UCR ENTOMOLOGY

THE BUZZ

Looking back on 2020

OCT. 2021

UCR Inclusivity Scholarship Challenge

Your donation can have twice the impact!

Beginning October 4th, every donation will be matched by an anonymous donor

Please consider a donation to help build the inclusivity fund, an endowed scholarship for underrepresented students.

In 2020, the Department of Entomology raised over $37,000 through a grassroots effort to create a permanently endowed scholarship for underrepresented students. We have already awarded funding to our first scholar (Ariana Sanchez)! We now have a novel opportunity this year to greatly build the fund even more. Starting October 4, 2021, the UCR Trustee Student Support Challenge Fund will match every gift made towards a student support fund 1:1 from $5 to a maximum of $500,000 for each donation! Every dollar that we contribute to our inclusivity scholarship will be doubled in value, so please consider making a new donation and help us to grow this fund to great heights! The campaign drive **starts Monday, October 4th** and our goal is make all of our contributions before December 31, 2021 to guarantee access to the match.

Note that Charitable Gift Annuities (CGT) and Charitable Remainder Trusts (CRT) also count for the matching funds. This involves giving your money to UCR and then they pay you a guaranteed income for life. This is a great way to plan and double your estate charitable contributions. For details contact DuBron Rabb (Director of Development; dubron.rabb@ucr.edu).

Donations: https://entomology.ucr.edu/advancing-inclusivity-entomology-scholarship

INSIDE THIS ISSUE:

Letter from the Chair

Alumni and Friends of UCR Entomology,

Welcome to the start of the Fall 2021 Academic year! I hope you all are in good health and spirits. The campus has opened back up after a 18 month hiatus! The students are coming back and classes are again being held in person. We are able to do this as there is a mandatory campus policy for vaccines and mask wearing. At the time of this writing, we are above 90% vaccinated. It is a big relief for everybody as we transition back to what we remember as "normal". Good news continues as the COVID infection rate continues to drop in California while the vaccination rate continues to increase statewide. Everyone is hopeful we can stay on this path. The faculty and staff have been phenomenal in keeping all of the teaching, research, extension, outreach, and service balls in the air! Everyone has done a fantastic job.

Both graduate and undergraduate Entomology programs remain strong as well as our participation in several interdepartmental graduate programs. As you may recall, the results of our external graduate review were excellent. Since our last newsletter, we also went through an undergraduate review with excellent results as well. Both graduate and undergraduate programs remain strong, growing, and nationally/internationally recognized for their excellence. I am also pleased to announce we have graduated our first 4+1 BS/MS this summer and have enrolled four additional students into the program.

Again, I would like to emphasize our newly established endowment, *Advancing Inclusivity in Entomology Scholarship Fund*. This endowment supports those undergraduates who have faced systemic barriers in their scientific careers. You can read about our first awardee, Ariana Sanchez, further into the newsletter. We now have an exciting opportunity this year to greatly build this and other funds even more. **Starting October 4, 2021, the UCR Trustee Student Support Challenge Fund will match every gift made towards a student support fund 1:1 from $5 to a maximum of $500,000 for each donation!** Every dollar that we contribute will be doubled in value, so please consider making a new donation and help us to grow our support funds to great heights! The campaign drive starts Monday, October 4th and our goal is make all of our contributions before December 31, 2021 to guarantee access to the match. I urge you to please consider donating to this very worthy cause. Once again, I cannot thank you, our alumni and friends, enough for generously supporting our programs.

If you would like to donate to support any of our programs, please visit https://entomology.ucr.edu/giving and choose among the many Entomology funds that support our students. And of course, I am always available to talk to those interested in establishing new endowments; if you have ideas, let's talk. Once again, *THANK YOU AND HAVE A GREAT 2021-2022!!!*

Dr. Rick Redak
Chair of the Department

A Special Thank you to all of our Contributors in 2020-2021

The UCR Entomology Department would like to thank the many supporters of our students and departmental programs. The number of individuals and companies that have provided financial gifts is remarkable, and the funds provided are used to keep the Entomology Department one of the best in the world! If you would like to give a tax deductible donation to UCR Entomology, please visit our website at https://entomology.ucr.edu/giving and then choose among the many Entomology funds that support our students and programs.

MONARCH LEVEL ($1000 and above):

Anonymous
Dr. and Mrs. Carde
Dr. Matthew Daugherty
Mr. and Mrs. Deardorff
Mr. Brock Dewey
Drs. Federici
Mrs. Michelle Grover Dewey
Mr. and Mrs. Hardison
Dr. and Mrs. Heraty
Mr. and Mrs. Ikeda
Mr. Rob Ives
Dr. Kabashima and Mrs. Kabashima
Mrs. Retha E. Keenan
Dr. Johnson and Dr. Le Beck
Ms. Leslie A. Leavens
Dr. Chow-Yang Lee
Mr. Wang and Ms. Lee
Dr. and Mrs. Legner
Dr. and Mrs. Malone
Dr. Quinn S. McFrederick
Kelly Murillo
Dr. and Mrs. Paine
Dr. and Mrs. Perring
Mr. Mark Pomerantz
Mr. David Rankin
Mr. and Mrs. Smith
Dr. Richard Stouthamer
Mr. Stuart C. Swanson
Mr. Edward H. Traynor
Mr. and Mrs. Veeh
Dr. Waines
Dr. Christiane Weirauch
Dr. William D. Wiesenborn
Mr. Eric M. Wilson
Mr. Tate and Dr. Wright
Mr. Yamanaka and Ms. Yamanaka
Agri-Turf Distributing, LLC
Alliance for Food & Farming
BASF Corporation
Bayer
California Date Commission
Canine Detection Services
Certis USA, LLC.
Control Solutions Incorporated
Corigin Solutions LLC
Corteva Agriscience
E.I. Du Pont De Nemours & Company
Fidelity Charitable
Insects4Inclusion
International Pheromone Systems Ltd
ISK Biosciences Corporation
J. J. Mauget Company
Leavens Ranches
Lehigh Agricultural & Biological Services, Inc.
Livestock Insect Workers Conference
Los Angeles County Beekeepers Association
Marrone Bio Innovations, Inc.
Mud Creek Ranch
Provivi, Inc.
PureCrop1
Rees Agricultural Services
Rentokil North America, Inc.
Semco Co., Ltd.
Sempra Employee Giving Network via YourCause, LLC.
Southern California Gas Company
Sumitomo Chemical Company, Ltd.
Sweet Blessed Bee Magic, LLC
Syngenta Crop Protection, LLC
Triangle Community Foundation, Inc.
US Poultry
Vestaron Corporation

QUEEN LEVEL ($500 - $999):

Dr. Atkinson and Dr. Baule
Dr. Nay and Dr. Boyd
Mr. James P. Finch
Dr. and Mrs. Gerry
Dr. Nora A. Hackett
Dr. Kimberly Hammond
Dr. and Ms. Irwin
Mr. Alexander Knyshov
Mr. James O. Lloyd-Butler
Ms. Jessica J. Maccaro
Dr. Jocelyn G. Millar
Mr. Peter K. Miller
Dr. Alexander S. Raikhel
Dr. Erin W. Rankin
Dr. Richard A. Redak
Dr. and Mrs. Rust
Dr. and Mrs. Toscano
Dean Uhrich and Mr. Holmes
Dr. S. Hollis Woodard
Mr. and Mrs. Zuparko
Finch Family Foundation
James Lloyd-Butler Family LLC
Vanguard Charitable

...continued on page 4

...continued from page 3: A Special Thank you to all of our Contributors

VICEROY LEVEL ($100 - $499):

Mr. Christopher W. Allen
Dr. Beesley and Mrs. Beesley
Dr. Roger A. Burks
Dr. Frank J. Byrne
Mr. Daniel Cahn
Mrs. Elizabeth A. Campos
Dr. and Mrs. Cardullo
Dr. and Mrs. Carroll
Dr. Dong-Hwan Choe
Dr. Christine E. Dodge
Ann-Marie Fisher
Mr. and Mrs. Forister
Mrs. Carol C. Fujita
Mr. and Mrs. Gardner
Mr. Marco Gebiola
Dick and Claudia Giardina
Mr. and Mrs. Gonzalez
Dr. William A. Gregory
Dr. Allison K. Hansen
Susan J. Hansen
Vice Chancellor Hayashida and Mr. Olman
Ms. Jennifer A. Henke
Mr. Henry A. Hespenheide, III
Mr. and Mrs. Hobza
Mr. and Mrs. Jorgensen
Mr. Mazin M. Kashou
Dr. David Kellum
Mr. Matt Kenney
Mr. and Mrs. Kimsey
Mr. Robert L. Kresslein
Dr. LaPre and Ms. Morris
Mr. Leitch and Ms. West
Dr. W. Joe Lewis
Mr. Paul Lofthouse
Ms. Adriana Medina
Dr. John C. Luhman
Mr. Ronald W. Lyons
Dr. Pamela Marrone
Dr. Mauck and Dr. Halloran
Dr. Emily G. McDermott
Ms. Jennifer W. Merchant
Dr. Hannah Nadel
Dr. Gregg Stephen Nuessly
Mr. and Mrs. Orth
Dr. Gregory J. Partida, Jr.
Mr. and Mrs. Pavela
Dr. and Mrs. Pinto
Mr. and Mrs. Platner
Dr. and Mrs. Powell
Mr. Ravindar Raman
Mr. Paul F. Rugman-Jones
Dr. David L. Ryan
Dr. Christi A. Scott
Jordan Sissel
Mr. Phil Tognazzini
Dr. and Mrs. Trumble
Mr. Richard S. Vetter
Dr. & Mrs. Vickers
Ms. Mari A. West
Mr. Keith Willingham
Mr. Sam H. Wilson
Mrs. Catherine I. Zimmer
Driscoll's Inc.
Isotech Pest Management
MGK Insect Control Solutions
Oro Del Norte, LLC
Pest Control Operators of California Orange County District
Tognazzini Avocado Partnership

DEPARTMENT SUPPORTERS:

Ms. Ruth Amrich
Mr. and Mrs. Berry
Bethanne Bruninga-Socolar
Ms. Kathleen A. Campbell
Ms. Elspeth S. Cannell
Dr. Chrisman and Mrs. Chrisman
Ms. Hannah Chu
Dr. Clint E. Collins
Mr. and Mrs. Cooley
Elvira de Lange
Dr. Thomas M. Dickson
Dr. John F. Emmel
Ms. Carol L. Engelhardt
Ms. Natalie Fischer
Ms. Kaleigh Fisher
Mr. and Mrs. Frommer
Ms. Marilia P. Gaiarsa
Ms. Ysabel M. Giraldo
Ms. Lisa A. Gonzalez
Mr. Matt Heimdahl
Ruth Hufbauer
Mr. Umeda and Ms. Louie
Ms. Giselle E. Lozano
Dr. Paul K. Masonick
Margrit McIntosh
Dr. Philip S. McNally
Ms. Nagham Melhem
Ricardo Nazairo-Colon
Dr. John William Oross
Mr. Iqbal Pittalwala
Mr. and Mrs. Rabb
Ms. Emily M. Rankin
Mr. and Mrs. Richmond
Mrs. Dana M. Risch
Jocelyn Robertson
Mr. Timo Rohula
Mr. and Mrs. Runholt
Dr. Dounia Sadeghi
Ms. Madison Sankovitz
Ms. Tessa Shates
Dr. Sheena Sidhu
Ms. Samantha Smith
Mr. Robert K. Straser
Mr. and Mrs. Strickman
Mrs. Katherine L. Van Horn
Samantha Weber
Mrs. Diana V. Whitney

First Department of Entomology Inclusivity Scholarship: Ariana Sanchez

In fall 2021, Ariana Sanchez will be a third-year microbiology major at the University of California, Riverside. While she is interested in pursuing clinical microbiology as a career, she has an entomological interest in studying fleas and ticks, because they can vector a bacterial pathogen to humans (ex: Borrelia burgdorferi, Bartonella). She became interested in these insect-borne microbial pathogens due to some of her family suffering from the many chronic illnesses that they can cause.

Ariana discovered this scholarship from Dr. Allison Hansen, her former Evolution professor. In her introductory lecture, Dr. Hansen mentioned that her labwork specializes in evolutionary relationships between insects and microbes; she knew immediately that she had to apply for this scholarship. This opportunity provides both the experience of working in a lab and provides a basis to help further her academic interests.

Ariana started taking STEM classes while being completely online in her sophomore year. The scenario of having no experience in a lab and having to readjust her study skills to adapt to online education was certainly a character-building experience, but one that she is grateful for nonetheless. It helped her focus on what was truly important and reminded her of the goals she needed to achieve to obtain her degree. This year, she actively researched which learning techniques helped her learn best, as well as finding study groups with people who also had similar learning issues. They helped each other figure out better studying habits, as well as formed wonderful friendships.

With this amazing research opportunity, she plans to work hard to learn as much as she can. With the experiences this opportunity will provide her, she plans to use it to support the many communities that she is a part of: Latino, neurodivergent, and women in STEM.

Targeted Opportunities for Giving to UCR Entomology

Visit **https://www.entomology.ucr.edu/giving**

Featured: Advancing Inclusivity in Entomology Scholarship Fund — supports undergraduate students who experience social, cultural, and financial barriers with a scholarship that will support their ability to participate in labor-atory research

Kenneth W. Gilstrap Endowed Memorial Fund — established by Frank Gilstrap and Marilyn McLaughlin to honor their brother Kenneth W. Gilstrap (November 25, 1947 – December 11, 2011). This perpetual legacy fund provides support for students in their professional activities including travel expenses for meetings

Distinguished Speakers Fund—supports invitation of notable scientists to present their research at a formal seminar to the students and faculty. Distinguished speakers include an eminent scholar selected jointly by students and faculty to present the "Boyce Lecture" each spring since 1977

Endowed Faculty Chairs

Alfred M. Boyce Endowed Chair in Entomology—honoring the memory of professor emeritus Alfred M. Boyce, this chair is currently held by distinguished professor Ring Cardé.

Mir S. Mulla Endowed Term Chair in Entomology—honoring professor emeritus Mir S. Mulla, this chair furthers instruction in entomology and research in arthropods affecting human and animal health.

Urban Entomology Chair Fund—gifts to this fund will support faculty chairs in the field of urban entomology.

Departmental Scholarly Activities Funds

Entomological Museum and Insect Collection—supports programs and activities of the UCR Entomological Museum and Insect Collection.

Entomology Fund for Excellence—supports educational activities for both graduates and undergraduates

Endowments for Student Support

Lauren & Mildred Anderson Endowed Graduate Assistantship in Immature Insects—supports graduate students studying immature insects.

Theodore Fisher Family Endowment Fund in Entomology—provides research, curatorial, and student support for the UCR Entomology Museum and Insect Collection.

Francis A. & Jane Davies Gunther Endowed Scholarship—supports graduate pursuing research in pesticide chemistry.

Ian & Helen Moore Endowment for Marine Entomology—supports graduate students pursuing research on aquatic insects.

Dr. Mir S. Mulla & Lelia Mulla Endowed Scholarship Fund—supports students in entomology, bioagricultural, and biomedical sciences.

Harry H. Shorey Endowed Scholarship Fund—supports graduate students who are pursuing research on pheromones in entomology.

Harry Scott Smith Endowed Fund in Entomology—supports graduate students studying biological control.

Honors and Awards received during 2020-2021

FACULTY

John Heraty: Honorary Member of the Entomological Society of America, 2021

Chow-Yang Lee: Medical, Urban & Veterinary Entomology Award, Pacific Branch, Entomological Society of America , 2021

Amy Murillo: Entomological Society of America Medical, Urban, & Veterinary Section Early Career Award, 2020

Thomas Perring: Excellence in Integrated Pest Management Award for the Pacific Branch ESA and the National ESA, 2021

Erin Wilson-Rankin: EGSA Outstanding Faculty Member Award, 2021

Academic Senate Distinguished Teaching Award, 2021

Christiane Weirauch: J.O. Westwood Medal from the Royal Entomological Society, best comprehensive taxonomic work. For "True Bugs of the World (Hemiptera: Heteroptera) by Randall Schuh and Christiane Weirauch, 2021

Hollis Woodard: NSF CAREER Award, 2021

Distinction in Student Mentoring Award, Pacific Branch of the Entomological Society of America, 2021

Chancellor's Award for Excellence in Undergraduate Research & Creative Achievement, 2021

RESEARCH STAFF

Marco Gebiola: University of California, Office of the President, Global Food Initiative.

Serguei V Triapitsyn: Short-term Invitational Fellowship for Research in Japan from the Japan Society for the Promotion of Science, 2021

Kristal Watrous: EGSA Outstanding Staff Member Award, 2021

STUDENTS

Student Competition at Pacific Branch ESA 2020. Hannah Chu, Tessa Shates, Ben Nyman, and Jaimie Kenney

Chris Allen: Mildred E. Mathias Graduate Student Research Grant

Lewis and Clark Fund for Exploration and Field Research

American Philosophical Society Supplementary Funding

Magda P. Argueta-Guzmán: CNAS Graduate Student Scholarship for work on Diversity Equity and Inclusion in the Entomology department

Jacob Cecala: USDA NIFA Postdoctoral Fellowship, 2021

2nd place, Ph.D. poster student competition, Pacific Branch ESA, 2021

Hannah Chu: NSF Graduate Research Fellowship Program (GRFP), 2021

Department of Entomolgy Exceptional Remote Teaching Award

Chrysalyn (Krissy) Dominguez: Robert and Peggy van den Bosch Memorial Scholarship, 2021

Francesc Gomez Marco: Short-term Postdoctoral Fellowship for Research in Japan from the Japan Society for the Promotion of Science, 2021

Caleb Hubbard: PBESA John Henry Comstock Award from the Entomological Society of America, 2021

Dissertation Year Program Award, 2020

MUVE Member Spotlight: December MUVEr in Veterinary Entomology, 2020

The Pacific Egg & Poultry Association Student Merit Award, 2020

Carl Strom/Western Exterminator Company Scholarship, 2020

Tejal Reddy Endowed Graduate Award, 2020

Novogene Life Sciences NovoBowl Sequencing Award, 2020

Deena Husein: Robert and Peggy van den Bosch Memorial Scholarship, 2020

Harry Scott Smith Biological Control Scholarship, 2020

Rebecca Keim: Mildred E. Mathias Graduate Student Research Grant, 2020

Shipley-Skinner Reserve - Riverside County Endowment Grant, 2020

Robert L Kresslein: USDA NIFA AFRI Predoctoral Fellowship, 2021

Robert & Peggy van den Bosch Memorial Scholarship, 2020

Robert & Peggy van den Bosch Memorial Scholarship, 2021

Adriana M. Lomelí: UC-Hispanic Serving Institution Doctoral Diversity Initiative (UC-HSI DDI) fellowship.

EGSA Travel Award, 2020

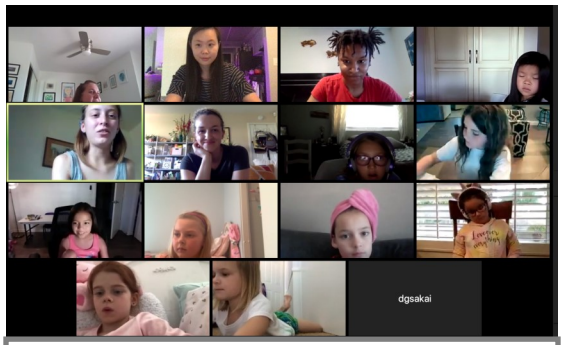
UC President's Pre-Professional Fellowship, 2020

Continued on page 7...

News from EGSA (Entomology Graduate Student Association)

Though the sudden shutdown of 2020 halted many planned activities, by the start of the fall school year our graduate student association had learned much about how to transition our activities to innovative formats, and in the process reach all new places for our department. Virtual outreach cut out the barrier of distance and led to classrooms and communities all throughout California and beyond discovering more about insects with the help of our students. Virtual conferences lowered the barriers to entry and allowed for more people to share their work, and gave viewers new insights. Our weekly seminar moving online allowed for the development of an entomology careers panel organized by our very own seminar committee, which saw dozens of entomology professionals outside of academia sharing their experiences with hundreds of viewers, illuminating alternative and exciting career paths open to entomologists. This year also saw the return of the Riverside Insect Fair, making its virtual debut. Our department joined forces with the city of Riverside to provide an entire week of buzzing content including panels, workshops, and at home activities for insect-lovers of all ages. While over 10,000 people engaged with the content throughout the week, almost everything produced is still available for viewing online for everyone, giving the virtual fair a broader reach than any before it. We have come together to support our peers, students, families, and friends, juggling research, writing, organizing, and sometimes even taking a moment for oneself. As we look towards the department's return to in-person operation, EGSA will do everything it can to keep our community safe, inclusive, and most importantly, passionate about all things insect.

-Ben Nyman, EGSA President



Virtual outreach with graduate students Hannah Chu, Jessica Webb, Rebbeca Keim, and Danielle Ruais

Awards and Honors continued...

Tessa Shates: Graduate Research Mentorship Program Award, 2020
Dissertation Year Program Award, 2021/2022
Department of Entomology's Exceptional Remote Teaching Award, 2021

Rob Straser: UC Global Food Initiative Fellowship, 2020
Western SARE Graduate Student Grant, 2020
Robert van den Bosch Scholarship in Biological Control, 2020 & 2021
Harry Scott Smith Fellowship in Biological Control, 2021

Julie Tsecouras: Ian and Helen Moore Marine and Aquatic Entomology Award, 2020

Mari West: Dissertation Year Program Award, 2021
Outstanding EGSA Member Award, 2021

Xinmi Zhang: Ian and Helen Moore Marine and Aquatic Entomology Award and Mayhew Graduate Research Award, 2020

Alumni and Associates, Tell us your News!

Please share your note-worthy happenings, we'd love to spotlight you in "The Buzz"

Email us at richard.redak@ucr.edu

Alumni News

Dr. Jacquie Serrano (2019) received the Pac Branch Comstock Award

Dr. Emily McDermoot (2016) was hired by Univ. of Arkansas Agricultural Experiment Station. Her studies will focus on the biology and ecology of biting midges that are disease vectors affecting livestock, deer and other ruminants.

Dr. Bob Stoltz (1973) participated in a 3 year insect phenology study in Yellowstone National Park. The project was conducted to gather baseline insect population data as climate change takes place in Yellowstone.

We would like to hear from you, our alumni and friends. Please share your own story of success, and the role that UCR had in your achievements by emailing richard.redak@ucr.edu - perhaps you will be our next featured alumni in the "where are they now" section of the newsletter!

Introducing Our Newest Faculty...

Amy C. Murillo: I am a new assistant professor of veterinary entomology. I received my B.S. in Entomology from Purdue University, M.S. in Entomology at North Carolina State University, and Ph.D. in Entomology at UC Riverside (with Dr. Brad Mullens). I was a USDA Postdoctoral Fellow at UCR, followed by a UCR Chancellor's Postdoctoral Fellow. My research focuses on management of arthropod pests of animals, including emerging pests of poultry which is driven primarily by livestock management changes. I am particularly interested in host-parasite interactions, such as how poultry ectoparasites (e.g. mites and lice) impact chicken health, behavior, welfare, and production. We are excited to expand upon this work to include other livestock pests and animal systems.

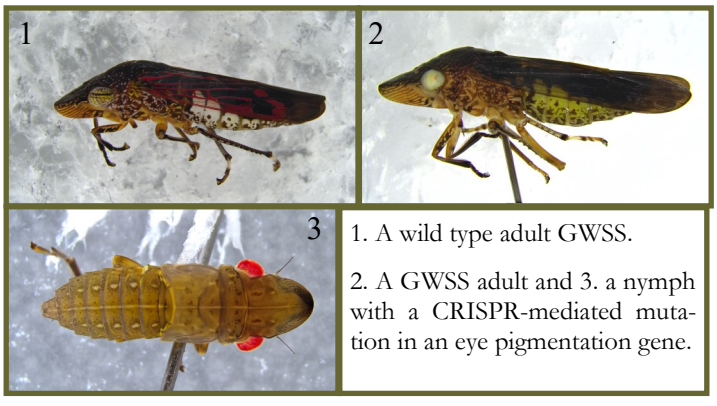
Ysabel Giraldo: I am excited to be a new member of UCR's department of Entomology, focusing on insect behavioral neuroscience. I received my B.S. in Zoology from the University of Oklahoma where I worked on insect community ecology in Panama's tropical rainforests. After a few years as research assistant, I moved to Boston University to complete my PhD, focusing on behavioral and neurobiological changes associated with aging in ants. From there I did my postdoc at CalTech examining the neural basis of navigation. In my own lab, I am fascinated by how animals perform complex behaviors and try to identify their neural underpinnings. My lab is interested in addressing insect navigation from the scale of individual neurons to ecology, using species in the genus Drosophila. Our research questions focus on identifying neural circuit elements involved in navigation, examining how sensory information is processed, and exploring navigation strategies of Drosophila species that differ in dispersal behavior and ecology. To approach these questions, we draw on many disciplines including machine-vision assisted behavior tracking, neural imaging in real-time during flight, and genetic manipulations to alter neural function during behavior.

Gene editing in the glassy-winged sharpshooter, *Homalodisca vitripennis*

Researchers in the department have achieved the first demonstration of CRISPR/Cas9-mediated gene editing in *Homalodisca vitripennis*, the glassy-winged sharpshooter (GWSS). GWSS is a significant vector of the bacterium *Xyllela fastidiosa,* which is the pathogen and causative agent of Pierce's Disease that kills grapevines and a number of other important commodity crops in California. Current control techniques rely on chemical insecticides and eradication. However, with the emergence of insecticide-resistant GWSS, it is clear that new, environmentally friendly approaches for the control of GWSS are needed. Genetic control is one approach but until recently this technology has been hampered by the ability to introduce genetic technologies to many pest insect species. CRISPR gene-editing technologies overcome this hurdle. Dr. Inaiara Souza Pacheco, Dr. Anna-Louise Doss, Ms. Beatriz Vindiola, and Mr. Dylan Brown have developed and deployed CRISPR technologies for GWSS. Microinjection of the components of CRISPR technology into early embryos of GWSS has allowed inactivation of genes (knock-out mutations) involved in eye pigmentation and wing color in this insect. These proof-of-principle experiments revealed that gene editing occurred at high frequency in these target genes and mutant genetic lines were established and maintained for over three generations (a first for insects in the order Hemiptera). More recently, the CRISPR technology has been used to insert genes (knock-in mutations) into the GWSS genome. These advances provide an opportunity to test novel genetic strategies for the control of GWSS and to disrupt the ability of GWSS to transmit *X. fastidiosa* to uninfected plants, thereby protecting California agriculture using environmentally friendly and sustainable technologies. The research has been enabled by a revised GWSS genome assembly by Dr. Cassandra Ettinger (Department of Microbiology & Plant Pathology.

The research is funded by grants from the CDFA and APHIS. The research program brings together knowledge and skills in insect genetics, plant-insect interactions, insect genomics, and molecular biology, as well as in GWSS rearing, ecology and behavior from across the agricultural departments in CNAS and UC Berkeley to tackle this important problem. This research is a collaboration between the laboratories of Professor Peter Atkinson (Department of Entomology), Professor Linda Walling (Department of Botany & Plant Sciences), Professor Rick Redak (Department of Entomology), Professor Jason Stajich (Department of Microbiology & Plant Pathology) and Professor Rodrigo Almeida (Department of Environmental Science, Policy and Management, UC Berkeley).

By Peter Atkinson



1. A wild type adult GWSS.

2. A GWSS adult and 3. a nymph with a CRISPR-mediated mutation in an eye pigmentation gene.

Entomology Research Museum News

Not surprisingly, the past year was far from normal or the Museum, but we have stayed open and largely functional. While the quarantine protocols resulted in changes to many of the normal activities, most of what was necessary over the past year was still accomplished, with the notable exception being the near-absence of student curatorial assistance, and a resulting drop in new specimens being added to the collection.

Salary offset from an Edwards AFB grant to Erin Rankin-Wilson allowed for the hiring of former student Vince Strode, who worked on HMDS processing and sorting bulk samples, primarily from Taiwan, as well as incoming donations and returned loans. For most of the past year the only student help was Ben Zeissner, working for us off-campus, intermittently. Donations from Bill Perreira (Hawaii) and Ricky Lara (Taiwan) were processed by Ben and Vince. Adriean Mayor, a retired former UCR grad, continues curating our melyrid beetles, though he has been working exclusively off-campus. Other notable donations include material donated by Mark Hoddle from New Zealand. We have hired an outside consultant, Emile Fiesler, to assist in databasing our large collection of hover flies (Syrphidae). During the closure Doug has been curating parts of the bee collection, velvet ants (Mutillidae), all of our hornets, and making major additions to the museum's authority files, as well as troubleshooting to enable remote work with the database. We added only 1,000 specimens to the database, from either recent donations or processed backlog, in the past year, so the Museum's regular database has grown to roughly 596,000 records, with ~180,000 that are IDed to genus-level or better, georeferenced and available online via DiscoverLife and SCAN. This is only a fraction of what we normally accomplish when there are students working as curatorial assistants. The bottleneck at present is labeling of newly-mounted material.

Doug gave two "virtual tours" of the Museum for different Entomology Department classes, as well as numerous radio, magazine, newspaper, and podcast interviews, and virtual lectures, such as Invited Speaker for the Iowa State Entomology Department, and Guest Lecturer for the UCR Citizens University Committee. This included MANY interviews on the Asian Giant Hornet sightings on the west coast, interviews on invasive insects, and various other topics; one of these interviews was for NPR's national broadcast. Doug also acted as scientific adviser for the producer of a series of nature videos ("True Facts").

This year, we had relatively little physical loan activity. Most of our potential loans were avoided by sending label data, or database information, instead of physical specimens. Most of the new interactions are being generated by non-targeted requests via social media (mailing lists, FaceBook, etc.), rather than direct solicitation; fewer than half of the loans or data requests originated through conventional channels. As in past years, loaned material was included in revisions by external authors, including several new species. The demand for things like data sharing, crowdsourcing, social media, and remote ID continued to increase; it is also very important to note that increasing numbers of these contacts are resulting in loan/data requests, donations, acknowledgments in publications, or even co-authorship.

Doug has been assisting with various projects in the department; (1) research on lanternflies in Arizona in collaboration with the Hoddle lab, as part of work on biocontrol for Spotted Lanternfly, for which there is a nearly complete manuscript describing several new taxa (2) as co-PI on a pollinator survey grant with Erin Rankin-Wilson, on Edwards AFB (though the Covid closure cancelled the 2020 field season). (3) a local trip to assist Quinn McFrederick in excavating and describing some ground-nesting bee nests. (4) assistance with bee identifications for several grad student projects (e.g., Jake Cecala, Gordon Smith), including co-authorship on some resulting publications.

Serguei sorted numerous drawers of parasitic Hymenoptera to family and beyond. Serguei published more than 20 scientific papers and one coauthored monograph. Serguei also received a prestigious short-term fellowship from the Japan Society for the Promotion of Science for 2021 to conduct collaborative research with the University of Miyazaki in Japan on the identification of parasitoids important for biocontrol in okra, rice, grape and tea agroecosystems.

By Serguei Triapitsyn and Doug Yanega

The remarkable species *Polynema dikobraz* Triapitsyn (Hymenoptera: Mymaridae) from Madagascar.

New Alumni (Students graduating during 2020-2021

Congratulations to our recent graduates!
We wish you the best as you pursue new opportunities!

Graduate Students:

2020

Paul Masonick

2021

Jake Cecala
Mark Derry
Caleb Hubbard
Tessa Shates

B.S. + M.S. Students:

2021: Dylan Brown

Undergraduate Students:

2020

Magali Lewis
Qian Yue Lu
Julia Perez
Emily Potter
Hao Thi

Undergraduate Students:

2021

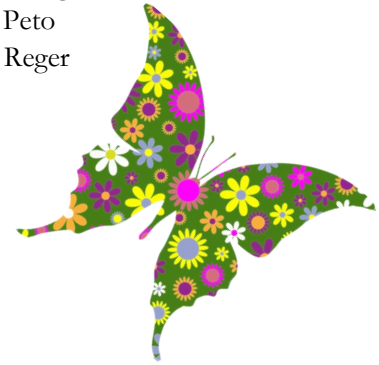
Anjo Brian Armendi
Colt Bellman
Stephanie Bremer
Tatiana Bush
Benning Le
José Hugo Moreno
Alejandra Rocha
Christian Schmitt
Ben Zeissner

Welcome to our newest students!

Graduate Students:

2020:
Megan Greenwood
Laura Harmon
Jessica Maccaro
Tobias Moyneur
Lyna Ngor
John So
Joelene Tamm

2021:
Savana Becerra
Ashley Bui
Lakshmi "Paloma: Dadlani Khilnani
Jacqueline Holquinn
Blanca Ortega
Blanca Peto
Joshua Reger



B.S. + M.S. Students:

2020:
Dylan Brown

2021:
Tatiana Bush
Benning Le
Darin McGuire
Alejandra Rocha

Undergraduate Students:

2020:
Marivi Angel
Emilia L. Burnham
Clarence Cole
Isabel C. Engelstad,
Aberdeen Fernandez
Nancy A. Frausto-Perez
Jeffrey A. Furgerson
Nami Ghaseminia
Karla M. Lemus Portillo
Dolores I. Lopez Hernandez
Kambrie M. Miller
Jamie Ramirez
Sydney N. Wilson
Lisa A. Woo

Undergraduate Students:

2021:
Ryan A. Campos
Min Chang
Bethany A. Johnson
Madison L. Julien
Bryan I. Lemus
Troy N. Manzano
Joshua D. Santos

Recently Retired...

Faculty

Timothy Paine
Beth Grafton Cardwell

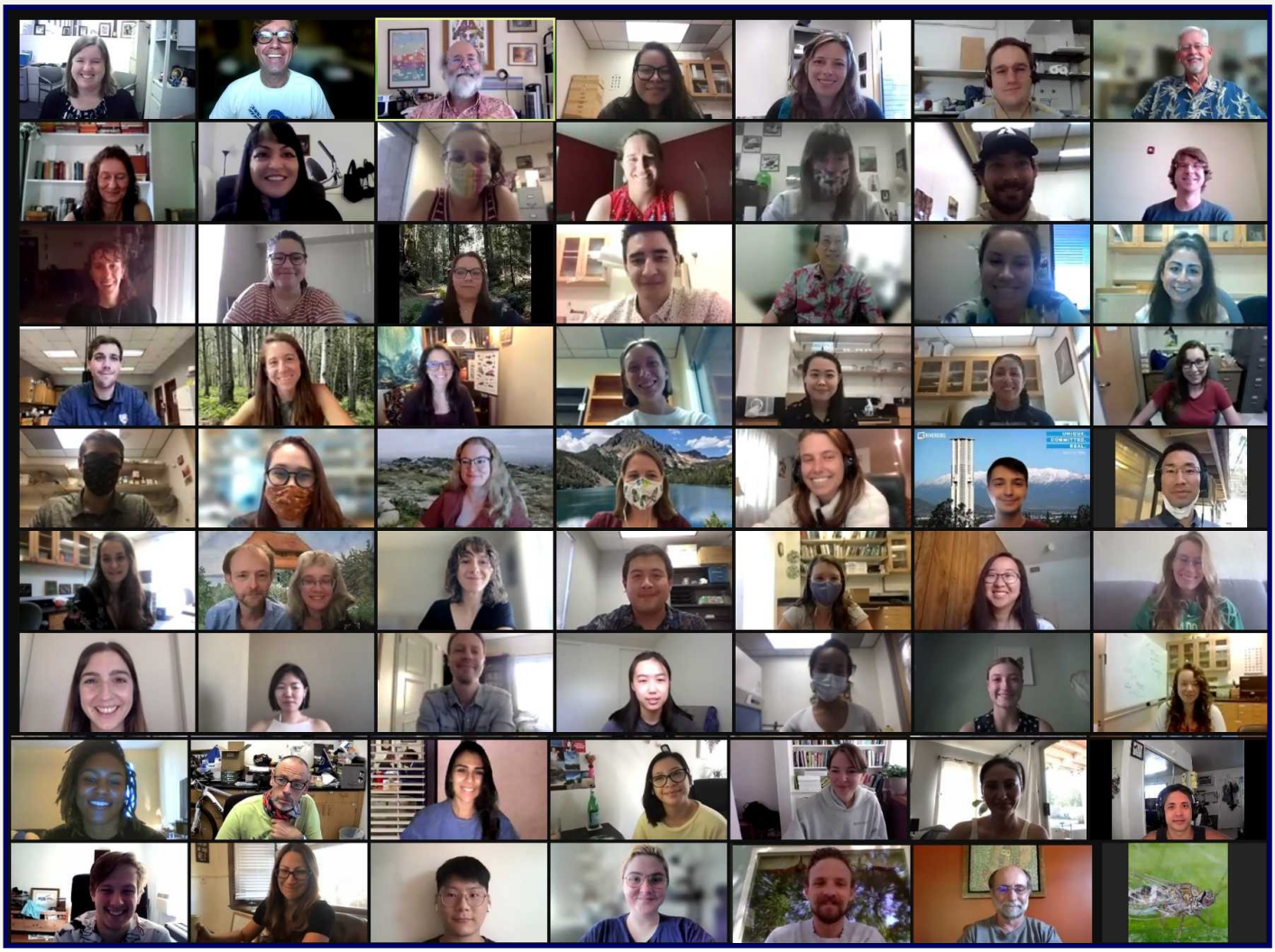
Where are they now? Connell Dunning

After graduating with her M.S. in Entomology from the Redak lab, Connell completed a two-year Presidential Management Internship with the Bureau of Land Management and United States Forest Service. She worked out of the Palm Springs Field Office of the BLM and prepared the first management plan for the Santa Rosa and San Jacinto Mountains National Monument. While at BLM, Connell helped tribes and the public incorporate their interests into policy, and worked to make the policy decision making process more accessible to all stakeholders. A highlight was getting to be Smokey Bear on an environmental education outreach visit to a local elementary school.

After moving to the Bay Area in 2003, Connell began working for the Region 9 office of the United States Environmental Protection Agency (California, Arizona, Nevada, Hawaii and the Pacific Islands), where she continues to work today. Over the last 18 years, Connell has worked to reduce the environmental impacts of federally funded and approved projects through the National Environmental Policy Act, Clean Water Act, and Clean Air Act processes. She is inspired by the opportunity to influence better environmental decision making for complex, large scale projects across multiple sectors, including transportation, mining, and water supply projects. She always looks for opportunities to better explain science to the public and values her UC Riverside Entomology Department experience for building her analytical and communications skills.

Connell lives with her family in Oakland, California. She can be found exploring the local redwoods, coastal getaways, and native plant hotspots with her family and one year old puppy Quincy in between kid soccer games and outdoor movie nights in the driveway.

Department Seminar Day, September 2021



In Memoriam: William E. Walton, 1956 - 2020

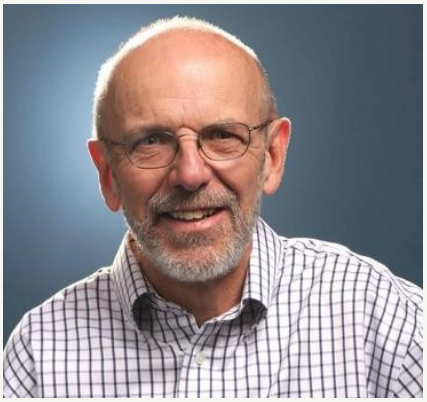
The Department of Entomology, the University of California, and the field of vector ecology have lost one of their most dedicated, productive, and beloved scientists. Dr. William E. (Bill) Walton, Professor of Entomology, passed away at the UC Irvine Medical Center on October 18, 2020 from B Cell Lymphoma. He was 64 years old.

Bill graduated with a B.S. in Zoology from the University of Rhode Island (URI) in 1978. This launched Bill into a career as an aquatic ecologist with fascinating studies at URI on copepod evolution and diapause. One of Bill's first studies was published in the Proceedings of the National Academy of Sciences, an amazing and certainly auspicious beginning for an undergraduate. Bill obtained his M.S. (1982) and Ph.D. (1986) in Zoology/Aquatic Ecology from the University of Maryland. He first turned his skills toward medical entomology as a postdoc from 1987 to 1990 working on mosquito ecology with Dr. Mir Mulla at UCR. Bill's ability and willingness to bring his superb basic science skills to bear on applied problems in medical entomology were important factors in his being hired on the UCR Entomology faculty in January 1995. Bill created a specialized niche addressing mosquito production issues as related to water quality and management in these anthropogenic sources. Bill's many publications addressing the complex ecology and variable designs of these wastewater management systems as they relate to mosquito control are absolute classics in that field. Bill's research activities in aquatic ecology and mosquito control at UCR resulted in over 130 refereed scientific publications, conference symposia, and review articles, plus comprehensive and influential book chapters and position papers. Bill was known and appreciated for his excellent, sustained collaborative work with mosquito abatement districts over his entire career, particularly those in the southern California region.

Bill was also a remarkably effective and dedicated teacher and taught several classes, most notably Insect Ecology (ENTM 127), Introductory Ecology and Evolution (BIOL 5C), and Aquatic Insects (ENTM 114). The latter, co-taught with Dr. Brad Mullens, featured numerous afternoon or weekend field trips, completion of an extensive insect collection, and participation in a group aquatic bioassessment project using the aquatic insect community to assess stream health. Despite its intensity, both the students and instructors especially loved that class. Bill was specifically recognized for his exceptional teaching prowess through several very prestigious teaching awards. These included being a National Academies Education Fellow in the Life Sciences (2013) and receiving the Outstanding Teaching Award on the UCR campus (2017), from USDA-NIFA (2018) and from the Entomological Society of America (2018). Bill trained many excellent graduate students and postdocs who have gone on to make major contributions themselves to the fields of vector ecology and medical entomology.

Bill's service to entomology and vector ecology is truly remarkable. He participated very actively in the California Mosquito and Vector Control Association for his entire career. Bill was very prominent in and served as president both of the Society for Vector Ecology (2013) and the American Mosquito Control Association (2018). Bill served on the Editorial Board of the Journal of the American Mosquito Control Association for seven years, including last two years as Chair of the Board. He received the Outstanding Service Award from the Society for Vector Ecology in 2017. He recently was instrumental in forming and was serving as co-Director of the Pacific Southwest Center of Excellence in Vector-borne Diseases. Bill also served ably for many years as the UCR Department of Entomology Vice-Chair and as such helped guide the department's teaching missions and student funding efforts. He was a critical part of the glue that held the department together, ensuring the high research and teaching productivity that resulted in the UCR entomology department being ranked as one of the best in the world. The void left by his passing will not be easy to fill.

In Memoriam



Robert F. Luck, Professor of Entomology, Emeritus, University of California, Riverside, passed away on September 6, 2020, in Santa Rosa, California. He attended the University of California, Berkeley (UCB), earning a B.S. degree in Forestry in 1964. Under the direction of Professor Don Dahlsten at UCB, he completed a Master's degree in Entomology in 1966. Because he had enrolled in the Reserve Officers Training Corps (ROTC) to finance his studies, he was required to serve in the U.S. Navy following his M.S. degree. He did his service on two ships, starting as an Ensign before being promoted to Lieutenant. Upon leaving the military, Bob obtained his Ph.D. in Entomology with Professor Dahlsten at UCB, working on various species of scale insects in the pine forests of California's Lake Tahoe area. Shortly after completing his Ph.D. in April 1973, he accepted a position in the Department of Entomology, Division of Biological Control, University of California-Riverside (UCR). There he continued his work on forest pests until the 1980s, when he initiated studies on insect pests of citrus. His leadership and pioneering research in citrus pest management were based on an in-depth understanding of the ecology and behavior of pest insects and their natural enemies. He stressed the importance of observing insects in the field and often disappeared from campus exclaiming, "Somebody has to do the field work!" Professor Luck's talent and leadership in biological control was recognized both in the U.S. and globally. He authored 97 scientific journal articles and 17 book chapters from 1967 to 2012. Often, the illustrations in these papers were created by his wife, Nancy, who was a technical illustrator at UCR. He was an exceptionally engaged and approachable research program leader, and well known as an enthusiastic educator and mentor of graduate students. He will be greatly missed.

Daniel Strickman passed away in October 2020. Dr. Strickman began his academic career at Dartmouth College, but later transferred to the University of California in Riverside to pursue his interest in insects, earning a BA in Entomology. He completed MS and PhD degrees at the University of Illinois in Champaign-Urbana under Dr. William Horsfall. After completing his graduate degrees, Dan and his wife Linda joined the Peace Corps and served in Paraguay where they taught environmental education and field entomology, and also completed natural history studies of mosquitoes, horse flies, and dragon flies. Later, Dan joined the U.S. Air Force and served as a consultant on toxicological issues. He then transferred to the U.S. Army as a medical entomologist and completed assignments at the Smithsonian Institution, the Armed Forces Research Institute of Medical Science in Thailand, and the Walter Reed Army Institute of Research, among other assignments. During his 22 years in the military, Dan worked in operations and research dealing with toxicology, taxonomy, repellents, and vector control. Following his retirement at the rank of Colonel from the military, Dan served briefly as the Vector Ecologist for Santa Clara County Vector Control District in California and then as the National Program Leader for Veterinary, Medical, and Urban Entomology in the USDA's Agricultural Research Service. Upon retirement from the USDA, Dan accepted a position as Senior Program Officer for Vector Control at the Bill and Melinda Gates Foundation where he supported the Malaria and Neglected Infectious Diseases Programs, Global Health Division.

Christopher Foster Wilkinson passed away in November 2017. In 1965, He was the first person to obtain a Ph.D. from the UCR Department of Entomology working under the guidance of Roy Fukuto. Dr. Wilkinson earned a degree in Agricultural Chemistry from the University of Reading in Reading, Berkshire, England and a PhD in Entomology from the University of California, Riverside. While at UCR he also served as captain on the U.C. Riverside rugby team. He had a long career as a professor at Cornell University and was the founder of its Institute of Environmental Toxicology. Dr. Wilkinson also worked for a time in Washington D.C. serving as the Vice President of two separate law firms with a focus on environmental strategic planning and risk assessment.

Houston Wilson selected to Direct the new UC Organic Agriculture Institute

In early 2020, UC ANR created the UC Organic Agriculture Institute (UC OAI) and selected Asst. Cooperative Extension Specialist Houston Wilson to be the inaugural Director. With the support of an endowment funded by the UC Office of the President and Clif Bar & Co., Wilson will lead UC OAI efforts to develop research and extension programs to support organic agriculture in California.

Based out of the UC Kearney Agricultural Research and Extension Center (near Fresno), Wilson's research and extension program has historically focused on the development of integrated pest management strategies. While not explicitly organic, most of his work is highly compatible with organic agriculture, making him a good fit to lead this new Institute. In his role as Director, Wilson serves mostly as a facilitator of UC OAI activities, building partnerships and coordinating program development.

Over the past 18 months Wilson has spent a lot of time getting the UC OAI up and running by forming a strategic plan, appointing an Advisory Committee and of course meeting with lots and lots of organic growers! Most recently, he received funding through the USDA Organic Research and Extension Initiative (OREI) to conduct a statewide needs assessment survey to identify organic research and extension priorities. Wilson will then use this information to develop UC OAI programmatic activities and collaborative projects to address those needs.

Additionally, Wilson is also working to form the California Organic Agriculture Knowledge Network (Cal OAK Network), which brings together growers, certifiers, consultants and other relevant stakeholders, as well as UC research and extension personnel. This network of organic knowledge-holders builds upon existing relationships to create new opportunities for sharing information while connecting the expertise and capacity of the UC system to the organic community. The UC OAI will then work within the Cal OAK Network to form new partnerships to address the most relevant and high priority needs for the organic sector.

California has always been at the forefront of organic agriculture, and today leads the nation in total organic farms, acreage and crop value. Under the guidance of Wilson, the UC OAI will now help to further extend that lead by harnessing the unique power of the UC to accelerate the development, optimization and adoption of organic agriculture. You can learn more about the UC Organic Agriculture Institute here: http://organic.ucanr.edu/

Online Graduation Ceremonies

Sadly, as with last year, due to COVID, we could not hold formal graduation ceremonies, but that did not stop us from having our own departmental online celebration of the wonderful accomplishments of our graduating undergraduate and graduate students. You can see it here (password UCRENTM2021!). A big thank you to all who worked to organize the ceremony, especially to Dr. Choe for his work organizing the event, AND playing the bagpipes as is traditional for UCR graduations!

Annual Insect Fair

The Riverside Annual Insect Fair is a collaborative event between UC Riverside Entomology and the city of Riverside. Started by the Entomology Graduate Student Association (EGSA) several years ago, the insect fair is now one of the city's iconic events. In 2019, on a sunny April Saturday, over 15,000 people attended the event. Due to the COVID-19 pandemic, we unfortunately had to postpone the fair that was planned for April 2020. Instead of our usual one-day event in downtown Riverside, we held the 5th Annual Insect Fair as a week-long virtual event in April 2021.

EGSA's Fundraising and Events committee worked together to rally the department. Together, we all contributed 17 pre-recorded videos, 7 interactive videos hosted on multiple social media platforms, and created our first entomology magazine with popular science articles and insect photography ("Insect Insider"). All of this content showcased the diverse and exciting research and interests within our department.

Many others contributed an additional 14 pre-recorded videos and other content to the event. The Riverside Public Library hosted virtual storytimes, featuring bilingual entomology-themed book readings, the Museum of Riverside showed off their entomology collection and encouraged the community to observe local insects for an iNaturalist bioblitz, Riverside's Northwest Mosquito and Vector Control provided information of mosquito biology and control methods, local artists created coloring book pages and crafts for community members to do at home, and local chef, Robert Sevaly, demonstrated several buggy recipes! Additionally, the city provided entomology-themed books, seed packets, and crafts kits to the community through the city's Little Free Libraries and Pantries. All of the content created for the event can be found on the city's website (https://riversideca.gov/insectfair) and all the videos are available on YouTube (CityofRiverside).

Overall, the Riverside Insect Fair continues to be a major event for our department to share our enthusiasm for insects with the community. The initial statistics during, and leading up to the event show that a large, diverse audience interacted with our content (see below infographic). And, with the virtual platform, everyone will continue to have access. We are proud that this event continues to grow each year and was able to serve as a bright spot for our community during a global pandemic. We are excited to start planning for the upcoming year! We will likely resume our in-person event, but plan to include virtual components to increase accessibility and creativity. Hope to see you there!

UCR ENTOMOLOGY

900 University Avenue
University of California
Riverside, CA 92521

Non-Profit Org.
U.S. Postage
PAID
Permit No. 131
Riverside, CA

Recipient Mailing Address

Combined B.S. + M.S. Program

This year marks the first graduation from our new Combined BS+MS Program in Entomology! This is a new program in which eligible students obtain both a BS and MS degrees through an integrated plan of study. This rigorous and accelerated program provides excellent research opportunities as well as prepares students for entomology careers and pursuing subsequent medical or doctoral degrees. Students should apply in their junior year, and successful applicants conduct their thesis research during their senior year (BS) and 5th year (MS).

In September 2021, Dylan Brown (MS, 2021) became the first BS+MS graduate from UCR Entomology. Dylan conducted his thesis work ("Costs of Insecticide Resistance on Fitness") in the lab of Dr. Rick Redak. We are about to start the third year of this program and are happy to announce that we currently have six students officially enrolled in the program (4 in the MS portion and 2 in the BS portion). Our BS+MS students are investigating a diversity of research topics, such as molecular studies investigating social structure in ants, the systematics of assassin bugs, factors associated with insecticide resistance, and management of invasive Argentine ants.

There are many labs currently looking for undergraduate researchers (ENTM 197/ENTM 199) on projects that may make great MS theses (https://entomology.ucr.edu/undergrad-programs/labs-interested-bsms-students). Interested students should check out our website (https://entomology.ucr.edu/undergrad-programs/combined-bsms-program-entomology) or contact Erin Rankin (erin.rankin@ucr.edu) for more information.