

Miriél Otero

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Education

Ongoing:

Doctor of Philosophy in Entomology, August 2020 - Present. Texas A&M University, Department of Entomology, College Station TX.

2017-2019:

Doctor of Philosophy in Plant Science & Plant Pathology, August 2017- January 2019. Montana State University, Bozeman MT.

2017:

Master of Science in Entomology, May 2017. University of Puerto Rico, Department of Crop and Agro environmental Sciences, Mayaguez PR. Thesis: **Revisión del género *Petrusa* Stål (Hemiptera: Flatidae) en Puerto Rico con notas sobre sus hospederos y biología.**

2011:

Bachelor of Science in Agronomy and soil, May 2011. University of Puerto Rico, Department of Crop and Agro environmental Sciences, Mayaguez PR.

Related Coursework

Biosystematics, Seminar, Insect morphology, Doctoral thesis, Insect Taxonomy
Integrated Pest Management, Invertebrates of Puerto Rico, Special issue
Conservation Development and Management of Natural Resources, Research Methods in
Biology, Research methods in plant pathology, Insects of Tropical Crops, Microbiology,
Entomology, Ecology, Tropical phytopathology and Genetics.

Work Experience

01/2019 – Present

Plant Protection and Quarantine Officer (PHSS)

USDA-APHIS-PPQ

8350 High Level Rd.

Houston, TX 77029 United States

Supervisor: Dr. Jon M. Daniels (713) 292-2610

Duties, Accomplishments and Related Skills:

As a plant health safeguarding specialist my responsibility is to safeguard United States agriculture and natural resources against the entry, establishment and spread of economically important pests and facilitate safe trade of agricultural products.

My current duties are:

Conduct regulatory actions, perform agricultural inspections, regulatory oversight and clearance of regulated items at ports of entry and warehouses, and verify that are pest and pathogens free. Issue phytosanitary certificates for exports and compliance agreements with private and public companies, universities and other facilities to allow them to perform cotton inspections, research with soil or quarantine/exotic insects, containment facilities and others. Perform audits as needed in compliant facilities. Apply corrective action if violation occur to mitigate pest risk. Supervise fumigations following the policies, guidelines and safety protocol. Work with other agencies like (DHS-CBP) to ensure the achievement of the USDA agriculture mission. Maintain program database as required and vehicle records.

Additionally, I'm working in a new entomological collection and developing new programs for students (school, university) for the agency outreach program. Also I'm assisting in the domestic program helping with trapping and pre-identification of entomological material collected. I've taken several trainings within the agency, some of them in the Professional Development Center in Frederick MD, also I took Cold treatment vessel calibrations training in Wilmington DE and in Harlingen TX I took several trainings with the Mexican FF program. Some of these trainings include, new techniques and research methods to improve the ID of insects (actionable vs non-actionable), determination of early sexual status from different species of exotic fruit flies like the Mexican FF (sterile vs non-sterile). In this last research project I'm collaborating with Dr. Sandra Leal (Field Operations) and Dr. Thomas (ARS). Finally I am the president of the Women Security Committee within the agency and we are working on a proposal to develop specific trainings and resources for women in the agency, to protect and prepare them against sexual harassment and violence in the field and work environments.

08/2017 – 12/2019

Graduate research assistant

Montana State University
P.O. Box 173150
Bozeman, MT 59717-3150 United States
Supervisor: Kevin Wanner (406) 994-5663

Duties, Accomplishments and Related Skills:

GRADUATE RESEARCH ASSISTANT (GRA) — Conducts research in the area of insect IPM, behavior and physiology as part of the research for my thesis or dissertation and other side projects.

General duties include:

- Performing experiments, statistical calculations, and analyzing the results of: Elateridae of economic importance in Montana, IMP including behavior, physiology and morphology of Elateridae, Pheromone chemistry and field experiment of Elateridae, Yucca moth symbiotic relationship, Alfalfa weevil management, Research in Fulgoroidea, vectors of diseases and other research topics.
- Proposing new research problems.
- Disseminating scholarly work and working in grants and research proposals.
- Attending conferences and symposia to present results like (ESA annual meeting)
- Training and supervising research personnel and students.
- Assist faculty, departments and other units in a variety of activities.

08/2018 – 12/2019

Graduate teaching assistant

Montana State University
P.O. Box 173150
Bozeman, MT 59717-3150 United States
Supervisor: Kevin O'Neill (406) 994-2333

Duties, Accomplishments and Related Skills:

GRADUATE TEACHING ASSISTANT (GTA) — Instruction, of undergraduates students.

General duties include:

- Classroom instruction of course ENTO 262 (Introduction to entomology)
- Instruction in recitation sections
- Conducting help sessions and holding office hours to advise students on class assignments
- Assisting with laboratory and field trip setup
- Grading papers, exams, laboratory reports, and homework; and/or other duties pertaining to the instructional mission of MSU.

11/2014 - 08/2017

Lab Research Assistant I

Ricetec

PO Box 1305

Alvin, TX 77512 United States

Supervisor: Kristina Licchetto (281)756-3300

Duties, Accomplishments and Related Skills:

Produce laboratory data to support the Ricetec breeding and biotechnology programs.

Perform routine and specialized assignments including:

- DNA extractions, PCR, and electrophoresis for project samples submitted to the marker lab.

Perform and document routine preventive maintenance per SOP on laboratory instrumentation to ensure optimum performance. Follow all safety rules and guidelines prescribed for operating in Lab Operations. Collects, prepares, evaluates and verifies samples and supporting records. Develops or designs various aspects of research projects. Contributes to the planning of various steps in experiment or project and to interpretation and documentation of findings. Operates and maintains a variety of highly specialized complex equipment which must be calibrated and synchronized to achieve desired results. Routinely communicate and coordinate laboratory operations and schedules with other members of Lab. Provide Lab Manager and Supervisors with information regarding project status, instrumentation failures, quality assurance data, and other relevant updates as requested. Organize, plan, and prioritize daily work assignments. Complete projects/assignments within strict deadlines with supervision. Quality and quantity of work meets departmental standards. Ability to work on limited number of projects concurrently. Intermediate to advanced knowledge in Microsoft software such as Excel, Word and Access.

Materials and Methods:

- Do PCR with rice samples using specific markers to determine presence of specific genes. Reactive and equipment used in this process are: molecular markers (PRIMERS), master mix, pipettes, multichannel pipettes, electronic pipettes, thermocycler, centrifuge and vortex. The machine used to see the fluorescent peaks is 3730 ABI analyzer.

- Pool PCR plates, for this process we do test panels to know the dilutions for the samples and then pool them. For the pool process we take the samples already PCR we add H₂O to the plates agree to specific dilutions, we prepare pool plates, high plates and ABI plates, we use Hydra machine to pool DNA and when the samples are already pooled, we put the ABI plates in 3730 DNA Analyzer to process and score the samples.

Other duties are: equipment maintenance including Hydras, 3730 DNA Analyzer, thermocycler, centrifuges, pool and DNA freezers and fridges.

- Sample sheets and data process, for pool plates we have to prepare sample sheets, ABI sheets and other documentation that required the use of computer programs like word, excel, power point, Adobe, and others. Also we use programs like DNA lab, Rocks, and applications like Gene mapper and Prism. We do data download and data entry of samples and inventory.

- Proficient in buffer preparation, marker reconstitution, RT PCR (7500 Fast RT and Quant studio 6 Flex), determine pool dilutions, test panels, Fluidigm (Phoenix, EP1

Genetic analysis), Gene flow, Knowledge in multiple scientific software and programs and Data Scoring.

-Greenhouse assistance: Assist in planting, maintenance and selection of rice hybrids as a part of a research to improve lines. Determine rice stages and do fertilization, irrigation and fumigation. Identify rice pests as insects, fungus, arachnids and nematodes.

- Maintains inventory of chemicals, stock solutions, etc., prepares solutions and reagents for use in the laboratory or field and safely disposes of waste material (both chemical and biological). Check amount of equipment, reagents, chemicals and materials we have and make orders if is necessary. Request quotes from different companies.

Train and supervise lab interns, lab assistants, research assistants and new staff.

Additional to my duties I:

Assist in quality lab functions: Amylose, grinding, milling, scanning barcodes, and data process.

- Assists in one or more phases of the research process by performing a variety of technical duties, in a laboratory, field, or greenhouse environment, common to the assigned area of work.
- Adapt to varying working conditions that require close concentration, visual attention and need for manual or physical dexterity.
- Constantly position body and limbs to perform functions in the field, laboratory and/or greenhouse
- Move body and limbs continuously throughout the day in the fields, laboratory and/or greenhouse
- Work effectively with plant and soil materials that may contain pollen, dust or other irritants
- Lift and/or otherwise move field, laboratory and/or greenhouse items weighing up to 40 pounds using proper lifting techniques
- Work in outdoor weather conditions including wet and/or humid conditions
- Required to stand; walk; use hands to finger, handle, or feel; reach with hands and arms and stoop, kneel, crouch, or crawl

Work Environment

- Must be able to work in all weather conditions on a daily basis
- Greenhouse and lab work may involve long hours and up to seven day work weeks

12/2013 - 10/2014

PPQ Aid L/A

United State Department of Agriculture (AHIS-PPQ)
USDA, APHIS, PPQ
Pedro Albizu Campos Ave. No. 2200 Suite 101
Mayaguez, PR 00682 United States
Supervisor: Albert Roche (787) 565-5261

Duties, Accomplishments and Related Skills:

As a laboratory aid, I performed laboratory related tasks like assist in taxonomically sorting received interceptions for identification (insects only), assist in preparing slides for identification and determination by the entomologist, tally fruit flies and pre-identify accordingly to species and classify by sex. Process URGENT interceptions as indicated by local identifier following established SOP, and agency guidelines and help with the organization and maintenance of Work Unit insect collection.

Additional to my duties I performed the following tasks - Genitalia dissection of Cicadellidae and other families within the order Hemiptera using 10% KOH Treatment. Genitalia dissection of male fruit flies with KOH Technique. Prepare insect collection for the activity “5 Días con Nuestra Tierra” Preparation of additional insect collections. Pre-identification of Survey Interceptions and Backlog. Prepared and packed Hot Zone Interceptions from San Juan to be sent. Facilitate taxonomic keys to the Identifier L. Sáez and help her to identify pests. These taxonomic keys came from Dr. Segarra Insectarium. (Cicadellidae, Psyllidae). Perform surveys of general insects to incorporate them to the outreach collection. Information Campaign on pigeon peas with *Migdalia Rosado*. Daily orientation to the general public on permitted and not permitted agriculture items.

I provided office support answering and making telephone calls as necessary in a timely and professional manner. Maintaining co-workers informed of important job-related work subjects. Following established protocols to process service requests and mailings. Providing data entry support and maintains records up to date (CBP interceptions). Photocopy and properly file critical program documents, related to surveys, treatments, regulatory actions, etc. Assist with computer projects and prepare reports as requested by Lab Head and/or Supervisor. Maintain filing system according to records management regulations and ensures information is accessible. Log interception data into the “Interception Record Book” in a complete, legible, and timely manner. Enter data from the “Interception Record Book” into local computer database records, correctly 95% of the time. Enter “actionable and reportable” pest interceptions in the AQAS National Pest ID Records. Assist in Surveys and Regulatory Activities following the guidelines as established by the PR & US VI Fruit Fly manual. Perform all the mechanics of traps preparation, installation and servicing. Explain project mission and survey activities to the public when requested. Collect and record data and prepare simple reports. Report damage or loss equipment to team leader

or supervisor immediately. Communicate to supervisor or team leader situations and/or events that affect program delivery. Accurately and timely complete all forms, logs, and records. Follow the safety and health guidelines and represent the agency professionally.

01/2012 - 12/2013

Teacher Assistant

University of Puerto Rico

PO BOX 9000

MAYAGUEZ, PR 00681-9000 United States

Supervisor: Aristides Armstrong (787) 832-4040 Ext: 3108

Duties, Accomplishments and Related Skills:

Teach entomology, fruit culture and floral arrangement laboratories to undergraduate students. As a teacher assistant, I give these laboratories as a part of my graduate assistantship. In the entomology laboratory the topics covered were: (1) Methods for collecting, in this laboratory I teach students different methods of insect collection using the net, aspirator and other resources; also I explain the different types of insect traps and their uses. We go outside to the field and we practice how to sweep the net to collect insects faster. (2) Preserving and mounting insects, in this laboratory I teach how to preserve insects using naphthalene and Paradichlorobenzene, also how to kill them using ethylic acetate, for the mounting I make a workshop in which each student have to mount different insects to practice the different types of mounting (pin, flags, butterflies and moths, minutem). (3) Taxonomy pictorial and dichotomy key, in this laboratory we talk about the different types of keys for insect identification and the frequent uses. We make a workshop in which I give each student a symbolic insect and they have to run the key and tell me which insect are. (4) Classes of arthropods, in this laboratory we talk about general classification, also we talk about the phylum arthropoda and the different subphylum and classes; we give more emphasis to the class insecta. (5) External Morphology: head, in this laboratory we make an Acrididae dissection, we took the head of the insect and we separate each structure of the insect head to see the different parts of the head and their uses. We see the mandibule, maxilla, labium, labro, maxillary palp, compound eyes, ocelli, hypofaringe, gena and palpus. (6) External morphology: thorax and abdomen, in this laboratory we also make an Acrididae dissection but we focus in abdomen and the different systems. We talk about the circulatory, respiratory, digestive, reproductive and nervous systems. In the dissection we see mostly the digestive and reproductive systems. (7) Classification: orders and families I, (8) Classification: orders and families II, (9) Classification: orders and families III, (10) classification: orders and families IV, in laboratory (7-10) I teach taxonomy of different families inside the orders. (11) The integument and metamorphosis of insects and (12) Internal systems of the insect. These last two laboratories I explain the process of metamorphosis of the insect and we make a review of the internal systems, circulatory, digestive, respiratory, reproductive and nervous. Also I prepare travels with the students and other activities. One of the travels that we make was to Cabo Rojo Puerto Rico and Adjuntas Puerto Rico to collect insects in the night. In this activity I teach the students how to use the net and several insects traps. Also I teach students how to build a light trap for nocturnal insects.

We practice field taxonomy and diverse collection methods in this travels.
Prepare study plans for students and help students to prepare entomology collections.

In the fruit culture laboratory the topics covered were:

Visit the mango study collection in AEE Fortuna

Avocado, citrus, pineapple - In these laboratories we took the students to different farms and Agricultural experiment stations in Mayaguez, Lajas and Isabela Puerto Rico. We explain the student the different crops and the economic importance, also we talk about the physiology of the crop. The students also make some tasks like spend mower, fertilize, and apply bio regulators and bio stimulants.

Security fruit farms (Lab in Alzamora) - in this laboratory we bring a representative of agricultural extension to talk about the most common accidents in the field, including information about how to prevent those accidents.

Propagation of fruit (fruit nursery, Alzamora) - In this laboratory me practice different methods of plant propagation including grafts and cuttings.

Athens Travel Pineapple and EEA Corozal (citrus, pineapple)- In this laboratory we visit two places, the Atenas Pineapple Farm that is in Manati Puerto Rico and The Agricultural experimental station that is in Corozal Puerto Rico. This laboratory covers citrus and pineapple crops. And the last laboratory was a trip to packer and distributor of fruits, metropolitan area.

In the floral arrangement laboratory the topics covered were: (1) Discussion of Syllabus Tools, materials, equipment, (2) Presentation Card, slotting handling flowers, (3) Dealing with flowers, (4) Identification of flowers and foliage, (5) Tour Major, (6) Color and exploring ways, (7) Wiring and Drying, Round and Bridal Bouquet, (8) Symmetric / Asymmetric Triangle, (9) Bud Vase and Ties, Vertical and Horizontal, (10) Increasing / Hogarth, (11) Design with plants and Project with dried flowers, (12) Eastern Tropical, (13) funeral, (14) Final Exhibition and Presentation. In the laboratory the students make different types of floral arrangements.

06/2013 - 12/2013

Research Assistant

University of Puerto Rico

PO BOX 9000

MAYAGUEZ, PR 00681-9000 United States

Supervisor: Dr. Jose Pablo Morales Payán (787) 832-4040

Duties, Accomplishments and Related Skills:

Assist in the whole agriculture process of avocado, citrus, mango, pineapple, breadfruit and guinep orchards.

Implement treatment orchards and take data/observations.

Database analysis.

My work areas where in Agricultural experimental station in Lajas Puerto Rico and

Agricultural experimental station in Isabela Puerto Rico.

My duties where to develop planting plans, assist in labor and be in charge of a group of workers in the field. Also I was running all the experiments in the field, take data and analyzed them.

In the organic avocado field we were looking for a better natural cover to avoid weeds around the avocado trees, also we make experiments using growth regulators. Between rows of avocado we planted different crops as beans, cilantro and tomatoes, this to get a better use of the field and help inhibit weeds. The growth regulator where used to compare different concentrations and see which concentration was better for plant growth.

In the citrus, mango, breadfruit and guinep we work with Bio regulators and the interaction plant pest with these treatments of bio regulators. We focus on citrus, and we were interested to know the interaction of *Diaphorina citri* citrus psyllid with application bio regulator.

In the pineapple field we work with production of tillers. The variety that we use was MD2 Pineapple.

04/2013 - 06/2013

MPD Intern

Du-Pont Pioneer Hi-Bred

Road 3 Km 154.9 Street CA

Salinas, PR 00751 United States

Supervisor: Liliseth Mora (787) 824-4440

Duties, Accomplishments and Related Skills:

Supervision of workers in cornfield - As a MPD Intern I was in charge of a group of 10 to 30 workers in a cornfield. I supervised the tasks that the workers have to complete and also I assist them in the duties. Some of the duties were: put shot bags over the corn shots, planting, harvest and cleaning of harvested fields. Also other duties that I do were monitoring pest and diseases, inventory and database analysis.

My area was the cornfield. Specifically restricted area, I work with the fields that were regulated because they're still under investigation and analysis

11/2010 - 12/2011

Research Assistant

University of Puerto Rico
PO BOX 9000
MAYAGUEZ, PR 00681-9000 United States
Supervisor: Dr. Alejandro Segarra (787) 241-3399

Duties, Accomplishments and Related Skills:

Collection of species of Fulgoroidea in Puerto Rico in a Survey of potential phytoplasma vectors associated to palms. In this investigation I collect several specimens of the superfamily Fulgoroidea in palms. The purpose of the study were identify all the Fulgoroidea that feeds on palms to make a report of potential phytoplasma vectors and determine abundance and diversity patterns, also in the 2010 finding in Puerto Rico of the palm cixiid, *Haplaxius crudus* (Van Duzee), a vector of coconut lethal yellowing disease (CLY) and the discovery of a palm-related 16SrIV phytoplasma in a local derbid planthopper, *Cedusa sp.* have generated concern in landscaping and tourism industries. Recent discoveries show complex vector-host plant interactions in palm phytoplasma epidemiology. CLY phytoplasmas have been found in other fulgorids, such as the derbid *Cedusa sp.* in Jamaica and in the cixiid *Nymphomyndus caribbaea* (Fennah) in Cuba. Further, CLY phytoplasmas have been found in non-palm hosts, such as in common dicotyledonous weeds. These new findings open startling possibilities for yet unknown palm phytoplasma-vector interactions. This potential complexity leads to the need for systematically understanding the range of potential fulgoroidea vectors in Puerto Rico. Also, in this investigation we want to know how *Haplaxius crudus* (vector of lethal yellowing phytoplasma) where distributed in Puerto Rico.

Collection and data analysis. The survey of planthoppers in palms start in April 2010, we have collected in sites containing concentrations of palms throughout Puerto Rico. Most commonly we sampled coconut palms (*Cocos nucifera*), but also royal (*Roystonea regia*), foxtail (*Wodyetia bifurcata*), fish tail (*Caryota mitis*), Christmas (*Adonidia sp.*), MacArthur's (*Ptychosperma macarthurii*), Merrill's (*Adonidia merrillii*), Sabal (*Sabal palmetto*), Prestoea (*Prestoea montana*), and phoenix (*Phoenix dactylifera*) palms. At each site, we swept several times with an entomological net the accessible foliage of palms of assorted sizes. Number of plants sampled, palm species, and GPS coordinates were recorded. Planthoppers were collected with aspirators into vials, and placed in plastic bags inside fridge with iceboxes for transport to laboratory. All planthoppers were mounted for identification, the mounting were in paper flags (double mounting). In most cases, genitalia dissections were used for species confirmation. We use GPS to create database in collected areas because with this data we can determine the distribution of specimens, especially the distribution of *Haplaxius crudus* and *Cedusa inflata*, and the two specimens of interest. Also we use taxonomic keys and other references like Caldwell & Martorell (Journal of the University of Puerto Rico), scientific papers and articles, handbooks (Study of insects, Triplehorn and Johnson) and others.

Preparation of genitalia dissections for species identification. For the identification, most of the insect been dissected, the procedure of dissection was: abdomen was place in KOH 10% and left for 30 minutes in hot "water bath ". For removal of genitalia first we remove the abdomen from KOH 10% with a dropper and place in a dissecting dish, then under the microscope and with dissecting needles we remove genitalia from the abdomen and clean it. After remove the genitalia this was placed on a slide with glycerol and cover

with a coverslip, then we observe the genitalia under the microscope and make the identification.

Help in the creation of conclusions and recommendations. The results of the study were: A total of 34 sites were visited in 18 trips conducted, between April 2010 and March 2011. A total of 1837 plants were sampled, resulting in the collection of 1045 fulgoroidea individuals. Collections sites included both coastal and mountain locations. Thirty-three fulgorid species belonging to 9 families were found in association with palms. The ten most common species represent 92.9% of individuals. Most common families were Derbidae (51.9% of individuals) and Cixiidae (37.1%), followed by Flatidae (6.7%), Delphacidae (2.5%), Issidae (0.6%), Achilidae (0.6%), Kinnaridae (0.3%), and Tropiduchidae and Acanaloniidae with 0.1% each. We conclude that compared with similar fulgoroidea surveys in Florida and Texas our survey appears to show greater fulgoroidea species diversity.

Present the results in the Scientific Journey of the University of Puerto Rico at Mayaguez, in which I receive the second place for this display presentation. Also, I present a poster title: Survey of potential phytoplasma vectors: Palm-associated Fulgoroidea in Puerto Rico, in the ESA-SEB Meeting in Puerto Rico in which I receive the first place as an undergraduate student. Finally we submit the article to Neotropical Entomology Journal.

Assist in the Digitalization project (Database) of the specimens from the Museum of Entomology and tropical biodiversity (EEA-PR).

01/2010 - 11/2010

Undergraduate Research Assistant

University of Puerto Rico

PO BOX 9000

MAYAGUEZ, PR 00681-9000 United States

Supervisor: Dr. Alejandro Segarra (787) 241-3399

Duties, Accomplishments and Related Skills:

Establish and maintain laboratory colonies of *Hyphotenemus hampei* (coffee pest known as Broca) in Francisco Sein Quarantine Lab in PR. Assist in the implementation of biological control against *Hyphotenemus hampei* using hymenoptera parasitoid under controlled conditions and extreme security. Assist in the maintenance and feeding of colonies of *Hypogeococcus pungens* as a research project of graduate student Adriana Jimenez.

-Assist in preparation of illustrations and identification of Puertorrican Long-horned beetles (Cerambycidae) and assist in photography and design of educational/scientific displays. This was a team project that was compound by Dr. Alejandro Segarra (PhD in entomology, Cathedratric of UPR Mayaguez), Agro. Luis Collazo (Technician of the Department of crop and agroenviromental sciences of UPR Mayaguez), Julio Micheli (Art Professor and expert in Cerambycidae family) and I (student of UPR Mayaguez). The purpose of the study was determining the number of species of Cerambycidae that are present in Puerto Rico and update scientific names if necessary. First we start for looking specimens at entomology collections of tree places, Crop protection Entomology Department Collection UPR Mayaguez, Biology Collection UPR Mayaguez and Museum

of Entomology and Tropical Biodiversity Collection in UPR Rio Piedras. I was in charge of taxonomy. Some specimens that I identified were: *Chlorida festiva*, *Stenodontes sp.*, *Calliphogon proletarium*, *Xystrocera globosa*, *Batocera rufomaculata*, *Derancistrus thomae* and others. We present it to the Department of Crop and Agroenvironmental Sciences of the University of Puerto Rico at Mayaguez Campus. This was a great team work because together we contribute to update the status of the species of Cerambycidae present in Puerto Rico.

-Assist to describe four endemic species of lady bugs from Puerto Rico (genus *Decadiomus*). This four species of *Decadiomus sp.* were found in a general survey that Dr. Segarra and I were running in the center of the island. For the identification I make genitalia dissection of male and female specimens. Genitalia were dissected after maceration of abdomens in KOH 10%, and placed in glass slides with glycerin for examination. Illustrations were arranged by species. First, a ventral view of the phallobase, followed in approximate order by a dorsal view of the phallobase, the siphon, an enlargement of its apical section, and the female genitalia. Prosternum pictures were produced with a JEOL 5410LV scanning electron microscope. Holotypes for *bahamicus*, *peltatus*, *hubbaridi*, *hughesi*, *pictus* and *tricuspidis* were examined at the United States National Museum of Natural History, Smithsonian Institute, Washington D.C. (USNM). Additional paratype specimens of *pictus* were examined at the Museum of Entomology and Tropical Biodiversity (METB) at the University of Puerto Rico Agricultural Experiment Station in Rio Piedras. Other specimens examined are deposited at the Invertebrate Collection at the University of Puerto Rico Mayaguez Campus (UPRM-IC), or in the senior author's private collection. With this four new species the number of *Decadiomus* species increased to ten species in the world. The article was published to the Journal of Neotropical Entomology. The four new species were: *Decadiomus martorelli* (Segarra & Otero), *Decadiomus seini* (Segarra & Otero), *Decadiomus ramosae* (Segarra & Otero) and *Decadiomus hayuyai* (Segarra & Otero). Also with the information obtained of the four new species of *Decadiomus sp.* we make a display poster and I present it in SOPCA.

-Curatorial duties at the Museum of Entomology and Tropical Biodiversity. My duties were take care of the entomological collections at the Museum, this include clean specimens, paste broken parts as tarsus, antenna, wings, heads etc., reorganized the collections and accommodate per family then by genera and species, Also take pictures of specimens for an electronic collection. I visit the Museum of Entomology and Tropical Biodiversity to see the collections, with the permission of Dra. Rosa Franqui I took the collection by orders and I organize collections by orders and every week I take an order collection for to the Insectarium Luis F. Martorell where I performed the work of curation. The orders that I work were: Odonata, Orthoptera, Phasmatodea, Dermaptera, Embiidina, Mantodea, Blattodea, Hemiptera, Coleoptera, Neuroptera, Hymenoptera, Trichoptera, Lepidoptera and Diptera. Also we incorporate new specimens collected by Dr. Segarra and me in several surveys to the collections. The specimens that we include were more from the order hemiptera superfamily fulgoroidea. We include some cixiidae, derbidae, delphacidae, tropiduchidae, flatidae, acanalonidae, kinnaridae and other specimens. When I finish the curatorial duties I return the collections to the Museum and then I took another order to make the same procedure. This was an extraordinary experience and very interesting.

08/2009 - 12/2009

Entomology Assistant

University of Puerto Rico

PO BOX 9000

MAYAGUEZ, PR 00681-9000 United States

Supervisor: Dr. Ramon Torres (787) 832-4040 Ext: 3796

Duties, Accomplishments and Related Skills:

This investigation survey was running in Club Deportivo del Oeste golf field in Cabo Rojo Puerto Rico, the principal problem that presents the field was the presence of big patches in the turf Dr. Ramon Torres Cathedric of the University of Puerto Rico at Mayaguez selects three students to run the investigation. He selects one student for soil analysis, one student for plant pathology and one student for monitoring insect pests. I was the student who was in charge of monitoring insect pests. My principal duties were collect insects in turf and adjacent zones like pond and trees three times per week. This was made using three different methods of collection, yellow sticky traps, pitfall traps and ento net. The sticky traps were used for flying bugs like (Lepidoptera, thysanoptera, coleoptera, orthoptera, diptera and hemiptera) they were placed in trees branches and shrubbery. The pitfall traps were using for insects that are mostly in soil like beetles (coleoptera), (Orthoptera: gryllotalpidae) and ants (hymenoptera). The net was using to collect general insects in grass and shrubbery. The yellow sticky traps were placed for one week, also the pitfall traps. The collected insects were put in plastic bags and putting in fridge with ice packs to preserve the insects until where carried to the laboratory for mounting and identification. In the laboratory the insects were mounting in three different forms, pin, paper flags (double mounting) and slide mounting. The most bigger insects (coleoptera: chrysomelidae, coccinelidae, scarabeidae, cerambycidae, curculionidae,) (Lepidoptera: sphingidae, hesperiidae, pieridae, nymphalidae, danaeidae, arctiidae) (Orthoptera: acrididae, gryllotalpidae, tettigonidae)(hemiptera: reduviidae, pentatomidae, coreidae, scutelleridae) were pinned, the small insects (Diptera: tephritidae) (Coleoptera: coccinelidae, chrysomelidae) (hemiptera: flatidae, cixidae, issidae, cicadellidae, derbidae, delphacidae, tingidae, membracidae, cercopidae, miridae) (Hymenoptera: formicidae, chalcididae, aphidae, vespiidae) were mounting in paper flags (double mounting). (Thysanoptera: tubulifera and terebrantia) and (Hemiptera: aphididae and pseudococcidae) were mounting in slides. The process for slide mounting was, place thrips, pseudococcids and aphids in separated vials with 10% KOH for 35 minutes, then we extract and place them in a dissecting dish with 70% alcohol for three minutes, then we place them in 'Double stain' diluted in 70% alcohol ratio 1:4 for two minutes, then we pass from the 'Double stain' to 70% alcohol and 95% alcohol for 3 and 5 minutes respectively. After dehydrate, specimens were place on a slide with Euparal and then we put a cover glass. The frames were place on a hot plate for 8 days and then we proceed to identify them. After we mount all the specimens collected, we start the identification of each insect. For the identification we use references, dichotomy keys and resources like Professors and investigators. Some references we used were Caldwell & Martorell, Borror and DeLong: Study of Insects, Journal of the University of Puerto Rico, Hipolito O'Farrill: Plagas de Cespedes, Torre Bueno Entomology Dictionary and American

insects. Many of these references are books that have dichotomy and pictorial keys for the identification of families and some have keys for genera and species. The Professors that helped me in the identification and teach me mount techniques were Dr. Alejandro Segarra (PhD Entomology), Dr. Carlos Rosario (Cathedralic Entomology), Dr. Angel L. Gonzalez (Cathedralic Entomology) and Professor Aristides Armstrong (Cathedralic Entomology) from the University of Puerto Rico at Mayaguez. Also we create a database for the collection of insects and with the data we make maps of the distribution of the insects collected inside the field, divided by zones (trees, turf and ponds). One of the purposes of the investigation was create Integrated Pest Management. But we don't have to create it because we don't find big populations of pests in the field. The entire pest found were under the umbral of economic damage and don't required action of treatment. We found only one gryllotalpidae and three *Diaprepes abbreviatus* (curculionidae), also we found only two anthills of *Solenopsis invicta* (hymenoptera: formicidae). In shrubbery we found sphingidae, noctuidae and danaeidae larva and adult, but about two of each one. In turf we found four cercopidae in different areas of turf, one very distant from another. The population of harmful insects was controlled by natural enemies like hymenoptera parasitoids, coleoptera: coccinelidae predators, Neuroptera: chrysopidae predator and others. The other insects found do not represent danger in the field. This was my first experience as an entomologist researcher in collaboration with Dr. Ramon Torres Cathedralic of the University of Puerto Rico at Mayaguez. This was part of a special work of two university credits

Job Related Training, Workshops and Meetings:

SOPCA Meeting (2010)

ESA-SEB Meeting, San Juan PR (3/2011)

ADA Amendments Act of 2008 Training Course (12/2/2013)

NSC Defensive Driving Course 9th Edition (English) (12/3/2013)

Sweepstakes Ethics Training (12/2/2013)

FY2014 USDA Information Security Awareness and Rules of Behavior training course (11/19/2013)

Understanding Chemical Labels Under GHS (12/3/2013)

Understanding Safety Data Sheet (SDS) (12/3/2013)

Tomato Chlorotic Spot Virus and Early Detection of Scolytidae (12/4/2013)

AQIM (12/10/2013)

Workplace Bullying (12/11/2013)

Fruits in Baggage (12/11/2013)

Pest and Disease training (12/11/2013)

Ponce WU Training Committee Survey (12/11/2013)

Pre Departure Training (12/11/2013)

Agricultural Products (12/11/2013)

X-Ray Machine Training (12/11/2013)

Border Patrol (12/11/2013)

Insect Morphology Training (12/11/2013)

Insect for Discard Authority (12/11/2013)

Fruit flies Adult Identification (12/12/2-13)

Fruit flies larvae Identification (12/12/2013)

Citrus Diseases Training (12/13/2013)
 Fruit flies Trapping Protocol (12/16/2013)
 Workshop Genetically Modified Rice (Texas A&M) (2015)
 Chemical Storage/ Flammables & Explosive (2/2015)
 Hurricane Procedures (3/2015)
 Heat Stress/ Greenhouse Safety (4/2015)
 Waste Disposal/ Compressed Gas Cylinders (5/2015)
 Hazard Communication/GHS/ Chemical Labeling (6/2015)
 Glassware Handling/ Emergency Response/Spill Kits (7/2015)
 Electrical and Fire Safety/ Good Housekeeping (8/2015)
 Ergonomics/ Basic First Aid (9/2015)
 PPE/Respiratory Protection/ Showers and Eyewashes (10/2015)
 Lab Equipment Safety- hoods, centrifuges and autoclaves (11/2015)
 Holiday Safety/ Driver Safety (12/2015)
 CPR and First Aid Certification (2016)
 ESA Meeting, Denver CO (11/2017)
 Workshop Pulse Crops, Montana State University (1/2018)
 Fumigation Workshop, Frederick MD (USDA) (2/2019)
 Train the Trainer Workshop, Frederick MD (USDA) (5/2019)
 Defensive Driving Training (2/2019-9/2019)
 Pest Detection and Interception, Frederick MD (USDA) (8/2019)
 Fruit fly genitalia dissection techniques, Harlingen TX (USDA) (9/2019)
 ACO Phytosanitary Certification Specialist (11/2019)
 Cold Treatment, Vessel Calibration, Wilmington DE (2/2020)

Language Skills:

Language	Spoken	Written	Read
English	Advanced	Advanced	Advanced
Spanish	Advanced	Advanced	Advanced

Affiliations:

Alpha Zeta - Active member
Gamma Sigma Delta - Active member
AEPROC - Active member
Entomological Society of America – Active member
SAAC Athlete Association – Member
SOPCA – Member
RA-Cooley Entomology Club - Secretary (Montana State University)
Women Security Committee – President (USDA)

Awards:

- 1- Arturo Roque Grant
- 2- First place, poster: Survey and identification of lawn pest in Club Deportivo del Oeste, P.R. (2009) University of Puerto Rico, 6th Undergraduate Scientific Day.
- 3- Second place, poster: Survey of potential phytoplasma vectors: Palm-associated Fulgoroidea in Puerto Rico. (2010) University of Puerto Rico, 7th Undergraduate Scientific Day.
- 4- First place, poster: Survey of potential phytoplasma vectors: Palm-associated Fulgoroidea in Puerto Rico. March 20-23, (2011). ESA-SEB Meeting, San Juan Puerto Rico.
- 5- SMART Scholarship and Robert & Edna Duncan Scholarship.

Professional Publications:

- 1- Poster: Four new species of *Decadiomus* Chapin (Coleoptera: Coccinellidae) from P.R. A. Segarra, **M. Otero** & H. Perez. 2010. Annual Meeting SOPCA. University of Puerto Rico – Mayagüez Campus, Mayagüez, PR.
 - 2- Poster: Survey of potential phytoplasma vectors: Palm-associated Fulgoroidea in Puerto Rico. A. Segarra & **M. Otero**. March 20-23, 2011. ESA-SEB Meeting, San Juan Puerto Rico.
 - 3- Publication: Survey of palm-associated Fulgoroidea in Puerto Rico. A. Segarra, R. Franqui & **M. Otero**. *Journal of Agriculture of the University of Puerto Rico* 97 (3-4): 107-117 (2013).
 - 4- Publication: Four New Ladybug Species Belonging to *Decadiomus* Chapin (Coleoptera: Coccinellidae) from Puerto Rico. A. Segarra & **M. Otero**. *Neotropical Entomology* (2014) 43:555-563.
 - 5- Publication: Establishment of the Sea Grape Flatid *Petrusa epilepsies* (Hemiptera: Fulgoroidea: Flatidae) in Florida. Brian W. Bahder, Susan Halbert, De-Fen Mou, Ericka E. Helmick, Noemi Soto, **Miriel Otero**, and Alejandro E. Segarra. *Florida Entomologist*, 101 (4): 634-641 (2019)
 - 6- Publication: A new species of *Abrosoga* (Hemiptera: Fulgoroidea: Delphacidae), an endemic Puerto Rican planthopper genus, with an updated checklist of the Delphacidae of Puerto Rico. **M. Otero** & Ch. R. Bartlett. *Zootaxa* (2019) 4563(2):372-386.
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References:

Name	Employer	Title	Phone	Email
Dr. Jon Daniels	USAD, APHIS, PPQ	Officer in Charge, Supervisor	713-292-2610	Jon.m.daniels@usda.gov
David Quiñones	USDA, APHIS, PPQ	Supervisor (Pre-Departure)	787-882-3515	david.quinones@usda.gov
Dr. Kevin Wanner	Montana State University	Cathedratic	406-451-3479	Kwanner@montana.edu
Dr. Alejandro Segarra	University of Puerto Rico	Cathedratic	787-241-3399	alejandro.segarra@upr.edu
Victor Gonzalez	University of Puerto Rico	Agronomist	787-325-3303	victorm.gonzalez@upr.edu

Additional Information:

Certifications:

- First Aid CPR AED (Adult & Infant)
- Regulatory pesticide applicator and private pesticide applicator licenses.

Media:

- Creator and administrator of the informative and educational website Insectarium Luis F. Martorell (since 2013)