**Letter from the Acting Director**

*Dr. Kipling Will*

Much has happened since our last news letter, the museum and its community continues to grow and be vibrant with much success in ongoing programs, new initiatives and expanding projects. We are all saddened by the passing of John Chemsak and Richard Bohart, and at the same time we are very grateful to have had the opportunity to know them and for their lasting contributions to all aspects of the Essig Museum. I think that they would be pleased that the legacy they have left will be an important part of the future success of the museum. Real and substantive progress has been made toward the move to the new museum space in the Valley Life Sciences building. The unit previously occupying our space has moved out and, as soon as the space is prepared, our new compactor systems will be installed.

*continued on page 2*

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**Grylloblatta Discoveries**

*Sean Schoville*

Almost a century ago, the discovery of a pair of peculiar insect nymphs in the snowfields of Sulphur Mountain in Banff led E.M. Walker to describe a new order of insects in the Neopteran clade, the Grylloblattodea. Ice crawlers, or rock crawlers, are now known to occur from South Korea through China, Japan, Siberia, and south into western North America along the axis of the Rocky Mountains and the Sierra Nevada-Cascades. While the distribution is extensive, the number of collecting sites across this range is small and highly fragmented. At the same time, the number of species described is relatively rich, with eleven species in the genus *Grylloblatta* of North America and five of these occurring within California (four of these are endemic to California). The legend and lore that surround

*continued on page 4*
All of us understand the importance of taxonomic knowledge and the utility of a collection that has both breadth and depth. But we seldom have a case that demonstrates this more clearly and with such potential economic consequences as the recent discovery of the light brown apple moth (Epiphyas postvittana) in California by Jerry Powell. Jerry’s knowledge of the local fauna and the reference collection he has built in the Essig through his years of sampling allowed him to recognize this invader immediately. Given the potential damage this polyphagous moth could cause the California agricultural markets, state and federal authorities have rapidly moved to impose restrictions on movement of potential host material, require pesticide application in plant nurseries and recommend a plan for eradication. Whether it is possible to eradicate this moth now that it is established in California is debatable, but the identification provided by Jerry appears to be early enough in the spread of the species to allow USDA and CDFA many options.

The region already under quarantine includes areas in Alameda, Contra Costa, San Francisco, Marin and Santa Clara, Monterey, Santa Cruz, San Mateo and other counties. Jerry Powell was featured in a San Francisco Chronicle article. That article and several others detail the story of how the moth was found and tracked are available in the archives at the Chronicle website (www.sfgate.com).

We are extremely pleased to welcome a new faculty member in ESPM, Patrick O’Grady, as an associate of the museum. Patrick has a robust research program ranging across morphology and taxonomy, phylogenetic systematics, population genetics, molecular evolution and genomics. He and a number of his students focus on the evolutionary history of Hawaiian Drosophila with many research projects looking at the patterns and processes that generate and maintain biological diversity in Hawaiian Insects. Additionally, Patrick is in charge of the new ESPM genetics facility that will provide cutting-edge tools and resources for many projects.

Recently we have had two successful and enjoyable museum collecting trips that have taken us across the state to collect insects and spiders. These trips have each been attended by a dozen or more people, including an ever growing number of our colleagues from the California Academy of Sciences.

The first of these trips was held in May of 2006 at the Sedgwick Reserve, managed by U.C. Santa Barbara. This reserve lies only 20 km off the coast and just northwest of Santa Barbara. It contains a large part of the Figueroa Creek watershed and has a good diversity of habitats in various states of preservation and disturbance. The most prominent of these are oak savannah, mixed grasslands and gray pine forests that abut the Los Padres National Forest. A good collection of insects, including several notable records for moths, beetles and wasps, was made.

In July of 2007 we headed as far northeast as we could go in California, to the Warner range. For this collecting trip we based out of the Stough Campsite in the Warner Mountains about half way between Alturas and Cedarville. The area near the campsite and higher elevations were in typical dry Sierra pine habitat and the dry conditions did slow insect activity (but not camaraderie and good fun). However, many good collections were made by sampling the streams and the adjacent riparian zone. We also had easy access to contrasting habitats in the lower elevations of Surprise Valley to the east, and Goose Lake to the west. Dry conditions limited the collected to near springs on the east side and to near the boarder of Goose Lake to the west. We made some surprisingly large collections at the UV lights at these sites. We are all still working on the back-log from this trip, but expect many
useful additions to the Essig’s Californian holdings.

In the recent period we have had a number of excellent Essig museum graduate student curatorial assistantships. Previously this position was awarded to Patina Mendez, who works on the ecology and systematics of Trichoptera (*Oligophlebodes* spp. (Uenoidae)) and Stephen Lew, who works on the systematic and biogeography of Californian spiders (*Callobius* spp. (Amaurobiidae)). Presently the position is held by Matthew Van Dam, who works on the systematics of mydid flies (*Rhaphiomidas* spp.) and dune-inhabiting insects in general.

A number of new awards and grants that have been obtained by members of our museum group including the very prestigious Fulbright scholarship George Roderick receive for 2007, to study the “Predictive Biology of Invasive Species” and the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring awarded to Rosemary Gillespie.

Significant new and continuing projects in the museum include a National Science Foundation, Planetary Biotic Inventory (PBI) Collaborative Research grant on “The Megadiverse, Microdistributed Spider Family Oonopidae” (N.I. Platnick, R. Gillespie, C. Griswold, P. Sierwald, G. Hormiga.). In this PBI some 30 investigators from 30 countries are jointly tackling what may be the most ambitious project on spider systematics ever attempted. Preliminary data suggest that the 459 previously described species represent only about 20% of the actual diversity of the group. The team is assembling and sorting the specimens available in collections and will acquire new material through 12 expeditions that will concentrate on securing samples of forest floor and canopy dwelling species. Team members are building internet accessible databases of the species, all specimen locality data and images; a new application will allow team members to enter descriptive data into a multi-user database, in a

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*Essig Museum Faculty, Staff, Students, and Associates on the 2007 Musem trip to the Warner Range.*
highly structured format that will allow direct use of that information in formal descriptions for publication, on species web pages, in phylogenetic analyses, in interactive keys, and in automated identification systems. The collections, student funding and training from this project will be a great boost to the Essig museum.

The highly successful National Science Foundation project headed up by Rosemary Gillespie “GK-12: Exploring California Biodiversity” is continuing to be funded for a second track to fund graduate students associated with Berkeley’s Natural History Museums to work in K-12 schools in the Bay Area. The goal of this grant is to inspire K-12 students in the study of biodiversity and give graduate fellows an understanding of issues in K-12 education. Last year (2006-2007), eight graduate students were involved with the program working primarily with Adams Middle School in Richmond. The graduate students took the middle school students into the field where they were taught how to collect various groups of organisms. These collections formed the basis of subsequent classroom activities.

Spring trips, funded research and important donations keep the Essig collections growing. We have had a number of significant specimen donations recently including about 1400 Coleoptera from Scott Haskins; 7400 specimens of Lepidoptera from Ron Robertson; 5206 aquatic Hemiptera and 3300 miscellaneous insects from Bill Shepard; 1595 miscellaneous insects from Ron Wielgus; and an important addition to out collection reduviids collection of 24 Brazilian species, all from and determined by Jose Barata, Univ. de Sao Paulo.

**GRYLLIOBLATTA** from page 1

this group of insects suggest that they are rare and elusive, and locally uncommon. Collection notes for the Sierra Nevada of California are scarce. Within this area, they are known to live in moist, cold boreal forest, caves, and talus snowfields in the high mountains.

In 2005 and 2006, I began searching high elevation snow fields for icecrawlers. I found my first individual specimens walking in darkness on ice in the early hours of the night. With diligence, and the benefit of a heavy snow year, I began finding series of individuals (5-20) and increased coverage of their distribution in the Sierra Nevada (southwest in Mineral King, southeast into the Palisade Basin) as well as the adjacent White Mountain Range. Their microhabitats and habits make them difficult to find. Although an occasional individual can be found by lifting rocks at the edge of a snowfield, actively foraging individuals can only be found at night when temperatures fall near zero Celsius. They seem to prefer talus slopes near lakes and streamcourses, probably because of the abundance of windblown insects and organic detritus. In the course of a typical early summer night in the mountains, icecrawlers will emerge from holes in or around the snowfields about an hour after nightfall. They will forage for several hours on the snow, moving quickly across this surface until they find a frozen meal to eat. Their quick movements and golden bodies stand out dramatically on the snow, and make for easy capture.

Over the course of the next few years, I will continue to develop collections of icecrawlers from California and use genetic data to examine their evolutionary history. It is thought that the diversification of icecrawlers is closely tied to past glacial cycles. Understanding the history of this group may help us reconstruct how alpine environments and other alpine insects shifted geographically during the large, cyclical expansions of glacial ice.
Chilean Temperate Arthropod Survey- 2007 Developments
Dr. Elizabeth Arias

In January 2007, our team made another field expedition to the severely fragmented Chilean Coastal temperate rainforests. This time John Lawrence, a world-wide beetle expert, came along. Our other expedition members were: Bill Shepard, coleopterist; Ainsley Seago, graduate student; Erick Inostroza, technician; Juan J. Pinto, undergraduate; Gabriela Urrutia, undergraduate; and Sergio Ocares, parataxonomist. We were also joined by Juan Enrique Barriga and Isabel Miranda. They own a colonial style farm and have one of the greatest beetle collections in Chile. It proved to be a very nice place to lodge on our way to collecting farther to the South, as well as on our return to the North.

As goals for this trip, John Lawrence wanted to obtain key beetles for the NSF Assembling the Tree of Life beetle project. Bill Shepard worked in rivers and streams to obtain riffle beetles (which is hard to do when everybody else is searching for canopy insects in the trees). I was searching for good *Nothofagus* trees - tall and with a thick canopy to fog - and targeting their beetles.

Prior to our trip, I was invited to make a presentation about biodiversity and its importance to students at St. Ignatius Elementary School in Davis. The children were very excited to see the displays of pinned beetles, as well as live spiders and roaches. Thus they were prepared to be virtual participants on our field expedition. We set up an online chatroom so that the students could see and hear about our progress and send us questions about our work while we were still in the field.

As we undertook the expedition, collecting beetles and having adventures, the children of St. Ignatius School were able to see photos of our collecting efforts in the forests. Ainsley and Gabriela worked constantly uploading photos and captions, as well as answering the children’s many questions every time we were close to an internet connection. Having an opportunity to be in touch with scientists in the field inspired the children to ask many questions such as:

Patrick: Are there any dangerous insects in Chile? Why did you get involved with bugs?

Matthew: When people destroy the rainforests are the insects becoming endangered?

Sarah: Are different bugs present at different seasons when weather is different?

The chatroom was visited many times, and we hope that we were able to demonstrate the excitement of science in the field, and to show a glimpse of Chile, one of the most wonderful places on Earth.
Dr. Richard M. Bohart passed away February 1, 2007

leaving a long golden path of accomplishments in teaching and the understanding of insect systematics.

A memorial service in his honor was held at the University of California, Davis, and was attended by friends, relatives, colleagues and former students. A number of people spoke about how Dr. Bohart touched their lives, including: Lynn Kimsey, curator of the R. M. Bohart Museum; Jerry Powell, UC Berkeley emeritus professor and curator at the Essig Museum; Wojciech Pulawski, curator at the California Academy of Sciences; and Bob Washino, emeritus professor at UC Davis.

“Doc”, as he was called, set an example of a life dedicated to science. He produced over 230 papers and six books. His undergraduate and graduate degrees were from UC Berkeley, where he played football for the Golden Bears in the 1930s. He then became an entomology professor at UC Davis. He started the entomology collection at UC Davis with only 2 Schmitt boxes from his personal collection. “I took the butterflies off and kept the pins,” he told me. He and his former wife Margaret made several collecting trips, with the specimens taken being deposited at the museum. That is how the Museum collection began to grow. Students and friends always had a place to lodge in the Boharts’ house.

Dr. Bohart made it possible for me to continue my systematic studies in Elateridae, and my inventories of Chilean Coleoptera. Thus, I have been able to continue unveiling the poorly surveyed arthropod fauna of the Chilean temperate rainforests. Today several thousand species of Insecta and Arachnida have been collected and databased from these forest surveys, including several new genera and over 200 new species of Coleoptera. He and I travelled to Chile together in December, 2005. He told me that he was so happy that he finally made it to one of the countries he thought he would miss seeing.

Dr. Bohart was a very generous person and devoted to his teaching. He was always ready with words of advice and encouragement for his students. The R. M. Bohart Museum, at UC Davis, bears his name in recognition of his outstanding achievements in his professional life and his contributions to UC Davis and UC Berkeley. He was honored by a corridor full of students and colleagues that held their nets up as a salute, and he proudly smiled. In May 2006, Dr. Bohart received the Distinguished Research Medal from the International Society of Hymenopterists, one of only three lifetime achievement awards ever presented by the Society.

Dr. Bohart’s path will never be forgotten.
John A. Chemsak
1932-2007

By Dr. Jerry Powell

John Chemsak was born in Ambridge, Pennsylvania. He came to Berkeley after developing an interest in longhorn beetles (Cerambycidae) and corresponding with E. G. Linsley. During his graduate student years, John worked as a Research Assistant with Prof. Linsley, and they completed the first five volumes of Linsley’s monograph on North American species of longhorn beetles. John conducted his Ph. D. thesis research on the taxonomy and bionomics of the genus Tetraopes, which was published in 1963. He then spent five years working as a postdoctoral Assistant Research Entomologist on N.S.F. funding with Linsley, laying the foundation for the remaining five volumes of The Cerambycidae of North America, which were completed by Chemsak and published during the succeeding 30 years (1972-1997).

In 1967 Chemsak was reclassified as an Associate Specialist, and later Specialist, for the California Insect Survey, a position he occupied for 32 years. He was a curator in the Essig Museum of Entomology, and carried out a highly productive research program on the systematics of Cerambycidae, especially of Mexico and Central America. He produced about 175 publications, in which were described about 570 new species, 64 new genera, and one new tribe. In an era when biologists lament the loss of habitat and species worldwide, especially in the tropics, paradoxically descriptive taxonomy has fallen out of favor, and few persons have done as much in the past 50 years to catalog and describe the extant Neotropical fauna as did John Chemsak.

His taxonomic research was not confined to the museum. During 1957-2002, Chemsak made 50 expeditions to Mexico, Honduras, and Costa Rica in quest of longhorn beetles, collecting other insects extensively as well. He also conducted field work in French Guiana, Brazil, Hawaii, and Papua New Guinea, where he contracted Malaria in 1994. In addition, John carried out extensive field research in California and the southwestern U.S. He helped organize, planned logistics, and served as cook for 15 ‘Spring Trips’ — student-faculty insect survey ventures to various parts of California, 1968-1982. Numerous students were indelibly impressed by this experience, and found John to be easy going, a great field companion, with a ready sense of humor and not very reverent of academic protocol. Attesting to the diversity of collections that he made and persons whom he assisted, there are at least 31 species and two genera named in his honor.

John Chemsak was appointed a Fellow of the California Academy of Sciences (1971) and was a Research Associate of the Academy. He was president of The Pacific Coast Entomological Society (1973) and served as editor of the Pan-Pacific Entomologist for five years (1985-1989). He was a member of the editorial board for the U. C. Press Publications in Entomology for many years. During 1964-1974, he assisted as social secretary for meetings of The Biosystematists, a multi-institute group of systematic biologists in central California, who met monthly to discuss ongoing research and controversial ideas in evolutionary biology.

John is survived by his wife of 22 years, Hatsue Katsura, who often accompanied him on his collecting trips, by two daughters and a son from a former marriage — Sheryl Zimmerman of Elmira, Oregon, Laurie Chemsak and John M. Chemsak (wife Joni) of Richmond, California, by his sister, Mary Ann Nissen (husband Duke), also of Richmond, and two grandchildren, Haley and Bryan. He is also survived by four stepsons, Neil Katsura (wife Jane) of Orinda, California, Randolph Katsura (wife Elizabeth) of Weimar, California, Stewart Katsura (wife Anyaa) of Honolulu, and Winston Katsura of Woodland Hills, California, and by four granddaughters, Kaitlin, Kelly, Mari, and Erin.

The family encourages donations made in honor of John Chemsak be made to the Essig Museum of Entomology, University of California, Berkeley.
My research uses a diversified approach incorporating population genetics, phylogenetic, genomics, taxonomy and ecology to understand the origin and evolutionary history of the family Drosophilidae. Of particular interest are the 1000 species endemic to the Hawaiian Archipelago. Currently, my lab is:

– using population genetics and coalescent theory to investigate population level processes during recent speciation events, both in the Hawaiian Islands and in California dune systems,
– comparing the phylogenetic history of the Hawaiian Drosophila to the histories of other groups of endemic Hawaiian Diptera (Limoniidae, Calliphoridae, Dolichopodidae, Ephyridae, Muscidae) to determine common evolutionary patterns, and
– exploring the genomes of several drosophilid species to investigate genome rearrangements and changes in genome in the family Drosophilidae.

Since arriving on campus about a year ago, I have found Berkeley to be a stimulating intellectual environment in which to conduct research. I am particularly excited to be associated with the Essig Museum and its diverse community of researchers. Eventually, I hope to expand my research focus to include projects dealing with California insects and their habitats.

Last summer I was able to make field trips into two different parts of Latin America: Paraguay and Panama. On the first trip, to Paraguay, I went alone, but teamed up there with Carlos Aguilar Julio and friends. Some of you know of their website that offers guided natural history trips in Paraguay and various Paraguayan insects for sale. On the Panamanian trip, I was accompanied by Cheryl Barr, Senior Museum Scientist at Essig, and Doug Post, a Cal. Dept. of Fish & Game benthic macroinvertebrate biologist and specialist with Dytiscidae. Both trips were highly productive of aquatic beetles and adventures.

Paraguay is a medium-sized country in southern South America. Since the water beetles of Paraguay have never been systematically surveyed, I was confident of many new finds and was not disappointed. I am still trying to identify how many species I collected, but among the undescribed taxa are 3 genera and about 15 species. Thus more work looms. A preliminary manuscript based on the collections, co-authored with Carlos Aguilar, is currently being translated into Spanish. Subsequent papers are planned. Not bad for a 2 week trip!

Panama, the last country going southward through Central America, is predominately forest and heavily studied biologically. So there were no big surprises, only range extensions. We did learn that going during the rainy season is not good, as we were unable to visit the Atlantic coast or areas deep into the forests paralleling the Panama Canal. We greatly enjoyed the people, and we learned much more Spanish. Obtaining permits was facilitated by the Smithsonian Institution’s research group in Panama City (STRI), and I highly recommend others to make use of their help. I also learned to definitely not drive after misplacing one’s driving license. It took a very polite and patient policeman 30 minutes to explain this, and to give directions to the nearest police station. While we very much enjoyed our time there, the take of species was less impressive than from Paraguay. Ponds were less common than streams so Doug’s dytiscid collections were less than our collections of aquatic byrrhoid beetles. Since all the taxa collected were already described, no papers will result from our work. We will be sending two collections back to Panama – one to the Smithsonian Institution’s offices and one to the University of Panama. And the Essig collection now has more Panamanian specimens!
2004-2005 Friends of the Essig Museum

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Benefactor – Anonymous
Sponsor – Douglas Kain
Patrons – Janet Dahlsten, Bill Shepard, Maurice & Catherine Tauber
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Specimen Donations:
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Other Donations:
Margot Brady (collecting and lab equipment), Lanna Cheng (research literature)

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201 Wellman Hall
University of California
Berkeley, CA 94720-3112

MAILING ADDRESS:

ESSIG MUSEUM OF ENTOMOLOGY

DIRECTOR: ROSEMARY GILLESPIE
ASSOCIATE DIRECTOR: KIPLING WILL
DATABASE MANAGER: GORDON NISHIDA
COLLECTION MANAGER: CHERYL BARR
BULLETIN EDITOR: STEPHEN LEW

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CHECK OUT THE ESSIG MUSEUM WEBSITE AT
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UPCOMING EVENTS

FEBRUARY 12, 2008
DARWIN DAY CELEBRATION:
museum open house, tours, drinks
and cake

APRIL 12, 2008
CAL DAY (BUG DAY):
ACTIVITIES AND CRAFTS FOR CHILDREN,
museum open house, tours, amazing live arthropods, and more...