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.

January, 2006

(covering the months of November and December, 2005)

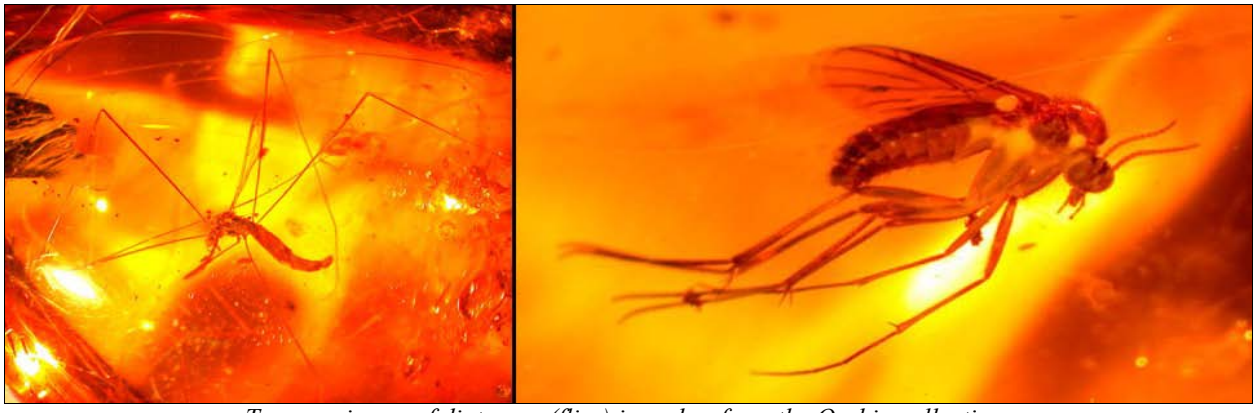
NOTE: *R & C Newsletter now in PDF format on the Web*
All former R & C Newsletters can now be accessed via the Museum's web site at:
http://collections.nhm.org/newsletters

Collection News

Invertebrate Paleontology

The Michael and Nancy Oschin Collection

A large collection of polished Baltic amber with a number of encapsulated well-preserved fossils, primarily invertebrates, was donated to the Museum in December of 2005 by Michael and Nancy Oschin of Temecula, California. This latest donation by the Oschin's is another facet of their ongoing support of the Museum's Division of Invertebrate Studies and education programs. The donated Baltic amber and associated fossils (some of which are shown at right) are about 40 million years old, or late Eocene in age. This newest collection of amber contains a taxonomically diverse assemblage of fossils that includes many unusual, unique, and rare specimens. Most of the identified invertebrates belong to the phylum Arthropoda and include specimens of various kinds of insects (phorid flies, gnats, ants, wasps, damselflies,



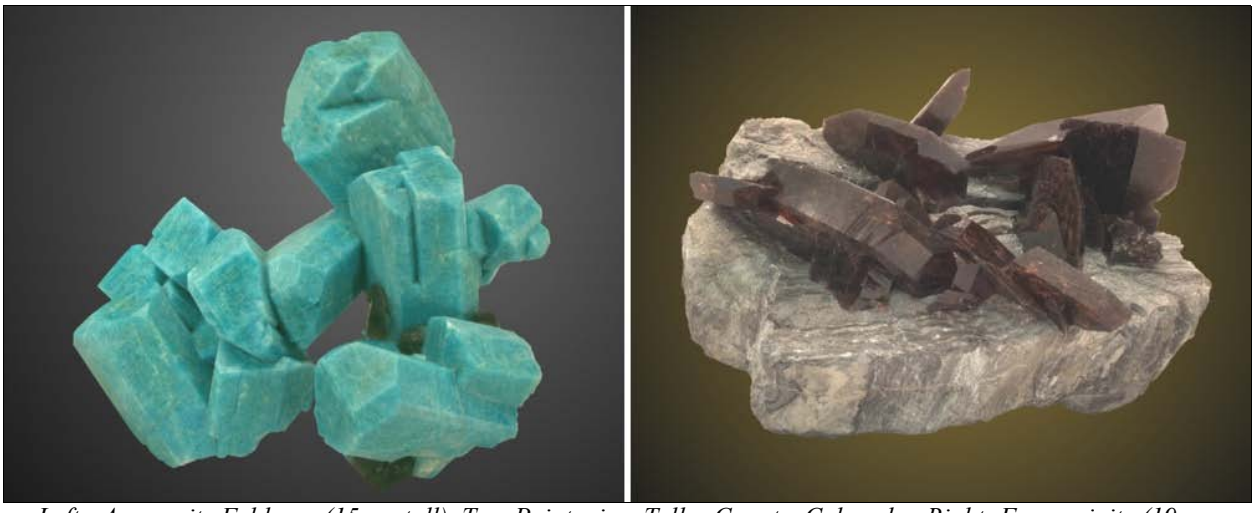
Two specimens of dipterans (flies) in amber from the Oschin collection.

stoneflies, true bugs, assassin bugs, crane flies, weevils, mayflies, dance flies, caddis flies, springtails, aphids, beetles, grasshoppers, crickets, cockroaches, walking sticks, dermestid beetles, and insect eggs and larva), arachnids (several kinds of spiders, harvestmen, ticks, and mites), and rare pseudoscorpions, centipedes, millipedes, and crustaceans.

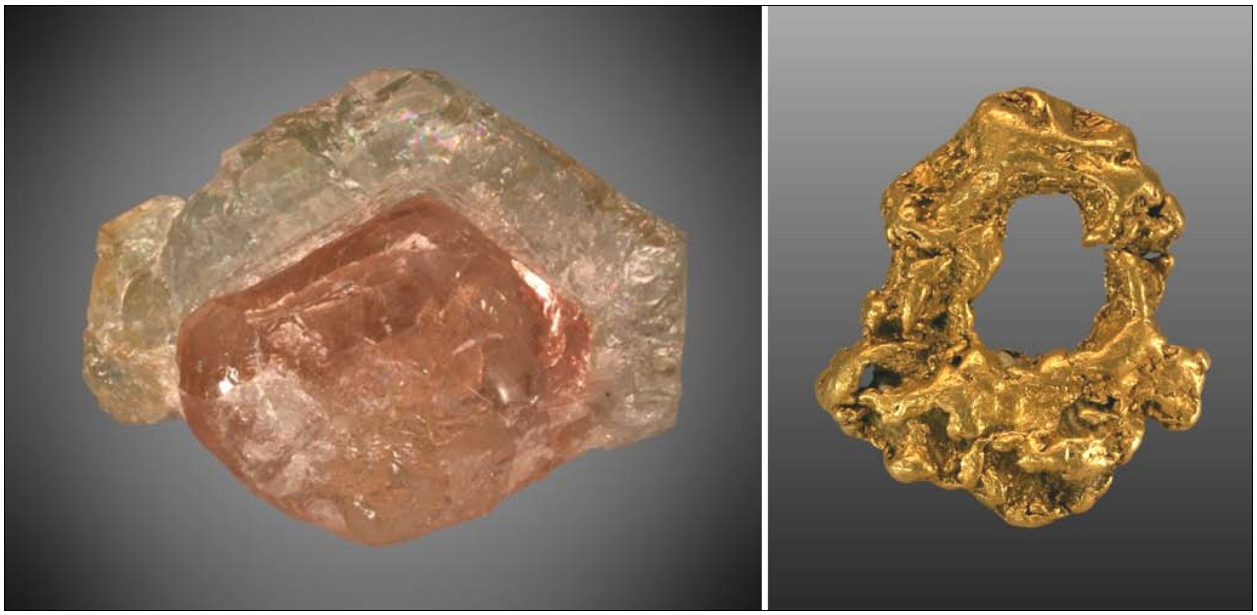
In addition to the diverse array of invertebrate taxa enclosed within the amber, some of the pieces hold preserved plant material such as lichens, conifer needles, fragments of wood, bark, parts of stems, flower blossoms (at right), seed pods, seeds, and fruit, while others contain relics of vertebrate life in the form of tufts of mammal hair and bird feathers. Some of the specimens from the current donation are already in possession of NHMLAC Curator of Entomology Dr. Brian Brown. Brian has studied many of the pieces of Dominican and Baltic amber from the earlier donations by the Oschin's, and his investigations have resulted in the discovery of several new species of insects. Future work on this significant collection of amber will certainly yield many additional important new discoveries.

Mineral Sciences

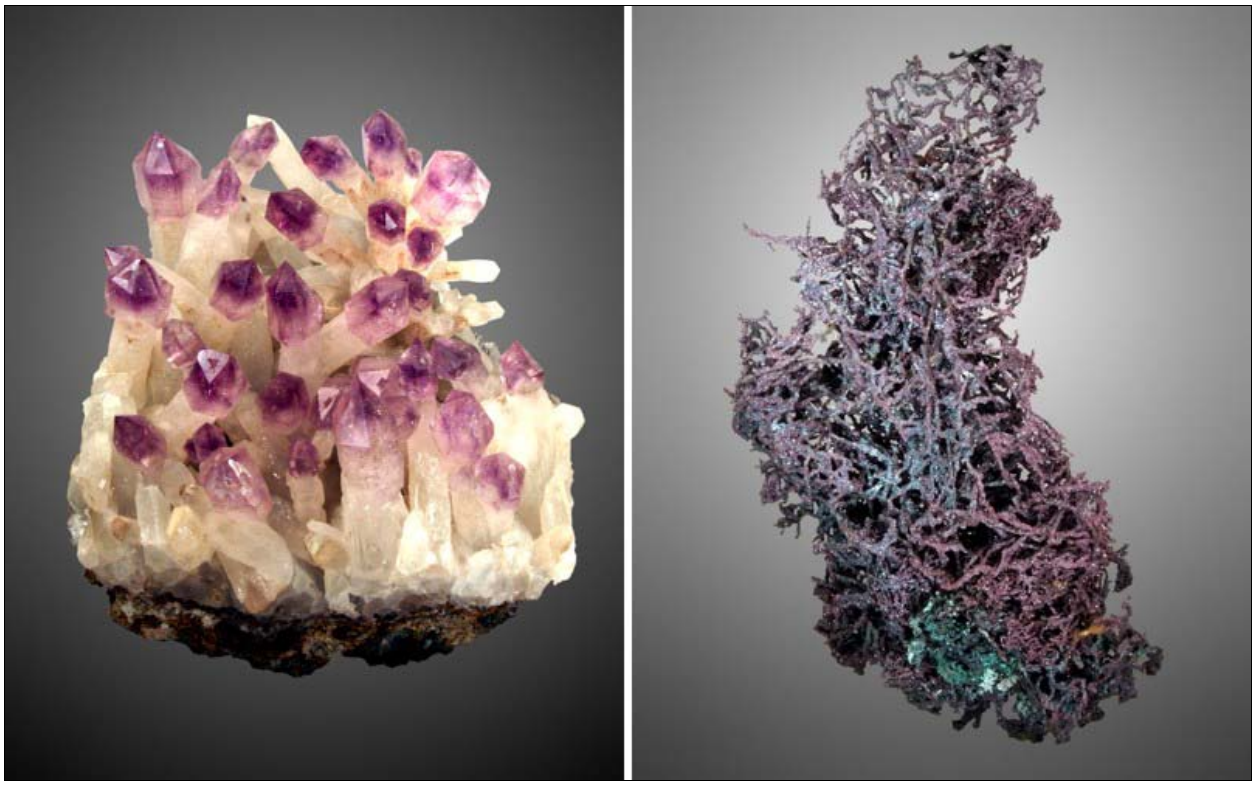
2006 was one of the best years ever for donations to the Museum's mineral collection. It began with the donation of the combined micromount collections of Julius Weber and Louis Perloff, which totals well over 50,000 specimens and ranks as the largest and one of the most significant mineral collections ever acquired by the Museums. The end of the year saw the acquisition of a number of world-class display-quality specimens from several donors.



Left: Amazonite Feldspar (15 cm tall), Two Point mine, Teller County, Colorado. Right: Ferroaxinite (19 cm across) Puyva,Prepolar Urals, Russia. Gifts from Beverly Savinar.



Left: Morganite and Aquamarine (19 cm across). Bananal, Minas Gerais, Brazil. Right: Gold Nugget (7.4 cm tall). Wright Creek, B.C., Canada. Gifts from Beverly Savinar



Left: Amethyst Quartz (15 cm tall). Denny Mountain, Washington. Gift from Beverly Savinar. Right: Copper with Cuprite (19 cm tall). Bisbee, Arizona. Gift from Bobbe Frankenberg.

Left: Krennerite (27 mm tall). Emperor mine, Vatukoula, Fiji. Gift from Kay Robertson. Right: Diamond Crystals (6.8 to 17.7 carats). Mbuji-Mayi, Democratic Republic of Congo. Gift from Mel Hindin.

Vertebrate Paleontology

One of the fish specimens collected by our new graduate student, Jack Tseng, from the Tibetan Plateau in August has been prepared. We are now afforded a first view of this strange fish, one of the most complete from the high Plateau ever collected. We are startled to find this endemic (restricted to the Plateau) form with a severe case of hyperostosis (extreme swelling of bones; see picture below). Apparently these fishes were living in a highly saline environment during the late Cenozoic (precise age to be determined), and are found associated with abundant deposits of gypsum, a mineral often indicating evaporative environments. We may speculate that these fishes were the last species still able to tolerate the highly toxic water and managed to add so much bone to the skeleton just to be able to weigh them down in the hypersaline, high-buoyancy water. We are not aware of any other occurrence of this condition in the world, although certain fish hyperostosis in east Africa, not nearly as extreme as in our specimen, has been noted before.

Lateral view of a specimen of Schizopygopsis *from the locality CD0507 in the Qaidam Basin, Qinghai Province, China. Bones in the lateral rib cage are all hypertrophied to the point that they are armor-like, with imbricating (shingle-like) ribs that leave no space between them, and fully encase the abdominal cavity. Note also the floating ribs above the articulated skeleton that are exceptionally robust. Scale bar is in centimeters.*

Invertebrate Paleontology (again)

Mary Stecheson and her team of USC work-study students have reached an important landmark in cataloging the Invertebrate Paleontology collections: we now have over one million specimens entered in the database! Notably, most of these specimens are identified to species level! As of January 9, 2006, there are 1,045,713 specimens comprising 34,561 lots in the Invertebrate Paleontology database.

Field Work

Polychaete Worms

In November Leslie Harris (Collection Manager, Polychaetes) spent another two weeks in Costa Rica with her colleague Ingo Wehrtmann (University of Costa Rica). They are collaborating on a digital catalogue of small marine invertebrates of both the Caribbean and Pacific coasts. Dr. Art Anker (Smithsonian Tropical Research Institute, Panama) joined them for field work on the Caribbean side during which they found several new species. Most of their time was spent collecting and photographing live animals in the field (such as the *Chaetopterus* polychaete in the above image) and visiting potential sponsors and funding agencies. Future projects for the pair will extend the geographic coverage of the catalogue to other regions of Central and South America. One goal of the current project is to produce a traveling exhibit of invertebrate images. The Children's Museum in San Jose has already agreed to show the exhibit for several months and FujiFilm CR has expressed an interest in being a sponsor.

Entomology

Entomology Research Assistant Giar-Ann Kung returned to Las Cruces, Costa Rica, in November for another bout of collecting bee-killing flies. These flies are being studied by Brian Brown, supported by a grant from the National Science Foundation, and are particularly diverse at Las Cruces. Giar-Ann was able to collect some extremely important species for the phylogenetic analysis that will be based on DNA from collected specimens.

Anthropology

Bill Wood (Assistant Curator of Latin American Anthropology) traveled to the Pacific Coast of Oaxaca, Mexico for nearly 4 weeks of fieldwork in October and November. His research is focused on the management of the area's natural resources and, in particular, its coral reefs. Oaxaca's coral reefs are among the most complex and best developed along the western coast of the Americas and are also one of the primary drivers behind the area's tourism development.

In spite of efforts to develop the area sustainably, however, there are signs that the health of the coral is being compromised. At La Entrega Bay for example (see photos), a very large tract of coral, clearly distinguishable from above as a dark expanse in the bay's clear blue waters, has been damaged by boat traffic, the construction of a dock, and by the activities of the many tourists that visit what has become one of the area's most popular beaches. Wood's research is focused on the competing interests of the multiple stakeholder groups involved in negotiating a balance between economic development and protection of the reefs.

While there, Wood also met with researchers and administrators at the local university (Universidad del Mar, Oaxaca, Mexico). They discussed how the Natural History Museum and university might partner with the local community to develop a monitoring program focused on the corals and the activities of people as well as to increase public awareness of the importance of the area's coral reefs. His continuing research in Oaxaca has most recently been supported as part of an Environmental Leadership Program Fellowship <www.elpnet.org> he was awarded in 2004.

Meetings, Workshops, and Presentations

Vertebrate Paleontology

In November, Curator Lawrence Barnes traveled to La Paz, Baja California, to present a series of lectures about the evolutionary history of marine mammals at the Universidad Autonoma de Baja California Sur.

Barnes was accompanied by Hitoshi Furusawa of the Sapporo Museum Project in Hokkaido, Japan, and graduate student Nicholas Pyenson of the University of California at Berkeley. Both Nick and Hitoshi were guest lecturers as well.

Dr. Lawrence Barnes, Curator of Vertebrate Paleontology, discussing pinniped evolution with students at the Universidad Autonoma de Baja California in La Paz.

On December 8, Dr. Barnes gave a Museum seminar about whale evolution, featuring examples from our outstanding collection of fossil marine mammals. Displayed on the table (at right) are whale skulls from Baja California, the US, and Japan, ranging in age from about 48 to 22 million years ago, that document the kinds of changes that occurred in whales that lost their teeth and developed baleen plates for filter feeding. This sequence of specimens could only be assembled in our Museum.

Malacology

In early November Jim McLean visited the Malacology collections at the National Museum of Natural History (Washington, DC), the Academy of Natural Sciences of Philadelphia, and the American Museum of Natural History (New York) for continuing research on his identification manuals of northeast Pacific shelled gastropods.

Archaeology

Dr. Scott Van Keuren (Curator of North American Archaeology) presented a session paper at the 104th Annual Meeting of the American Anthropological Association in Washington, D.C. (November 30 to December 4). Co-authored with Dr. William M. Graves (University of Iowa), *The Development of Regional Belief Systems in the Pre-Hispanic Southwest: Creating Meaning Then and Now* examined the role of new religious ideologies in fourteenth century Ancestral Pueblo society. The paper critically addressed how archaeologists use pottery symbolism to reconstruct Pueblo community organization in the American Southwest.

External Funding

Archaeology

Dr. Stephen Nash (PI; Field Museum) and Dr. Scott Van Keuren (Co-PI; Curator of North American Archaeology) were awarded an $8,000 grant from the Southwest Foundation. The *Paul Sidney Martin Archaeological Sites Project* will allow Drs. Nash and Van Keuren to relocate and document important archaeological sites that were discovered in the 1960s but have rarely been visited since. These include famous Ancestral Pueblo (or "Anasazi") villages located on private land. The condition of these sites is unknown but others in the region have been heavily vandalized in recent decades. Ultimately, the joint project between the Field Museum of Natural History in Chicago and the Natural History Museum of Los Angeles County will promote much needed education and preservation initiatives in this part of the northern Southwest.

Entomology

A major grant proposal submitted to the National Science Foundation, entitled "TIGER: Thailand Inventory Group for Entomological Research," has been funded. Submitted by

Michael Sharkey of the University of Kentucky and Entomology Curator Brian Brown, the $650,000 awarded is for a large-scale insect survey of the southeast Asian country of Thailand. In a procedure similar to Sharkey and Brown's highly successful Colombia project, personnel from the Thai National Park service will operate insect traps, whose catch will be sorted by Thai students that Sharkey and Brown will train. Specimens will then be sent to experts worldwide for identification and the description of new species. Brown will be traveling yearly to Thailand to work on this project over then next three years.

Public Outreach

Invertebrate Paleontology

Research Associate LouElla Saul and Curatorial Assistant Mary Stecheson participated in the Education Department's semiannual fossil collecting trip to Silverado Canyon in the Santa Ana Mountains in November.

Distinguished Visitors

Vertebrate Paleontology

In November, Hitoshi Furusawa of the Sapporo Museum Project in Hokkaido, Japan, visited our Museum with his wife Hiromi. A primary focus of the Furusawa's visit to the U.S. was to observe museum procedures. A welcome bonus was that Mr. Furusawa was able to study fossil sea cows and dolphins in our collections and to pursue collaborative studies with Curator of Vertebrate Paleontology, Larry Barnes.

Graduate student Nicholas Pyenson of the University of California at Berkeley also visited the Vertebrate Paleontology Department, and he then traveled with Dr.Barnes and Mr. and Mrs. Furusawa to Baja California.

Photo caption: Hitoshi Furusawa of the Sapporo Museum Project in Hokkaido, Japan, holds the holotype skull of the aberrant fossil dolphin *Albireo whistleri* Barnes, 1984. Mr. Furusawa and his wife Hiromi have found and prepared for study a related dolphin from Hokkaido.

Hitoshi Furusawa of the Sapporo Museum Project in Hokkaido, Japan, holds the holotype skull of the aberrant fossil dolphin Albireo whistleri *Barnes, 1984. Mr. Furusawa and his wife Hiromi have found and prepared for study a related dolphin from Hokkaido.*

Malacology

Advanced shell collector Dan Yoshimoto (Eureka, CA) visited Malacology in late November to photograph mollusks from Humboldt Bay, CA. He is currently working with Jeff Robinson (Humboldt Bay Harbor Recreation & Conservation District) to document all of the marine life of Humboldt Bay. Victoria Stosel and Noel Smith (Calif. St. Univ., Los Angeles) visited the section twice in December to measure specimens of *Haliotis cracherodii* (Black abalone) for current research purposes.

Student Mentoring and Research

Vertebrate Paleontology

Jack Tseng: Computed tomography (CT) scans of a spotted hyena skull (*Crocuta crocuta*, Mammalogy collection LACM30655) and the fossil carnivoran *Dinocrocuta* (specimen of Institute of Vertebrate Paleontology and Paleoanthropology, Beijing, China) were done at UCLA Medical Center with the assistance of Drs. Michael McNitt-Gray (UCLA Radiology) and Jill McNitt-Gray (USC Kinesiology) in December 2005. The images serve as potential data source for three-dimensional computer reconstruction of the skulls and subsequent biomechanical modeling that would begin to characterize the structural properties of the skulls. This information could further shed light on the probable ecological roles of fossil carnivorans with morphology indicative of bone-cracking.

A spotted hyena skull from the LACM Mammalogy collection being scanned at UCLA Medical Center. Dr. Michael McNitt-Gray (left) sets up the parameters on the equipment as Dr. Jill McNitt-Gray looks on (right). The specimen being scanned is in the cardboard box in the center of the CT scanner.

Recent Publications

Brown, B. V. 2005. Classification of two poorly-known genera of African Phoridae (Diptera). African Invertebrates. 46: 133-140.

In this paper, the previously undescribed males of two genera are described, based on material in our incredibly rich collection of phorid flies from around the world.

Christiansen, P. and **J. M. Harris**. 2005. The body size of *Smilodon* (Mammalia: Felidae). *Journal of Morphology*, 266: 369-384.

Martin, J. W., and T. A. Haney. 2005. Decapod crustaceans from hydrothermal vents and cold seeps: a review through 2005. Zoological Journal of the Linnean Society (London) 145: 445-522.

A comprehensive review and listing of all known deep-sea crabs, shrimps, lobsters and their relatives from the hot vents and cold seeps (areas where hydrocarbon or brine waters seep out of the earth without any accompanying heat) anywhere in the world. More than 125 species in 33 families of decapods are listed, along with information on the localities where each is found, notes on their biology and ecology where known, and the physical location of all known specimens.

Snelling, R. B. 2005. Wasps, Ants, and Bees: Aculeate Hymenoptera. In: James Lazell, "Island Fact and Theory in Nature", Univ. Calif. Press, Berkeley, pp. 283-296.

A chapter in Lazell's book on the remarkably diverse flora & fauna of Guana Island, British Virgin Islands, and speculations on theories of island ecology and biogeography.

Staff Departures and New Staff

Malacology

Malacology welcomed new volunteer Robert Sinclair (retired), who is currently assisting Jim McLean with preparation of his identification manuals of northeast Pacific shelled gastropods.

Miscellaneous

New Fossil Whale from Japan

Below is the holotype skeleton and only known specimen of *Scaldicetus shigensis* Hirota and Barnes, 1995, an archaic Middle Miocene fossil sperm whale from the Island of Honshu, Japan. It was discovered in the bed of a river near the town of Shiga-mura, and local people diverted the flow of the river in order to collect it. It is one of the world's most complete fossil whale skeletons. After being named in 1995 by Curator of Vertebrate Paleontology Lawrence Barnes and co-author Kiyoharu Hirota, the Shiga Fossil Museum obtained sufficient funds to provide for its mounting and public exhibit. This sperm whale has functional upper and lower teeth, thereby differing from living sperm whales that lack functional upper teeth. Larry and Dr. Toshiyuki Kimura of the Gunma Museum of Natural History have just submitted for publication a paper describing additional morphology of this specimen that was learned subsequent to its more recent cleaning and mounting.