



THE BUZZ



UNIVERSITY OF CALIFORNIA RIVERSIDE
DEPARTMENT OF ENTOMOLOGY
NEWSLETTER

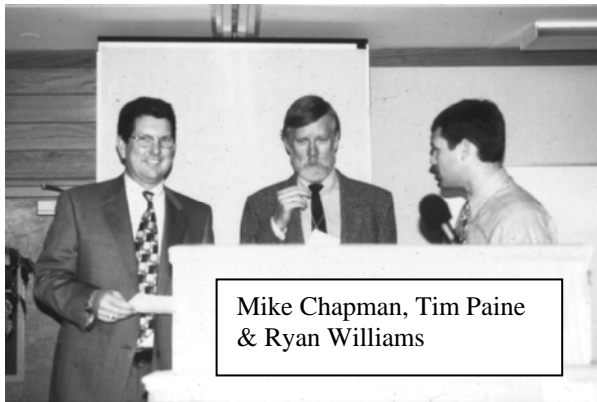
Spring 1999

8th UCR Urban Pest Management Conference



By John Klotz

UCR's 8th Annual Urban Pest Management Conference convened on March 30, 1999 at University Extension. About 300 attendees, mostly pest control operators (PCOs) from southern California, received continuing education credits for their attendance. The program featured various industry and university spokespersons, with opening remarks from Dr. Tim Paine, Chairman of the Department of Entomology.



Mike Chapman, Tim Paine & Ryan Williams

Dr. Paine welcomed the audience and along with Mike Chapman, Technical Director of Western Exterminator Company, presented the Strom scholarships to graduate students Ryan Williams and Stephanie Young. The Carl Strom/Western Exterminator Scholarship is a new and ongoing fund to support both graduate and undergraduate studies relative to urban pest management.



Stephanie Young, Mike Chapman, Ryan Williams

Ryan is a student of Dr. Bob Krieger, and is investigating pesticide exposure for accurate risk assessment and effective risk communication. Stephanie is a student of Dr. Mike Rust and has developed a new marking technique to map foraging territories of Argentine ants.

In the morning session, Integrated Pest Management (IPM) was the main topic and the afternoon was devoted to discussions of several exotic pests in the urban environment. The keynote speaker, Dr. Austin Frishman, (pictured at right) is a well known industry spokesman for structural pest control. Dr. Frishman is from Farmingdale, New York, where he runs a pest control consulting firm. According to Dr. Frishman, the big challenge for PCOs is getting beyond pesticides and compressed air sprayers and using low toxic and nonchemical, environmentally safe methods of control.



Rick Cooper, Vice President of Cooper Pest Control, also from the East Coast, addressed the topic "IPM: What Have We Created?" Rick represents a family owned company in New Jersey which uses control methods based on sound biological principles.

After a hearty buffet luncheon, industry sponsors gave short presentations on their various company products. This year, thanks to Mary Thompson's persistence and hard work, we were supported by a record 19 sponsors: AgrEvo, American Cyanamid Company, Bayer Corporation, B&W Sales and Marketing/Clorox, Dow AgroSciences, FMC Corporation, Lipha Tech, Nisus Corporation, Paragon Professional Pest Control Products, Rhône-Poulenc, S.C. Johnson Wax, Target Specialty Products, Van Waters & Rogers Inc., Waterbury Company, Inc., Whitmire Micro-Gen, Woodstream Company, Zeneca Ag Products, Zoecon

Professional Products/Wellmark International, and U.S. Borax.

Drs. Les Greenberg, Mike Rust, and Kirk Visscher then followed with the biology and control of imported fire ants, native fire ants, and Africanized bees. A keen interest was expressed by all with many questions surrounding these pests which PCOs are currently learning to deal with. Other topics covered in the conference included an update on rules and regulations from the Structural Pest Control Board, by John Munro, a pest control consultant, formerly of Pest Control Operators of California; Debbie Raphael, Environmental Program Analyst for the City of Santa Monica and Lynn Hawkins, Senior Environmental Research Scientist in the Department of Pesticide Regulation addressed "New Directives for Institutional Customers;" Debbie and Lynn have developed a successful IPM program for the City of Santa Monica; and 2 graduate student presentations, one by Marco Metzger on "California Ground Squirrels, Fleas and Plague," and Stephanie Young on "Foraging Behavior in Argentine Ants."

The conference was a resounding success due to the hard work and contributions of the many volunteers who helped organize the program and work registration. One individual in particular deserves the lion's share of credit for making this conference run smoothly, Mary Thompson.

BREAKTHROUGH RESEARCH

By Mike Adams



Following the breakthrough by Dusan Zitnan and Mike Adams announcing discovery of a new hormone in insects, the ecdysis-triggering hormone (ETH) that made the cover of Science magazine (5 Jan 1996 issue). Dusan gave the following update report:

ROLE OF STEROID AND PEPTIDE HORMONES IN REGULATION OF THE ECDYSIS BEHAVIORAL SEQUENCE

D. Zitnan¹, I. Zitnanova¹, L. Ross², S.S. Gill² and M.E. Adams^{2,3}

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Depts. of ²Entomology and ³Neuroscience, University of California, Riverside, CA 92521.

Shedding of the old cuticle of the tobacco hornworm, *Manduca sexta*, is accomplished by stereotypic programmed movements which are initiated and regulated by the release of pre-ecdysis and ecdysis triggering hormones (PETH, ETH) from endocrine Inka cells of epitracheal glands. These blood-borne peptides act directly through the blood-brain barrier on the central nervous system (CNS) to sequentially activate all subunits of the ecdysis behavioral sequence. The sequence contains three characteristic motor patterns displayed in specific order. PETH triggers pre-ecdysis I (dorso-ventral contractions), while ETH activates pre-ecdysis II (posterior-ventral and proleg contractions) followed by ecdysis behavior (anteriorly-directed peristaltic

movements). Administration of these peptides induces the described motor programs in pharate larvae *in vivo* or in the isolated CNS *in vitro*.

PETH and ETH are encoded by the same gene, which is expressed only in Inka cells. The gene contains a direct repeat ecdysone response element in its promoter region. It was shown that rising ecdysteroid levels up-regulate transcription of this gene followed by increased production and accumulation of PETH, ETH and their pro-peptide precursor forms. The highest ecdysteroid levels also induce expression or activation of PETH and ETH receptors in the CNS 1-2 days before each ecdysis. A decline in ecdysteroid levels is necessary to determine the timing of the PETH and ETH release into the hemolymph. Results suggest that successful ecdysis requires a complex cascade of endocrine events that includes high steroid levels for expression of the gene encoding PETH and ETH in Inka cells and their receptors in the CNS, declining steroid levels for PETH and ETH release, followed by direct activation of pre-ecdysis I, II and ecdysis motor units in the CNS by these peptides.

GRADUATE STUDENT ENROLLMENT

By Dan Hare



Currently, the Department has 43 graduate students enrolled, with eight of these enrolling last Fall (1998). Since we instituted the three-quarter graduate core sequence some years ago, most of our new students start their graduate studies in the Fall quarter. The Department has made a commitment to allocate its

resources for graduate student funding to first and second year students, and this has greatly aided our recruiting effort over the last four years. We have set a goal to recruit about ten new students per year, and we expect that total graduate student enrollment to rise to about 50 within the next few years. Multiple years of payment of non-resident tuition still is a major barrier to the recruiting of foreign students, but the Department generally has been able to identify funds to cover the one year of non-resident tuition for domestic, out-of-state students while they establish California residency. Overall, the graduate student population is about equally split among students from foreign countries, domestic students from outside California, and students who completed their undergraduate studies in California.

Our most recent graduate secretary, Barbara Wotherspoon, left Entomology to assume a position of Student Affairs Officer with the College of Humanities and Social Sciences at the end of 1998. All graduate student affairs for Entomology now are being handled through a new Biological Sciences Graduate Student Affairs Center that also administers graduate programs in Biology, Botany and Plant Sciences, the interdisciplinary Genetics program, and several of the new interdepartmental Graduate Research Umbrellas, (GRUs) that have been established within the College of Natural and Agricultural Sciences. Ms. Kathy Redd is the new director of this graduate student affairs office and also has taken over day-to-day administration of

Entomology's graduate student program. For prospective applicants, Ms. Redd also is the person to contact for all information and application materials. She can be reached by telephone at (909) 787-3424 and by e-mail at kathy.redd@ucr.edu.

FACULTY NEWS

Ring Cardé is the associate editor of the Annual Review of Entomology, which reviews topics ranging from molecular entomology to insect management. He will serve a five-year term.

Tim Paine is the president-elect of the Entomological Society of America-Pacific Branch.

Rick Redak is the Pacific Branch representative to the governing board of the Entomological Society of America. His term is for three years.

Nick Toscano has been named chair of the Western Regional Integrated Pest Management Committee.

Kirk Visscher is president of the North American section of the International Union of Social Insects and the chair of Section Cb of the Entomological Society of America.

Joe Morse will serve as Agricultural Policy and Pest Management Program leader for the UC Division of Agriculture and Natural Resources.

FEDERICI AND MULLA TAKE PART IN WHO MEETING

The World Health Organization convened an international informal consultation on "Guideline Specifications for Bacterial Larvicides for use in Public Health" April 27 to May 1, 1999, in Geneva, Switzerland. Two of our faculty, Brian A. Federici and Mir S. Mulla were invited to participate in this international meeting. Mulla served as chairman of the meeting while Federici served as reporter. The meeting was held under the auspices of the World Health Organization Pesticide Evaluation Scheme (WHO/PES) in the Division of Communicable Diseases Prevention and Control. WHO/PES is an international program, which promotes and coordinates the testing and evaluation of pesticides for public health use, and publishes specifications for pesticides to be used as part of the International Code of Conduct on Distribution and use of Pesticides.

The purpose of the meeting was to prepare draft guideline specifications for bacterial larvicidal products for use in public health and to initiate and facilitate the development of internationally agreed upon specifications for these products. The intent of these specifications is to harmonize national standards, world trade, assist in the registration process internationally and to promote consumer protection and safety.

Mulla had to return to Riverside to take care of urgent mosquito problems at home, whereas Federici managed to spend one day in Beaune, France, tasting recently released Burgundy vintages.

THE "FRIENDS OF THE ENTOMOLOGY RESEARCH MUSEUM" ENTERS SECOND YEAR

by *Dave Hawks*

The Friends of the Entomology Research Museum (FERM) has been very successful in all respects during its first year in existence. FERM collected about \$22,000 and has already made a few purchases for the Museum, the most notable of which is a new Zeiss SV6 microscope and camera lucida for use by Museum staff, students and visiting scientists. Our membership now numbers over 120 "fans" of the UCR Entomology Museum!

During the past year, we've had several evening lectures and a number of collecting trips in support of the Museum and the UC Granite Mountains Reserve and Desert Studies Center at Zzyzx in the eastern Mojave Desert. Plans for this summer include an overnight collecting/camping trip to the San Bernardino Mountains, and, just for fun in early September, our first annual "Collect-a-thon" in which two-person teams will compete during a 24-hour intensive effort aimed at collecting examples of the highest number of insect families possible. The winning team will probably be able to turn up about 200 families! Our weekly Thursday "Museum Nights", during which volunteers from the Entomology Department and the community work on various Museum-related projects, continues to be popular and successful.

The main goals of FERM, as a UCR support group, include volunteer work, community outreach, and fund-raising aimed at contributing to the maintenance and improvement of the UCR Entomology Research Museum which represents an invaluable and irreplaceable record of arthropod biodiversity.

For more information about FERM, a copy of our quarterly newsletter, or to join FERM, please contact our President, Greg Ballmer, at 909-787-3725, or our Treasurer, Martin Barnes, at 909-784-7240.



DEPARTMENT WEBSITE

<http://cnas.ucr.edu/~ento/index.html>

The Departmental web server has undergone several changes in scope over the past year. Most of the recruiting information is being maintained on a College (CNAS) server, while the on-line classes have been moved to a campus-wide server. The Departmental server will still be maintained and will be providing access to materials more specific to the Department's research mission.



DEPARTMENT CHAIR'S CORNER

By Tim Paine



I recently returned from participating in a graduate review of another large entomology department. One of the faculty members of that department, who is also UCR alumnus, wanted to know who we had to pay for all our recent publicity. I had to stop and think for a moment before I realized what he was talking about. The April edition of "Fiat Lux", the UCR alumni magazine, spotlighted the accomplishments of the Entomology Department as the cover subject.

I suppose from a journalist's perspective this should not be a surprise. After all, insects can be cute, scary, amazing, dangerous,

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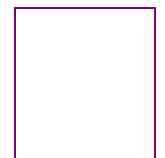
disturbing, fascinating, or all of the above,

Bugs are an eye catching, everyone can relate to, publicists dream. However, the hype should not hide the message. The faculty, staff, and students in the Department are committed to advancing the science and solving problems affecting the state. We are in the midst of construction of a new insectary and quarantine building, and we will break ground on the new Entomology building on 14 September. We will recruit two new faculty in 1999-2000. The future for the Department is as bright as it has been in a long time.



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ADDRESS CORRECTION REQUESTED



To Reply to the Editor

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