Directors Note
Fall is upon us again and the seasons and insect populations are changing, with houseflies ruling the Sacramento Valley. Other changes are happening in the museum as well—new faces in the museum, with new projects, and new displays. We’ve launched a new Bohart website, with the same address, that has much improved navigation and updated information, thanks in part to grants from the Bess Spiva Foundation. The Bohart is now on Twitter. Check us out!
—Lynn Kimsey

Wasps With An Attitude
By Lynn Kimsey

Late in the summer and fall, we often see outbreaks of annoying insects in California. This year is no exception. We’ve had complaints about ants, cinch bugs, and wasps to name a few. Several complaints about yellow jackets have come to the museum this fall from parts of the Sierra Nevada Mountains, particularly around Lake Tahoe. The culprit is one of the most reviled wasps in North America, the western yellow jacket (Vespula pensylvanica).

Yellow jackets, or meat bees, are among the most easily recognized wasps in the U.S., with their bright black and yellow coloration and aggressive attitudes. These are social insects, with a queen and dozens to thousands of workers. They construct papery nests out of a mixture of saliva and plant fibers, making the cells, and in some cases the surrounding covering colored in various shades of grays and browns. Most yellow jackets collect live insects to feed their larvae.

The kinds of food the colony requires depends on the time of year. In the spring and early summer large amounts of protein and fat are needed to feed to new brood. As the season progresses the colony goes into maintenance mode as the queen lays fewer eggs, leading to smaller numbers of new larvae. At this point, usually in mid to late summer, yellow jackets collect larger amounts of sugar for the adults than “meat” for the larvae.

Their nests are generally annual, meaning that members of the nest, workers and the old queen die in the fall after producing new queens and males. The new queens mate, leave the nest, and search for safe hiding places to over-winter. The males die shortly after mating. How wet and cold the winter is determines how many queens survive until spring to found new colonies. In year-round warm climates the nests can become perennial.

The western yellow jacket is a moderate-sized wasp, with bright black and yellow markings, a yellow ring around each eye, and a bad attitude. It is found throughout the western

A typical underground yellow jacket nest entrance. Photo courtesy of Kathy Keatley-Garvey.

Continued on page 4.
Bohart Museum Society Newsletter Fall 2016

MUSEUM NEWS

Collection Donations

Edward Laidlaw Smith
1936-2013

Edward Laidlaw Smith after passing his qualifying exam in 1967. Photo by Frank Strong.

Edward Laidlaw Smith was a California entomologist who studied the sawflies that create galls on willows, and the functional anatomy and evolution of arthropods. He served in the U.S. Army in Korea where he studied the Korean mosquito species, accumulating a synoptic collection from the country. He collected other Korean insects as well. After leaving the army he went to graduate school and received his Ph.D. from UC Davis in the early 1960’s. He taught at California State University, Chico, from 1968 to 1972 and after word worked as a research associate and in 1991 Honorary Fellow at the California Academy of Sciences in San Francisco.

Ed died at the age of 77 leaving his estate to the University of California, Davis. The Bohart Museum has received his insect specimens, illustrations, photographs, microscopes and manuscripts. Organizing and inventorying all of these materials will take some time. The UC Davis Center for Plant Diversity received all of his willow species vouchers.

Arnold Menke

Arnold Menke was one of Richard Bohart’s graduate students in the late 1950’s. He wrote his thesis on the sphecid wasp genus Ammophila of North America. His thesis is still the only overall treatment, with a key to species for the genus in the region. He also worked extensively on aquatic Hemiptera.

This summer he donated nearly 3,000 sphecid wasps in 40 wooden Schmidt boxes and over 500 reprints and journal articles on Hemiptera.

Arnold Menke hard at work as a graduate student in 1959.

Other News

Bess Spiva Foundation

Over the past several years the museum has received grants from the Bess Spiva Foundation for a diversity of projects.

We now have a new, updated website thanks to a grant from the Bess Spiva Foundation and Greg Hiromu Wada, who designed the website in Weebly.com, with the help of Tabatha Yang. Check out our new look at:

http://bohart.ucdavis.edu

In Memorium

We are sad to inform you that Les Ehler, one of our faculty members, who also created a great deal of our mite collection, passed away earlier this fall. Les had a terrific knowledge of mite taxonomy and biology. He’s been retired for a number of years, which gave him more time to go fishing. He will be sorely missed.

Museum Shoes

In a surprise moment the museum graduate and undergraduate students presented director Lynn Kimsey with flashy shoes. They were marvelously painted with chrysidid wasps and flames (two of Lynn’s favorite things) by Nicole Lam and Charlotte Herbert.

Lynn’s flashy shoes. Photo by Kathy Keatley-Garvey.

Collection Donations

Arnold Menke

More Donations

We have had a number of other terrific donations from museum associates and friends this summer.

Henry Hespenheide donated 1,316 parasitoid wasps.

Jack Schuster gave us 137 wasp specimens from Guatemala

Norm Smith donated 2,634 specimens collected in Panama.

Chris Wemmer donated a diverse collection of grasshoppers, cicadas, moths, centipedes, and even some Orthoptera from Myanmar.

Organizing the Smith microscopes. Photo by Lynn Kimsey.
SPECIAL WEEKEND HOURS
Fall 2016-Spring 2017

Bohart Museum of Entomology
University of California - Davis
1124 Academic Surge Building
Crocker Lane, Davis, CA

FEaturing • Interesting Scientists • Live Insects •
Craft Projects • Fabulous Insect Collections • Gift Shop
HTTP://BOHART.UCDAVIS.EDU

FREE ADMISSION & PARKING

SEPTEMBER
Sunday, September 18
1:00-4:00 PM
Un-Belize-able Expedition: Collecting tropical insects

NOVEMBER
Saturday, November 19
1:00-4:00 PM
Uninvited Guests: Common pests found in the home

JANUARY
Sunday, January 22
1:00-4:00 PM
Parasite-palooza: Botflies, fleas, and mites, oh my!

FEBRUARY
Saturday, February 18
Times will vary
Biodiversity Museum Day
Explore 11 UCD collections

MARCH
Sunday, March 19
1:00-4:00 pm
Egg to Wings: Backyard Butterfly Gardening

APRIL
Saturday, April 22
10:00 am-3:00 pm
UC Davis Picnic Day
United States. You almost never see only one individual. This wasp is considered a pest due to its willingness to build nests in structures and scavenge on a variety of food materials other than live insects. This behavior brings them into frequent contact with humans, which in turn often results in stings. The majority of sting related deaths in the U.S. are the result of yellow jacket stings, and not Africanized honeybees or ants.

It is important to understand the basics of yellow jacket stings. Unlike honeybee workers, yellow jackets can sting as many times as they want. Their sting lacks backwards pointing barbs like those seen in honeybee worker stings. The only thing that will happen is that they will run out of venom. Receiving multiple stings from these wasps requires immediate treatment because the stings can cause two adverse reactions. The first issue is allergic reactions to the venom. Immediate treatment with antihistamines is required, and if difficulty breathing occurs, treatment for anaphylactic shock is urgent. The second major issue is toxic shock caused by the large amount of foreign protein injected in the stings. Hundreds of stings require kidney dialysis to remove the foreign protein from the blood stream (this applies to honey bee stings as well).

Western yellow jackets build their nests in existing cavities in the ground or above ground. Common nest sites include gopher and ground squirrel burrows, attics, wall voids, basements and hollow trees. They’ve even been known to fill the passenger compartments of abandoned cars. The nests are generally annual, but in Hawaii where the western yellow jacket is an introduced pest, the nests are perennial and can become enormous. One such nest found in the ground and removed by a colleague on the island of Maui, was 6 feet long and two feet wide, containing more than 1 million workers!

Yellow jacket control is relatively straightforward and involves two approaches, removing nests, and collecting and killing workers. Nest removal is always important, particularly when nests are located near paths, in buildings or in other places near people, livestock and pets. However, nest removal is tricky and should not be done by someone who isn’t trained, unless you want to get a large number of stings in a short period. Nest removal should also be done at night if possible, when all of the workers are in the nest and not flying around foraging for food. Nests are rarely easy to find, so the most effective control method involves trapping the foraging workers. Because the western yellow jacket is a scavenger, a variety of materials can be used to attract them into traps, including bacon, red meat and fish. The most effective traps either use funnels leading into larger containers baited with food or other attractants, or food suspended over soapy water. The commonest traps on the market are fluorescent green funnel traps. The theory behind the color seems to be that it is also visually attractive to the wasps in addition to the attractive odor of the bait. Trapping of this kind must be started in the spring to control their numbers. If you wait until the population is huge and annoying it’s really too late to do much, except hope for a very cold, wet winter; soon.

This year the western yellow jacket has been particularly annoying in parts of montane California. The reasons are numerous and its rarely possible to predict why and where their populations sometimes become so large. A number of factors lead to outbreaks. The winter and spring weather certainly plays a role but human activities may be just as important.

In a nutshell, problems with this wasp are largely human induced. The populations wouldn’t grow so large over the summer if there wasn’t a lot of food available. We leave a great deal of food around for yellow jackets – garbage in roadside dumps or infrequently emptied garbage containers, feeding pets or leaving pet food outside, feeding wild animals including feral cats, and road kill all feed these wasps. In addition, our buildings and gardens provide numerous nest sites. It may very well be that our warmer and drier winters will also allow more new queens to survive and more and more regions able to support perennial colonies.
September Open House: the Un-Belize-Able Expedition

The open house highlighted the on-going Belize inventory project described elsewhere in the newsletter. Not only did we show off the results of the project to date but we also had examples of the collecting equipment, like Malaise traps and black light traps. A number of museum folks who collected in Belize as part of the project volunteered during the open house including Noah Crockette, Melissa Cruz, Joel Hernandez, Fran Keller, Jeff Smith, and Dave Wyatt. They added personal accounts of their adventures, like hiking up a mountain to collect near a waterfall. Several visitors wondered about peanut-headed bugs (Fulgoridae) and how to tell the difference between the orders.

Visitors in the Museum

Shuangshuang Li visited us for two weeks to study our chrysidid wasp collection. She is doing her research on a group of egg parasitic chrysidids. She's a graduate student in the Department of Entomology, South China Agricultural University working with Prof. Zaifu Xu in Guangzhou, China.

Allan Smith-Pardo, a bee specialist with the USDA in San Francisco, spent a week working with Robbin Thorp and studying the Bohart Museum bee collection.

Bohart Museum Society Newsletter Fall 2016
Bohart Belize Bioblitz
By M. Fran Keller

In 2014, Dave Wyatt recruited me to go to Belize to start an insect collection. We returned in 2015 to teach a summer Tropical Biodiversity course and at the same time collecting more insects with the help of the students. This year we decided to have a trip that just focused on extensive collecting in the jungle areas surrounding the Toucan Ridge Ecology and Education Society (TREES) field station (http://www.treesociety.org/). This facility is the headquarters of an organization dedicated to the study of the biological and cultural diversity of Belize. The field station borders the Sibun Forest Reserve, a huge tract of virgin forest that composes an area of 1,290,000 acres. About 26% of Belize or 2.6 million acres, is preserved.

More than 150 species of amphibians and reptiles, 150 species of mammals, approximately 600 species of freshwater and marine fish, and about 540 species of birds, as well as an impressive 3,408 species of vascular plants are recorded from the TREES property. However, they do not have a survey of the insects, nor does Belize have collection available for research. Thus, Dave and I are working to create an insect reference collection and a biological inventory, with specimens divided between Belize and the Bohart Museum. Specimens housed at the Bohart Museum will be available for entomologists to study. Maintaining the collection in Belize has been a challenge with mold and pests destroying the first collection. We are working to secure a climate controlled area to house the collection. Bringing the insects back to the Bohart preserves the collection until duplicates can be returned to Belize and housed in a newer climate controlled building. For more about our 2014 project visit www.experiment.com and search Wyatt, Keller, Belize.

Although we were able to take some time away from teaching to collect during previous trips, there really wasn’t a chance to just focus on collecting so we decided to lead a collecting trip.

We sent out emails to specialists in different groups to recruit a combination of professional entomologists and college students. About 20 people committed to go in June which gave us enough hands and eyes and nets to collect many more insects than Dave and I had done alone over the last two years.

The trip was a great success; we all came back alive, and one participant, Larry Bezark, even came back with live bot flies he is rearing out. I cracked a few ribs but otherwise came back more or less in one piece. We tried some new collecting techniques, such as black light canopy traps and portable battery operated UV white pan traps. There were 9 malaise traps, about a hundred yellow pan straps that Steve Heydon set up and mercury vapor and blacklight sheet stations. Jeff Smith set to work setting up several stinky, foul bait traps for butterflies. He used rotten fish, rotten fruit and meat and they worked wonderfully. We captured many more butterflies this year than we have done previously. His baiting technique and traps were so successful he earned the title “Master Attractor” for his ability to draw in the leps.

We brought back close to 100,000 specimens. A major challenge has been to ensure there is enough storage for this important biodiversity collection. We will need pins, unit trays and drawers to house all these specimens. If you would like to help the Bohart Museum house the Belize Collection let us know. You can mail a check to the Bohart Museum with a special notation of BELIZE.

We are planning to lead another collecting trip in Summer 2017, but will be adding some new collecting locations in the south of Belize and also north of the Maya mountains in the tropical savannah.
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.

**ASK THE BUG DOCTOR**

**A Plague of Bugs!**

The odd weather over the past several years seems to have created a perfect storm in the Sacramento Region, resulting in outbreaks of large numbers of insects in odd places. In mid September one of these outbreaks occurred in Davis. Homeowners adjacent to an open, undeveloped field found their gardens and homes overrun by hundreds of millions of tiny bugs. These turned out to be nymphs and adults of the false cinch bug, *Nysius raphanus*. Sort of like plagues of locusts but in miniature. Fortunately, these bugs do little if any damage to garden plants, and do not bite or cause any problems with pets.

False cinch bugs feed on weeds, particularly mustards and their relatives. These outbreaks appear to be weather related, occurring after cool wet springs, followed by hot, very dry summers. The bug populations build up during the spring and early summer and by late summer their food plants are dried up and they begin migrating searching for moisture and cooler temperatures. The problem usually only lasts a week or so, but can be quite disturbing while its happening.

Unfortunately there isn’t much that can be done to stop them. False cinch bugs are resistant to quite a number of commonly used insecticides, so spraying is out. The best treatment is either to just wait it out and try to bug proof the house so they can’t get in, or to create a water barrier, like a water filled “moat” along the property line where the bugs are coming from. Vacuum cleaners work well indoors and then there’s always the satisfaction of squishing them...

**Strawberry Scarab**

![Strawberry Scarab](image)

Strawberry scarab. Photo courtesy of Mehmet Sait Taylan.

Just when you thought you’d seen it all this weird insect shows up with a question about what it was. Evidently this scarab beetle occurs in Turkey and other parts of Eurasia.

**Bumblebee Robber Fly**

![Bumblebee Robber Fly](image)

*Laphria* robberfly. Photo courtesy of Peggy Smith.

We’ve seen unusually large numbers of this large robber fly in the genus *Laphria* in Davis this summer. Its not clear why but we’ve seem more individuals of this great bumble bee mimic this year than in the total past 20 years!

**Pebble Nests**

![Pebble Nests](image)

A *Dianthidium* leaf-cutter bee (family Megachilidae) nest found by Howard Ferris on chamise in the Shingle Springs area of California. These bees build their cells out of saliva and pebbles; constructing several cells for their larvae within the mass.

**Thanks!**

Finally, a shout out to Peggy Smith, Jim Tassano and Scott Oneto for sending in interesting insect questions and some really great photographs.
Don’t forget to renew your Bohart Museum Society Membership for 2017!

Some of you have been members for many years; others are brand new to the Bohart Museum Society. Benefits of membership include: receiving this newsletter, as well as invitations to special events, access to the research collections, free insect and pest information and identification services, use of the museum library, and free borrowing privileges of “Oh My” boxes and live specimens.

Your dollars support museum education and outreach, supplementing our exhibits and maintaining our insects zoo! We rely on your support to keep museum outreach and education programs alive!