 2001 received 1,013,012 page views.

Research efforts center on ecology and management of the bean leaf beetle and bean pod mottle virus problem in soybean. Rayda Krell (co-advised with Larry Pedigo) recently completed her Ph.D. on this topic, and Jeffrey Bradshaw, a first-year doctoral student, is continuing research in this arena. Royce Bitzer, a postdoc, is researching the biodiversity and abundance of Collembola in transgenic Cry3Bb1 rootworm corn.

In May, Rice was the academic advisor to 20 Iowa State undergraduate students on a 3-week International Field Trip in Biology to Kenya and Tanzania. Images and a short movie can be viewed at <http://www.ent.iastate.edu/kenyafieldtrip/>

Rice is currently serving the second year of a 3-year term as the Entomological Society of America representative to Section E (Extension). At the annual meeting in Ft. Lauderdale, Rice was elected by the Governing Board to serve on the Executive Committee. He also is the Linnaean Games gamesmaster for the ESA North Central Branch.



News from Alums

From Earle S. Raun

I not only received my Ph.D. at ISU but also was on the staff for 18 years, before moving to Nebraska. While at ISU, Harry Stockdale and Les Lewis worked with me as students. I still go on the annual fall fishing trip in late September (which is now in its 43rd year) with Harry, Dick Wilson, and former ISU students or staff Roger Didrickson, John Robinson, Bill Showers, Bob Moorman, Gary Reed, and John Campbell. (This annual fishing trip is a function of the USDA corn insects laboratory.)

I resigned from the University of Nebraska in late winter 1974 to become the region's first independent crop consultant. I started my company advising farmers on insect management techniques, including pesticides, and gradually branched out to include services on weed and disease management, irrigation scheduling, fertility, and crop rotations, to name a few. I personally work with several colleagues of different specialties. I provide the entomological expertise.

Independence can have some decided benefits (not monetary). For example, an article in *NAICC News*, the official publication of the National Alli-

In Memoriam: Don Huse

Sally Poirier, daughter of Don Huse wrote to say that Don died in December 2001 after a brief illness. Don had been battling cancer since leaving Iowa. Don was in charge of building maintenance and the shop in the Insectary from 1975 to 1992. Sally commented that Don always said that the ISU job was the best job that he ever had.



ance of Independent Crop Consultants, describes my work (for the past 2 years and starting the third season) with a seed farmer to manage the big bluestem seed midge on prairie grasses. Activities of this midge caused up to 50% loss of prairie grass seed production. Being a niche problem, university, government, and chemical industry aren't interested in supporting it. But I'm having a fabulous time with the project, which is different than most I've been involved with during my career. It is also interesting that this midge was originally identified taxonomically by Dr. Ray Gagne at the National Museum, a former student of Dr. Jean Laffoon at ISU.

From John B. Waller

I received the recent newsletter, which I found most interesting. I graduated in 1972. My major was Professor P. A. Dahm. I would be interested in receiving information about staff and graduate students of that era with the idea of making contact. Larry Pedigo was one of the faculty when I was there, which prompted my response to your newsletter. My e-mail is jbwaller@i4free.co.nz.

Keep in touch!

Please let us know if 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 and coordinated by Bryony Bonning, Russ Jurenka, Marlin Rice, Julie Todd, and John VanDyk. This newsletter and previous issues are online at <http://www.ent.iastate.edu/alumni>

Visit our Web Site:
<http://www.ent.iastate.edu>



Faculty Awards and Honors 2002

Bryony Bonning was accepted onto the faculty of the Center for Plant Responses to Environmental Stresses (CPRES). CPRES is one of the Research Centers within the Iowa State University Plant Sciences Institute (<http://www.plantsciences.iastate.edu/>). A large part of Bonning's current research program deals with aphid-virus-plant interactions, the applied goal being development of aphid-resistant transgenic plants.

Tom Baker, John Obrycki, and Junwei Zhu were honored by the Iowa State University Research Foundation for their invention of predatory insect attractants (Benallure).

Joel Coats was a coauthor of the article selected for Best Ecological Risk Assessment Paper for 2001, entitled *Chlorpyrifos: ecotoxicological risk assessment for birds and mammals in corn agroecosystems*. The article was published in a special issue of the journal *Human and Ecological Risk Assessment* 7: 497-632.

Jerry DeWitt was reelected Board Member of the Organic Farming Research Foundation, Santa Cruz, CA.

Woody Hart received the Margaret Ellen White Graduate Faculty Award. The purpose of this award

is to recognize faculty for excellence in guidance and encouragement of graduate students.

Richard L. Hellmich was reelected chair of the NC-205 regional research committee, which focuses on stalk-boring insect research.

Richard L. Hellmich, Group Leader; **Adrianna D. Hewings** (Peoria, IL); and **Eldon E. Ortman** (West Lafayette, IN) received a USDA Secretary's Group Award for contributions to a science-based assessment of Bt corn and the monarch butterfly.

Russell Jurenka received an award from ISU for Outstanding Organization Advising as an advisor to the Entomology Graduate Student Organization.

Did you know?

The Department of Entomology has generated more funds during the past 5 years per research full-time employee than any other department within the College of Agriculture except Plant Pathology.

Sumerford Investigates Evolution of Resistance to Transgenic Crops

Doug Sumerford joined the USDA Corn Insects Research Unit in May 2002. The USDA-Agricultural Research Service has employed Sumerford for the past five years to work on insect resistance management in Mississippi. His research focused on the genetic factors affecting insect resistance management for insects feeding on Bt cotton varieties. He also has worked with colonies of *Heliothis virescens* adapted to feed on plant secondary compounds, and by using classical genetic methods, dissected the inheritance of these adaptations.

At ISU, Sumerford is interested in the genetic mechanisms that influence plant-insect interactions. His current research direction is on the population genetic and ecological factors that influence how

insects evolve resistance to transgenic varieties of corn engineered to express Bt proteins. Using family-based analyses in combination with genetic mapping via DNA technologies, Sumerford is investigating the genetic parameters that affect the development of resistance in insect populations feeding on Bt corn. Once the genetic mechanisms for Bt resistance are isolated, they can be put into their proper ecological contexts. Understanding the inheritance of the Bt resistance traits will allow all stakeholders in Bt corn to better evaluate strategies to slow the evolution of resistance to transgenic crops.





Student Awards 2002

Brad Coates received a Professional Advancement Grant for \$300 for research from the ISU Graduate Student Senate.

Rayda Krell was awarded an ISU Research Excellence Award. Research Excellence Awards are given to the top 10% of graduate student researchers.

Jeremy Heath was awarded an ISU Teaching Excellence Award. Teaching Excellence Awards are presented to the top 10% of teaching assistants for their outstanding contributions.

Gretchen Schultz received an ISU Undergraduate Research Assistantship for Fall 2002.

Awards from the Department

Yong-Lak Park and **Johnson Ouma** both received Department of Entomology Henry and Sylvia Richardson Research Incentive Grants. An award of \$1,000 was provided to each recipient for research costs.

The Department of Entomology Herbert Osborn Awards for Professional Performance were awarded to **Susan Moser** (M.S. category) and **Rayda Krell** (Ph.D. category).

The Entomology Student Award for Outstanding Service was presented to **Vanessa Ware** in recognition of service at Veishea and the Insect Horror Film Festival, and for work with the Insect Zoo.

Awards from Entomological Society of America

Rayda Krell received first place in the Ph.D. competition for her 10-min talk at the NCB-ESA meeting in East Lansing, MI. She also received the President's prize runner-up for poster presentation at the ESA National Meeting in Ft. Lauderdale.

Brent Werner received first place for his poster in the undergraduate competition at the NCB-ESA meeting in East Lansing, MI.

Ted Wilson received second place for Submitted Paper by a Doctoral Student at the NCB-ESA meeting, East Lansing, MI.

Graduates Students Work and Play Hard

In between courses, exams, teaching, research, and extension commitments, the Entomology Graduate Student Organization (EGSO) hosted speakers, presented awards, and worked in the community. And they still found time to play games!

The EGSO invited two speakers to ISU in 2002: Dr. David Grimaldi (American Museum of Natural History, NY) talked about his work with fossil insects, and Dr. Steven Taylor (Illinois Natural History Survey) talked about cave ecosystem management. On April 16, 2003, Steve Kutcher will present the University Lecture on cultural entomology and insects in the movies.

On the community front, the EGSO gave two awards at the *State Science and Technology Fair of Iowa* and began preparing insect display cases for donation to local schools in 2003.

The EGSO organized some intramural sporting activities, including flag football and women's volleyball. The flag football team, the *Yellow Jackets*, was 4-0 until a loss ended the season in the quarterfinals. The women's volleyball team, the *Bug Babes*, also made it to the quarterfinals.

Yong-Lak Park was awarded the second place prize for the student poster presentation competition at the ESA national meeting in Ft. Lauderdale. The poster was coauthored with **Seong-Gyu Lee**.

Did you know?

Two ISU Department of Entomology alumni have been elected to the office of president in the Entomological Society of America: Mike Gray (North Central Branch President—2003) and Kevin Steffey (ESA National President—2004). Congratulations to both!



The ISU mixer at the ESA national meeting is always a fun time for relaxing and sharing stories. Here are a few photos of alumni and students at the mixer in Ft. Lauderdale.



Laura Weiser (University of Minnesota), Rayda Krell (University of California-Riverside), and Brad Coates (Iowa State).



Kris Giles (Oklahoma State University), David Shapiro (USDA, Georgia) and Denny Bruck (USDA, Oregon).



(Back) Tim Johnson (Ecogen Inc., Pennsylvania), Kevin Steffey (University of Illinois), David Buntin (University of Georgia), Mike Gray (University of Illinois). (Front) Von Kaster (Garst Seed Co., Iowa) and Gary Hein (University of Nebraska).



Paula Davis (Pioneer Hi-Bred International, Inc., Iowa) and Lamar Buckelew (Bayer Corporation, Oregon).

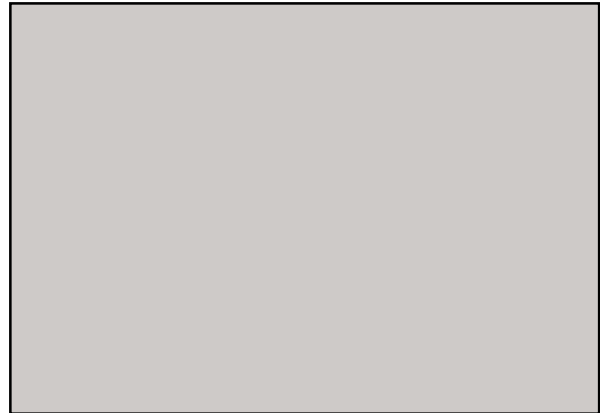


(Above) Robyn Rose (EPA, Washington) and Randy Pingel (USDA, Puerto Rico). (Left) Todd DeGooyer (Monsanto Co., Missouri) and Jon Sagers (Syngenta, Minnesota).



Alumni Return for Departmental Seminars

Two alumni gave invited seminar presentations in the department in 2002: Dr. Clint Pilcher (Monsanto Company, Johnston, IA) (Ph.D. 1999) and Dr. Kevin Steffey (Department of Crops Sciences, University of Illinois, Urbana, IL) (Ph.D. 1979). Clint spoke about "Insect Resistance Management: Developing Tools that Maximize Voluntary Stewardship and Minimize Governmental Regulation." Kevin presented the Harold Gunderson Memorial Lecture, entitled "Challenges for Extension Entomology in the 21st Century: Sustaining Value to the University and the Agricultural Community."



Endowed Scholarship Halfway to Goal

We are halfway to our goal of \$15,000 for the first endowed scholarship in the Department of

Entomology, the *Entomology Alumni Scholarship*. This fund is intended to provide one or two scholarships annually for incoming undergraduate students in entomology. Promoting and strengthening undergraduate enrollment goes a long way toward attracting future entomologists and increasing the department's visibility.

An Opportunity to Give: Department of Entomology Donations

With the ongoing budget constraints at ISU, the Department of Entomology is increasingly dependent upon the generosity of alumni and friends. To support the department, please send this form with your check or money order. Checks should be made payable to ISU Foundation and can be sent directly to the Department of Entomology, Iowa State University, 10 Insectary Bldg., Ames, IA 50011.

Name _____

Address _____

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

_____ *Entomology Memorial Fund* for expenses such as speakers, student travel and student awards

_____ *Entomology General Account* for ongoing operational expenses

_____ *Other*

For more information about these programs, please contact the Department of Entomology, Iowa State University, 10 Insectary Bldg., Ames, IA 50011 or call (515) 294-7400.

For more information about any other special gift designations, please contact O. Richard Bundy III, Executive Director of Development – The College of Agriculture, ISU Foundation, 310 Curtiss Hall, Ames, IA 50014. Phone: (515) 294-9088; Fax: (515) 294-6613; e-mail: rbundy@iastate.edu.