Research & Collections Newsletter

Winter 2015

re•search (ri-sûrch′, rē′sûrch) n. **1.** Scholarly or scientific investigation or inquiry. See synonyms at inquiry. **2.** Close, careful study. **3.** When performed on collections, the *raison d'être* of all great natural history museums.

Collection News

Invertebrate Paleontology

Invertebrate Paleontology Collections and Research Facility

Work continues on the inventory of the Invertebrate Paleontology collections in Carson. This effort not only improves upon earlier estimates of our collection's size, but it has yielded important information about variations in curatorial quality across the collection, priorities for digitization, and previously hidden opportunities for research. With about 25% of the collection now documented we have already exceeded the previously reported collection size!

Marine Invertebrate Biodiversity Center

The Crab Shack: Crowdsourcing collections data

Legacy "wet collections" (specimens in jars of alcohol) provide a huge challenge for capturing label data in databases. The digitization process is difficult for wet collections because they have varying numbers of labels contained directly with specimens. Digitizing involves removing the labels (and usually the specimen, too), capturing label data, and reassembling the specimen jar. The MBC chose to digitize part of the Crustacea collection (crabs in the family Cancridae, which include commercially important Dungeness and rock crabs) using a hybrid in-house and crowdsourced approach. Early in Fall Semester of 2015, Adam Wall and Jenessa Wall developed photographic rigs for consistently capturing images of specimen labels and intact specimen jars. During the semester, Adam, Jenessa, and Kathy Omura led work-study and volunteer students in photo-

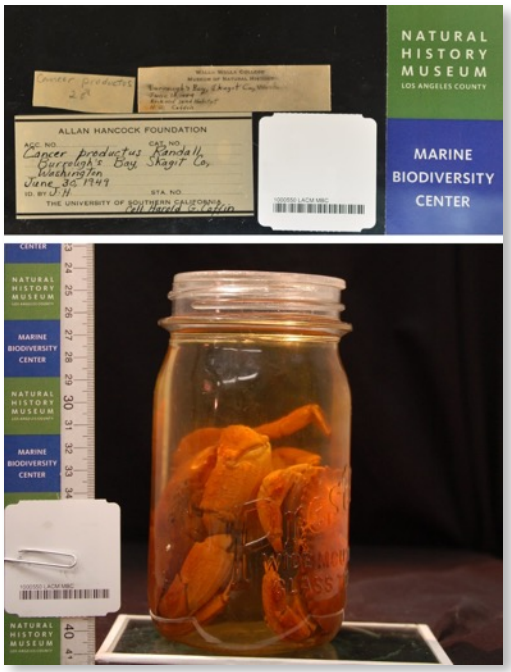


Image of a crab specimen jar and, above, an image of the labels from the jar, used to do the data digitization.

A student participant enters data into the Crab Shack data capture system during the iDigBio digitizing event at NHM.

graphically capturing label data from nearly 1,000 sample lots. Meanwhile, Research Associate Dean Pentcheff worked with the Notes From Nature group (http://www.notesfromnature.org) to create a customized data entry system, *The Crab Shack*, in the Zooniverse science crowdsourcing website (http://www.zooniverse.org). *The Crab Shack* was launched during the international *iDigBio* digitizing event (http://www.idigbio.org), where invited USC students participated in digitizing the first set of specimens at the Collaboratory at NHM on 23–24 October. At that event, students were oriented to the data entry platform, digitized specimens, toured the collections, and participated in videoconferencing with *iDigBio* participants at U.C. Berkeley and the Smithsonian in Washington, D.C. Over the next month or two, all the rest of the specimen labels were digitized by remote participants through the online platform. We're now in the midst of analyzing the crowdsourced label data to evaluate its quality, and to assess whether to use this style of crowdsourcing as an element of collections digitization in the future.

Urban Nature Research Center

The venomous sea snake that washed up in Ventura County (covered by The LA Times, ABC, KTLA, and many other news outlets) was added to the NHM Herpetology collection. This is the first time in 30 years that one of these snakes has been found in California. The warm waters of El Niño were likely responsible for bringing this (normally tropical) snake so far north.

Greg Pauly with his new (famous) specimen.

Field Work

Herpetology

Fieldwork on West Anacapa Island

On Veteran's Day, November 11, Greg joined a joint NOAA/NPS boat to West Anacapa Island. Although East Anacapa Island is one of the most visited of the Channel Islands, people rarely step foot on Middle and West Anacapa Islands because they are critical sea bird nesting habitat. Small numbers of biologists tend to get on the islands only once or twice per year, and Greg had been trying to go for the past two years.

The view from West Anacapa looking east across Middle Anacapa to the lighthouse on East Anacapa.

He finally got out there (with 22 hours notice) on November 11. Greg boarded the NOAA Shearwater in Santa Barbara Harbor and 90 minutes later took a small skiff from the Shearwater to the only landing site on West Anacapa. Over the next 5.5 hours, he collected specimens of the two lizards and one amphibian known from the island. Greg collected the first Channel Island Slender Salamanders that had been collected from this island since 1979. He also collected two Side-blotched Lizards, which were last collected in 1963 and only six specimens of which had ever been deposited

in museum collections. Greg also found 7 Southern Alligator Lizards. The species was last collected from West Anacapa in 1979 and only nine were known in museum collections. These new specimens will provide the first tissue samples of the Southern Alligator Lizard and Side-blotched Lizard from the island. The specimens and tissues will be used by Greg and his colleagues for understanding the colonization history of the islands and how island populations differ from mainland relatives.

Two Channel Island Slender Salamanders, a species only found on the northern Channel Islands. These salamanders were found under rocks in narrow canyons that drain the north side of the islands.

Invertebrate Paleontology

Tropical seas of Southern California

IP Collections Manager Austin Hendy joined Dr Judy Terry Smith (Smithsonian), research associates Pat LaFollete, Mark Roeder, and George Kennedy, and former IP Curator Edward Wilson for field work in the Indio Hills in Riverside County during October. We prospected a number of late Miocene exposures, typically referred to the Imperial Formation. Austin collected a large number of samples which are being prepared at the IP facility in Carson. These faunas look remarkably similar to those which Austin has been studying in Panama, Venezuela, and Colombia, reflecting the tropical nature of seas that transgressed into southern California 5 or 6 million years ago.

Urban Nature Research Center

The UNRC continues to conduct research in Los Angeles and beyond! Both UNRC researchers and the citizen scientists they work with are busy documenting the wildlife of the city.

A cover board now sits under the Malaise trap in the Nature Gardens (see photo at left). This piece of wood acts as a home to creatures like snails, slugs, lizards, spiders, and many others that prefer a damp, dark environment. The Urban Nature Research Center team will be monitoring what takes up residence under this board for the next year.

On Thursday October 8th, Greg Pauly gave a guest lecture on local reptiles and amphibians to Audubon docents at Ballona Wetlands. After the lecture the group wandered around observing several species of native lizards. The highlight were three California Legless Lizards, *Anniella pulchra.* These lizards are found in sandy soil as well as loose organic soils, where they burrow around looking for tasty invertebrates to eat. The recent rains have brought these soil-dwellers up to the surface. You can see the report of this find on the RASCals project: http://www.inaturalist.org/observations/2094828.

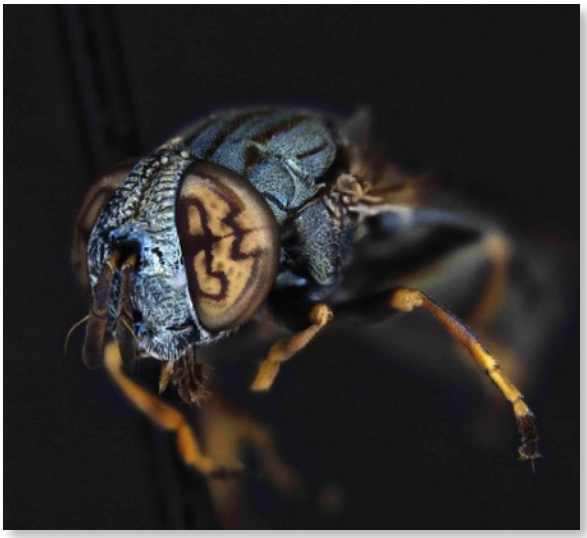
A California Legless Lizard observed at Ballona Wetlands Ecological Reserve.

Chris Thacker continues to monitor the Nature Gardens pond for Arroyo Chub. About 45 of these little native fish were released into our pond last July and promptly hid among the

rocks and plants. Few have been seen since then, but on October 6 Chris sighted a solitary chub in the upper portion of the pond, past the footbridge in the shallow section. These fish are adapted to the intermittent flow of Southern California coastal streams, and will tolerate different types of stream habitats, but the kind they like best is slow-flowing backwaters where there are good places to hide. Keep an eye out on the edges of the deeper parts of the pond and up in the shallow section for these elusive minnows.

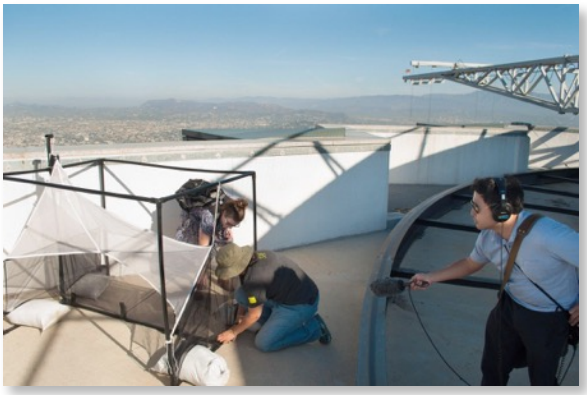
Polygyra cereolus, the Southern Flatcoil snail (pictured at right), was found by SLIME citizen scientist Sharon Nakata in the Marsh Street Nature Park in Los Angeles on September 7th. This is only the second record of this snail occurring in Los Angeles County! This snail is an introduced species to California and probably is hitching a ride on landscaping plants transported here for the horticultural trade.

On Saturday, October 3rd, Greg Pauly, Research Associates Bobby Espinoza and Tom Wake, and three students from CSU Northridge, headed to Simi Valley to conduct fieldwork on an urban gecko population. Greg and Bobby secured 20 geckos for use in their physiological studies at CSUN testing for local adaptation to a Mediterranean climate in this widespread invasive species. They also acquired a number of specimens for the Museum that will be used for studying morphological adaptations to differing climates.



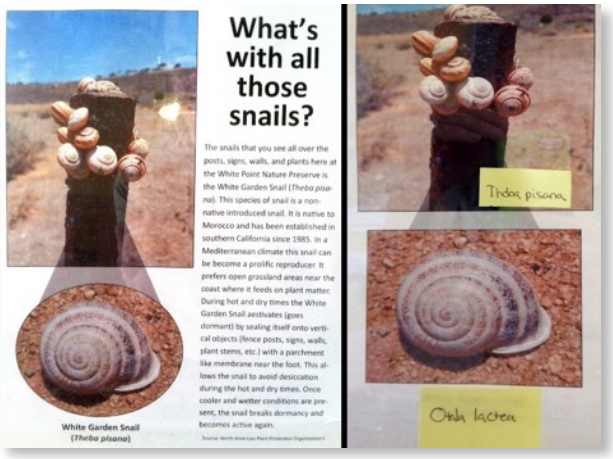
The wavy-eyed syrphid fly (pictured at left) has been collected in the Malaise trap in the Nature Garden and a few other BioSCAN sites across L.A. Their larvae live in muckish water, feeding on rotten organic debris and breathing with siphons off their rear-ends, giving them the nickname "rat-tailed maggots". Lisa Gonzalez and Kelsey Bailey decided to see if they could locate some of these larvae in the Nature Gardens pond. With Daniel Feldman's help, Lisa and Kelsey (equipped with aquatic net and camera, respectively) set about looking for them on the edges of the shallow end of the pond. Lisa's net quickly filled with damselfly and dragonfly larvae, little water striders, and backswimmers, but alas, no rat-tailed maggots were to be found. Not all hope is lost, however, as they spotted several species of syrphids, including two *O. flukei,* hovering above the murky water, apparently ovipositing right there in the muck!

BioSCAN took insect trapping to new heights by placing a Malaise trap on the top of the tallest building on the West coast, the US Bank Tower in DTLA! This momentous occasion (pictured at right) was covered by KPCC; you can listen to the clip and see the slideshow online.



The samples from the Malaise trap on the roof of the US Bank building turned up relatively few insects, but we did get several of a single species of phorid! This phorid is one of the recently described species from the BioSCAN project, and happens to be the one named after NHM board member Patricia Lombard's family (*Megaselia lombardorum*).

A couple of short hikes in Palos Verdes by Jann Vendetti revealed 4 land snail species: *Helminthoglypta traski* (the Los Angeles native snail!), *Otala lactea* (milk snail), *Theba pisana* (Italian White snail), and *Cornu aspersum* (the European Garden snail). Additionally, a stop at the White Point Nature Education Center presented the opportunity to correct the Center's snail information (see photos at right). It is easy to mistake these three common snail species for each other: *Otala lactea* (milk snail), *Theba pisana* (Italian White snail), and *Cornu aspersum* (the European Garden snail).



On Tuesday September 22nd, Greg visited a site in Santa Ana where he had previously collected four species of nonnative lizards. Two of these, Brown Anoles and Mediterranean House Geckos, represent the first times that these species had been documented in Orange County. Two other geckos, Flat-tailed House Geckos and Tropical House Geckos, were also observed here in October 2014, but it wasn't clear if they were an established population or just a few recently introduced geckos. Greg was visiting the site to determine if these two species also represented established populations. Greg's hope was to be at the site for just an hour or so, but the number of animals kept him there until 1am. He found multiple Flat-tailed House Geckos and Tropical House Geckos as well as clear evidence that they are established. This is the first time established populations of these two species have been documented in California. Greg also found a Brahminy Blindsnake, a tiny nonnative snake that is becoming increasingly common in Southern California.

An adult male Brown Anole collected in Orange County with his red dewlap on his display.

An adult Mediterranean House Gecko hanging out back in the Section of Herpetology.

Greg returned to this site again on October 11th and October 23rd to map out the ranges of the various nonnative species found there. Most of these species likely arrived at Santa Ana as escapees from a reptile and amphibian importer. On October 11th, Greg visited the previous location of this business approximately 1.5 miles away from the current location. Although the old location had been left in the late 1980s, Greg was able to find an established population of Flat-tailed House Geckos, suggesting they had been there for over 25 years.

Prior to the nighttime collection of geckos on October 23rd, Greg was in another Orange County neighborhood tracking down a new report of Brown Anoles in Southern California. Greg confirmed an established population, which is the 4th recorded population in the County. Greg will include all of these records in an upcoming publication about the establishment of this species in Southern California.

Also, in Mid-October, this time on October 17th, Greg was joined by Saddleback College professor Tony Huntley in Orange. In the late afternoon they collected Brown Anoles and after dark they collected Indo-Pacific Geckos. They will return to this site every 6–8 weeks for one year to study the reproductive biology of these two tropical species now living in an urban area with a Mediterranean climate.

Greg Pauly's recent field work at a Torrance nursery collecting nonnative Coqui Frogs was featured on KCET: http://www.kcet.org/news/redefine/rewild/invasive-species/are-puerto-ricos-loudest-invasive-frogs-coming-to-los-angeles.html

Meetings, Workshops, and Presentations

Anthropology

Ethnology

On October 17th, the museum hosted a symposium entitled *Natural Discourse: Flora and Fauna* that was organized by Shirley Watts, artist and principal of Shirley Alexandra Watts Design (http://www.sawattsdesign.com). As described on www.naturaldiscourse.org, "*Natural Discourse: Artist, Architects, Scientists and Poets in the Garden* began as a collaborative project between the University of California Botanical Garden at Berkeley (UCBG) and a multi-disciplinary group of artist, writers, architects, and researchers." This group was invited to spend time at the UCBG and develop site specific work to present. The project has grown to include Southern California, and at the event held on October 17th, presentation topics covered contemporary art made with taxidermy, beautiful paintings made using tar from the La Brea Tar Pits, and the process and aesthetic qualities of preparing pressed plant specimens. There was also an activity about silk that explored both Mick LoRusso's work to genetically modify bacteria to produce fluorescent silk at the Art/Sci Center at UCLA and Jason Fahrion's artwork created using silk cocoons of silk worms that he raises on local mulberry leaves in his garage.

NHM employees Carol Bornstein and KT Hajeian also participated in the symposium. As Director of the Nature Gardens, Carol led participants on an inspirational tour through the gardens and Collection Manager KT joined Mick and Jason's silk activity with a display of objects made of silk from the Anthropology's Ethnology collections. These dolls wearing silk outfits (pictured at left) were collected in Kentucky in the 1870's. Though it was attempted, silk production never really caught on in the South because it wasn't as lucrative as growing tobacco.

Invertebrate Paleontology

Sharing our success and learning from others

Austin Hendy gave multiple presentations at the Geological Society of American Annual Meeting in Baltimore in early November. These aimed to publicize the strengths of the NHM IP collections, outreach efforts, and research opportunities.

Austin also participated in a three-day workshop offered by iDigBio on Managing Natural History Collections Data for Global Discoverability held on the campus of Arizona State UnIversity. The workshop covered a broad range of informatics and biodiversity data concepts, with many hands-on data cleaning exercises.

Austin appreciates funding support from R&C that enabled participation at both meetings.

Urban Nature Research Center

Miguel Ordeñana gave a talk on his work with citizen science at the recent Urban Biodiversity Seminar put on by the Council for Watershed Health. Not only did Miguel get a chance to talk about his bat detection and camera traps, but he also spoke about the NHM SuperProject. Councilman Paul Koretz spoke at the seminar and was enthusiastic about BioSCAN's work downtown. The Councilman brought with him the poster of some of the beautifully photographed micro-wasps that were collected with the traps at City Hall.

On Sunday September 20th, Greg Pauly presented at the Santa Monica Mountains National Recreation Area Reptile and Amphibian Show. The show was the largest event ever held at the Recreation Area's Headquarters in Calabasas. Greg's talk was entitled *Reptile and Amphibian Discoveries by Southern California's Citizen Scientist Army.*

Vertebrate Paleontology

Participants select materials to pack their fossil analogues during the SVP packing workshop.

During 14–17 October 2015 Vertebrate Paleontology staff Dr. Xiaoming Wang, Dr. Samuel A. McLeod, and Vanessa R. Rhue attended the 75th annual meetings of the Society of Vertebrate Paleontology in Dallas, Texas. Assistant Collections Manager Vanessa R. Rhue led a workshop 13 October 2015 with colleagues from the Yale Peabody Museum of Natural History, the American Museum of Natural History, and the National Museums of Scotland. The hands-on workshop, *Vertebrate Fossil Packing for Shipment by Courier*, provided participants with a knowledge of materials and techniques to mitigate potential damage that can occur when irreplaceable fossils are sent on institutional loan. A lecture in combination with hands-on activities allowed for participants to practice the steps of properly stabilizing and supporting fossils entrusted to their care.

Vanessa R. Rhue also gave a poster presentation, *Designing a Holistic Internship for Undergraduate Students in Collections Care*. For the student aspiring to pursue a career in the museum field of vertebrate paleontology, such as a preparator or collections manager, there are generally limited opportunities available to build up the requisite experiential knowledge prior to graduation. Attention to recruitment, assessment, training, workflow, and evaluation are all key elements to a well-rounded internship program. The aim of the presentation was to provide a model that could be emulated by other institutions seeking to develop a thriving program for the benefit of future professionals.

Vertebrate Paleontology Assistant Collections Manager Vanessa R. Rhue gives her poster presentation at the SVP annual meetings in Dallas, Texas.

Public Outreach

Anthropology

Archaeology Month

KT Hajeian, Margaret Hardin and Chris Coleman participated in Anthropology's first foray in celebrating Archaeology Month for October 2015. On October 15, we conducted a successful presentation regarding use wear on prehistoric artifacts in order to determine their function. We had out a selection of artifacts consisting of pottery, basketry and groundstone.

Artifact Selection for October 2015 Archaeology Month.

Haunted Museum

Chris Coleman, Caroline Weiss and Margaret Hardin at the Haunted Museum presentation.

On October 25, Anthropology KT Hajeian, Margaret Hardin and Chris Coleman as well as Leslie Estrada and Caroline Weiss, our two volunteers, participated in the *Haunted Museum*'s Egyptian Mummy theme by presenting objects from our Ancient Egyptian Collections. We featured our objects from the Dr. Peter Janss donation of a Ptolemaic mummy mask, a carved wooden mask from a coffin and a canopic jar. Other artifacts included mummified animals such as a partial cat, birds and juvenile crocodiles. The CT scan movie of the mummified partial cat was especially popular.

Home School Day Archaeology Adventures

On November 5, Anthropology, consisting of KT Hajeian, Margaret Hardin and Chris Coleman, conducted a presentation for Home School Days. We used prehistoric artifacts that had been "recycled". These were items that were initially made for one use but then were damaged or broken and then repurposed for another type of use.

Margaret Hardin and KT Hajeian participating in Home School Day

Junior Scientist Program

On Saturday November 14, Chris Coleman conducted a presentation for the Museum's Junior Scientist Program. The young scientists visited the Archaeology Storeroom in four groups to view Ancient Peruvian and Egyptian artifacts.

Crustacea

The Marine Biodiversity Center's (MBC's) Regina Wetzer and Sivakami (Sivi) Ananthasingam, and Crustacea's Joel (Jody) Martin and Adam Wall, participated in the annual *Haunted Museum* event with great enthusiasm. To play into this year's theme of Egyptian mummies, the two sections presented "Franken Shrimp" (fairy shrimp or sea monkeys) that you can bring to life just by adding water! Visitors could see live examples in all stages of life from egg, larva, and adult — includ-

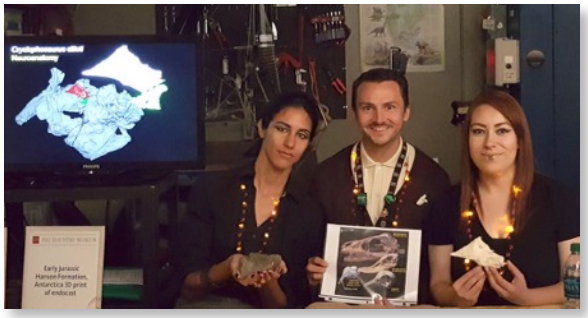
ing death! They even saw where good fairy shrimp go when they die — an ethanol-filled jar in the Crustacea collection! Fun loving guests of all ages could actually color in their favorite life stage of Franken Shrimp and pin her (by happenstance all of the outlines where of female Franken Shrimp) up on a mural hand-painted by MBC work-study student Gracie Mowery depicting a fishbowl with an Egyptian pyramid and sarcophagus buried in desert sands. But the Franken Shrimp didn't stop there; guests were given their very own NHM branded Franken Shrimp kits to take home and bring back to life themselves!

Conservation

At the 2015 *Haunted Museum,* Tania Collas and Elizabeth Drolet hosted kids' conservation activities, including cleaning a mock Egyptian tomb painting. Elizabeth created the Egyptian painting and Tania added the dirt to prepare a realistic simulation!

Dinosaur Institute

Haunted Museum in the Dino Lab



Participants from left to right:
Erin Perez, Eric Schlegel and Erika Canola.

The Dino Lab crew and volunteers brought to light how new knowledge is obtained through the use of CAT scans on both mummies and dinosaurs. Staff presented the new research of Dr. Rachel Racicot, that included CT scans of *Cryolophosaurus ellioti* and a 3D endocast of its skull. Touch specimens of sauropod material from the Utah Late Jurassic "Gnatalie" quarry were available for children to feel the organic nature of fossils.

National Fossil Day

The Dinosaur Institute took center stage for the 2015 Fossil Day celebration on Saturday, October 10, 2015. Staff members Jose Soler, Maureen Walsh, Alyssa Bell and Nate Smith where helped by DI volunteers Sarah Edwards and Izchel Moreno. Highlights covered the DI's internship programs that teach "hands on" paleontological techniques on BLM and NPS lands.

From left to right, DI Volunteer Sarah Edwards, Jose Soler and Dr. Nate Smith

Working with Disney Studios, Curator Nate Smith, Preparator Jose Soler, and Director of Marketing Mara Naiditch developed and installed a terrific exhibit at the El Capitan Theater from November 17 – December 14 as part of the premiere and run of the Disney Pixar film, *The Good Dinosaur.* The exhibit included numerous sauropod specimens, similar to "Arlo", the star of the film, as well as a *T. rex* footprint photo-op for visitors and a rotating *T. rex* skull display. Dinosaur Institute staff and Gallery Interpreters also hosted several "Ask a Paleontologist" Q/A sessions with visitors throughout the exhibit's run.

Dr. Nate Smith, Mara Naiditch, and Jose Soler at the El Capitan Theatre.

Dr. Rachel Racicot (Postdoctoral Researcher — Dinosaur Institute) poses with comedian and actor Patton Oswalt in front of the NHM exhibit for the premiere of Disney's The Good Dinosaur.

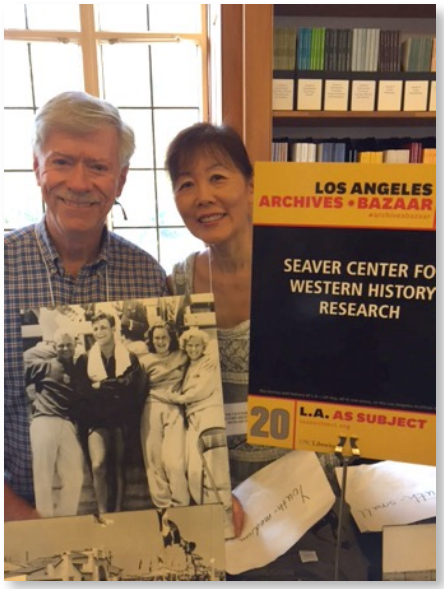
History

Haunted Museum

At *Haunted Museum,* the History Department showcased movie artifacts and photographs from *The Mummy*, the 1932 film starring Boris Karloff.

Docent Tour of Becoming Los Angeles

On October 27th, Dr. William Estrada conducted a two-hour tour of the *Becoming Los Angeles* exhibition in the Kevin Sharer Hall for our NHM docents. This tour actually picked up where Dr. Estrada left off from an earlier tour covering the first sections of the exhibition. Docents took down several notes, asked lots of questions and came away excited about the prospect of conducting official tours of the exhibit for our visitors.



Archives Bazaar

The Seaver Center for Western History Research was present at the 10th annual Archives Bazaar held at the USC Doheny Library on October 17th. Visitors to the table viewed photographs from the 1932 Olympics held in Los Angeles.

Invertebrate Paleontology

The Invertebrate Paleontology collection was busy throughout Fall with education and outreach events, including the NASA *Night at the Aquarium*, which was hosted by the Aquarium of Life, the *Journey Through Life on Earth* teachers workshop at Carson, and celebrating National Fossil Day at the Natural History Museum. The Angeles Workshop School visited in September, learning about fossils and participating in fossil preparation.

Students of the Angeles Workshop School anxiously waiting for their turn to wash samples.

A highlight was hosting a dozen students competing in the 2015 Science Olympiad, who sought help from Austin Hendy and Jann Vendetti to learn about one hundred kinds of fossils, fossil preservation modes, and walk through the history of life on earth.

Participants in the Science Olympiad receive an overview on paleontology from Jann Vendetti.

Malacology

Malacology participated in the *Haunted Museum* where we showcased two different species of snail from our collection (*Bolinas brandaris*, the "purple dye snail" and *Hexaplex trunculus*, the "banded dye snail") that were used by the ancient Phoenicians to make "royal purple" cloth. This cloth was so expensive that it was only purchased by and worn by Ancient Egyptian royalty.

In November, Malacology was part of two events: a *Scavenger Safari* highlighting some of the most impressive shells from the collection, and a *Hildegarde Howard Society Brunch* in Playa del Rey at the home of Nancy Edwards, where Jann Vendetti showcased marine and terrestrial snails and discussed various aspects of their extraordinary shell growth and reproductive biology.

Malacology & Echinoderms

On Saturday, October 24th Lindsey Groves (Malacology) and Cathy Groves (Echinoderms) co-led *A San Andreas Odyssey* for 26 fault- seeking participants. This annual excursion highlights geomorphic features formed by motion along the San Andreas Rift Zone from Cajon Pass to Palmdale and includes pressure ridges, fault scarps, sag ponds, hogbacks, fault scarps, shutter ponds, and earthquake trees.

Happy fault seekers near Valerymo, CA, by sign marking San Andreas Fault trace.

Malacology, Invertebrate Paleontology, & Echinoderms

Austin Hendy (IP) discussing fossil and Recent cephalopods with National Fossil Day visitor.

On Sunday, October 11th, Lindsey Groves (Malacology) and Jann Vendetti, Austin Hendy, and Cambria Rodriguez (Invertebrate Paleontology), and Cathy Groves (Echinoderms) participated in National Fossil Day. Lindsey featured a suite of asphalt infused marine invertebrates recovered from a site destined to be a MetroRail station near the Page Museum. Jann, Austin, and Cambria presented a selection of fossils from the Los Angeles Basin including some large ammonites, modern Chambered Nautilus, and specimens recovered from excavations at 6th and Flower streets in downtown L.A. Cathy exhibited fossil and Recent echinoderms including crinoids, helicoplacoids, seastars, and sea urchins. Many thanks to volunteer Christyann Evans for her assistance.

Cathy Groves (Echinoderms) sharing her knowledge of fossil and Recent echinoderms with visitors to National Fossil Day.

Urban Nature Research Center

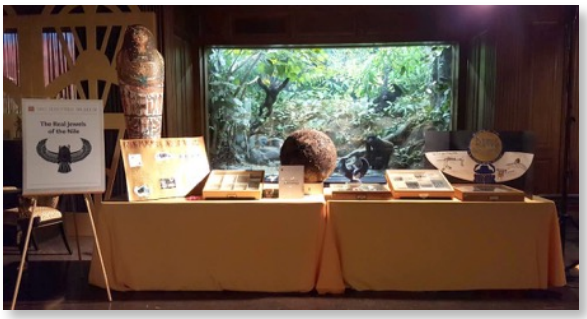
Citizen Science and Cocktails

On November 12 the Fall Citizen Science and Cocktails series concluded with Brian Brown and Greg Pauly presenting on BioSCAN and RASCals. Although billed as a duel (complete with competing cocktails "Snake Bite" and "Fly Guy"), the talks were actually a dual presentation on the incredible contributions of citizen science projects here at NHM, and the collaboration of these projects into the SuperProject. The SuperProject, which involves not only BioSCAN and RASCals but also SLIME and the Southern California Squirrel Survey (the subject of earlier CS&C talks and the inspiration for a "Beatrice the Biologist" cartoon), is the current focus of the Urban Nature Research Center. Cheers!

"Snake Bite" and "Fly Guy", with Brian Brown presenting.

Haunted Museum

What better way to highlight the importance of urban biodiversity (even 1500 BCE) than talking about insects that ate the mummified dead in ancient civilizations? The dung beetle, although not a particularly urban phenomenon, was a huge hit (complete with a giant dung ball)! The whole urban biodiversity team had a great time at this annual event.



Vertebrate Paleontology

Vertebrate Paleontology staff Dr. Xiaoming Wang, Dr. Samuel A. McLeod, and Vanessa R. Rhue participated in the Museum's *Haunted Museum* 26 October 2015. Mummified fossils of horse, ground sloth, and snake were featured from Gypsum Cave, Nevada and Shelter Cave, New Mexico. The mummified skeleton of a Trans-pecos Rat Snake (*Elaphe subocularis*) from Shelter Cave, New Mexico and soft tissue "skin" covering claws of a ground sloth

(*Nothrotheriops shastensis*) were among the eye catching specimens. The arid environment of caves can yield some spectacular forms of preservation. Also, on display were some casts of fossil cat skulls, which afforded guests the opportunity to see and touch the large saber teeth.

Vertebrate Paleontology Collections Manager Dr. Samuel A. McLeod converses with guests about the spectacular "mummified" specimens from our collections.

External Funding

Dinosaur Institute

4th Floor Collections

Princeton Internships in Civic Service
AN ALUMNI INITIATIVE

Collection Manager Maureen Walsh will welcome a lucky candidate from Princeton University for a 2016 *Princeton Internships in Civic Service* internship with the Dinosaur Institute. Interns work in the Mesozoic Collection organizing, labeling, updating KE Emu, the collection management software, and learning conservation and preparation techniques. Interns also join the annual DI expedition to Utah for "hands on" paleontological collection in the Jurassic Morrison Formation "Gnatalie" quarry.

Invertebrate Paleontology

An EPICC undertaking

The Invertebrate Paleontology Collection was thrilled to be the recipient of a sizable grant from the National Science Foundation (in partnership with 7 other institutions) to digitize (photograph and add specimens to our database) our extensive collection of Cenozoic (the last 66 million years) fossil invertebrates from the East Pacific (and primarily the North American West Coast). The primary goal of the funding is to make discoverable digital records and images of fossils from this region through an interval of earth and life history that experienced 7 major environmental changes (*e.g.*, warming and cooling phases, glaciation events). The funding is a tremendous boost in our efforts to curate one of the largest collections of invertebrate fossils in North America. The grant will allow Invert Paleo to complete digitization of more than 800,000 specimens, digital imaging of 22,000 specimens, and georeferencing of in excess of 9000 localities. The grant also allows Invertebrate Paleontology to hire an assistant collections manager. For the first time, this valuable collection will get into an online database so that researchers and the public can use those data and see images of the fossils.

Pleistocene fossils from the IP collections.

Student Mentoring and Research

Invertebrate Paleontology

Intern Invasion

The Invertebrate Paleontology collection is pleased to announce a partnership with California State University Dominguez Hills (CSUDH) for students to participate in an credit-earning internship in museum studies. Beginning early next year, students from CSUDH will be working alongside IP collections staff, research associates, and volunteers to prepare, catalogue, and photograph collections as part of the NSF EPICC grant. This new partnership builds on a similar new partnership with Glendale Community College.

Glendale Community College students Alvaro de La Cruz and Cameron Casillas learning about Los Angeles' past marine biodiversity.

Malacology/IP/Ichthyology

Malacology, Invertebrate Paleontology, and Ichthyology shared interns from Glendale Community College (GCC) for an inaugural course in Museum Studies. Seven students completed 16 weeks of training in specimen sorting, identification, re-housing, and data collection. They all successfully presented their final research projects to an enthusiastic crowd of NHM staff, family, friends, and GCC faculty and administrators. Another semester is planned for this Winter with a new cohort of GCC students.

Glendale College interns Cameron Casillas and Alvaro de la Cruz sorting Pleistocene invertebrate fossils from San Pedro, CA.

Glendale College interns (l to r) Shannon Ary, Jose Sifuentes, Lidia Fernandez, and Allesandro Signorini sorting preserved mollusks from Tanzania.

Students from Glendale Community College started an internship this Fall with Dr. Jann Vendetti and Dr. Javier Gago to gain experience in research and collections. Collection Manager Rick Feeney put them to work right away, moving 55 gallon drums of fishes that needed to be transferred to new stainless steel tanks. An inventory was taken and the students hopefully saw a variety of fishes that few people get to see. They were then directed to choose a species or group that they want to work on and start a mini research project, using all the tools available in Ichthyology, including the x-ray machine, microscopes and the Giles Mead reprint library. The students quickly adapted and got results.

Cameron Casillas and Alvaro De la Cruz unload a barrel of catfish from the Rio Orinoco, Venezuela.

Lidia Fernandez, Alessandro Signorini, and Jose Sifuentes discover a locking mechanism in the pectoral spine in a marine catfish from Pakistan.

Marine Biodiversity Center

The MBC had three students working in their lab as interns from USC for the Fall semester. Jennifer Pan, a Biomedical Engineering student, received the USC Provost's Undergraduate Research Fellowship Award to study one of the most economically important families of crabs in the Crustacea collections — the Cancridae. Matthew Enloe, a So Cal native majoring in Environmental Studies, is working in the MBC as part of an internship program in his major. And Eilen Itzel Mena, studying Fine Art and Urban Planning, has been working in the MBC as an art intern through the Roski School of Art & Design as part of her course studies. All of the interns worked closely with MBC staff on several different projects and with the addition of all the interns' hard work it was a very productive fall in the MBC!

Vertebrate Paleontology

Fernando Salinas-Marquez returned to utilize our collections 3–15 October 2015. Fernando is currently a doctoral student at Universidad Autónoma de Baja California, Ensenada, Mexico. Fernando is studying Kentriodontid dolphins for his doctoral thesis with Dr. Lawrence G. Barnes and Dr. Jorge Velez-Juarbe.

Volunteers and Research Associates

Invertebrate Paleontology

The Invertebrate Paleontology Collections and Research Facility is becoming an increasingly busy place. Bob Stanton and John Alderson continues to develop research papers on the Conjeo Volcanics, and John Alderson and LouElla Saul are nearing completion of Takeo Susuki's monograph on fossils of the Topanga Formation. Our fantastic team of regular volunteers (Lidia Lustig, Janice Tompson, and Carolyn-Marie Weiss) who have been busy conserving the IP research library, inventorying, and preparing fossils have been joined by Steve Sholly. Steve will begin to curate our impressive collections of Cambrian-age fossils.

Carolyn exploring the Pliocene of Southern California.

Distinguished Visitors

Crustacea

Lauren Miller, a Ph.D. student in Ecology at University of California, Davis and her colleague, Nick Bertrand, visited the Crustacea collection from December 2nd–17th. This work is part of Lauren's dissertation on the functional morphology and macroevolution of brachyuran crabs. During Lauren's time in Crustacea, with Nick's help, they took over 12,000 precision measurements on over 300 specimens from over 50 families of crabs. All of these amazing data are being linked to the database records for those specimens for use by future researchers!

Invertebrate Paleontology

The Invertebrate Paleontology Collection was honored to host Dr. Judy Terry Smith for a week during October. Judy has contributed significant collections of fossils from her work in southern California and Baja California over the last few decades and visited to supervise their reorganization and ready them for digitization.

Malacology

Jordan Abney and advisor Doug Eernisse (Cal. St. Univ., Fullerton) made multiple visits to the land snail collection at the Carson IP/Malacology facility to examine holdings of helminthoglyptid gastropods. Ángel Valdés and students Jenny McCarthy, Sabrina Medrano, and Eric Breslau (Calif. Poly. Pomona) made several visits to use the SEM and examine Malacology holdings of cephalaspidean gastropods. Jessica Goodheart (Univ. Maryland) visited with Ángel to examine nudibranchs. Paul Tuskes (San Diego Shell Club) made two visits to examine trochid gastropods and to give a program on mollusks of Mission Bay for the October meeting of the Pacific Conchological Club. Daniel Geiger (Santa Barbara Museum of Natural History) visited to examine fissurellid gastropods and to discuss additional plans for Jim McLean's Northeast Pacific gastropod book. Shawn Wiedrick (Calif. St. Univ., Fullerton) spent a day identifying ocenebrinid gastropods for thesis research. Gennady and Natalia Kamenev (A.V. Zhirmunsky Institute of Marine Biology, Far East Branch of the Russian Academy of Sciences) spent two weeks examining and photographing bivalve types for research purposes.

Gennady and Natalia Kamenev photographing bivalve type specimens in the Malacology collection.

Vertebrate Paleontology

During 19–21 October 2015, our department was honored to receive international visitors from Japan. Among the researchers were Dr. Naoki Kohno, Senior Researcher and Curator of Fossil Marine Mammals at the National Museum of Nature and Science in Tokyo, Japan, and his graduate student,

Left to Right: Jun Hiramoto, Brandon Hupka, Dr. Lawrence G. Barnes, and Dr. Naoki Kohno.

Jun Hiramoto, of the University of Tsukuba. Together they spent time with Vertebrate Paleontology Curator Emeritus Dr. Lawrence G. Barnes, studying fossil toothed whales of the families Delphinidae and Kentriodontidae. Also visiting from Japan on 21 October 2015 was Dr. Toshiyuki Kimura, Assistant Curator at the Gunma Museum of Natural History. Dr. Kimura spent time with Dr. Barnes using both the modern and fossil marine mammal collections. In Vertebrate Paleontology he mainly focused on examining our Pleistocene gray whale skeleton from San Pedro Sand and specimens of Allodelphinidae from the North Pacific.

Dr. Naoki Kohno (left) and Dr. Toshiyuki Kimura (right) study our fossil gray whale skull from the Pleistocene San Pedro Sand.

On 8 December, Dr. Bruce Lander of Paleo Environmental Associates visited our collections to study the Chadronian fauna from Titus Canyon, Inyo County, California. He is preparing for a field trip that will go to the locality sometime next year. Dr. Lander examined our collection's holotype material from the deposit, which includes a large robust skull and jaws of a fossil brontothere, *Protitanops curryi,* that at one time was on display in our Museum's Hildegarde Howard Cenozoic Hall.

Dr. Barry Albright examines a specimen in our Vertebrate Paleontology collections from the Sharps Formation of South Dakota.

Dr. Barry Albright of the University of North Florida visited our collections 15 December 2015. He spent time studying specimens in our collection from the Arikareean Sharps Formation of South Dakota. This particular visit allows him to make faunal comparisons with material from a locality in Mississippi that he is currently involved in describing.

Recent Publications

Adams, P.A., Wise, W.S. and **Kampf, A.R.** (2015) The Silver Coin mine, Iron Point district, Humboldt County, Nevada. Mineralogical Record 46, 701-728.

Cempírek, J., Grew, E.S., **Kampf, A.R.**, Ma, C., Novák, M., Gadas, P., Škoda, R., Vašinová-Galiová, M., Pezzotta, F. and Groat, L.A. (2015) A potentially new borosilicate mineral, *ca.* $Al_{16}B_4Si_4O_{38}$, related to boralsilite from the Manjaka pegmatite, Sahatany Valley, Madagascar. Geological Society of America, Annual Meeting, 1–4 November 2015, Baltimore, Maryland. GSA Abstracts with Programs 47(7), 497.

Chivers, S.J., W.L. Perryman, M.S. Lynn, T. Gerrodette, F.I. Archer, K. Danil, M. Berman-Kowalewski and **J.P. Dines**. 2016. Comparison of reproductive parameters for populations of eastern North Pacific common dolphins: *Delphinus capensis* and *D. delphis*. Marine Mammal Science 32(1): 57-85.

Carretta, J.V., K. Danil, S.J. Chivers, D.W. Weller, **D.S. Janiger**, M. Berman-Kowalewski, K.M. Hernandez, J.T. Harvey, R.C. Dunkin, D.R. Casper, S. Stoudt, M. Flannery, K. Wilkinson, J. Higgins and D.M. Lambourn. 2015. Recovery rates of bottlenose dolphin (*Tursiops truncatus*) carcasses estimated from stranding and survival rate data. Marine Mammal Science 32(1): 349-362.

Deng, T., H. Wang, **X. Wang**, Q. Li, and Z.J. Tseng. 2016. The Late Miocene *Hipparion* (Equidae, Perissodactyla) fossils from Baogeda Ula, Inner Mongolia, China. Historical Biology 28:53-68.

Eagle, R.A., Enriquez, M., Grellet-Tinner, G., Pérez-Huerta, A., Hu, D., Tütken, T., Montanri, S., Loyd, S.J., Ramirez, P., Tripati, A.K., Kohn, M.J., Cerling, T.E., **Chiappe, L.M.** and J.M. Eiler. 2015. Isotopic ordering in eggshells reflects body temperatures and suggests differing thermophysiology in two Cretaceous dinosaurs. Nature Communications. DOI: 10.1038/ncomms9296

Jacobs, L.L., L.J. Flynn, Y. Kimura, Y. Kobayashi, **X. Wang**, Z. Qiu, C. Jin, Y. Zhang, L.H. Taylor, N. Kohno, and A.J. Winkler. 2016. Contributions to vertebrate palaeontology in honour of Yukimitsu Tomida. Historical Biology 28:1-7.

Kampf, A.R., Mills, S.J., Nash, B.P., Jensen, M. and Nikischer, T. (2015) Apexite, $NaMg(PO_4)\cdot 9H_2O$, a new struvite-type phase with a heteropolyhedral cluster. American Mineralogist 99, 2695-2701. DOI: 10.2138/am-2015-5457.

Kampf, A.R., Plášil, J., Kasatkin, A.V., Marty, J. and Čejka, J. (2015) Fermiite, $Na_4(UO_2)(SO_4)_3\cdot 3H_2O$, and oppenheimerite, $Na_2(UO_2)(SO_4)_2\cdot 3H2O$, two new uranyl sulfate minerals from the Blue Lizard mine, San Juan County, Utah, USA. Mineralogical Magazine 79, 1123-1142.

Long, J.A., Large, R.R., Lee, M.S.Y., Benton, M.J., Danyushevsky, L.V. and **L.M. Chiappe**. 2015. Severe Selenium depletion in the Phanerozoic oceans as a factor in three global mass extinction events. Gondwana Research. DOI: 10.1016/j.gr.2015.10.001.

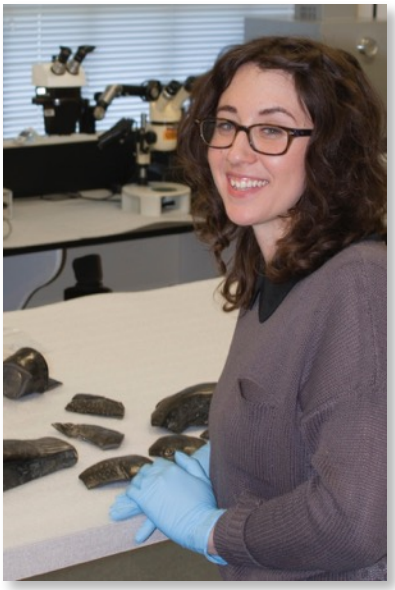
Martin, T., **Marugán-Lobón, J.**, Vullo, R., Martin-Abad, H. Luo, Z. and A.D. Buscalioni. 2015. A Cretaceous eutriconodont and integument evolution in early mammals. Nature 526: 380-384. DOI: 10.1038/nature14905.

Milàn, J., **Chiappe, L.M.**, Loope, D.B., Kirkland, J.I. and M.G. Lockley. 2015. First report on dinosaur tracks from the Burro Canyon formation, San Juan County, Utah, USA — evidence of a diverse, hitherto unknown lower Cretaceous dinosaur fauna. Annales Societatis Geologorum Poloniae 85: 515-525. DOI: 10.14241/asgp.2015.034.

Staff Departures & New Staff

Conservation

We wish Assistant Conservator Elizabeth Drolet the best of luck as she moves on to pursue exciting opportunities in the New Year. We'll miss you, Elizabeth!



Vertebrate Paleontology

The Department of Vertebrate Paleontology welcomes part-time Assistant Collections Manager, Sophie A. Wang. Ms. Wang holds a Bachelor's degree in Biology from Pomona College, where she completed a senior thesis on the relationship between aquatic lifestyle transitions and eye morphology. Ms. Wang's involvement with our department began in the summer of 2014, when she volunteered to prepare, house, and catalogue specimens in our collection. In July of 2015 she was hired to work part-time, assisting Vertebrate Paleontology staff with a variety of curation projects. She is currently cataloging and preparing a collection of Late Pleistocene fossils that were found on a construction project near Beverly Hills. Ms. Wang's research interests include the evolution of vertebrate morphology and adaptations to habitat transitions. In addition to her scientific research interests, Ms. Wang is also invested in studying the relationships between science and society. She is currently part of a team developing a blog that aims to increase access to scientific knowledge and develop a political education about the history and structure of science. Ms. Wang is also currently a Student-In-Training member of the Society for Integrative & Comparative Biology (SICB).

*Sophie Wang prepares a pelvis from a Mastodon (*Mammut americanum*) that she cataloged into our collections from a locality near Beverley Hills.*

Miscellaneous

History

San Gabriel Mountains Community Collaborative

William Estrada has accepted the invitation by the National Forest Foundation to serve as a member of the newly formed San Gabriel Mountains Community Collaborative. The purpose of this organization is to identify, prioritize, and advocate for investments, management objectives, and values that sustainably benefit the National Forest Service, the San Gabriel Mountains National Monument — designated by President Obama in 2014, and all communities throughout the region. Dr. Estrada was selected to serve on this board because of his ability to provide important interpretive knowledge on the cultural and historical resources of the San Gabriel Mountains National Monument and his past involvement in land use management plans for the region.

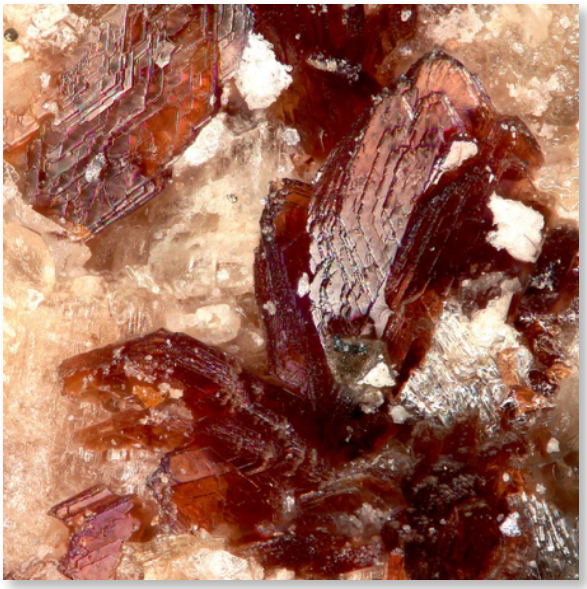
National History Day Learning Lab

Seaver Center Collections Manager Betty Uyeda participated in the National History Day Learning Lab at UC Riverside on November 7th. She provided one-on-one, individual archival reference guidance to middle-school students whose topics included European Settlements in the Americas, Gandhi and the Liberation of India, Pizarro and the Incas, Marilyn Monroe, and Walt Disney.

In December Curatorial Assistant Kristen Hayashi advanced to candidacy in pursuance of a PhD degree in History at the University of California, Riverside. Her forthcoming dissertation will focus on the return of Japanese Americans to Los Angeles in the early postwar period. In January, she will begin a 10-week research fellowship at the Smithsonian National Museum of American History.

Mineral Sciences

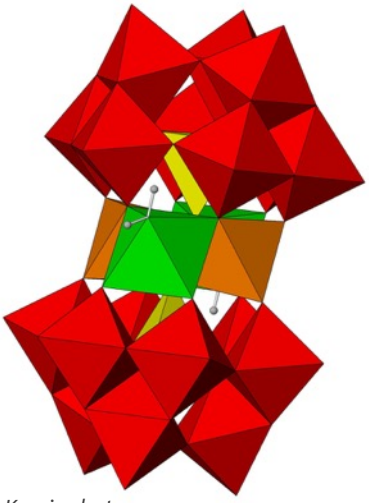
NHM Mineral Sciences Curator describes "Mineral of the Year"



Ophirite — 0.7 mm FOV.

An orange-brown mineral named "ophirite", described by a team led by Dr. Anthony R. Kampf, Curator Emeritus of Mineral Sciences at the Natural History Museum of Los Angeles County (NHM), has been designated the "Mineral of the Year for 2014" by the International Mineral Association. The award was announced in the December 2015 issue of the international mineral science magazine *Elements* and on the website of The International Mineralogical Association: http://www.ima-mineralogy.org.

More than 100 new mineral species are discovered every year. Every one of them adds something to our understanding of the natural world and the conditions under which minerals can form and exist. In some cases, they can help us to understand processes going on in the Earth that we cannot otherwise observe. Occasionally, they have internal structures or chemical compositions that have never been seen before; such discoveries can lead to the development of new materials with important uses. To celebrate these kinds of new mineral discoveries, the International Mineral Association developed an annual award — Mineral of the Year — in order to recognize the most interesting mineral published in the previous year. This year marks the first time this award has been presented.



Keggin cluster.

The award-winning mineral is named "ophirite" after the Ophir Hill Consolidated mine in Utah, where it was found. Its discovery is particularly exciting because the internal structure of ophirite contains a complex cluster of atoms that has never before been found in nature. That cluster, referred to as a *trilacunary Keggin anion*, had been synthesized in laboratories for many years and has found a wide range of applications in technology and medicine.

Kampf's co-authors include John M. Hughes (University of Vermont), Barbara P. Nash (University of Utah), Stephen E. Wright (Miami University, Ohio), George R. Rossman (Caltech), and Joe Marty (Salt Lake City, Utah). It was Marty who discovered the specimen containing ophirite roughly 25 years ago.

Kampf, who has been involved in the descriptions of more than 150 new minerals, said he enjoys the challenge of putting together everything that is needed to define a new mineral. "I do it because I relish the sense of discovery that I get,

especially when the crystal structure turns out to be unique or reveals an unusual new feature," said Kampf. Interestingly, Kampf was also involved in the descriptions of two out of the three minerals that were runners-up for the Mineral of the Year award.

Urban Nature Research Center

The Urban Nature Research Center conducted two trainings for almost 300 Super Citizen Scientists representing over 200 study sites ranging from the coast to the desert! These sites make up the new NHM SuperProject. The team is excited about the huge number of interested Super Citizens Scientists, the SuperProject could not be done without them. The enthusiasm and dedication that have been seen so far make everyone excited about this yearlong project that started on the 1st of November! Project participants do twice-monthly surveys for RASCals, SLIME, and the Southern California Squirrel Survey and submit their findings to iNaturalist. Eighteen of the sites also have Malaise traps and will be participating in BioSCAN. These "Super+" sites will also be surveyed for spiders for the Los Angeles Spider Survey.

Nearly 300 Super Citizen Scientists attended two trainings for the NHM SuperProject.

The Palatucci family from Santa Monica loves having "active science" happening in their backyard!

The *Research & Collections Newsletter* is issued quarterly by the Research and Collections staff of the Natural History Museum of Los Angeles County.

Editor: Dr. Joel W. Martin, Curator of Crustacea and Chief of the Division of Invertebrate Studies.

Layout: N. Dean Pentcheff.

All issues of the newsletter may be found at: http://research.nhm.org/newsletters