



THE BUZZ



UNIVERSITY OF CALIFORNIA RIVERSIDE
DEPARTMENT OF ENTOMOLOGY
NEWSLETTER

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AFRICANIZED BEES: THE VIEW FROM UCR.

By Kirk Visscher, Associate Professor of Entomology

The winged peril – In 1989, when I began my career at UCR, like all of the U.S., I was highly aware of the Africanized honey bees then at our doorstep in Mexico. Since the late 1960's, the news media had been reporting the spread of these fierce bees from an inadvertent introduction in Southern Brazil in 1956. These bees were of a tropical subspecies of *Apis mellifera* (the same species as the familiar European honey bee of beekeeping, itself an introduced species in the New World). The media had dubbed them "killer bees," and this moniker had enough resonance with the public to support at least two "bee-grade" movies spinning fanciful tales of homicidal swarms of insects invading our borders and ending life as we know it.

Man the torpedoes - The first Africanized bees were identified in southern Texas in 1990. Based on the rate at which Africanized bee swarms had colonized South and Central America, it seemed that Los Angeles, Houston, New Orleans, and Miami had just a couple years at most to prepare for the onslaught. As the only honey bee scientist in California south of Davis, I received many questions from the news media, and these only accelerated as Texas, New Mexico, and Arizona were colonized. Government agencies in California began to coordinate their preparedness for these bees. It was not until 1994 that the first colony of Africanized honey bees was detected in California, at the Chuckwalla Prison near Blythe. By that time California was much better prepared than any of the other states had been when the bees arrived. Fire and ambulance personnel had had training, insecticidal soap had been tested and registered for killing swarms, the vector control agencies had added additional technicians to work on bee removal, and structural pest control operators were training for removing colonies in structures. The media had gotten the message that while they were dangerous, these bees were not the menace many people feared, and were reasonably level-headed in educating the public. At UCR, I had done the testing behind the soap registration, had invented the UCR Take-Out Trap (constructed from the familiar Chinese food container) to contain straggler bees left after the removal of a swarm, studied the defensive behavior of bees and the treatment of bee stings, and done a lot of public education.

Anticlimax - But then, the bees stopped moving. In the meantime, trained personnel in various agencies turned over, Orange County went bankrupt and withdrew its vector control agency from dealing with bees, and the interest of the news media moved to Monica Lewinsky. Why the Africanized bees moved so slowly we can only guess. Probably the impact of

parasitic mites, which were also damaging managed colonies of bees, played a role, as well as the difficulty of migrating across dry deserts without much available bee forage.

Don't let your guard down - Following the wet winter of El Niño, the bees once again began to move, and during the course of 1999 were found in far-flung desert areas of San Bernardino County, in the Coachella Valley and western Riverside County, in the Antelope Valley, in Los Angeles and Orange counties, and even in southern Nevada. There were more stinging incidents reported, confined dogs were attacked and killed, and in September 1999 the first person was killed in California by Africanized bees in Long Beach. It is likely that new surveys being conducted in June 2000 will discover Africanized bees even further north in California.

Now what - Our best efforts on the California Africanized Bee Steering committee have failed to steer them back, and in the next few years, I think it is likely that we will experience them in increased density. Meanwhile in the south, some counties (e.g., L.A.) are aggressively deploying Vector Control to eradicate bee colonies, while others (e.g., Orange) are not. As the experience in Texas, Arizona, and now California has demonstrated, Africanized bees do cause some morbidity and mortality, but less than many had envisioned. Appropriate measures of preparedness by first responders, and especially public and professional education, can ameliorate the problem considerably.

Bee aware - So, what do you do, now that Africanized bees are part of your life? Individuals can minimize the likelihood that they will be hurt by Africanized bees by taking two actions: awareness and preparedness. I like to compare the Africanized bees to rattlesnakes: creatures we need to be cautious of, but that needn't keep us indoors. The same will apply to bee colonies. Bees that are foraging on flowers are not much of a threat. It is when bees are defending their colony that they attack *en masse*, so it is for the presence of bee colonies that you should be alert. If you see numerous bees coming and going from the same spot, whether it is a hole in a rock or the wall of your house, or a particular place in the vegetation, this may indicate that there is colony of bees located there. If you are going to operate vibrating machinery in an area, the vibration may be especially disturbing to bees, and it is wise to inspect the area for bee colonies before beginning (remember they may have moved in since you last looked). The safest thing to do if you detect a colony is to avoid them, since further investigation may cause the bees to sting and if the colony is near human or domestic animal activity to have the bees removed.

Stings - If you are stung by a bee, this may mean you have approached a colony without knowing it, and that other bees may soon be joining the attack. The solution is pretty obvious: get the heck out of there! You should keep going to a safe place, inside a structure or vehicle, or until you are sure no bees are pursuing you if no enclosure is available. Bees may come in with you, but don't leave, there are probably more outside. Once you are safe, you should remove the stings that bees leave behind as quickly as possible, since they continue to pump venom into your skin.

Preparedness - Around your own property, you can reduce your chance of encountering bees by reducing the attractiveness of your home as their home. Honey bees usually (but not always) nest inside of cavities. One of the differences between Africanized and European bees is that Africanized bees will accept a wider range of cavities as nest sites. In particular, they will go to cavities which are smaller than would usually be acceptable to European bees. On residential property, these cavities may include holes in trees, spaces inside the walls or roofs of houses, water meter, irrigation control, and electrical boxes, upside-down flower pots, junk water heaters, even old tires. A good precaution, then, is to remove the cavity, fill the cavity, or seal off the cavity so bees cannot enter. The holes in water and electrical boxes can also be screened off. Some cavities can be removed by filling them, with insulation, sand, etc., depending on the cavity.

Keeping perspective - The presence of Africanized bees increases the risk of being stung at all by bees, and even more increases the risk of being stung by large, potentially deadly, numbers of bees. However, one needs to keep things in perspective. Ridden a horse? Lived on the typical American diet while not engaged in full time hard physical labor? Lived in a house with a firearm? Any of these things probably involves a greater risk of death than living in an area with Africanized bees (e.g., about 3000 times as many people die in automobile collisions as from bee stings). About 20 people die of bee stings annually in the U.S. Since Africanized bees entered the U.S. 10 years ago, only six people in three states have died from their stings. Probably, this is no greater than would have died from European bee stings in the same area in those years, and may even be less. This may be due to greater awareness by the public of bee safety, and better preparedness by emergency and medical responders. I foresee that stinging incidents will be rare but not all that rare (particularly involving confined animals), and human deaths will be very uncommon, but may nonetheless increase. Reason enough for awareness and preparation, but not the end of life as we know it.

ALUMNI FEATURE



Our featured alumnus for this issue is Dr. Jules Silverman. Dr. Silverman holds an endowed chair in urban entomology and is the Charles G. Wright Professor of Structural Pest

Management at North Carolina State University. He joined the staff at North Carolina in 1999 after working as a research scientist in industry for 18 years.

Dr. Silverman received a B.S. in Biology from the State University of New York at Fredonia in 1975, and his M.S. and Ph.D. in Entomology in 1978 and 1981 respectively from the University of California at Riverside.

Dr. Silverman's doctoral research at UC Riverside focused on the abiotic and biotic factors that influence the developmental life cycle of the cat flea. His seminal research on the environmental factors that influence the development of immature stages of cat fleas challenged the accepted dogma and became the basis for new pest management strategies to control cat fleas. The new strategies focused on indoor treatments and led the way to the widespread use of insect growth regulators. This would revolutionize flea control until 1995 when the current oral and topical treatments appeared. As a research scientist with American Cyanamid Company and later with Clorox Services Company, Dr. Silverman was one of the primary architects of the Combat cockroach bait stations. His research on the mode of action hydramethylnon baits and the cockroach behavior associated with feeding on

baits has been widely cited. In a series of elegant studies, he showed that German cockroaches had developed behavioral resistance to glucose used in the Combat baits. Simple changes in the sugars used in the bait matrix resulted in improved performance. The success of the Combat roach bait station resulted in a major paradigm change in the pest management of German cockroaches. Virtually all integrated pest management programs for cockroach control incorporate bait.

His current research interests are behavior, ecology, genetics and management of urban insect pests, particularly cockroaches and ants. Major areas of emphasis include:

- **Behavioral Resistance:** German cockroaches have evolved mechanisms to detect toxicants and inert ingredients, including nutrients in bait formulations, thereby avoiding and surviving insecticide treatment.
- **Foraging Behavior and Nutritional Ecology:** An understanding of the seasonal movement and foraging energetics of urban ant species helps predict conditions that trigger invasion of human-built structures.
- **Chemical Ecology:** Nestmate recognition in ants can be mediated by environmental cues, specifically hydrocarbons derived from the insect's diet.
- **IPM of Urban Pests:** Develop ecologically sound approaches to minimize indoor entry of peridomestic insects.

On a personal note, Dr. Silverman enjoys fishing, fly typing, aquascaping, and backpacking. He and his wife Darlene (who received her B.S. from UCR in 1982) have three children: Aaron 16, Eli 12, and Emily 10. Dr. Silverman can be contacted at jules.silverman@ncsu.edu

AWARDS AND HONORS

Mark Hoddle – received an Outstanding Young Farmer of the Year Award from the California Junior Chamber of Commerce for his research to control two major avocado pests, avocado thrips and perseas mites. In addition, he was appointed to the editorial board for the journal *Biological Control: Theory and Application in Pest Management*.

Nick Toscano – received the Non-Senate Distinguished Research Award for 1998-99.

Alec Gerry – upon completion of his Ph.D. took a job with the State Department of Public Health and has now received two awards – the Gamma Sigma Delta Outstanding Dissertation Award, and the Entomological Society of America – Pacific Branch’s Comstock Award (for the most outstanding graduate student in the Branch).

Karl Haagsma – received a \$2,000 Carl Strom/Western Exterminator Scholarship to assist in his studies on the nutrient dynamics in subterranean termites.

Mike Rust – recently gave the Arnold Mallis Memorial Lecture at the 2000 National Conference on Urban Entomology as the recipient of the organization’s Distinguished Achievement Award in urban Entomology.

STAFF SERVICE AWARDS

Susan Fairchild and Steve McElfresh 10 years; Lindsay Robinson and Marcella Waggoner 15 years; John Chaney, Rick Vetter and Al Urena 20 years; Jeff Johnson 25 years; Gary Platner 35 years.

CHAIRMAN LEADS ENTOMOLOGY TEAM TO 3RD PLACE IN JIMMY STEWART RELAY MARATHON

On Sunday April 9, 2000 the Entomology team placed 3rd in the College and



University Division, paced by the inspired leg run of Department Chair Timothy Paine, in the Jimmy Stewart Marathon at

Griffith Park. The 5 person team, which ran the race in the time of 3:11:27, included Bill Carson (leading off) Tim Paine (who shaved nearly 2 minutes off the time he ran the year before, when the same team finished fourth in its division), team captain and motivator “Coach” Mike Rust, Don Van Dyke (husband of former Entomology SRA Ann Van Dyke), and anchoring the team, the “Wonder from Down Under”, Peter Atkinson (who was also running on his birthday).

Competing against nearly 700 teams from all over southern California, our team finished 79th overall. In addition, despite qualifying to compete in the masters category (combined age 250+) the team chose to compete in the open portion of the race, against much younger teams.

CHAIR'S COMMENTS

By *Tim Paine, Department Chair*



The academic year is now complete. Most of the undergraduate students have gone home for the summer, but some students are busily engaged in the research laboratories. Although the campus is almost ghostly quiet, our department hallways are alive with activity and many new faces. Last year at this time, the payroll for the department stood at 325. I suspect that this year will be very similar. Many of these summer employees are undergraduate students getting their first actual exposure to Entomology and to a research environment. Others are students who have worked in our research labs for some time. A benefit that derives from having a large active faculty is that we can offer all our undergraduate majors the opportunity to work in a research lab with a faculty mentor. In fact, our department is virtually unique on campus in this regard and has the

potential to be a hallmark of the undergraduate experience for our students. They have the chance to interact closely with faculty, staff, post-docs, graduate students, and other undergraduates. A significant number have responsibility for an aspect of a project or have a related, but independent, research project. The opportunity for either employment or research experience at UCR has become an important attraction for our majors. The experiences they gain as members of a lab have practical benefit which may (or may not) stimulate interest in future graduate studies, or may facilitate the process of finding that right job after graduation. However, while they are part of the labs, the undergraduates bring enthusiasm and energy to the process of learning and discovery. Looking back at the end of the academic year, it is important to recognize the important contributions of the undergraduates to our department. They are an integral part of what we do and our success as an institution.

ENTOMOLOGY BUILDING CONSTRUCTION UPDATE

By J. Dan Hare

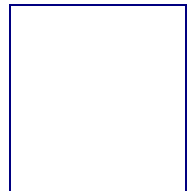
Construction on the new Entomology building has been going on for about eight months. The first phase of construction was an extensive re-routing of several utility lines serving the existing buildings used by the Department that ran through the construction site. This project took longer than anticipated because of the poor records of where the existing lines actually were located. This phase of the project was originally scheduled to be completed in December but wasn't completed until the end of March. Following the utilities relocation, the site was excavated, compacted, then leveled, and we started to get an idea of how large the building was to be after this site preparation was completed.

The building will be constructed of concrete throughout and will be built one floor at a time. Footings for the walls and support columns were poured in early May, followed by the installation of utility lines below the first floor of the building. After those utility lines were installed, the site was prepared to pour the concrete slab for the first floor (photo), and the first-floor slab for the east wing was poured on June 19. The slab for the north wing will be poured in mid-July because of the need to first construct concrete walls that extend about 15 feet below ground at the north end of the building.

Further construction will be phased between the north and the east wings throughout the summer and fall. The columns to support the second floor in the east wing were poured on June 28, and forms for the first-floor walls are now being assembled. Those walls will be poured in mid-July and early August for the east and north wings, respectively. The completion of the shell of the building isn't expected until late February, 2001, when concrete for the roof deck is scheduled to be poured. The completion date has been pushed back to near the end of 2001 because of the delays in re-routing the utilities.



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ADDRESS CORRECTION REQUESTED

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