

Research & Collections News

The Occasional Newsletter of the Research and Collections Staff
Natural History Museum of Los Angeles County

re•search (rī-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.

September, 2007

(covering the months of May, June, July, and August, 2007)

Collection News

Crustacea

A rare specimen of a Japanese giant spider crab, *Macrocheira kaempferi*, will soon be transferred to the Museum from its former home on the campus of the University of Southern California. The move is in anticipation of having it displayed eventually as part of our newly renovated Marine Hall. The crab (at right with KT Olson), a gift from the emperor of Japan to USC's Dr. John Garth many years ago, is officially part of the extensive Alan Hancock Foundation collection of crustaceans, which has belonged to the Museum since 1985. We have intentionally left the giant crab on display at USC rather than transferring it here for safety and security reasons, and it will remain at USC until we have built a suitable protective case to house it over here.



These giant crabs are the largest living arthropods on earth. Fully grown, they can reach a size of nearly 4 meters (13 feet) across the tips of their outstretched legs and can weigh some 40 to 50 pounds. Their natural habitat is on the bottom of the western Pacific, at depths of about 200 to 400 meters. They are most commonly encountered along the

Japanese archipelago where they are occasionally caught by trawling. Most museums have few, if any specimens of this species; the Smithsonian has a single specimen, and this is our only specimen. We will announce its safe arrival to the Museum when the protective case has been furnished to ensure its safe transfer.

Research Library

This summer the library was the recipient of a major gift of a book collection donated by long time museum volunteer Kay Nakamura. Ms. Nakamura's books represent a lifetime of collecting, and her interests largely focused on topics that are related to the museum's programs and research. The majority of the books are in outstanding condition and are wonderful additions to our existing library collection.

Polychaete worms

Leslie Harris (Polychaete Collections Manager) has been sent a small collection of polychaetes and other worms from Panama and Sao Tome (Africa) by Dr. Art Anker, Smithsonian Tropical Research Institute, Panama. In addition she has been promised a large collection of sorted polychaetes from the Antarctic by Dr. Sammy DeGrave, Oxford University Zoological Museum, England. Now she has to persuade local colleagues to provide fresh caught shrimp species to make up an exchange package for Sammy.

Ichthyology

On May 31st Ichthyology took the newly acquired oarfish out of the fourth floor freezer and prepared it for preservation (see photo at right, courtesy of Kimball Garrett). The specimen was thawed, measured, dissected, photographed, and preserved in a new 13 foot long stainless steel tank, funded by a donation from Judy Perlstein. Histological examination of the gonad of the oarfish, performed by herpetology research associate Dr. Stephen Goldberg, reveals that the specimen is most likely a male who has recently spawned. The specimen also features a bony forehead crest, suggesting it is a mature male.



Also, our NSF-supported skeleton cleaning and cataloging project came to a successful close due to the heroic efforts of Nefty Camacho. About 8000 fish and herpetological skeletons were cleaned, cataloged, labeled and re-boxed over a period of two years. Nefty will return to the museum September 10 as curatorial assistant in Fishes, in charge of curating our frozen tissue collection.

Mineral Sciences

Type specimens of five newly approved minerals will soon be in our collections, thanks to research by Dr. Tony Kampf, Curator of Mineral Sciences, and his colleagues. See the Recent Publications section for the first paper on the atomic structure of one of these newly approved minerals.

Electronic Collections

The Museum has purchased and installed a new museum collections database system, KE Emu. We have completed the transfer of Registration, Conservation, and existing electronic records in History (Material Culture and Seaver) to Emu to facilitate Museum Project work of conservation and workflow for the planned Under the Sun exhibit. Staff from Conservation, Registration and History attended a week-long training course, and the database went live during the last week of August. Collections Records for the planned Cenozoic/Age of Mammals and Dinosaur exhibits will be transferred next. Emu provides web-ready collections records and it will facilitate much wider electronic access to all records, as well as supporting web based multi-media for the new exhibits.

We thank Susan Oshima, Tania Collas, Beth Werling, Betty Uyeda, John Cahoon, Ayesha Salatore and consulting conservator Claire Dean, and especially KT Olson and Kristen Hayashi, for being the early adopters of this new software system, and Bobet Gutierrez and Bill Mertz in IT for working so hard to make it possible to implement Emu.

Field Work

Rancho La Brea

Chris Shaw and Aisling Farrell (along with nine other intrepid prospectors representing the Page Museum, the San Bernardino County Museum and Arizona Western College) spent five days over Memorial Day weekend combing some of the badlands south of El Golfo de Santa Clara, Sonora, Mexico. Despite 100° F weather and high humidity, over 100 sites were recovered. Among the early Pleistocene fossils found was a partial skull of a large extinct tapir, the most complete and diagnostic specimen of this animal yet recovered from the region.

The annual excavation of Pit 91, Rancho La Brea, began on June 20 and was scheduled to end on September 9 but has now been extended through October 7. Kristen Brown (Senior Excavator) and Andrea Thomer (Excavator) report that nearly 3,000 specimens have been recovered so far this summer, including some beautiful sabertoothed cat and dire wolf skulls, loads of birds, and perhaps the first mastodon bone from this site.

Malacology

Ángel Valdés spent 15 days in Thailand documenting the opisthobranch diversity of the Gulf of Thailand, specifically in Tao and Samui Islands.

Vertebrate Paleontology

Xiaoming Wang, Curator of Vertebrate Paleontology, returned to the Tibetan Plateau this summer to lead an expedition by a team of American and Chinese vertebrate paleontologists. Participants from the LACM included curatorial assistant Gary Takeuchi and graduate student Jack Tseng. We started from the low-elevation Qaidam Basin (3000 meters above sea level) in order to get ourselves adjusted to the altitude. We then moved up to the high-elevation Kunlun Pass Basin (4,700 to 5,000 meters) for a few days. We finally settled into the Zhada Basin (3,700 to 4,300 meters) in the foothills of the mighty Himalayan Mountains for two weeks of intensive prospecting and collecting. Traveling between these basins, this year we were especially fortunate to be treated with plenty of wildlife in close proximity (photos below).



Clockwise above: Cranes of the genus *Grus*, Tibetan ass (*Equus kiang*), a lizard, and Goa (also known as Tibetan gazelle, *Procapra picticaudata*). The high plateau vertebrate fauna is generally low in diversity and non-domestic vertebrates are relatively rare due to human settlements.

Paleontologically, this year has been particularly rewarding and has kept Gary and Jack busy all season whenever extensive digging was required. Among other finds, we've found the first complete skull and associated jaws of a rhino in Zhada Basin (photo below), a couple of partial skulls of a bovid with twisted horncores, and the oldest and most complete horncore of the blue sheep (*Pseudois*).

At right: Curatorial assistant Gary Takeuchi (top), graduate student Jack Tseng (lower right), and research associate Li Qiang (lower left) are preparing a plaster jacket to protect a large rhino skull for the long journey back to Beijing (10 days of bumpy road). This jacket probably weighs 300 lbs, and in the Tibetan thin air that contains half the oxygen of normal air, it is quite a challenge to haul it from the quarry.



Dinosaur Institute

The Dinosaur Institute's summer field season began in June with an expedition to the beautiful badlands of southeastern Utah. The expedition consisted of staff of the Dinosaur Institute along with colleagues from Spain and Portugal. The team prospected for 3 weeks in the Morrison Formation of the Jurassic (~150mya). This was the Museum's first collecting trip to the area where they worked on BLM lands in San Juan County. The purpose of this trip was to explore the badlands and examine the potential for future expeditions to the area. The mission was a success! A selection of vertebrate fossils, including several specimens of stegosaurus and numerous sauropods, together with dinosaur tracks, were identified. These will greatly enhance the Museum's research collections as well as augment the proposed new exhibits.



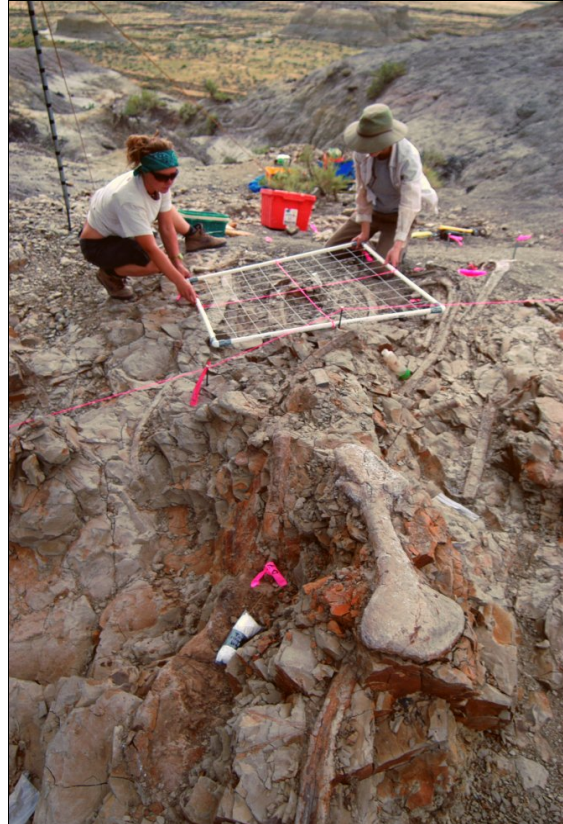
Above and at right: Fieldwork in Jurassic exposures in Utah, June 2007

In late July, the Dinosaur Institute set out on the 2007 Carl Holland Expedition, returning to southeastern Montana. It took the best part of a month to expose, plaster jacket and transport a partial *Triceratops* skeleton back to Los Angeles. The team, consisting of the staff of the Dinosaur Institute, the curator of vertebrate paleontology at the Natural History Museum in Vienna, students, volunteers and local enthusiasts also prospected the badlands and collected a number of interesting micro-vertebrates from the Cretaceous exposures. They also identified excavation sites for next year's expedition. The *Triceratops* is planned go on display in the proposed new dinosaur gallery.



At Right: *Triceratops* quarry mapping in Montana

Below: *Triceratops* quarry in the badlands of southeastern Montana.



Meetings, Workshops, and Presentations

Entomology

Dr. Brian Brown gave a talk about his research and the museum's entomology collections at the Entomological Association of Southern California meeting at the Arboretum on 5 June. This group is dominated by state and county entomologists who are charged with responding to problems relating to insects in southern California, and they were pleased to learn more about our entomology programs here at the museum.

Ichthyology

Rick Feeney went to the American Society of Ichthyologists and Herpetologists in St. Louis in July and presented a poster on the skeleton grant, entitled "Fungus removal and rehousing of the Ichthyology and Herpetology skeletal collections at The Natural History Museum of Los Angeles County (LACM)" by Neftali Camacho, Richard Feeney, Christine Thacker, and Jeffrey Seigel.

Malacology

Dr. Jim McLean, Dr. Ángel Valdés, and Ángel's graduate student Alvin Alejandrino (CSULA) attended the *World Congress of Malacology* in Antwerp, Belgium (15-20 July). Jim was an invited speaker in the symposium *Inventorying the Molluscan Fauna of the World, Frontiers and Perspectives*, organized by Philippe Bouchet of the Paris Museum,

and presented *Updating the gastropod fauna of the northeastern Pacific*. Ángel presented *What happens when it gets dark? Biology of deep-sea nudibranch gastropod species and nocturnal behavior*, and Alvin presented *Phylogeny of Aeolidacea (Gastropoda: Nudibranchia)*, based on his thesis research.

Ornithology

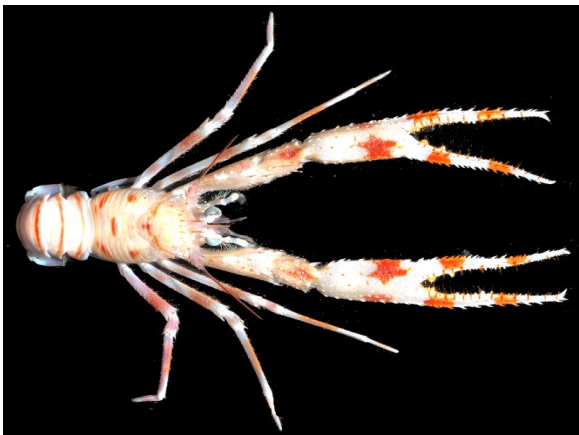
Curator of Ornithology Dr. Ken Campbell traveled to Paris, France, in July to participate in two international conferences. The first was the 1st International Palaeobiogeography Symposium, where he presented a paper entitled “Late Miocene Dynamics of the Great American Faunal Interchange.” This paper was the result of extensive field work in the Amazon Basin of South America and presented arguments for a much older end to the geographic isolation of South America as an island continent than currently recognized. The second conference the following week was the 8th International Congress of Vertebrate Morphology, where he presented a paper entitled “The Automated Balance System of Birds,” a topic of current research seeking to explain why birds waddle. Each conference extended over four days and both were held at the Université Pierre et Marie Curie (Paris 6) and Muséum national d’Histoire naturelle, Paris.

External Funding

Vertebrate Paleontology

Curator Xiaoming Wang, in collaboration with Chinese colleagues from the Institute of Vertebrate Paleontology and Paleoanthropology, was awarded two multi-million-yuan (final amount is yet to be determined) grants from the National Natural Science Foundation of China. These new grants will help fund his expeditions in Inner Mongolia and the Tibetan Plateau over the next three years.

Crustacea and Polychaetes



Dr. Jody Martin received a contract for \$50,000 from the National Oceanic and Atmospheric Administration (NOAA) to conduct systematic work on specimens of crabs and polychaete worms (in collaboration with Kirk Fitzhugh and Leslie Harris in our Polychaete Worms lab) that were collected during the October, 2006, expedition to French Frigate Shoals in the Northwestern Hawaiian Islands. The work will include identifications and photography of some of the spectacular crabs and worms collected by Jody and by Leslie

Harris, collection manager of Polychaetes. At left is a new species of deep-sea “squat lobster” collected on the expedition.

Crustacea

Dr. Jody Martin, Curator of Crustacea, received a grant of \$40,000 from the National Science Foundation to support a symposium that he is hosting and organizing in San Antonio, Texas, in January of 2008. The symposium will bring together many of the world's experts on decapod crustaceans (crabs, lobsters, shrimps, and their many relatives) to discuss evolutionary relationships among these groups and how we elucidate those relationships. Other societies that are helping to fund this meeting include the American Microscopical Society, The Crustacean Society, The Society of Systematic Biology, The Society for Integrative and Comparative Biology (SICB), and two divisions within SICB (the Division of Invertebrate Zoology and the Division of Systematic and Evolutionary Biology).

Public Outreach

BUG FAIR

Polychaete Worms

Dr. Kirk Fitzhugh and Leslie Harris, staff of the museum's polychaete collection, were participants at the Annual Bug Fair during 19-20 May. Kirk and Leslie amazed visitors with displays of polychaetes, earthworms, and leeches. Right: Worms ain't bugs, but they sure were a big draw at the NHM's 21st Annual Bug Fair. Kirk Fitzhugh and Leslie Harris provided patrons a bevy of sights and info about the world of worms.



Crustacea and Marine Biodiversity Processing Center

Again this year, the Crustacea section and staff from the MBPC took part in the annual Bug Fair by providing information and access to specimens of a variety of non-insect arthropods in the Museum's extensive collections.

CURATOR'S CUPBOARD "OCEANS MONTH"

Crustacea and Marine Biodiversity Processing Center

In addition to organizing and hosting the Oceans Month Curators Cupboard (June 30), the Crustacea section provided tables full of crabs, lobsters, and other delights for the many visitors. The MBPC table was of special interest, as it contained rare and beautiful glass sponges, corals, and other specimens that are usually kept at the North Grand Warehouse and are rarely if ever seen by the public or even by other museum staff.

Echinoderms

Cathy Groves and Gordon Hendler offered a display featuring living echinoderms, including local brittle stars that can reproduce asexually, hermaphroditic “live-bearers” that brood their young, and a species that has hemoglobin in its circulatory system. The public was also able to view selected specimens from our collection, such as sea stars that can regenerate an entire individual from just part of an arm, and basket stars whose multiple appendages are armed with thousands of hooks used to capture their prey.

Polychaete Worms

Dr. Kirk Fitzhugh and Leslie Harris, staff of the museum’s polychaete collection, were also participants in *Curator’s Cupboard* event on 30 June that highlighted many of the museum’s marine collections.

Invertebrate Paleontology

Harry Filkorn, Department of Invertebrate Paleontology, presented an exhibit entitled “The Fossil Record of Ancient Oceans: A Sample of Past Biodiversity.” Visitors were able to meet the Museum’s invertebrate paleontologist and closely examine some of the most spectacular invertebrate fossils held in the Museum’s extensive collections. Fossils displayed for the event included several trilobites, some large ammonites, a giant oyster, numerous snails, sea lilies, and many other examples of extinct marine life. The question most frequently asked by visitors to the invertebrate paleontology display was: Does the giant oyster have a giant pearl inside?

Harry also presented “Fossil Invertebrates and the Museum’s Marine Hall” while leading a public tour of the Museum’s Marine Hall on Saturday, June 23. The tour’s participants focused on the diversity of invertebrate life while they journeyed through the classic dioramas and exhibits of the Museum’s renowned Marine Hall and examined the significance of invertebrates in our understanding of changes to the environment and global climate.

Malacology

Ángel Valdés, Lindsey Groves, and Jim McLean also participated in Curators Cupboard on June 30th. Ángel exhibited various nudibranchs from his research, Jim showed completed figures for his upcoming books on shelled gastropods of the northeast Pacific, and Lindsey exhibited fossil abalones including the oldest known specimen from the Late Cretaceous from the Garapito Creek area of Topanga Canyon.

See below for other contributions to this event from other R & C sections such as Ichthyology & Herpetology and Vertebrate Paleontology.

ADVENTURES IN NATURE

Ichthyology and Herpetology

See below under “Other Public Programming” for their record contribution!

Invertebrate Paleontology

Harry Filkorn, Department of Invertebrate Paleontology, recently assisted with the Museum's Adventures in Nature (AIN) summer class program of the Education Department. Harry selected specimens of fossils from the Museum's collections and gave presentations to Carlos Tenorio's AIN class entitled "Prehistoric Pals" (1st grade, two classes) on July 16, and Max Braz's AIN class entitled "Incredible Invertebrates" (4th-5th grade, two classes) on July 23. Everyone was thrilled to see and touch real fossils and talk to a real paleontologist!

Polychaete Worms

Dr. Kirk Fitzhugh, Curator of Polychaetes, gave four presentations about polychaetes to children attending *Adventures in Nature* during 15-16 August.

Malacology

Lindsey Groves participated in seven sessions of Adventures in Nature.

Other public outreach and public programming events

Malacology

Once again Lindsey Groves co-lead *Fossil hunting in Silverado Canyon* with LouElla Saul (Invertebrate Paleontology Research Associate) and the Education Division on May 12th. 42 participants collected Late Cretaceous (Turonian) mollusk fossils from the Baker Canyon and Holz Shale members of the Ladd Formation in Silverado Canyon, Santa Ana Mountains, Orange County. Expert field assistance was provided by Christy Evans (Education), and Cathy Groves (Echinoderms).



Above: Participants on outcrop of the Ladd Formation, Silverado Canyon.



Left: LACM Staff at Silverado Canyon: (left to right): LouElla Saul (Invertebrate Paleontology), Lindsey Groves (Malacology), Christy Evans (Education), and Cathy Groves (Echinoderms).

Vertebrate Paleontology

As part of the Museum's Saturday Programming, in May Dr. Lawrence G. Barnes, Curator of Vertebrate Paleontology, gave an afternoon lecture about the evolutionary history of sea lions and walruses (pinnipeds), summarizing recent advances in our understanding of the evolution of these aquatic carnivores of the North Pacific Ocean. Members of the public are always impressed to learn that our Museum conserves significant fossils that demonstrate most of the stages in the evolution of the diverse groups that are related to sea lions and walruses.



An example of our Museum's unique holdings among the fossil pinnipeds is the holotype and only known specimen of the strange 6 to 8 million-year-old "pseudo-walrus" from San Clemente, *Gomphotaria pugnax* Barnes and Raschke, 1991, above (Contributions in Science No. 426).

Polychaete Worms

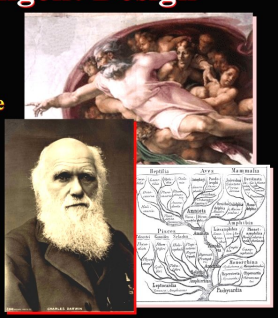
In May, Dr. Kirk Fitzhugh, Curator of Polychaetes, was interviewed by students from the class "Atheism vs Theism" from Providence Christian College, Ontario, regarding his views on science, evolutionary biology, and intelligent design.

In June, Dr. Fitzhugh presented the public lecture "Evolutionary Biology versus Intelligent Design: Resolving the Issue" as part of the *Weekends at NHM* series on 2 June. The lecture was attended by 40 people, with questions and discussion continuing for over one hour after the talk (at right is the announcement for Dr. Fitzhugh's public lecture on evolution versus intelligent design).

He also participated in the "Ocean Exploration" *Family Fun Day* event in the Discovery Center on 16 June. Kirk presented displays of polychaetes and other annelids for visitors to view.

Evolutionary Biology vs Intelligent Design

Resolving the Issue



Should 'intelligent design' be considered a scientific alternative to evolution? Join our Curator of Marine Worms, J. Kirk Fitzhugh, Ph.D., to explore some myths surrounding the nature of science, and understand why intelligent design cannot be considered in that realm.

Today! 1-2 pm

Times Mirror Room, Ground Floor



Kirk also was invited to present a talk entitled "Evolutionary Biology versus Intelligent Design: Resolving the Issue" to attendees of the 2007 International Meeting of Apologetics Research Society on 23 June. That evening, Dr. Fitzhugh attended the public debate (photographs at left) between Drs. Michael Shermer and Douglas

Jacoby, “Does God Exist?” in Irvine. The auditorium, holding over 400 people, was filled to capacity, with another 100 people viewing the debate outside on a large-screen TV. Clearly, the public has a keen interest in the topic of how, or if, science is to address the supernatural in relation to evolutionary biology, origin of life, and cosmology.

Vertebrate Paleontology

Howell Thomas, Vertebrate Paleontology Preparation Laboratory Supervisor, delivered in August to the U.S. Air Force and to the Lompoc Museum replicas that he made during the summer of a new kind of fossil harbor porpoise (family Phocoenidae) that he and associates collected along the coastline at Vandenburg Air Force Base (right). This significant fossil marine mammal, discovered in the Late Miocene (circa 10 to 12 million-year-old) Monterey Shale, was announced by Howell and co-authors at the February 2007 Annual Meeting of the Western Association of Vertebrate Paleontologists in San Diego. The realistic replicas will soon be publicly exhibited in two locations in Santa Barbara County.



Ichthyology

Ichthyology and Herpetology had a heavy schedule of public programming this summer. Chris Thacker gave a public presentation on coral reef mutualisms as well as a presentation on tropical shrimp goby research to the corporate council in June, as well as a discussion of using skeletons in fish research at the June Curator’s Cupboard. Jeff Seigel gave a record number of Adventures in Nature tours and classroom visits, *twenty-two* in total, covering subjects including shark feeding, deep-sea fish ecology and how scientists collect and preserve specimens.

Ornithology

In August, Dr. Campbell presented an afternoon “conversation” with Museum visitors as a “Weekends-at-the-Museum” program. Entitled “*How birds fly and why dinosaurs never could,*” the presentation used specimens from the collections to illustrate aspects of flight in birds. This was followed by a brief explanation of anatomical reasons why flight could not have evolved in dinosaurs.

Dinosaur Institute

In July, the Dinosaur Institute collaborated with the Education Department to move a partially prepared *Triceratops* skull from the warehouse to the Discovery Center. The specimen, collected in Montana several years ago will eventually become part of the permanent dinosaur gallery. For now, however, it will be prepared in public by the staff of the Dinosaur Institute and trained Gallery Interpreters, under the supervision of Doug Goodreau.

At right: The crew it took to move the *Triceratops* skull to the Discovery Center!



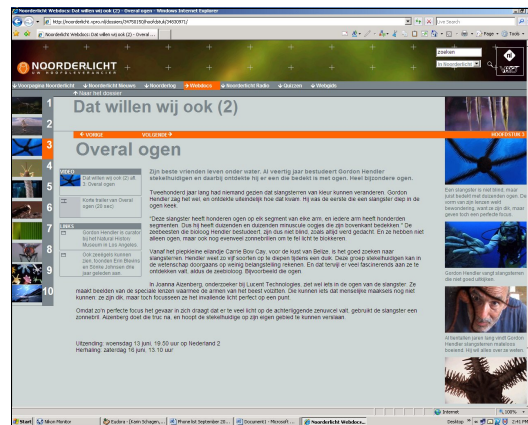
Echinoderms

In June, a television documentary featuring Gordon Hendler, Curator of Echinoderms, was broadcast twice in Europe. It is part of a series, funded by the Dutch public broadcasting organization VPRO and by Discovery, concerned with “how scientists are drawing inspiration from nature.” The English version of the series is called “Copycats” because it focuses on the adaptations evolved by animals and plants, which were discovered through basic research, and which have been applied in technology and engineering. The program on Gordon’s research is called “Covered with Eyes” (“Overall Ogen” in Dutch), as it deals with his investigations of color-change and vision, and his discovery of optically perfect lenses, thousands of which are embedded in the animal’s limestone skeleton. The program can be viewed (see webpage image below) at:

<http://noorderlicht.vpro.nl/dossiers/34750150/hoofdstuk/34830971/>

Although the narration is in Dutch, Gordon’s dialogue is in English, and the show offers some beautiful underwater footage of brittle stars and their underwater habitat. Gordon will screen an English version of the program at the Museum later this year. Last November’s Newsletter reported on the fieldwork and filming for the program on the Belize Barrier Reef, carried out by Gordon, the producer Karin Schagen, and the videographer Hendrik Wuyts.

When Gordon planned this last minute trip for 26 September to 6 October, the producer was dubious that filming brittle stars would take more than a few days, but shooting filled daylight hours, all day, every day, and spilled over into night dives. Happily, Gordon was able to stay up later than the film crew to do science, and made a few after-hours discoveries that alone would have made the trip worthwhile. Fortunately, one of the fellow islanders on Carrie Bow Cay was a Smithsonian dive officer and a talented photographer, Laurie Penland, who took the pictures above, and others that can be viewed at: <http://www.si.edu/dive/carriebow>



Mineral Sciences

GEM TOUR TO MINAS GERAIS, BRAZIL

From June 26 to July 9, the Gem & Mineral Council staged another of its very successful tours to one of the world's best sources of fine gems and minerals – the Brazilian State of Minas Gerais. Dr. Tony Kampf and his wife Kathy treated 25 tour participants to a wide array of gem mines and dealers. New for this year was a visit to the Brazil Gem Show in Governador Valadares, where a treasure trove of gems and minerals were available for viewing (and buying), but perhaps the most exciting happening on this year's tour was the opportunity to dig for (and actually find) some very nice aquamarine crystals.



For photo highlights go to: <http://www.nhm.org/gmc/brazil2007.htm>

From September 29 to October 13, Tony is leading a Gem & Mineral Council tour to Namibia and South Africa.

Volunteers and Research Associates

Invertebrate Paleontology

Boris Savic, a volunteer for the Department of Invertebrate Paleontology, received a Certificate of Outstanding Achievement for Exemplary Volunteer Service at the annual Volunteer Recognition Night of the Natural History Museum held on Monday, June 4. Boris is an outstanding volunteer for the Department of Invertebrate Paleontology. He has been functioning as a Curatorial Assistant for the last two years and his help with recently donated academic and personal fossil collections has greatly improved their level of curation and accessibility. Boris has assisted with all of the important first steps to organizing a newly acquired fossil collection: unpacking fossils, arranging them by collecting locality, and sorting them according to species within each locality, all while simultaneously re-housing them in archival grade specimen trays and glass vials. Boris is keenly interested in invertebrate paleontology and he is a specialist in extant and fossil echinoderms, particularly echinoids such as sea urchins and sand dollars, so his skills at organizing paleontology collections are exceptional. Notably, because of his interest in echinoderms, his first volunteer project in invertebrate paleontology was arranging a newly acquired world-wide collection of fossil echinoids. Thanks to his efforts, these fossils are now properly curated and they are available for scientific study and museum exhibit. The museum's Department of Invertebrate Paleontology is extremely fortunate to have such a bright, dedicated volunteer as Boris Savic and we are all very grateful for his assistance. Thank you, Boris!

Ichthyology

Max Schulman spent the summer cataloging frogs and lizards for the Section of Herpetology. Great job Max!

Vertebrate Paleontology

Kathleen Gonzales, at the Museum's May Volunteer Recognition event, was awarded the Vertebrate Paleontology Volunteer of the Year for 2007. Kathleen, a student at both Cal State Fullerton and Saddleback College, has been a great asset to the Vertebrate Paleontology Department. Her interest in marine subjects has inspired her to help us with the preparation of several of our important fossil dolphin specimens from Oregon and Washington.



Here (above) Kathleen is cleaning the skull of a new species of early dolphin that was found in the Middle Miocene Astoria Formation along the coast of Oregon.

Distinguished Visitors

Malacology

Malacology associate Bret Raines (Oswego, KS) visited in late July to examine the LACM holdings of the micro-mollusk family Caecidae for a current research project. Dan Muhs of the US Geological Survey (Denver, CO) delivered numerous fossil invertebrate samples from Santa Rosa, Santa Barbara, and Santa Cruz islands in mid July for ongoing research on climate change and landscape evolution in the Channel Islands National Park. Lindsey Groves will identify most of the samples which will then be deposited in the Invertebrate Paleontology Collection. Nudibranch specialists Ali Hermosillo (Guadalajara, Mexico), Shireen Fahey (CAS), Sandra Millen (University of British Columbia), and Yolanda Camacho (Universidad de Costa Rica) visited the section to examine specimens from the Malacology collection and consult with Ángel. Another nudibranch specialist, Hans Bertsch, presented a talk for the May meeting of the Pacific Conchological Club entitled “*John Steinbeck, Ed Ricketts, Jr., Mollusks of the Sea of Cortez.*”



Invertebrate Paleontology associate Richard Squires visited Malacology to compare fossil members of the bivalve family Pteriidae with Recent

counterparts. Collector and frequent Malacology visitor Dan Yoshimoto (Eureka, CA) and co-producer the late Jeff Robinson (Humboldt Bay Harbor Recreation and Conservation District) have compiled *Humboldt Bay Species Galleries* as part of the HBHRCD web site (see <http://www.humboldt-bay.org/galleries>). The fauna and flora completed include mollusks, fishes, birds, polychaetes, and plants. *The Shells of Humboldt Bay* poster can be seen above.

Polychaete worms

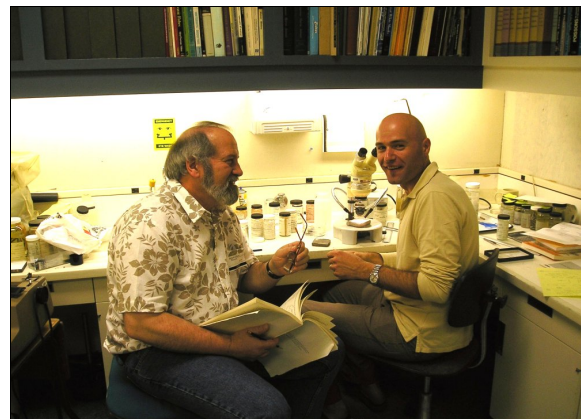
Ms. Beatrice Yanez Rivera (El Colegio de Frontera Sur, Chetumal, Mexico) worked in the Polychaete Section for 3 weeks from August 1 to the 18th. Her thesis is on taxonomic and ecological aspects of the big tropical fireworm *Eurythoe complanata*. Another visitor to the section was Dr. Joao de Matos Nogueira (University of Sao Paulo, Brazil) on August 18-24. Joao is studying the phylogeny of the family Terebellidae for his “Scientific Thesis.” This thesis is required to advance to full professor in the Brazilian university system & is expected to be of more significance than a doctoral thesis. NHMLAC contains the largest collection of northeast Pacific terebellids in the world and provided Joao with many specimens of interest. While here Joao invited Leslie Harris (Polychaete Collections Manager) to collaborate with him on a study of undescribed species from California.

Mammalogy

Mammalogy hosted a steady stream of visiting researchers over the summer months. Visitors included: Antonio Guillen (Instituto de Ecologia, A.C. in Veracruz, Mexico) who studies the evolutionary relationships of leaf-nosed bats, Ken Berger (University of Idaho) who is examining geographic variation in shrews, Bill Perrin (NOAA Southwest Fisheries Science Center) who studies dolphins from the Eastern Tropical Pacific, D.J. Eichenberg (CSU Sacramento) investigating spinal fusion in bats, and Felipe Martins (Washington University) studying geographic distribution of vampire bats.

Ichthyology

Dr. Theodore Pietsch and Georgio Carnevale visited Ichthyology to work on fossil anglerfishes (photo at right).

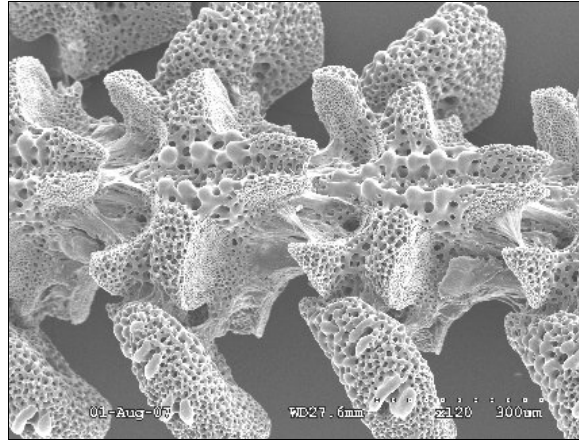


Echinoderms

During July and August, Gordon Hendler (Curator of Echinoderms) and the Museum’s Echinoderms Laboratory hosted Srta. María Zulema Juarez Cortez, a visiting student from the Universidad del Mar’s Puerto Angel Campus in the state of Oaxaca, México (UMar). Srta. Juarez is the first exchange student from UMar to come to the museum as a result of a binational program initiated two years ago by former museum curators, Drs. Bill Wood and Ángel Valdés. Zulema’s visit, and the investigation that she and Gordon carried out, accomplished three goals. It provided Zulema an opportunity to complete a project

required for her degree, it enabled Gordon, Zulema, and her advisor (Dr. Francisco Benítez Villalobos, of UMar) the chance to study an intriguing species from Mexico's Pacific coral reefs, and it helped foster collaboration between the Museum and the University. The focus of the research was a species of six-armed brittle star that lives symbiotically on soft-corals and sponges. During the month-long project, Gordon and Zulema spent many hours in the museum's Scanning Electron Microscope (SEM), prospecting for structural features that enable the tiny star (*Ophiothela* sp.) to clone itself.

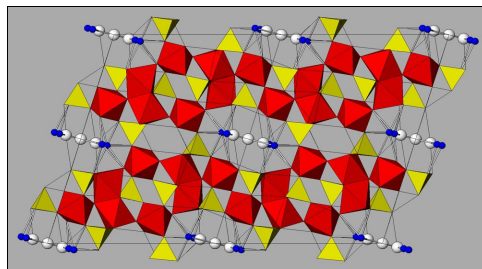
At right: Scanning electron micrograph of the bones within a cloning brittle star's arm. The central row of bones are referred to as "vertebrae," because of their resemblance to structures in the mammalian spine.



Recent Publications

- Barnes, L.G.** 2006. A phylogenetic analysis of the superfamily Platanistoidea (Mammalia, Cetacea, Odontoceti). *Beitrage zur Paläontologie (Vienna)* [Dr. Gudrun Hoch Festschrift, edited by Lars van den Hoek Ostende], 30:25-42.
- Barnes, L.G., H.W. Thomas, S.A. McLeod, D.J. Bohaska, S.J. Godfrey, N.D. Pyenson, J.L. Goedert,** and F.J. Aranda-Manteca. 2007. Evolutionary diversity and determination of character polarity among stem delphinoids, the Miocene Kentriodontinae (Cetacea, Odontoceti, Kentriodontidae). Abstracts, Western Association of Vertebrate Paleontologists, 2007 Annual Meeting, San Diego Natural History Museum, 17 February 2007.
- Barnes, L.G.,** and R.E. **Reynolds.** 2007. A primitive Early Miocene platanistoid dolphin (Cetacea: Odontoceti) from Cajon Pass, San Bernardino County, California, p. 107. In: Robert E. Reynolds, (ed.), *Wild, Scenic and Rapid: A trip down the Colorado River trough. The 2007 Desert Symposium Field Guide and Abstracts from Proceedings*, California State University Desert Studies Consortium and LSA Associates, Inc., April 2007.
- Bertelli, S., Chiappe, L. M., and Tambussi, C. 2007. A new phorusrhacid (Aves: Cariamae) from the Middle Miocene of Patagonia, Argentina. *Journal of Vertebrate Paleontology* 27(2): 409-419.
- Bohaska, D.J., L.G. **Barnes,** and S.J. **Godfrey.** 2007. *Araeodelphis natator* Kellogg, 1957, the most primitive known member of the Platanistidae (Odontoceti, Cetacea) and a review of the Platanistidae from Calvert Cliffs (Miocene, Chesapeake Group), Maryland, USA. Geological Society of Australia, Abstracts, Number 85, 11th Conference on Australasian Vertebrate Evolution, Palaeontology, and Systematics, Melbourne, Australia, 10-13 April 2007, Programme Abstracts, p. 61-62.
- Brown, B. V.** 2007. A further new genus of primitive phorid fly (Diptera: Phoridae) from Baltic amber and its phylogenetic implications. *Contributions in Science.* 513: 1-14.
This is one of a continuing series of papers highlighting new discoveries in insect paleontology based on our collection of fossil amber from the Eocene period in Europe. The evolution of the basalmost groups of flies leading to the modern family Phoridae is still obscure and contentious, but new fossils like this one are slowly clearing the picture.

- Brown**, B. V. 2007. The problematic Neotropical genus *Cyrtophorina* Borgmeier & Prado (Diptera: Phoridae). *Journal of the Entomological Society of Ontario*. 137: 117-130.
This paper contains a review of a small genus of rainforest-inhabiting flies, with description of three species new to science.
- Carlton, J. T., and J. W. **Martin**. 2007. Mystacocarida. P. 413. In: J. T. Carlton (ed.), *Light and Smith Manual*, Fourth Edition.
- Chatterjee, S., R.J. Templin, and K.E. **Campbell**. 2007. The Aerodynamics of *Argentavis*, the World's Largest Flying Bird from the Miocene of Argentina. *Proceedings of the National Academy of Sciences*, 104(30): 12398-12403.
- Deering, M., L.G. **Barnes**, S. **Siren**, M. **Walsh**, and S.A. **McLeod**. 2007. A fossil ziphiid whale (Cetacea: Odontoceti) from the latest Miocene Capistrano Formation in southern Orange County, California. Southern California Academy of Sciences, 2007 Annual Meeting, California State University, Fullerton, California, June 1-2, 2007, abstract number 146.
- Ghosh, P., J. Eiler, S. E. Campana, R. F. **Feeney**. 2007. Calibration of the carbonate 'clumped isotope' paleothermometer for otoliths. *Geochimica et Cosmochimica Acta* 71:2736–2744.
- Godfrey**, S.J., and L.G. **Barnes**. 2007. A new genus and species of Late Miocene pontoporiid dolphin (Odontoceti, Cetacea) from the St. Marys Formation (Chesapeake Group), Maryland, USA. Geological Society of Australia, Abstracts, Number 85, 11th Conference on Australasian Vertebrate Evolution, Palaeontology, and Systematics, Melbourne, Australia, 10-13 April 2007, Programme Abstracts, p. 62-63.
- Goedert**, J.L., L.G. **Barnes**, and H. Furusawa. 2007. The diversity and stratigraphic distribution of cetaceans in early Cenozoic strata of Washington State, U.S.A. Geological Society of Australia, Abstracts, Number 85, 11th Conference on Australasian Vertebrate Evolution, Palaeontology, and Systematics, Melbourne, Australia, 10-13 April 2007, Programme Abstracts, p. 44.
- Groves, L.T. 2007. Malacological contributions of Twila Langdon Bratcher-Critchlow (1911–2006). *The Festivus* 39(7):66-73, figs. 1-3.
Museum Associate Twila Bratcher was an expert on the gastropod family Terebridae (auger shells). She authored or co-authored 35 terebrids and was senior author of Living Terebridae of the World (1987) with Walter O. Cernohorsky.
- Haney**, T. A., J. W. **Martin**, and E. Vetter. 2007. Leptostraca. Pp. 484-489 In: J. T. Carlton (ed.), *Light and Smith Manual*, Fourth Edition.
- Hendler**, G. 2007. Ophiuroidea. Pp. 930-941. In: Carlton, J.T. (ed.), *The Light and Smith Manual: Intertidal Invertebrates from Central California to Oregon*, 4th edition. University of California Press: Berkeley, CA.
- Hertel, F., and K.E. **Campbell**. 2007. The Antitrochanter of Birds: Form and Function in Balance. *The Auk*, 124(3): 789-805.
- Kampf**, A. R. (2007) The David Eidahl mineral collection. *Mineralogical Record* 38, 303-312.
- Kampf**, A. R., Pluth, J. J. and Chen, Y.-S. (2007) The crystal structure of meurigite. *American Mineralogist* 92, 1518-1524.
Right: Atomic structure of meurigite
- Martin**, J. W. 2007. Arthropoda. Pp. 411-412 In: J. T. Carlton (ed.), *Light and Smith Manual*, Fourth Edition.



- Martin, J. W.** 2007. Crustacea. Pp. 412-414 In: J. T. Carlton (ed.), *Light and Smith Manual*, Fourth Edition.
- Martin, J. W., and A. Dittel.** 2007. The megalopa larval stage of the hydrothermal vent crab genus *Bythograea* (Crustacea, Decapoda, Bythograeidae). *Zoosystema* 29(2): 365-379.
- McLean, J.H.** 2007. Gastropoda: Shelled Gastropoda. In: Carlton, J.T. (ed.), *The Light and Smith Manual: Intertidal Invertebrates from central California to Oregon*, 4th edition, completely revised and expanded. University of California Press: Berkeley, CA. p. 713-753, pls. 356-373.
Jim's chapter provided keys and descriptive notes as well as new photographic illustrations for 170 species of marine snails from Central and northern California to Oregon.
- McLean, J.H. 2007. Twila Bratcher-Critchlow (1911-2006). *The Festivus* 39(7):61-65, figs. 1-6.
Museum Associate Twila Bratcher was an accomplished diver and shell collector, who added thousands of specimens to the museum's mollusk collection. She generously provided a bequest of endowment funding for a future Chair of Malacology.
- Thacker, C. E., P. J. Unmack, L. Matsui and N. Rifenburg.** 2007. Patterns of molecular evolution and phylogeography within and among *Hypseleotris* species in southeastern Australian drainages. *Journal of Biogeography* 34(9): 1518-1533.
- Thomas, H.W., S.A. McLeod, L.G. Barnes, and E. A. McWaters-Bjorkman.** 2007. A very small Late Miocene dolphin (Cetacea, Odontoceti) from the Monterey Formation in Santa Barbara County, coastal central California. Abstracts, Western Association of Vertebrate Paleontologists, 2007 Annual Meeting, San Diego Natural History Museum, 17 February 2007.

Staff Departures and New Staff

Vertebrate Paleontology

Maureen Walsh (right) is a newly-hired Paleontological Preparator for the 1913 Building Project. She is preparing the skeleton of a paleoparadoxiid desmostyliid that we plan to incorporate in the new 1913 Building Cenozoic Mammal exhibits. Maureen received her training as a vertebrate fossil preparator at the San Diego Museum from the late Mr. Robert L. ("Fritz") Clark, who was for many years our Laboratory Supervisor in the Department of Vertebrate Paleontology. Desmostylians are an extinct group of quadrupedal marine herbivorous mammals, and our specimen is one of the most complete such skeletons ever found, has the best skull of the group yet discovered in North America, and is a new species.



Vertebrate Paleontology again...

Kathleen Gonzales (right) is a newly-hired Paleontological Preparator for the 1913 Building Project. She is preparing the skeleton of the San Pedro Gray Whale that we plan to incorporate in the new 1913 Building Cenozoic Mammal exhibits. Kathleen received her training as a vertebrate fossil preparator in paleontology classes at Saddleback College taught by Museum Research Associate Sarah Siren, and by working as a Museum Volunteer with Howell Thomas in our Vertebrate Paleontology Preparation Laboratory. The fossil that she is cleaning is iconic for our Museum, and received world-wide press coverage when it was discovered in the 1970s by Museum Volunteer Paul Kirkland (seated on the box immediately behind the skeleton in the photo below). It was described by Vertebrate Paleontology Curator Lawrence Barnes and Vertebrate Paleontology Collections Manager Samuel McLeod in the 1984 book "The Gray Whale," and it is the world's only museum specimen of a fossil gray whale. Kathleen moved the plaster-encased vertebral column of this whale into the Museum during August, and is now engrossed in its preparation.



Conservation

In May, Kathleen Olson joined the Conservation Section as Conservation Technician. KT, as she is known in R&C, had already made a great contribution to the deinstallation of the Native American Hall and the organization of related Anthropology collections. As Conservation Technician, she will be working on conservation preparation for a number of Museum Project exhibits, especially *Under the Sun*.

The Conservation Section also hosted conservation graduate student Elizabeth Homberger for a summer internship funded by the Samuel H. Kress Foundation. Over her eight week internship, Liz examined, treated, and rehoused a range of collection objects including Pre-Columbian statues from Nayarit, Mexico; a Velociraptor model from the film *Jurassic Park*; an early photograph of William S. Hart; and two articulated bird skeletons from the Ornithology collection. She was a great help and we will miss her!

The Conservation Section also is pleased to welcome final year conservation graduate student Jennifer Kim for a nine-month internship as a Student Associate. Starting in September, Jen will be working with some of the Hispanic costumes in the Material Culture Collection and other projects related to the preparation of objects for *Under the Sun*.

Dinosaur Institute

The Dinosaur Institute would like to welcome their new Graduate-student-in-residence, Alyssa Bell. Alyssa will be working in the Geology Department at USC as well as conducting research here at the museum under the supervision of Luis Chiappe.

Archaeology

Over the summer we bid farewell to Dr. Scott Van Keuren, Curator of Archaeology, who left to take a position as Professor of Anthropology at the University of Vermont. Scott joined the Museum in 2001 and contributed broadly to Anthropology, to R & C, and to our Museum in many ways. With the assistance of funding from the Wenner-Gren Foundation for Anthropological Research and the National Science Foundation, he initiated a new research program in East-Central Arizona that is expected to yield new understanding of late prehistoric Pueblo communities in East-Central Arizona. In addition to his widely recognized research and teaching strengths, Scott will be missed as a major contributor to various museum public programming efforts; he was the primary in-house curator for the *Collapse?* exhibit and was the receiving curator for *Bog People*. Scott was also one of the two Principal Investigators on our federally-funded REU Site Grant (Research Experiences for Undergraduates). In the words of Margaret Hardin, acting Deputy Director for R & C, Scott will be missed additionally for his “good citizenship within the museum, his ability to work with a diversity of colleagues for the good of the museum, and his wicked but understated sense of humor.” Bon voyage and best wishes, Scott.

Miscellaneous

Malacology

Graduate student Alvin Alejandrino successfully defended his M.S. Thesis at California State University Los Angeles on July 31. Alvin's dissertation, entitled: *Phylogeny of Aeolidacea (Gastropoda: Nudibranchia)*, provides the first molecular and morphological phylogenies of the Aeolidacea and explores the diversification that took place in several clades as the consequence of dietary specialization. He also proposes a new classification for the group.

Polychaete worms

Leslie Harris (Polychaete Collection Manager) was contacted by photo editors at National Geographic and invited to submit some of her images for consideration. If accepted, one will appear in the "Visions of Earth" section of the magazine. After viewing previous published images she's sure hers won't be selected but considers it an honor just to be asked.

Terri Togiai celebrates 40 Years!

August 2007 marked the 40th anniversary of service from R & C's own beloved secretary Terri Togiai, who celebrated with a pot-luck luncheon in the Times Mirror Room amidst a huge number of well-wishers and friends. To put this momentous milestone in perspective, when Terri first started working here, Lyndon Johnson was president, *Respect* by Aretha Franklin was released, and the first Super Bowl was played. We think Terri must have been 12 years old. Thank you, Terri, and congratulations – here's to another 40 years!



“Research on collections is neither a nicety nor an option for natural history museums; it is, instead, the reason they exist. All museums began with collections entrusted to them and with the appropriate staff to care for and interpret those collections. As a healthy museum grows, so must its collections and associated staff. It is no coincidence that museums that have reduced or eliminated research have fallen into disrepair and have eventually closed their doors. All of the truly world-class natural history museums dedicate at least 30% of their budget in direct support of research and collections; this research in turn is what informs and sustains their educational and exhibit endeavors.”

Dr. Jody Martin

*From an invited address presented to
the National Science Foundation on
the future of natural history
museums, March, 2007.*

