Bohart Museum Society

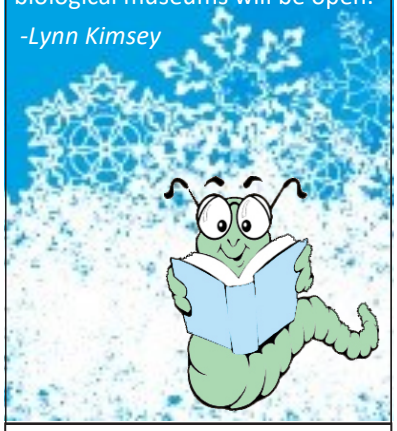
Winter 2024 **Newsletter** No. 97

In This Issue

Well, big changes are coming to the museum. As of February 2024 I will be officially retired from the university. However, I won't be going anywhere and will remain Executive Director of the Bohart Museum Society. It just means that I won't be teaching or doing university administrative things any more. Jason Bond, an arachnid specialist and holder of the Schlinger Endowed Chair will be taking over as museum director.

We have a full schedule of fun open houses in the coming winter and spring, and don't forget Biodiversity Museum Day, February 10, when all the campus biological museums will be open.

-Lynn Kimsey



CONTENTS

SPOTLIGHT ON A SPECIES

They Walk Among Us

by Lynn Kimsey

Carboniferous Period fossil cockroach. Photo Jo McCulty; courtesy Ohio State University.

Cockroaches are a one of those groups of insects that we know and loath. There is some justification for that view with a couple of species, but most cockroaches provide important ecosystem services and some are even pretty(?!).

Cockroaches belong to an ancient lineage of insects, and cockroach-like fossils have been found dating back to the Carboniferous Period, some 300+ million years ago. They have changed little during that period, except that they have gotten smaller. The largest known cockroach, at 3 ½ inches long, dates from the Carboniferous.

Roaches are found all over the world, except in Antarctica, and they are particularly diverse in tropical regions. There are native species of cockroaches in California, but they are found primarily in desert regions (sand roaches in the genera *Arenivaga* and *Eremoblatta*) or under bark (wood roaches in the genus *Cryptocercus*). In North America, and probably everywhere else humans live, the most commonly encountered species are peridomestic. There are currently eight exotic species in California; the American, brown-banded, garden, German, black, smokey brown, tiny and Turkestan cockroaches. All of these roaches are omnivores and they have readily adapted to the urban and suburban habitats created by humans.

The American cockroach, *Periplaneta americana*, is one of the largest cockroaches found in California, averaging about 1½ inches in length. This is one of the most common pest cockroach in cities and is found nearly worldwide. Despite the name, this species is thought to have originated in West Africa, and was introduced to the rest of the world via the slave trade. It's hard to imagine the kind of nasty conditions found in the holds typical of the old sailing ships.

In cold parts of the world these peridomestic cockroaches are only found indoors. However, in warmer climates, and during the warm summer months, they also can be found outside. In hot, humid climates these

Female three striped tiny cockroach carrying an egg case . Photo by Casey Hubble.

Continued on page 4.

MUSEUM EVENTS

Annual Halloween Party

We held the Bohart Museum Society annual Halloween party October 27. About 50 folks attended, some in costume and others not.

Halloween party invitation designed by Allen Chew.

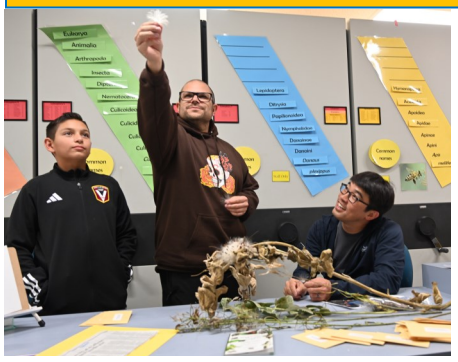
Tabatha came in an incredible mantis costume that she found on-line. Allen Chew created a fantastic horsefly head and gloves. Bob Kimsey came as a wookie. Christofer Brothers was a dragonfly and Severyn Korneyev was a medieval warrior. We had a great cake from Nugget Market and finger food created by Ivana Li, Barbara Heinsch and Nugget.

Everyone had a really great time.

Allen Chew as a fly and Severyn Korneyev as a medieval warrior. Photo by Kathy Garvey.

Halloween partygoers—Tabatha Yang as a mantis, Jason and Kristin Bond, Joanna Chiu, Christofer Brothers, Bob Kimsey and Ziv Lieberman.

Monarch Open House



Louie Yang showing Mike Silva and his son Jovana Silva milkweed seeds.

Our November 4 open house on Monarchs was a terrific success, with more than 500 visitors. We had a number of scientists on hand who study monarchs to answer questions, including Hugh Dingle, Elizabeth Crone, Art Shapiro and Louie Yang. Larry Snyder was also present with large prints of his beautiful photographs of monarchs.

The Yang lab handed out narrow-leaf milkweed seeds.

The weekend coincided with the UC Davis Alumni and Family event and it is always great to remind people that we are a go-to resource for their insect questions.

Prof. Elizabeth Crone showing visiting kids how to look at butterfly scales. Photo by Kathy Garvey.

Upcoming Open Houses

Winter and Spring Quarter Schedule:

January 20 (Saturday) 1-4pm; Social Wasps

February 10 (Saturday) various hours; Biodiversity Museum Day

March 3 (Sunday) 1-4pm; Crickets, Grasshoppers & Katydids

April 20 (Saturday) various hours; Picnic Day

May 19 (Sunday); 1-4pm; Bees

Museum News

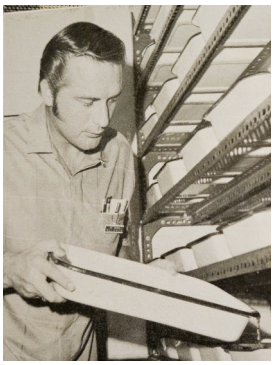
Baerg Collection Donation

On Her Father's Work

by Robin Baerg

Dr. David Carl Baerg obtained a doctorate in Entomology at UC Davis in 1967. He started collecting insects while attending UC Davis.

Upon his graduation, he accepted a job at Gorgas Memorial Laboratory in the Republic of Panama, where for the next nine years he researched tropical, parasitic diseases such as malaria and leishmaniasis. Dr. Baerg worked extensively with mosquitoes during his 9 years at Gorgas Lab, and authored or co-authored 27 research papers.



Newspaper article photo about Dr. Baerg working in Gorgas on *Anopheles* mosquitoes.

When Dr. Baerg passed away in January 2018, his daughter Robin inherited a portion of his insect collection, which included two 18"x 24" cases which had been prominently displayed in the Baerg family home throughout her childhood.

Many of the insects in Dr. Baerg's collection are from Panama. Robin has fond memories of night drives with her father and younger brother to Madden Dam outside the former Canal Zone, swiping nets in the air around the bright lamps along the top of the dam, excited at what they would find.

Dr. Baerg would also scour Pseudobombax trees for buprestids, aka metallic wood boring beetles.

Although Dr. Baerg maintained his specimens carefully and routinely throughout his lifetime to ensure their preservation, after he stopped collecting. His appreciation of - and passion for - insects never waned.

Robin Baerg (center), with her mother, Judy Baerg (left) and Lynn Kimsey (right), showing off her father's collection.

In mid November, Robin Baerg and her mother, Judy Baerg, brought her father, David Baerg's insect collection to donate to the Bohart Museum. The collection consisted of 576 beautiful specimens of mostly insects that he collected when he worked in the Panama Canal Zone in the 1970's and 1980's.

The Residential Backyard and Container Breeding Stegomiid *Aedes* Mosquitoes

by Richard Meyer

California has been plagued for over 20 years by an infestation of "container breeding" stegomiid mosquitoes commonly referred to as the infamous "ankle biters". The culprits are represented by a guild of three species, the Yellow Fever Mosquito (*Aedes aegypti*), the Asian Tiger Mosquito (*Aedes albopictus*) and more recently *Aedes notoscriptus*. Both *Ae. aegypti* and *Ae. albopictus* are exceptional vectors of a number of encephalitis viruses including Yellow Fever, Dengue Fever, West Nile Virus and many more.

After 40 years of studying these mosquitoes in some capacity, I have come to realize the overwhelming reality of why abatement operations have failed miserably in an attempt to control these species infesting California neighborhoods. Control failures can be directly linked to the condition of the urban/suburban residential backyard where these anthropophilic and "container" breeding *Aedes* have the literal "home field" advantage. In that regard, routine premise inspections and surveys have revealed that a notable number of residences were harboring an impressive array of container types by the presence of active breeding or the potential of sustaining breeding when flooded. In some instances, when I inspected both the front and back yards of a number of residences with "manicured' and container free front yards, the back yard was a totally different story. It was as though I traversed an "event horizon" to enter into a "wonderland" of A to Z containers. The consequences of this not too uncommon condition became apparent. Hopes of achieving a goal of either complete control (eradication) or at least some "acceptable" level of *Aedes* population reduction would be next to impossible without complete resident compliance with source (container) elimination. Furthermore, any additional support provided by the need for a large army of container inspectors and control technicians would cost millions - not likely. For now, use repellent and don't overwater the potted plants on the patio or even indoors. Yes, indoor infestations! That's another story.

Continued from page 1.

roaches can even be seen flying at night.

The smokey brown cockroach, *Periplaneta fuliginosa*, resembles and is biologically similar to the American cockroach. It is also very good at hitchhiking, and is now nearly as widespread as the American cockroach.

Black cockroaches, *Blatta orientalis*, are large, slow moving, shiny, black-colored insects. They are known by a variety of other common names including: *black beetles* or *water bugs*. Females are slightly larger than males, and have short wings. Both sexes are about 1 inch long. Males have wings and can fly, but rarely do so in California. Females cannot fly, the wings are simply too small.

Like other urban cockroaches, black cockroaches have been transported by human commerce throughout the world. In situations around homes, they are most commonly found in cool, damp areas, particularly in garages.

Turkestan roaches (*Shelfordella lateralis*) are thought to have first reached the U.S. on military equipment returning from central Asia to Sharpe Army Depot in California. However, now they are used as feeder roaches in the pet trade. As a result, they are becoming increasingly widespread and are actually replacing American cockroaches in many sites.

Two small-bodied cockroaches, the brown-banded (*Supella longipalpa*) and German roaches (*Blattella germanica*) are also peridomestic and widespread. Of the two species the German cockroach has an older association with humans and is found indoors as far north as Alaska and south as Patagonia.

Blattella vaga, the garden or field roach, is a relative newcomer in California. It feeds on detritus out-of-doors in urban and suburban settings.

The smallest species of roach in California is the 3-striped or tiny roach, *Luridiblatta trivittata*. Although found in urban and suburban settings, these roaches are only found outdoors in semi -irrigated and dry landscapes. They never develop wings and were at first thought to be juveniles of another exotic species until a female was observed carrying an egg case.

Our native sand roaches live in sandy soil and dunes in the Southwestern U.S. Females and juveniles live in the sand and literally “swim” through the sand. They live in rodent burrows and feed on mycorrhizal fungi, plant debris and seeds collected by their burrow hosts. Males are often winged and short-lived. They generally live on the surface.

Wood roaches resemble termites in many ways. They are subsocial and raise their young as a group. Also, like termites, they also feed on wood and have wood digesting bacteria in their guts.

Cockroaches are generally clean insects spending considerable time grooming. However, they are also important to public health. Restaurants and catering trucks are inspected for cockroaches as an indication of cleanliness. Although cockroaches clean themselves frequently, in food preparation areas they can contaminate food and cooking/handling surfaces with bacteria, such as *E. coli*, and *Salmonella* and viruses, such as hepatitis and Norovirus, because of their habit of moving from sources of water (bathrooms) to sources of food (kitchens and pantries).

Gorgeous Roaches
(yes, they can be amazing)

Pseudophyllodromia sp. Projectnoah.org https://www.projectnoah.org/spottings/17394461 .

Periphaerus sp. Nick Bay Photography. .

Polyzosteria mitchelli. Cockroach species file, https://cockroach.speciesfile.org/.

Tricolored roach. Projectnoah.org .

Museum Art

Basso Alebrijes Sculptures

Francisco Basso creating one of his alebrije sculptures, the *Lepidodáctilo.*

Francisco Basso, a former UC Davis undergraduate from San Diego, created these fantastical insectoid creatures for the Bohart Museum. In Mexico these creatures are referred to as alebrijes.

Alebrijes, or *monos de madera*, as we know them today were originally created by artist Manuel Jimenez in Oaxaca, Mexico. In Mexico cartoneros are artists who use paper. However, the very first alebrijes and their name were created by cartonero Pedro Linares in Mexico City in the 1940's. They were the result of him becoming very ill and while unconscious dreamed of strange animals, like donkeys with butterfly wings and a lion with an eagle head.

Francisco created three sculptures, a *Lepidodáctilo,* which is a moth + pterodactyl, *Libelulón,* meaning a very big dragonfly in Spanish, and *Mosquita,* which is a tiny fly. The sculptures are made with wire frames and covered with paper maché, and painted bright colors.

They are now on display in the hallway by the museum entrance.

Origami Creations

Kevin Murakoshi holding his origami mantis (left) and his monarch (creation (right).

Kevin Muraskoshi came to our mantis open house in September and created terrific origami mantises, two bedbugs and one flea, which he donated to the museum. Each was made from a single piece of wax paper. Mr. Muraskoshi founded the Davis Fencing Academy and works as an IT specialist for Amazon.

Tardigrade Piñata

This fantastic tardigrade piñata was created by Jennifer Niles and her family for the Bohart Museum Society Halloween party in October.

Monarch Art

The family of Bohart donors Ray and Al Ryckman visiting Pacific Grove, California sent us this lovely photo of them standing in front of the monarch mural at the Monarch Sanctuary, known for the large numbers of overwintering monarchs that arrive every fall.

The Ryckman family in front of the Monarch Grove Sanctuary mural.

MORE MUSEUM NEWS

Insect Transportation

Dispersal is a critical part of all animal's survival. The longer a species stays in a particular habitat the more it changes the habitat until the resources and conditions it needs are changed or gone. One mechanism to overcome this issue is dispersal. Ecologists estimate that some 10% of every animal population just gets up and moves away from "home". Most often this ends catastrophically, but if an animal reaches a new habitat and survives the species thrives. Insects are no exception to this spontaneous dispersal, and they are very good at finding novel ways to do this, often with someone else's help, usually ours.

Consider all of the possible ways humans provide for insects to passively disperse to new places. We fly thousands of commercial jets across oceans and from country to country carrying passengers and cargo. Trains and cargo trucks haul cargo across continents. Cargo ships carry thousands of cargo containers between continents and countries. And, let's not forget passenger vehicles.

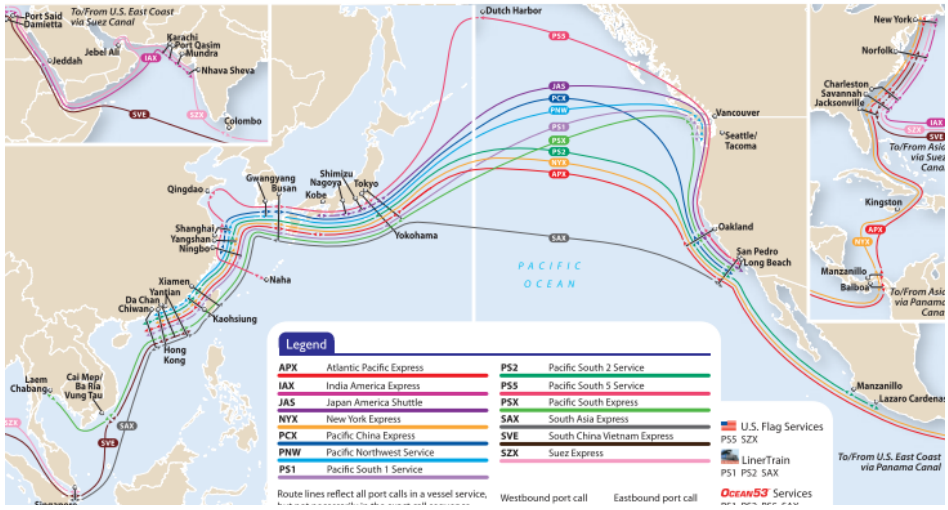
However, one of the largest transportation sources for insects might be cargo containers stacked on ships. West Coast ports receive over 38 million cargo containers, and at least 22 million in California alone annually! Cargo container capacity is often referred to as TEU's (twenty foot equivalents). The average cargo container is typically two TEU's. The largest container ship can carry about 24,000 TEU's or 12,000 containers, but the majority of these ships can carry 9,000 to 10,500 containers. It takes a container ship 12 to 24 days to cross the Pacific from Asia to the West Coast. What this means is that particularly during the winter when insects are diapausing or hibernating, they're even more likely to survive crossing the Pacific.

Maersk McKinney Möller & Marseille Maersk, cargo ship. Wikipedia.

What is astonishing about this is how few exotic insects are detected outside of ports. It really tells you how hard it is to establish in a new place.

Hornets in the genus *Vespa* are classic examples of hitchhikers. More than a century ago, the European hornet landed in the Southeastern U.S. where it became established. A decade ago or so ago the Asian hornet (*Vespa asiatica*) was found near the Port of Long Beach, in southern California. However, this hornet never seemed to establish and has not been seen since it was first observed. More recently, the giant hornet, *Vespa mandarinia*, was found in coastal northwestern Washington State. Again, it doesn't seem to have established successfully.

Brown widow egg cases from inside a car door. Photo by LS Kimsey.



Asia-North America ocean shipping routes from ShipLilly, https://www.shiplilly.com/blog/asia-north-america-ocean-shipping-routes/

ASK THE BUG DOCTOR

If you have an insect question, need advice, want an identification of something you've found, or would like to see an article in the newsletter on a particular topic let us know. Email us at bmuseum@ucdavis.edu.

Invasive Hawkmoth

Hummingbird hawkmoth. Photo courtesy of Janke, Wikipedia.

The Eurasian hummingbird hawkmoth, *Macroglossum stellatarum*, has recently shown up in many parts of northern California. This day-flying moth's caterpillars feed on bedstraw in the genus *Rubia*, as well as other plants in the Rubiaceae, *Centranthus* and *Epilobium*.

Hitler Beetle Extinction?

Anophthalmus hitleri. Photo courtesy of Michael Munich, Wikipedia.

A small blind, cave-dwelling beetle found in Slovenia was named in the 1930's by Austrian collector, Oskar Scheibel, in honor of Adolph Hitler. As a result of its species name, *Anophthalmus hitleri*, it is now facing extinction. Collectors of Nazi memorabilia are apparently searching caves for this beetle to add to their collections!

Tau fruit fly. Photo by the California Dept. of Food & Agriculture

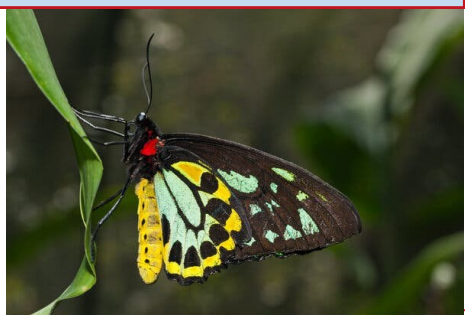
Tau Fruit Fly

This past June quarantine officials in southern California discovered nearly 30 Tau fruit flies. Because of the potential impact of these flies on California agriculture this resulted in a produce quarantine affecting about 80 mi^2 in Los Angeles Co. This fly, *Zeugodacus tau*, is native to southeast Asia and probably came to California as larvae in produce.

New moth species, *Mirlatia arcuata*, male.

New Moth Discovered

As unusual as it may seem, a new genus and species of moth was recently described from Croatia. Equally odd, it appears to only fly during the winter. Apparently, specimens of this species had a history of changing hands from one collector to another starting in the 1980's. It wasn't until a research team from the British Museum and the Tyrolean State Museums recognized them as new that they were described. The team determined that it wasn't an exotic introduction and didn't belong to any other genera in the Geometridae.



Birdwing butterfly. Reinhard Dirscher\ullstein bild, via Getty Images.

Butterfly Smuggling

A New York man faces up to 20 years in prison for smuggling $200,000 worth of birdwing butterflies and other insect specimens disguised as "decorative wall coverings" and origami creations.

New Malaria Vector in Africa

Anopheles stephensi, native to India, first appeared in the East African nation of Djibouti about 10 years ago. It is now found across central Africa and is expected to spread further. This mosquito is resistant to current insecticides and is a major malaria vector. It thrives in urban environments. Much like *Aedes aegypti*, this species of *Anopheles* breeds in small pools of water, such as bottle caps, making control very complicated.

Star Trek Spiders

Roddenberryus spiders, named after Kirk, McCoy and Spock.

Brazilian scientists, Alexander Sanchez-Ruiz and Alexandre Bonaldo, recently described a new genus and three new spiders in the European Journal of Taxonomy after Gene Roddenberry and the main Star Trek characters—*Roddenberryus kirk*, *R. mccoy* and *R. spock.*

Bohart Museum Society
c/o Department of Entomology & Nematology
University of California
One Shields Ave.
Davis, CA 95616

Happy 2024!!!