

**FOURTH INTERNATIONAL
CARIBBEAN CONFERENCE
OF ENTOMOLOGY**

And

**THE PUERTO RICO
ENTOMOLOGICAL
SOCIETY**

In Conjunction With

The
**EIGHTY-SECOND
ANNUAL MEETING**

***Florida
Entomological
Society***

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25-29 July, 1999
CONDADO PLAZA HOTEL & CASINO
San Juan, Puerto Rico
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**1999 Pioneer Lecture Honoree
Dr. George N. Wolcott**

George Norton Wolcott (1889-1965)

George Norton Wolcott was born in Yorkville, New York, on July 12th 1889, the son of David Clinton Wolcott and Marion Delia Denedict. He was married in Utica, NY, on April 21st, 1919, to Magdalen Hall, daughter of Davis Hall-Ames, a merchant from Utica. He and his wife had three children: Ann, married to Edgard Rafael-Martínez a resident of Rio Piedras, David Ames and Oliver. Wolcott died in Barneveld, NY on October 20th, 1965.

Wolcott did his primary education at Yorkville and Utica, NY, and obtained his Bachelor of Arts, Masters in Agriculture and Ph.D. in Entomology at Cornell University. He received a research scholarship from the University of Illinois during 1916 to 1917. During the summers while in school, he worked as a sales person at the Utica Daily Press, and as a field worker on farms in Wansperville, NY, Riverhead, NY, and Manilus, NY.

His career as an entomologist started in 1910 as an agent with the "Negociado de Entomología del Departamento de Agricultura Federal" (Entomology Office of the Federal Agriculture Department). He was assigned initially to the cotton boll weevil laboratory in Dallas, Texas and then did field and laboratory work with the Department of Agriculture in the southern U.S and Cuba. He studied the cotton boll weevil, several tobacco pests, tick biology and photography.

After a variety of jobs and research projects in Illinois and other parts of the United States, he traveled by boat to Puerto Rico where he worked at the "Estación Experimental de la Asociación de Productores de Azúcar" (Experimental Station of the Sugar Producer Association). He was soon promoted from Assistant Entomologist to Associate Entomologist and, during the same year, to Entomologist. He was also appointed to the Puerto Rican Agricultural Board.

Wolcott traveled to Venezuela, Trinidad, Barbados and other places in the Caribbean and, in 1914, he was named Director of the Department of Entomology of the "Estación Experimental Insular" of Rio Piedras (Insular Experimental Station), a position that he kept until 1916. Still Director Entomologist, he continued doing research on insects important to the country's agriculture, including studies on the effect of rain, and the lack of waste treatment after harvest on populations of *Diatraea saccharalis*. In 1916 he returned to the United States and joined a training camp for civil service officials in Plattsburgh, NY. In the summer of 1917, he was again sent to Texas by the federal government to study the cotton boll weevil. That same year, he joined the military service as a recruit to serve in the First World War, stationed in Fort Hamilton, NY. The next year, he was sent to France with the Headquarters Company, 5th Regiment, Coast Artillery Corps and participated in the offensive against Saint Michel and Meuse-Agronne. He returned to the U.S. after his tour of duty in the Army ended in 1919.

Wolcott relocated to Puerto Rico and conducted research on vectors of sugar cane mosaic virus with the "Negociado de Entomología del Departamento de Agricultura Federal" (Entomology Office of the Federal Agriculture Department). In 1920, he accepted the position of Entomologist at the "Estación Experimental de Haina" (Haina Experimental Station) in Santo Domingo, Dominican Republic. When he arrived in Santo Domingo, he realized that the "Estación Experimental de Haina" (Haina Experimental Station) had not been constructed and he went back to Puerto Rico, returning to his previous position with the "Estación Experimental Insular". He continued his research on the sugar cane mosaic virus, and also worked with coffee pests, cotton boll weevil, termites and many other pests.

In 1924 he left his position in Puerto Rico to become an entomologist with the Agricultural Technical Service in Haiti, where he stayed until 1928. In Haiti, his efforts were dedicated to teaching and training Haitians in activities such as the safe use of pesticides. He also did field research on diseases of

pineapple in several other Caribbean Islands and beach grape in Venezuela.

Dr. Wolcott approached his work in a disciplined, simple, capable fashion, as much in the field as in the laboratory, facilitating intelligent comprehension of the problems of agricultural entomology. Examples of his ability in research and education were demonstrated in Haiti. His disciples included Marcel Dartiguenave, Adonis Muller, Emanuel Ducasse, Andre Audant, Alphonse Noel, Auguste Daumer, and Ernest Guedy. His "Entomologie d'Haiti" (1927) is of this period, published in Port au Prince by the Technical Service and profusely illustrated with drawings by Fritz Maximilien (an ex-student of the Agriculture School), employed as an assistant by the Technical Service.

In 1928-1929 he traveled to Peru, where he worked as an entomologist in the "Estación Experimental De la Sociedad Agrícola" (Agricultural Society Experimental Station) of Lima. He studied the cotton leaf stainer, sugar cane aphid, sugar cane mosaic virus and the local parasitoids of *Diatraea*. In 1929, he returned to his home at Barneveld, NY, where he dedicated his time to writing until 1931, when he accepted the position of Entomologist at the "Subestación de Isabela del Departamento de Agricultura" (Isabela Substation of the Department of Agriculture) in Puerto Rico to study the diseases and pests of vegetable crops, especially the lima bean borer.

In 1932, he returned to Rio Piedras as Director of Entomology of the Experimental Station, a position that he kept until his retirement in 1956. He continued his work on insects of agricultural importance, including scale insects and coffee ants. During this period, he traveled to South America, Haiti and many other areas to study and collect parasitoids that could be used as natural controls for pest insects, among them, wasps of the genus *Larra*, to control the mole cricket.

During the first five years after his return to Rio Piedras, he dedicated significant time to evaluating parasitism by *Trichogramma* on *Diatraea saccharalis*

in sugar cane fields and using augmentative release of *Trichogramma*. He also studied termites, eventually becoming a renowned authority in their control, and accumulated a considerable amount of knowledge about the susceptibility of termite attack to different types of wood. These studies consisted of testing several types of chemicals that repelled termites.

His work on the classification of tropical insects set the stage for other entomological studies in Puerto Rico, fulfilling his goal of protecting sugar cane against pests. He wrote and illustrated several books with original drawings. His most important works are: "Entomologie d'Haiti", "An Economic Entomology of the West Indies", "Insectae Portoricensis", "Insectae Boriquensis", "Insects of Puerto Rico" and "Entomología Económica Puertorriqueña".

His Doctoral thesis, "An Animal Census in Pastures and Meadows in Northern New York" was published in 1937 in Ecological Monographs. His published work on tropical entomology, including 205 papers as author or co-author, appeared in the *Journal of Economic Entomology*, *Bulletin of Entomological Research*, *American Naturalist*, *The Caribbean Forester*, *Science*, and *Journal of Agriculture of the University of Puerto Rico*. Among his works are the hierarchy of lumber from the Antilles in the order of its resistance to woodborers and the use of phenol as a compound that provides protection against woodborers. There are also several publications on topics such as mycetophagous ants. In addition he wrote several book reviews and for some time assisted in preparation of *Biological Abstracts*. His works have not yet been completely published.

He was a member of the *American Association for the Advancement of Science*, the *Entomological Society of America*, the *American Society of Agriculture Sciences*, the *American Association of Economic Entomologists*, the *Ecological Society of America*, the *Washington Entomological Society* and the *National Society of Descendants of Henry Wolcott*.

In 1933, Wolcott revived The Entomological Society of Puerto Rico and presided over the society between 1933 and 1938. His influence upon the development of Puerto Rican entomology extends to the present, especially through "The Insects of Puerto Rico".

1999 Pioneer Lecturer Pauline Lawrence

Dr. Pauline O. Lawrence received her M.S. in 1972 and her Ph.D. in 1975 from the University of Florida, Gainesville, with a Major in Entomology and Minor in Plant Pathology. In 1968 she obtained a B.Sc. with Honors from the University of the West Indies, Jamaica, majoring in Zoology with Minors in Chemistry and Botany.

She joined the University of Florida faculty in 1976 as an Assistant Professor of Zoology in the College of Liberal Arts and Sciences, was promoted to Associate Professor in 1981 and Professor in 1989. She was a Visiting Professor in the Department of Entomology, Cornell University, Ithaca, New York from 1984-85. From 1994 to the present she has been a Professor of Biochemistry and Physiology in the Department of Entomology and Nematology at the University of Florida.

Professor Lawrence has taught graduate courses in Host Selection of Parasitic Arthropods, Invertebrate Physiology and Parasite Behavior as well as undergraduate courses in Parasitology, Cell Biology, Ecology and Behavior, and Parasitic Diseases to General Biology and Honors students. Her teaching was recognized with an Excellence in Teaching Award from the College of Liberal Arts and Sciences, University of Florida in 1988.

Since 1976 Dr. Lawrence has served as mentor and advisor to numerous undergraduate students at the University of Florida and has fostered their participation in research, publication of scientific results and other educational enhancement activities. Her efforts were recognized with her election as a member of the Danforth Foundation (1978-86) and more recently, with a Distinguished Faculty Award

from the Florida Blue Key, a student-run service organization at the University of Florida. Her service to the University of Florida has also been recognized with a 1997 Outstanding Leadership Award from the Board of Directors of the University of Florida Athletic Association.

Dr. Lawrence is best known for her research in insect host-parasitoid (parasite) interactions, particularly those of the Caribbean fruit fly, *Anastrepha suspensa* and its parasitic wasp, *Diachasmimorpha longicaudata*. Her research has evolved over the years from the study of fruit fly and parasite behavior to endocrinology and biochemistry, investigating the influence of insect molting hormones (ecdysteroids) on the wasp's larval development. She developed an *in vitro* system to demonstrate that the parasite larva cannot molt without the ecdysteroids of its fruit fly host. She also discovered two previously undescribed viruses in female wasps, one of which (a poxvirus) destroys the fruit fly's cellular defenses, and facilitates the development of the wasp. Her laboratory is using state-of-the-art molecular and biochemical approaches to characterize the genome of the poxvirus and decipher its mechanism for disrupting the host's defenses. She has also identified a unique protein induced in the fruit fly by the poxvirus. Both virus and protein are under investigation in her laboratory, as potential biorational agents for fruit fly control.

In a separate area of research, Dr. Lawrence, in collaboration with colleagues in Honolulu, seeks to develop a Caribbean fruit fly strain of an egg-pupal parasitic wasp, *Fopius arisanus*, which is a successful parasite of the Mediterranean fruit fly.

Dr. Lawrence has received several national competitive grants to support her research and presented invited lectures at many national and international scientific meetings and symposia.

In recognition of her research, she received in 1989 a National Science Foundation Career Advancement Award for Women and in 1993, a University of Florida Research Achievement Award. She has edited two volumes and published abstracts, book

chapters and refereed journal articles on the toxicology, behavior, physiology and molecular biology of beneficial insects, such as the green lacewing and parasitic wasps of tephritid fruit flies.

Dr. Lawrence has been active at the national level, serving on many advisory and grant review panels at the National Science Foundation, U. S. Department of Agriculture and U. S. Agency for International Development. Within the Entomological Society of America (ESA), she has served as Secretary and Chair of her section on Physiology, Biochemistry, Molecular Biology and Toxicology, as a member of the Governing Board and the International Affairs Committee. She has also chaired and organized symposia and contributed paper sessions at meetings of the ESA, International Congress of Entomology and Society for *In Vitro* Biology.

She is a member of Phi Beta Kappa (a national honor society), the Board of Directors of the University of Florida Foundation and the Editorial Board of the Archives of Insect Biochemistry and Physiology.

Dr. Lawrence was listed in American Men and Women of Science (1982) and is a member of the following professional Societies: The American Association for the Advancement of Science, Entomological Society of America, Florida Entomological Society, Sigma Xi Scientific Society, Society for Invertebrate Pathology and Society for *In Vitro* Biology.

She has received awards for her service to non-profit organizations, such as the Women of Distinction in Alachua County from Santa Fe Community College, Gainesville, Florida in 1991 and the Women of Achievement Award from the Gateway Girl Scout Council of Florida and Continental Cablevision in 1992.

PROGRAM HIGHLIGHTS
SUNDAY, JULY 25, 1999

12:00-5:00	Slide Review/Press	Laguna Room
1:00-4:00	Registration	La Fiesta Annex
4:00-6:00	Executive Board Meeting	Board Room No. 2

MONDAY, JULY 26, 1999

8:00-4:00	Registration	Ponce Foyer
8:00-5:00	Slide Review/Press	Laguna Room
	GENERAL SESSION	Ponce C
8:30-8:40	Welcome to Hotel and Puerto Rico	
8:40-9:00	Presidential Address	
9:00-9:50	Pioneer Lecture Award	
9:50-10:10	Break	Ponce Foyer
10:10-12:10	Symposium: Insect Behavioral Ecology,	Ponce C
12:10-1:30	Lunch – Special invitation to graduate students to have lunch discussions with Dr. Pauline Lawrence, Pioneer Lecturer.	Tony Roma Restaurant
1:45-2:33	Student Paper Competition	Ponce C
2:40-3:30	Submitted Papers: Pest management	Ponce C
3:30-3:50	Break	Ponce Foyer
3:50-5:10	Submitted Papers: Pest management	Ponce C
5:10-6:15	Annual Business Meeting	Ponce A
6:30-8:30	Reception Mixer:	Pool Area

TUESDAY, JULY 27, 1999

7:00-8:00	Past Presidents' Breakfast	Max's Deli
8:00-4:00	Registration	Ponce Foyer
8:00-4:00	Slide Review/Press	Laguna Room
8:00-4:00	Poster Display Session	Panama Room
8:15-10:30	Concurrent Session I Symposium: Curculionids of the Caribbean Region: Importance to Agriculture	Ponce A
8:15-10:30	Concurrent Session II Symposium: Facing the Threat of Exotic Pest Invasion	Ponce C
10:30-10:50	Break	Ponce Foyer
10:50-11:30	Concurrent Session I Submitted Papers, Biological Control.	Ponce A
10:50-11:20	Concurrent Session II Submitted Papers: Termite Biology.	Ponce C
12:00-2:30	Awards Luncheon	Ponce B
2:30-3:20	Concurrent Session I Symposium: Biological Control of Pests in Ornamental Plants of the Caribbean.	Ponce A
2:30-3:25	Concurrent Session II Symposium: Preserving Our View of the Past; Protecting Historic Structures from Wood-Destroying Insects.	Ponce C
3:20-3:45	Break	Ponce Foyer
3:40-5:00	Concurrent Session I (con't) Symposium: Biological Control of Pests in Ornamental Plants of the Caribbean.	Ponce A

3:45-5:25 Concurrent Session II (con't)
Symposium: Preserving Our View of the
Past: Protecting Historic Structures from
Wood-Destroying Insects.
Ponce C

WEDNESDAY, JULY 28, 1999 OFF SITE EXCURSIONS

*Trip Information - See Wednesday in program. Meet in
Hotel Lobby 15 minutes before scheduled departure
time. Departure times from 8:00 a.m. to 8:30 a.m.*

THURSDAY, JULY 29, 1999

8:00-12:00	Registration	Ponce Foyer
8:00-12:00	Slide Review/Press	Laguna Room
8:00-10:00	Concurrent Session I Symposium: Sweet Potato Insect Pests,	Ponce A
8:00-10:05	Concurrent Session II Submitted Papers: from the Puerto Rico Entomological Society. Biology/Taxonomy/Systematics/Pest Management/Biological Control En Español - Spanish Speaking section	Panama Room
10:00-10:25	Break	Ponce Foyer
10:25-11:20	Concurrent Session I (con't) Symposium: Sweet Potato Insect Pests.	Ponce A
10:25-11:25	Concurrent Session II (con't) Submitted Papers: from the Puerto Rico Entomological Society. Biology/Taxonomy/Systematics/Pest Management/Biological Control En Español - Spanish Speaking section	Panama Room

FLORIDA ENTOMOLOGICAL SOCIETY PRESENTATIONS

MONDAY MORNING

JULY 26, 1999 GENERAL SESSION J. M. Sivinski, Presiding Ponce C

8:30	Welcome to Hotel and Puerto Rico
8:40	Presidential Address, J. M. Sivinski
9:00	Pioneer Lecture Award The Pioneering Work of George Wolcott: Implications for U.S. - Caribbean Entomology in the 21 st Century. P. O. Lawrence, Department of Entomology & Nematology, Univ. of Florida, Gainesville, FL

9:50-10:10 Break Sponsored by:
U.S. Army Health Care Recruiting

MONDAY MORNING JULY 26, 1999 SYMPOSIUM: Insect Behavioral Ecology Organizer: J.M. Sivinski Ponce C

10:10	1. Territoriality and nestmate recognition in the ponerine ant <i>Pachycondyla apicalis</i> (Hymenoptera, Formicidae). Jorge Valenzuela Gonzales, Instituto de Ecologia, Xalapa, Veracruz, Mexico, and D. Fresneau, Univ. of Northern Paris, Paris, France.
10:45	2. Dung beetles, monkeys and seed dispersal in the Brazilian Amazon. K. Vulinec, Univ. of Florida, Gainesville, FL.
11:10	3. Kleptoparasitism and phoresy in the Diptera. J. M. Sivinski, USDA-CMAVE, Gainesville, FL.
11:35	4. Predation on a fractal surface. R. Lowen, Univ. of Florida, Gainesville, FL.
12:00	Discussion
12:10	Adjourn
12:15-1:30	Graduate Student Luncheon with

Pioneer Lecturer, Dr. Pauline
Lawrence. Sponsored by:
Dow AgroSciences
Tony Roma Restaurant

**MONDAY AFTERNOON
JULY 26, 1999
STUDENT PAPER COMPETITION**
Moderator: E. McCord, Jr.
Ponce C

- 1:45 5. A new species of *Cligenes* (Lygaeidae: Antilocorini) from Mexico and Central America. R. M. Baranowski, J. A. Slater,* and **J. Brambila**, Univ. of Florida, Tropical Research & Education Center, Homestead, FL, and *Dept. of Ecology & Evolutionary Biology, University of Connecticut.
- 1:57 6. Molecular evidence for sibling species in *Ageniaspis*, a parasitoid of the citrus leafminer. **J. M. Alvarez** and M. Hoy. Univ. of Florida, Department of Entomology & Nematology, Gainesville, FL.
- 2:09 7. *Triaspis* sp.: a potential biological control agent to manage pepper weevil in Florida. **M. A. Toapanta**, P. A. Stansly and D. J. Schuster. Univ. of Florida, Department of Entomology & Nematology, Gainesville, FL.
- 2:21 8. A cladistic analysis of the genus *Disonycha* (Coleoptera: Chrysomelidae), species of the Caribbean basin. **S. Moyá-Guzmán**, Department of Biology, Univ. of Puerto Rico, Ponce, P. R.

2:33 **Adjourn**

**MONDAY AFTERNOON
JULY 26, 1999
SUBMITTED PAPERS:
Pest Management, Sampling, and Biology**
Moderator: L. G. Peterson
Ponce C

- 2:40 9. Pepper weevil control in Florida with

Actara 25 WG. **J. S. Fergeson**, J. P. Koenig, D.S. Lawson, and M.E. Green, Novartis Crop Protection, Vero Beach, FL.

- 2:50 10. A Novel insecticide for vegetable pest management programs. **J. T. Andaloro**, E. McCord, Jr., and D.W. Sherrod, DuPont Company, Newark, DE.
- 3:00 11. Comparison of bioassay techniques for assessing the toxicity of spinosad to the leafminer *Liriomyza trifolii* (Burgess) (Diptera: Agromyzidae). **J. E. Eger, Jr.**, Dow AgroSciences, Tampa, FL., J. M. Petti, Univ. of Florida, M. D. Remick, A. Duda and Sons, Belle Glade, FL. and G. L. Leibee, Univ. of Florida, Central Florida Research & Education Center, Sanford, FL.
- 3:10 12. Mortality of *Rhagoletis* species encountering pesticide-treated spheres - Implications for management of the Caribbean fruit fly (Diptera: Tephritidae). **O. E. Liburd**, L. Gut, L. Stelinski, M. McGuire, and J. Wise, Michigan State Univ., Department of Entomology, East Lansing, MI.
- 3:20 13. Traps for monitoring insects. **R. F. Mizell, III**, Univ. of Florida, North Florida Research & Education Center-Monticello, Monticello, FL.
- 3:30-3:50 **Break Sponsored by:
U.S. Army Health Care Recruiting**
- 3:50 14. Accuracy of an electronic grain probe insect counter (EGPIC) system. **N. D. Epsky** and D. Shuman, USDA, ARS, CMAVE, Gainesville, FL.
- 4:00 15. Acoustic detection of *Diaprepes abbreviatus* at naturally infested sites in Puerto Rico. **R. Mankin**, USDA, ARS, CMAVE, Gainesville, FL.
- 4:10 16. Assessment of *Diaprepes abbreviatus* oviposition and larval survival on different plant taxa. **A. G. Hunsberger**, J.E. Peña, R. Giblin-Davis, and L.

Osborne. Univ. of Florida, Tropical Research & Education Center, Homestead, FL.

- 4:20 **17.** Upland cotton resistance to cotton leaf crumple disease transmitted by the silverleaf whitefly, *Bemisia argentifolii* Bellows and Perring. **E. T. Natwick**, C.G. Cook, R.L. Gilbertson, and Y.-S. Seo, Univ. of California Cooperative Extension, Holtville, CA.
- 4:30 **18.** Influence of slash and burn and slash and mulch practices on insect pests in intercropped sorghum and maize in Honduras. **H. N. Pitre**, Mississippi State Univ., Department of Entomology and Plant Pathology, Mississippi State, MS.
- 4:40 **19.** Development of *Metamasius callizona* (Coleoptera: Curculionidae) on pineapple stems. **J. Salas** and J.H. Frank, FONAIAP, Barquisimeto, Lara, Venezuela.
- 4:50 **20.** Evolution of sampling plans for Chironomidae (Diptera) larvae in central Florida lakes. **R. J. Lobinske** and A. Ali, Univ. of Florida, Central Florida Research & Education Center, Sanford, FL.
- 5:00 **21.** Temephos (5% Skeeter Abate® pellets) effects on target larval Chironomidae (Diptera) and on non-target invertebrates in Lake Monroe, central Florida. **Ali, A.**, R. J. Lobinske and R. J. Leckel, Jr. Univ. of Florida, Central Florida Research & Education Center, Sanford, FL.

5:10 **Adjourn**

TUESDAY

JULY 27, 1999

8:00 a.m. - 5:00 p.m.

POSTER SESSION

Authors Present from 11:30 to 12:30

Panama Room

- DSP **1.** *Valeris*, a new genus of antillocorine

lygaeids from Trinidad, Brazil and Venezuela. **R. M. Baranowski**, J. A. Slater*, and **J. Brambila**, Univ. of Florida, Tropical Research & Education Center, Homestead, FL, and Dept. of Ecology & Evolutionary Biology, University of Connecticut.

- DSP **2.** Laboratory and field infestation studies on mamey sapote to determine its host status in relation to the Caribbean fruit fly. (Diptera: Tephritidae). **W. P. Gould**, USDA-ARS, Miami, FL.
- DSP **3.** Establishment of *Cybocephalus binotatus* Grouvelle and *Coccobius fulvus* (Compere & Annecke) for suppression of cycad scale, *Aulacaspis yasumatsui* Takagi (Homoptera: Diaspididae) in South Florida. **R. M. Baranowski** and H. B. Glenn, Univ. of Florida, Tropical Research & Education Center, Homestead, FL.
- DSP **4.** Progress and prospects for biological control of Tropical Soda Apple in the USA. **J. C. Meda**, D. Gandoffo, J. Cuda and D. Subbrink, Univ. of Florida, Department of Entomology & Nematology, Gainesville, FL.
- DSP **5.** The IR-4 Project, a national agricultural program to clear pest control agents for minor crops in the U.S. **K. S. Samoil**, IR-4 Project, Rutgers Univ., North Brunswick, NJ.
- DSP **6.** The Lygaeidae of the West Indies. **R. M. Baranowski**, Univ. of Florida, Tropical Research & Education Center, Homestead, FL and J. A. Slater, Univ. of Connecticut, Storrs, CN.
- DSP **7.** Improved trapping of pickleworm and insecticide bioassay. **K. A. Sorensen**, T. P. Lynch, North Carolina State Univ., Department of Entomology, Raleigh, NC, and D. M. Jackson, USDA-ARS, Vegetable Laboratory, Charleston, SC.
- DSP **8.** Diet-reared vs. host-reared parasitoids: influence of host kairomones on host

selection. **J. E. Carpenter**, USDA-ARS, Insect Biology and Population Management Research Laboratory, Tifton, GA and **P. D. Greany**, USDA-ARS Center for Medical, Agricultural & Veterinary Entomology, Gainesville, FL.

- DSP **9.** Growth, development and reproduction of *Podisus maculiventris* reared on an insect-free artificial medium. **P. D. Greany**, H. Dillon, I. Baez, J. Shapiro, S. O'Keefe and J. L. Nation, USDA-ARS Center for Medical, Agricultural & Veterinary Entomology, Gainesville, FL.
- DSP **10.** Parasitoids of Lepidopterous pests of plaintain (*Musa AAB*), sub-group plaintain, cv. Harton, in South Maracaibo Lake Basin, Venezuela. **O. Dominguez-Gil**, Universidad del Zulia. Facultad de Agronomia, Unidad Técnica Fitosanitaria. Maracaibo, Venezuela.
- DSP **11.** Termite education program in Louisiana. **X. P. Hu**, D. Ring, A. Morgan and J. Polizzi, LSU Agricultural Center, Louisiana Cooperative Extension Service, Baton Rouge, LA.
- DSP **12.** Effectiveness of various insecticides on the development stages of silverleaf whiteflies. **C. M. Sabines**, D. R. Seal and R. T. McMillan, Univ. of Florida, IFAS, Tropical Research and Education Center, Homestead, FL.
- DSP **13.** Effect of various temperatures on the biology of *Catolaccus hunteri*, a potential parasitoid of pepper weevil. **T. Cabrera** and D. R. Seal, Univ. of Florida, IFAS, Tropical Research and Education Center, Homestead, FL.
- DSP **14.** Action thresholds for applying insect growth regulators for control of the silverleaf whitefly and irregular ripening on tomato. **D. J. Schuster**, Univ. of Florida, IFAS, Gulf Coast Research & Education Center, Bradenton, FL.

**TUESDAY MORNING
JULY 27, 1999**

**CONCURRENT SESSION I
SYMPOSIUM: Curculionids Of The Caribbean
Region: Importance To Agriculture
Organizers: C. W. McCoy and S. L. Lapointe
Ponce A**

- 8:15 Introductory Remarks: **C. W. McCoy**, Univ. of Florida, Citrus Research & Education Center, Lake Alfred, FL
- 8:20 **22.** Agricultural Curculionidae: Diversity and distribution. **C. W. O'Brien** and P. W. Kovarik. Florida A & M Univ., University Center for Biological Control, Tallahassee, FL.
- 8:40 **23.** Major curculionid pests of Puerto Rico and their management. **R. R. Franqui**, Univ. of Puerto Rico, Puerto Rico Agricultural Experiment Station, Rio Piedras, PR.
- 9:00 **24.** Management of key curculionid pests of South Florida agriculture. **J. E. Peña**, L. Osborne, Univ. of Florida, Central Florida Research & Education Center, Apopka, FL., R. E. Duncan and A. Hunsberger, Univ. of Florida, Tropical Research & Education Center, Homestead, FL.
- 9:20 **25.** Status of root weevils in Jamaican agriculture and IPM strategies for Caribbean farmers. **D. O. Clarke-Harris**, CARDI, Kingston, Jamaica.
- 9:40 **26.** Humidity and temperature effects on development of *Diaprepes abbreviatus* and its implication for pest management. **S. L. Lapointe**, USDA-ARS, Orlando, FL.
- 10:00 **27.** Entomogenous nematodes as biological control agents of root weevil larvae. **D. I. Shapiro**, C. W. McCoy and L. W. Duncan. Univ. of Florida, Citrus Research & Education Center, Lake Alfred, FL.
- 10:20 **Conclusions**
- 10:30 **Adjourn**

**TUESDAY MORNING
JULY 27, 1999
CONCURRENT SESSION II
SYMPOSIUM: Facing The Threat Of
Exotic Pest Invasion
Organizers: R. R. Heath and N. D. Epsky
Ponce C**

- 8:15 28. The role of female-targeted detection systems for the Mediterranean fruit fly. **R. R. Heath**, USDA-ARS, SHRS, Miami, FL and **N. D. Epsky**, USDA-ARS, CMAVE, Gainesville, FL.
- 8:40 29. Production and field use of genetic sexing strains to improve Mediterranean fruit fly control. **P. Rendon**, USDA-APHIS, Guatemala City, Guatemala.
- 9:05 30. Research related to enhancement of sexual maturity of sterile male Tephritid fruit flies. **P. E. A. Teal**, USDA-ARS, CMAVE, Gainesville, FL.
- 9:30 31. Florida Department of Agriculture and Consumer Services approach to exotic pest invasion. **S. E. Halbert**, FDACS, Div. of Plant Industries, Gainesville, FL.
- 9:55 32. The role of USDA/APHIS in exotic pest interdiction. **M. Shannon**, USDA-APHIS, Gainesville, FL.
- 10:20 **Discussion**
- 10:30 **Adjourn**
- 10:30-10:50 **Break**

**TUESDAY MORNING
JULY 27, 1999
CONCURRENT SESSION I
SUBMITTED PAPERS: Biological Control
Moderator: J. E. Carpenter
Ponce A**

- 10:50 33. *Oligota minuta* (Coleoptera: Staphylinidae): biology and seasonal abundance. **A. Bolques** and **R. F. Mizell, III**, Univ. of Florida, North Florida

Research & Education Center-
Monticello, Monticello, FL.

- 11:00 34. Factors affecting Florida strawberry growers' decisions to use *Phytoseiulus persimilis* for control of two-spotted spider mites. **J. F. Price** and **G. C. DeCou**, Univ. of Florida, Gulf Coast Research & Education Center, Bradenton, FL.
- 11:10 35. Biological control of *Aleurodicus pulvinatus* (Homoptera: Aleyrodidae) in Nevis. **M. T. K. Kairo**, V. F. Lopez, CABI Bioscience, Trinidad and Tobago, G. V. Pollard, Food And Agriculture Organization, Bridgetown, Barbados and **R. Hector**, Department of Agriculture, Nevis Island.
- 11:20 36. Mole crickets and their natural control. (A documentary video) **J. H. Frank**, Univ. of Florida, Dept. of Entomology and Nematology, Gainesville, FL.

11:35 **Adjourn**

**TUESDAY MORNING
JULY 27, 1999
CONCURRENT SESSION II
SUBMITTED PAPERS:
Termite Biology
Moderator: R. H. Scheffrahn
Ponce C**

- 10:50 37. Changes in the chemical composition of wood susceptible to *Coptotermes formosanus* (Isoptera: Rhinotermitidae) by fungi associated with this termite. **M. G. Rojas** and **J. A. Morales-Ramos**, USDA-ARS-SRRC Formosan Subterranean Termite Research Unit, New Orleans, LA.
- 11:00 38. Preference of Formosan subterranean termite, *Coptotermes formosanus* (Isoptera: Rhinotermitidae), for wood species commercially available in New Orleans, Louisiana. **J. A. Morales-Ramos** and **M. G. Rojas**, USDA-ARS-SRCC Formosan Subterranean

- Research Unit, New Orleans, LA.
- 11:10 **39.** Foraging behavior and caste distribution of *Incisitermes snyderi* (Light) within natural colonies. **B. Maharajh** and R. H. Scheffrahn, Univ. of Florida, Ft. Lauderdale Research & Education Center, Ft. Lauderdale, FL.

11:20 **Adjourn**

12:00-2:30 **Awards Luncheon**
Ponce B

TUESDAY AFTERNOON
JULY 27, 1999
CONCURRENT SESSION I
SYMPOSIUM: Biological Control Of Pests In
Ornamental Crops Of The Caribbean
Organizer: N. C. Leppla
Ponce A

- 2:30 Introduction: **N. C. Leppla**, Univ. of Florida, IFAS, Department of Entomology & Nematology, Gainesville, FL.
- 2:40 **40.** Pink hibiscus mealybug and other mealybug pests of ornamentals. **M. T. K. Kairo**, CABI Bioscience, Caribbean & Latin American Centre, Trinidad and Tobago and G. V. Pollard, Food and Agriculture Organization of the United Nations, Bridgetown, Barbados.
- 3:00 **41.** Silverleaf whitefly and related whitefly pests of ornamentals. **C. L. McKenzie**, USDA-ARS, U.S. Horticultural Research Lab., Ft. Pierce, FL.
- 3:20-3:40 **Break** **Ponce Foyer**
- 3:40 **42.** Prospects for biological control of the coconut mite, *Aceria guerreronis*, in the Caribbean. **F. W. Howard**, Univ. of Florida, Ft. Lauderdale, FL and E. Abreu, Univ. of Puerto Rico, Isabela, PR.
- 4:00 **43.** Western flower thrips and the other primary thrips on ornamentals. **F. Diaz**

and C. Pereira, Univ. Centroccidental Lisandro Alvarado, Departamento de Ciencias Biologicas, Lara, Venezuela.

- 4:20 **44.** Biology and control of the banana moth. **S. Wainwright**, Florikan ESA Corp. Coral Springs, FL and T. Weissling, Univ. of Florida, IFAS, Ft. Lauderdale Research & Education Center, Ft. Lauderdale, FL.
- 4:40 **45.** Green peach aphid and other aphid pests of ornamentals. **E. Abreu**, Univ. of Puerto Rico, Crop Protection Department, Agricultural Experiment Station, Isabela, PR.

5:00 **Adjourn**

5:00-6:30 Special Session
Elzie McCord, Jr., Moderator

TUESDAY AFTERNOON
JULY 27, 1999
SYMPOSIUM: Protecting Historic Structures
From Wood-Destroying Insects
Organizers: Nan-Yao Su and E. M. Thoms
Ponce C

- 2:30 **46.** Termites (Isoptera) of Puerto Rico. **R. H. Scheffrahn**, J. A. Chase, S. C. Jones, J. R. Mangold J. de la Rosa and N.-Y. Su, Univ. of Florida, Ft. Lauderdale Research & Education Center, Ft. Lauderdale, FL.
- 2:45 **47.** Technology transfer and the role of the National Center for Preservation Technology and Training in preserving historic structures. **M. Gilberg**, National Center for Preservation Technology and Training, Natchitoches, LA.
- 3:05 **48.** Review of methods used to preserve historic structures at the Christensted National Historic Site, US Virgin Island, from subterranean termites. **Z. Hillis-Starr**, National Park Service, St. Croix, USVI.
- 3:25-3:45 **Break** **Ponce Foyer**

- 3:45 **49.** Control of the subterranean termite *Heterotermes* spp., at Fort Christiansvaern, Christensted National Historic Site, US Virgin Island. **P. Ban**, N.-Y. Su Univ. of Florida, Ft. Lauderdale, FL and Z. Hillis-Starr, National Park Service, St. Croix, USVI.
- 4:05 **50.** Managing the subterranean termite populations in San Cristobal and El Morro, San Juan National Historic Site, Puerto Rico. **N.-Y. Su** and **P. Ban**, Univ. of Florida, Ft. Lauderdale Research & Education Center, Ft. Lauderdale, FL.
- 4:25 **51.** Protecting historical buildings and trees from subterranean termites in the New Orleans. **E. Freytag**, New Orleans Mosquito & Termite Control Board, New Orleans, LA.
- 4:45 **52.** From minarets to mills; eradicating drywood termites in historic structures using Vikane gas fumigant. **E. Thoms**, Dow AgroSciences, Tampa, FL.
- 5:05 **Discussion**
- 5:15 **Adjourn**

WEDNESDAY, JULY 27, 1999

OPEN

SEE OFF-SITE TOUR REGISTRATIONS

Be in Lobby 15 minutes before departure

- 8:00-2:15 **Rainforest Tour to 'El Yunque'**, a guided natural history tour of the Puerto Rico Rainforest.
- 8:15-1:15 **Tour of 'San Cristobal' & 'El Morro' Forts**, a tour and discussion of fort history and termite control methods.
- 8:30-2:15 **University of Puerto Rico Botanical Gardens and the Entomological Museum**, a guided tour.

THURSDAY MORNING JULY 29, 1999 CONCURRENT SESSION I SYMPOSIUM: Sweetpotato Insect Management Organizers: K. A. Sorensen and D. Seal Ponce A

- 8:15 Introduction. **K. A. Sorensen**
- 8:20 **32.** Sweetpotato importance in the USA and the World. **K. A. Sorensen**, North Carolina State Univ., Raleigh, NC.
- 8:40 **54.** Biology and management of sweetpotato weevil, *Cylas formicarius*. **D. R. Seal**, Univ. of Florida, IFAS, Tropical Research & Educational Center, Homestead, FL.
- 9:00 **55.** Grubs, *Phyllophaga* species, and their management. **A. Hammond**, Louisiana State Univ., Baton Rouge, LA.
- 9:20 **56.** Wireworms, Elateridae species, and their management. **D. R. Seal**, Univ. of Florida, IFAS, Tropical Research & Educational Center, Homestead, FL.
- 9:40 **57.** Other soil insects and vector management. **K. A. Sorensen**, North Carolina State Univ., Department of Entomology, Raleigh, NC.
- 10:00-10:25 **Break** **Ponce Foyer**
- 10:25 **58.** Lepidopterous foliar feeders and their management. **A. Hammond**, Louisiana State Univ., Baton Rouge, LA.
- 10:45 **59.** Towards the development of an IPM program for the sweetpotato weevil in Puerto Rico. **I. Cabrera**, C. Cruz and A. Pantoja, Univ. of Puerto Rico, Mayagüez, PR.
- 11:05 **Discussion**
- 11:20 **Adjourn**

CONCURRENT SESSION II
SUBMITTED PAPERS: Biology,
Taxonomy/Systematics, Biological Control
En Español - Spanish Speaking section
Organizer/Moderator: Alberto Pantoja
Panama Room

Biology

- 8:15 **60.** Attraction of males by female pink hibiscus mealybug. **M. Serrano** and S. Lapointe. USDA-ARS, U.S. Horticulture Research Laboratory, St. Croix, U.S. Virgin Islands.
- 8:25 **61.** Distribution and Dispersion of *Alphitobius diaperinus* (Coleoptera: Tenebrionidae) (Panzer) on Chicken Barns in Puerto Rico. **V.M. González,** C. Oritz, and R. Inglés, Department of Crop Protection, University of Puerto Rico, Mayagüez, PR.
- 8:35 **62.** Population dynamics of insect pests of economic importance in Puerto Rico. **E. Abreu,** Univ. of Puerto Rico, Crop Protection Department, Agricultural Experiment Station, Isabela, PR.

Taxonomy/Systematics

- 8:45 **63.** Mole Crickets (*Scapteriscus* spp., Orthoptera: Gryllotalpidae) from Puerto Rico. **S. Medina Gaud** and **R. Franqui**. Univ. of Puerto Rico, Puerto Rico Agricultural Experiment Station, Rio Piedras, PR.
- 8:55 **64.** The status of the invasion and the agricultural impact of the pink hibiscus mealybug *Maconellococcus hirsutus* Green in Puerto Rico **A. A. Garcia-Moll** Univ. of Puerto Rico, Cayey, PR.
- 9:05 **65.** Larvae of *Spodoptera* Gueneé (Lepidoptera: Noctuidae) from Puerto Rico: Description and taxonomic key. **S. Medina Gaud** and R.A. Franqui, Univ. of Puerto Rico, Agricultural Experiment

Station, Rio Piedras, PR.

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| 9:15 | 66. | Estado actual del conocimiento de las cucarachas (Dictyoptera: Blattaria) de Puerto Rico. E. Gutierrez , Museo Nacional de Historia Natural, Ciudad de la Habana, Cuba. |
| 9:25 | 67. | Quantitative biodiversity of Cuban insects, J. A. Genaro , Museo Nacional de Historia Natural, Ciudad de la Habana, Cuba. |
| 9:35 | 68. | Historical bio-geography and character evolution in the taxon "Macromischa" (Hymenoptera: Formicidae: <i>Leptothorax</i>). J. L. Fontenla , Museo Nacional de Historia Natural, Ciudad de la Habana, Cuba. |

Pest Management/Biological Control

- 9:45 **69.** Effects of companion crops and insecticide applications on *Thrips tabaci* on population dynamics on onions in Puerto Rico. **I. Cabrera** and E. Vargas, Puerto Rico Agricultural Experiment Station, Fortuna Substation, Juana Diaz, PR.
- 9:55 **70.** Damage funations and biocontrol of the banana corn weevil, *Cosmopolites sordidus* (Coleoptera: Curculionidae) in plantains in Puerto Rico. A. Salazar, **A. Pantoja**, and J. Oritz, Univ. of Puerto Rico, Puerto Rico Agricultural Experiment Station, Mayagüez, PR.

10:05-10:25	Break	Ponce Foyer
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- 10:25 **71.** Management of the banana root weevil with fipronil. **R. Ingles**, E. Hernandez, V. Gonzalez, N. Acin, Puerto Rico Agricultural Experiment Station, and H. Mercado, Rhone-Poulenc, PR.
- 10:35 **72.** Biocontrol of the whitefly, *Bemisia argentifolii* in Puerto Rico. H. Bastidas, **A. Pantoja**, I. Cabrera, and S. E. Ramos, Univ. of Puerto Rico, Puerto Rico Agricultural Experiment Station, Mayagüez, PR.

- 10:45 **73.** Effect of *Wedelia trilobata* on *Bemisia argentifoli* incidence on tomato in the south coast of Puerto Rico. **S.E. Ramos**, H. Bastidas, I. Cabrera, and A. Pantoja, Univ. of Puerto Rico, Puerto Rico Agricultural Experiment Station, Mayagüez, PR.
- 10:55 **74.** *Bemisia tabaci* Biocontrol Project. **N. Gabriel** and P. Vásquez, USDA/APHIS/PPQ, San Juan, Puerto Rico and M. Ciomperlik, USDA/APHIS/PPQ, Mission, TX.
- 11:05 **75.** Effects of intercropping, augmentative biological control, and *Bacillus thuringensis* Berliner-based products on the population dynamics of *Plutella xylostella* L. on cabbage. **A. L. González-Rodríguez**, Univ. of Puerto Rico, Department of Crop Protection, Mayagüez, PR.
- 11:15 Adjourn**

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