

Hitting on a fossil skull in the subaquatic underworld

Emergency Grant from
The Leakey Foundation
yields an amazing find

BY DR. ALFRED ROSENBERGER
Brooklyn College, CUNY

The “hit” finally came.

It led to a blog whose text contained the magical keywords I entered into the Google search box: primate, skull, Caribbean, caves, scuba...I had been obsessively surfing for information about the underwater discovery of a primate skull in the Dominican Republic that I just heard about via a Cuban colleague. I was leery of writing to a blogger, but intrigued.

The piece was short, well written, and the monkey-mention was no more than a phrase. What now? E-mailing an anonymous blogger would be a first for me. Was the posting a weird scam? Could the identification be correct? It took only a few minutes to get an equally fine and upright reply.

“Yes,” wrote Walter Pickel. “We did find a monkey in an underwater cave. Thanks for your interest. We like to provide scientists with information they



Divers explore the cave Padre Nuestro in the Dominican Republic in search of fossils like the recently discovered *Antillothrix bernensis*.

can’t get by themselves. What can we do for you?” I held my breath and wrote: “Please call me at this number.”

By that evening, Walter had gotten in touch with his cave diving partner, photographer extraordinaire Curt Bowen, and high resolution images started flowing through cyberspace. I spent days pouring over them. They were beautiful, high resolution and crystal clear. Chunks of a monkey skull and a few limb bones were in a small pile.

But the skull’s pieces were large, with contours and serrated cranial sutures visible. I could pick out a frontal bone with the stem between the eye sockets, a parietal, temporal bones with their telltale ear openings, the occipital underside at the back of the head, foramen magnum – we have a braincase – and the paired facial bones with pearly white teeth as well as the lower rims of the orbits – we have the face.

Not only could we put this guy back
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The mission of
The Leakey Foundation
is to increase scientific
knowledge, education,
and public understanding
of human origins, evolution,
behavior, and survival.

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From The President's Desk

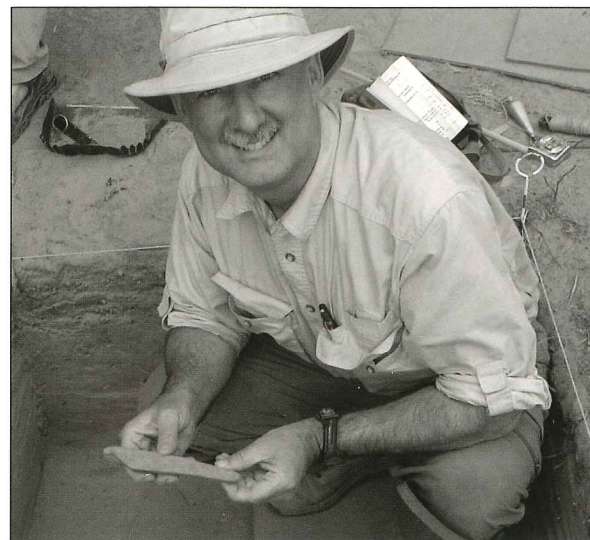
Dear Friends of The Leakey Foundation,

I am pleased to report that The Leakey Foundation continues to prosper even during the tumultuous economic environment of the past three years. If we compare the grants we awarded in 2011 with the grants we awarded in 2008, we are up by over 12%. During the same period, most national foundations dropped funding by 9%. We are proud of what we have accomplished, and look forward with confidence to the challenges ahead.

This success is only possible because of donors like you. The Leakey Foundation is completely dependent upon member support, and over the last five years you have unselfishly answered the call to honor the memory of Clark Howell through our endowment campaign, and helped fill the funding gap, left by other research institutions, with your gifts. As we complete the Howell Endowment Campaign, we have raised just under \$6.4 million, a remarkable accomplishment in these difficult times. On behalf of the many young scientists who have, and will benefit from your generosity, thank you for your confidence in their ability to unravel the mysteries of our evolution, and for your love of the science

Please know that your money is used wisely. We continue to be among the most efficient foundations in the world, with an efficiency ratio of 79% (typical is 60%). Since 1968 The Leakey Foundation has awarded over 2,000 grants for research in over 100 countries. Through your generosity we can continue to provide venture capital for our young scientists through research grants, and offer their groundbreaking discoveries through our lecture series (including two symposia in 2012: San Francisco (April 28) and Chicago (September 29); with printed and online publications; by offering youth and adult educational outreach; and by offering updates via social media (our Twitter "followers" now number over 114,000).

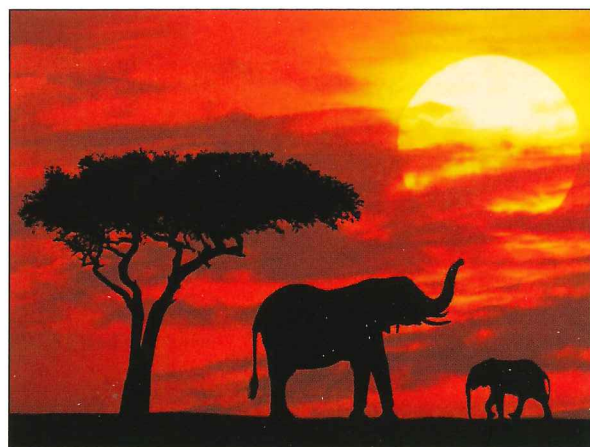
The Leakey Foundation is evolving with the times, by filling the funding gaps of



other institutions; establishing new national partnerships; and by generating content via Facebook, Twitter and an ever expanding website. We hope you are proud of your involvement with The Leakey Foundation.

Best wishes for a prosperous new year,

Don Dana
President



Kenya

September 2012

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Paleoanthropology

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Duke University, Department of Evolutionary Anthropology
Brain size and shape in early anthropoids

Dr. Dean Falk
School for Advanced Research
Hominin brain evolution: Comparative analysis of the Stw505 virtual endocast

Ms. Ashley Hammond
The Curators of the University of Missouri
Novel 3D analysis of Miocene hominoid hip joint mobility

Mr. Kevin Hatala
The George Washington University
Fossil hominin footprints and the dynamics of footprint formation

Dr. Rodrigo Lacruz
University of Southern California
*Facial growth remodeling of *H. heidelbergensis* from Sima de los Huesos*

Ms. Sarah Lacy
Washington University in Saint Louis
Oral health among western Eurasian Late Pleistocene humans

Dr. Laura MacLatchy
University of Michigan
Development of new hominoid fossil sites in Uganda

Dr. Frederick Manthi
National Museums of Kenya
The Pleistocene fauna of the Nariokotome Member, Nachukui Formation, Kenya

Mr. James Millette
University of Colorado at Boulder
Challenging assumptions of dental senescence using a primate comparative framework

Dr. Varsha Pilbrow
University of Melbourne
Non-metric dental traits in great apes

Dr. Michael Rogers
Southern Connecticut State University
Investigating the Oldowan-Acheulian transition at Gona, Ethiopia

Ms. Gabrielle Antoinette Russo
The University of Texas at Austin
Functional morphology of mammalian sacra: Implications for tail loss and positional behaviors in extinct primates

Dr. Aaron Stutz
Oxford College of Emory University
Mughr el-Hamamah: A new early Upper Paleolithic site in Jordan

Mr. Marcelo Fabian Tejedor
Centro Nacional Patagónico- CONICET
Middle miocene primates and other mammals from Colombia

\$254,287

Primates 45.7%

Morphology 34.9%

Fossil Recovery 8.9%

Actualistics 6.7%

Dating 3.6%

Behavioral

Ms. Caitlin Barale
Princeton University
The ontogeny of male-male bonds in wild Ethiopian geladas

Ms. Maria Blaszczyk
New York University
Temperament and social niche specialization in vervet monkeys

Ms. Anand Dacier
New York University
Group decision-making and the determinants of leadership in gregarious primates

Dr. Martin Muller
University of New Mexico
Coalitions and alliances in wild chimpanzees

Dr. Susan Perry
University of California-Los Angeles
Coalitions and alliances in wild capuchins (Lomas Barbudal, Costa Rica)

Dr. Barbara Tiddi
German Primate Center (DPZ)
Female mating strategies in tufted capuchin monkeys

Ms. Jessica Walz
Ohio State University
Mate choice in olive baboons at Gombe Stream Park, Tanzania

Ms. Tanja Wolf
German Primate Center (DPZ)
The ontogeny of wild white-handed gibbons' vocalization

Over \$6 million raised in Clark Howell's honor

Remembering the man who taught us what it means to be human

BY SHARAL CAMISA

Managing Director

In 2006, The Leakey Foundation launched the F. Clark Howell Memorial Endowment Campaign to increase the size of our endowment.

Dr. Howell served as Chairman Emeritus of the Foundation's Scientific Executive Committee, and was a valued member of the Board. He understood that funding research related to human origins would soon fall completely on the shoulders of a few funding-sources, and he expressed the urgency to raise this money now, to ensure that the discoveries yet to be made would not be lost forever.

The Foundation wishes to offer our sincere appreciation to those whom have made contributions. Your gift creates a lasting legacy in honor of Dr. Howell, and provides the opportunity to give the much-needed support for the next generation of researchers.

As of December 5, 2011 The Leakey Foundation raised over \$6,340,000.

The Foundation received many letters about Dr. Howell, including this from a group of African farmers who worked alongside Dr. Howell at the Omo Research Project:

"We have heard from Dr. Fredrick Kyalo Manthi that The Leakey Foundation is seeking to raise funds in the name of Dr. Clark Howell. Because we had the good fortune to work with Clark in the Omo, we would like to help, but we have returned to farming and are not wealthy people. Even so, we have managed to accumulate Kshs. 100,000 (US\$1,000).

On our behalf and also on behalf of our other Kenyan colleagues who worked with Clark but who have since



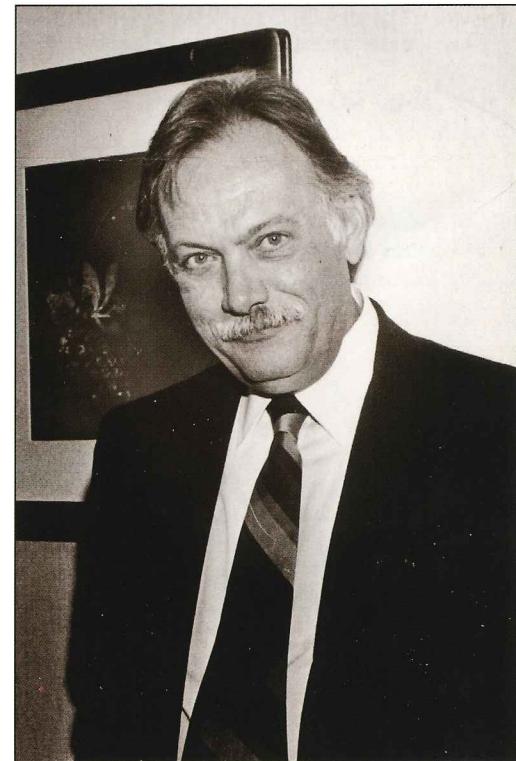
passed on, we are pleased to present this amount to The Leakey Foundation in honor of Clark.

The work that Clark began in the 1960's has helped many people in our community indirectly through employment. Some of us have written short statements about our memories of Dr. Clark, who we called "Mzee", a term of respect in our culture. We have asked Dr. Manthi to forward these statements to convey to Mzee's widow when the fund is announced.

We sincerely hope that you are completely successful in your efforts to establish this fund. Please accept our small gift in the spirit with which it is intended."

To read the statements from the Kamba Members of the Omo Research Expedition, along with other memories about Dr. Howell, please visit our website:

<http://leakeyfoundation.org/howell>



TOP: President Don Dana presents Mrs. Betty Howell with a certificate of appreciation in honor of the F. Clark Howell Endowment fund at the Holiday Open House. Photo by Pete Geniella

BOTTOM: F. Clark Howell was one of the first to bring geology, ecology, and primatology to the research and understanding of human origins.

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 Waita Musau Mutala
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 Mutoo
 William Ngao
 Peter Wio



BY PATRICIA REED
Special to AnthroQuest

Guests at the Louis Leakey Dinner felt what it was like to experience a mid-century research expedition to Tanzania—down to the flint tools in their hands and the taste of rustic bread that Louis Leakey would have made over a campfire in the field—but without all the dust.

Over 100 people attended the April 29, 2011 dinner that was more than 40 years in the making.

The idea for this event came while Managing Director Ms. Sharal Camisa was searching through the Foundation archives and discovered a piece of binder paper with a menu in the handwriting of the Foundation’s namesake, Dr. Louis Leakey. In 1970, while visiting with Leakey Foundation Trustee and Founder Mrs. Joan Travis, Dr. Leakey proposed an idea for a truly unique event. Leakey provided Mrs. Travis a handwritten-menu (including cooking instructions and wine pairing) for his favorite meal, which he suggested be served at a dinner for Foundation patrons and scientists.

When she found the menu in 2009, Ms. Camisa checked with Mrs. Travis and learned that the dinner had never been produced. Over four decades after Louis Leakey had the idea, the Foundation decided to host his vision at a special event.

The event planners of Jess Flood Event Design took Ms. Camisa’s ideas and recreated the rustic ambience of the Olduvai Gorge camp in the open hall of the San Francisco Presidio’s historic Golden Gate Club. Guests were greeted at the entrance with a handmade canvas expedition tent and camp-themed vignettes of authentic artifacts. In the center of the hall, long wooden tables with rustic burlap runners,

40

were set with artful groupings of items from the Foundation’s collection. Waiters wore khakis and pith helmets, and a large wall of the venue was even awash in the rich pink-orange light of a Tanzanian sunset.

Each place setting had a stone tool hand-crafted by a leading expert in Paleolithic tools, Dr. Nick Toth. Guests had the option of using the stone tool as a utensil or taking it home as a favor.

The Foundation also took advantage of honoring its past and future – by showcasing the scientists, researchers and educators close to the organization. A seating arrangement to highlight these individuals was created by placing them in director-style canvas camp chairs, spread amongst the other VIP guests.

The evening proved to be an opportune time to honor a friend of Louis Leakey. Mrs. Joan Travis met Dr. Leakey in 1965 and three years later helped to establish the Foundation

in her friend's name. The event was the ideal time to recognize her inspiration, support and invaluable contributions of hard work and heart.

A program to honor Mrs. Travis was held before the dinner, and guest speakers included former Foundation President Mrs. Kay Woods; longtime friend Dr. Birute Galdikas; and Ms. Cindy Travis, daughter of the honoree. The current Foundation President, Mr. Don Dana presented an award to Mrs. Travis, as the audience rose to their feet in applause.

The event entertained a diverse group of individuals, including Congresswoman and Leakey Foundation Life Trustee Nancy Pelosi; the Chairman of The Leakey Foundation Board Mr. Gordon Getty; Leakey Fellows; guests of event sponsor Wells Fargo Private Bank; Joan's husband Mr. Arnold Travis and their two grandchildren; world-renowned scientists including members of the Foundation's Scientific Executive Committee; along with Dr. Garniss Curtis and Dr. Don Johanson.

The honoree Mrs. Travis wrote: "I can't begin to tell you how much I appreciated the lovely 'homecoming' party you all spoiled me with! Words can't begin to tell you how much the celebration meant to all of us. It was full of happy surprises... we still talk about it, and giggle about the pith helmets and

years in the making

Foundation Founder Joan Travis honored at the Louis Leakey Dinner

stone tool knives and the royal treatment throughout. We love you all for being so thoughtful and playful and joyous. It was a memorable and very, very happy occasion."

The event's direct connection to The Leakey Foundation's history formed the core of an unforgettable evening that raised over \$60,000 to support the Foundation, its grant making program, and its new archiving initiative.

And most of all, we know Louis Leakey would have approved!

Opposite Page:

LEFT: Diners are served Louis Leakey's menu, complete with wine pairings under a Tanzanian sunset. Dr. Leakey's menu included: "Leakey Bread", Normandy soup, white fish, Denver chicken with peas and potatoes, and strawberry mousse.

RIGHT: Mrs. Joan Travis met Dr. Leakey in 1965 and three years later helped establish the Foundation in his name.

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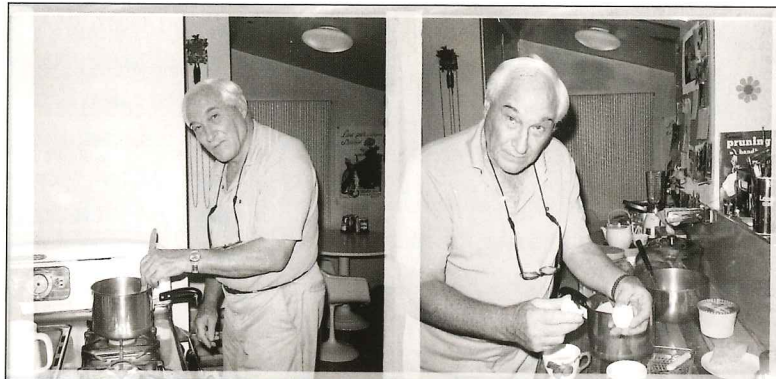
TOP: Louis Leakey cooks in Mrs. Joan Travis' kitchen.

MIDDLE: Mrs. Joan Travis with husband Mr. Arnold Travis.

BOTTOM: The Scientific Executive Committee with Leader Nancy Pelosi.

Photos by Pete Geniella.

Louis Leakey photo provided by Mrs. Joan Travis.



Carpe Diem *Pongo pygmaeus*...Sieze the carp

Orangutans observed catching and eating fish in Indonesian Borneo

BY DR. ANNE RUSSON

York University, Toronto

In an Orangutan Cultures project supported by The Leakey foundation, my field team recorded the first observations of forest-living orangutans eating scavenged fish¹. Thanks to Alain Compost's photographic documentation, we now have evidence that they deliberately catch and eat live fish, by hand and using tools.

Orangutan fishing is exceptional. While other wild nonhuman primates also fish (two other apes, chimpanzees and bonobos, and several monkeys including Allen's swamp monkey, baboons, and macaques), all are semi-terrestrial and all the monkeys swim. Orangutans are primarily arboreal, cannot swim, reputedly fear water, and rarely eat foods beyond fruits and vegetation. Orangutans catch fish with tools, but other primates only fish by hand.

Orangutan fishing is known only in juvenile and adolescent rehabilitants on forested islands in central Indonesian Borneo. All were orphaned as infants and raised for a time in captivity, then rescued and sent to rehabilitation centers to gain the know-how to resume free forest life with other orangutans. They were then placed on islands for advanced-level rehabilitation, where they could learn to range, forage, and interact freely but still gain some human support.

Chronologically, their fishing emerged as follows. We first saw ex-captives with fish in mid 2004, when they happened upon newly or nearly dead fish floating by, washed up on shore, or in boats. Later that year, in the

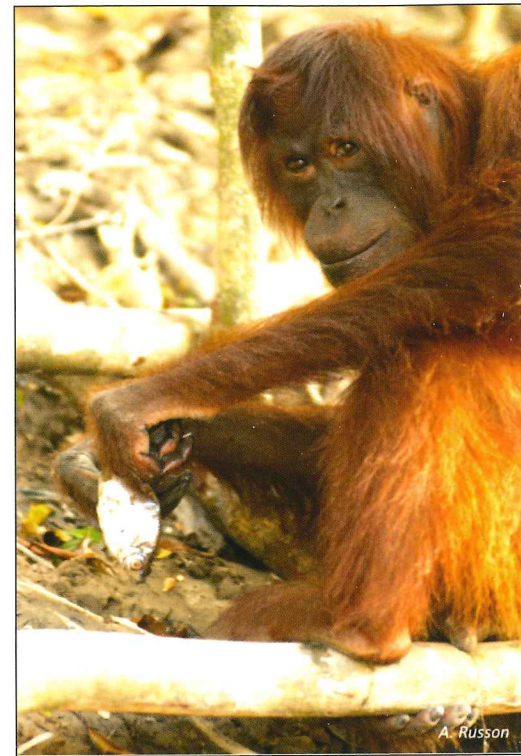
dry season, we saw a few investigating live fish while playing in shallow ponds that formed as river levels dropped. Around the same time local fishermen tied fishing lines to riverside vegetation, and orangutans started pulling them up—which also pulled up any live fish that were hooked. The fish were all catfish-related.

Living up to the carpe diem admonition, would-be fisher-orangutans tried to seize the carp but flinched and squealed if they touched one that wriggled and often let it slip free. Even those that succeeded in catching one mostly merely inspected or cautiously tasted it, and other orangutans still paid little if any notice. Orangutans are food-obsessed, so this makes no sense unless they didn't recognize fish as food. A few were better at seizing carp and ate them with gusto.

Most recently, late in 2007, Compost filmed and photographed some ex-captives deliberately groping for fish under water and some poking or swishing sticks in ponds to flush carp from their hiding places. Orangutan onlookers became more common and interested: several watched fishing orangutans intently, stole their catch, fished with them, or attempted to learn from them.

Orangutan fishing has broader importance because of its implications for the evolution of human diets and brains. A case has been building for the importance of wetlands in human evolution, especially the importance of aquatic foods (plants, fish, shellfish) in the evolution of our large brains². Aquatic fauna are among the best sources of the nutrients needed to

² Cunnane SC & Stewart KM, ed. (2010). *Human Brain Evolution*. NY: John Wiley & Sons.



Carpe diem—or in this case, sieze the carp.
Photo by Dr. Anne Russon

develop and run our large brains; they can be abundant and easy to catch—especially catfish related species. Fossil evidence shows ancestral hominins were eating fish by the time of early Homo (ca 2 million years ago) and perhaps earlier.

Finding fishing in orangutans and other nonhuman primates then increases the likelihood that earlier hominins caught and ate fish. Evidence for tool-assisted fishing is first found in Homo, who had larger brains than earlier hominins, and some suggest their larger brains enabled tool-assisted fishing. Orangutan fishing with tools suggests otherwise, that tool-assisted fishing is within the reach of early hominins. Finally, it is worth noting that a rag-tag bunch of juvenile-adolescent orangutans discovered fish as foods and invented hand and tool fishing techniques within about 5 years, so the process of hominin invention may not have been as drawn out as the fossil record now suggests.

¹ Russon AE, Kuncoro P, Ferisa A, Handayani DP (2010). How orangutans innovate for water. *Journal of Comparative Psychology*, 124(1), 14-28

Emergency grant allows for recovery of fossil skull

[continued from page 1]



A diver collects fossils into a tupperware container to bring to the surface.

together again, but when we did I knew it would be a skull never before seen in the Caribbean. “No,” explained Walter, “it’s not the skull you were googling. We know that one, too. It was found by a grad student from Indiana University. We found this one in another cave.”

Walter, Curt and I soon completed plans to return to the Dominican Republic to retrieve the skull from its subaquatic tomb, an abandoned aquifer locally known as La Jeringa. Thanks to a special projects grant from the City University of New York Research Foundation, we had the funding. I had already written my Dominican colleague at the Museo del Hombre Dominicano, in Santo Domingo. Renato Rimoli found the first Hispaniolan fossil monkey some 35 years earlier, and I asked him to partner with us.

Next was the Director of the museum, who happened to have graduated from my alma mater, City College of New York. “Yes, by all means,” he said. “We will arrange permission for you, Renato and your team to collect the material for the museum.”

That was two years ago. Walter and Curt gathered the skull, several ribs, vertebrae and long bones of *Antillothrix bernensis*, then known only by Renato’s single specimen. The latter preserved just enough dental anatomy to match with this new fossil. It was a brief trip, my first to the island, and my first exposure to the possibility of finding fossils underwater.

There were many other bones in the cave, especially of extinct ground sloths, waterlogged but in perfect condition. I was convinced more of the *Antillothrix* skeleton could be found if Curt and Walter had time to look. The Leakey Foundation made it possible to test my hunch and we embarked on another emergency rescue expedition. Several months later, it took only 20 minutes in the water to return with the nearly complete mandible of our spectacular rebuilt skull (Rosenberger et al., 2011), now one of the finest specimens of any fossil New World monkey.

The Leakey Foundation funds also allowed Walter and Curt to survey a few other caves. The Museo del Hombre, until then, had little knowledge of the natural history treasures awaiting discovery in the vast underworld of manantiales (underground springs) within the “Swiss cheese” geology of Hispaniola’s eastern provinces.

The salvage support provided by the Foundation enabled us to confirm that underwater paleontology in the Dominican Republic – especially primate paleontology – was viable, efficient and productive. In fact, The Leakey Foundation funds turned into seed money, as our small sample of fossils helped secure exploratory funds from the National Geographic Society/Waitt Foundation to expand the scale of the project and grow the collections of the Museo del Hombre.

What happened in the Caribbean? How and when did monkeys get there? What ecological niches did they exploit as they evolved, isolated from competition with mainland monkeys? How and when did they succumb to extinction? Answers will take time to develop, but at least we have found a good way to generate evidence in a place where surface prospecting for fossils has limited potential.

We already have a diverse trove of specimens in the museum – soon to be the finest in the Caribbean – awaiting study, representing all of the mammalian orders native to the Greater Antilles, as well as reptiles, amphibians, snakes, birds and fish. And, fortunately, several more of those rare monkeys.

Renato says many more surprises will come. So far, every time our dive team has entered the water, he’s been proven right. It’s like entering the Google search box yourself, wearing a wet suit, and toggling the “I’m Feeling Lucky” option. Every time, another hit.

Toshisada Nishida: In Memoriam

The Scientific Executive Committee remembers Leakey Prize winner



LEFT: Dr. Toshisada Nishida during his Leakey Prize Laureate Lecture in San Francisco in 2008. *Photo by Gene Kosoy*

RIGHT: Former Leakey Foundation President Bill Wirthlin presents Dr. Nishida, right, with the Leakey Prize, as Chairman of the Foundation Board Gordon Getty, left, and Dr. Alexander Harcourt, center, looks on. *Photo by Cliff Brunk*

Dr. John Mitani

I am very fortunate. I knew Toshisada Nishida for nearly 30 years. During that time, Toshi was a colleague, mentor, collaborator, and friend.

We forged an enduring friendship that lasted until the day he passed away. As our friendship solidified, I took great pleasure in hosting him at my field site in 2001. Toshi arrived in camp bearing a bottle of Scotch and bag of fried termites. He obtained the latter in a local market along the way and was ecstatic as he claimed he was unable to find these delicacies around Mahale for many years. We spent that first night consuming the termites and Scotch with relish and gusto in the same manner chimpanzees would devour a red colobus monkey. The next day in the field, Toshi was in his element observing a new community of chimpanzees. It was instructive to see the chimpanzees that I had been studying for several years through his eyes. Toshi's passion about everything associated with chimpanzees

was infectious, and he could barely contain his excitement when he saw two chimpanzees that morning grooming and utilizing a variant of the "social scratch" employed by chimpanzees at Mahale.

I will remember him as convivial, gracious, and kind. But above all, I will recall how he was keenly interested in and forever fascinated by the behavior of chimpanzees. Chimpanzee research has lost a towering figure. Toshi will be missed dearly by those of us who knew him and by the entire primatological community. Our understanding of chimpanzees was enriched immensely through his tireless work in the field. Chimpanzees too will mourn his passing, as they have lost a powerful advocate for their conservation.

Dr. Alexander Harcourt

Some of the most pleasurable days of my life were spent in Toshi's company. In San Francisco, my wife, Kelly Stewart, and I hosted Toshi

for a day. He was a delightful guest, interested in everything, enthusiastic about everything. Enthusiastic about the serious—Golden Gate Park. Enthusiastic about the ridiculous—Ripley's Believe It Or Not. He certainly wanted to see how San Francisco's seafood measured up to Japan's. McCormick and Kuleto's are good, but how could any American seafood restaurant match Japan's best?

Conversation of course always circled back to gorillas and chimpanzees. It goes without saying that Toshi was a fountain of information, insight, and anecdote. And this returns me to Toshi's graciousness and generosity. Here is one of Japan's most famous primatologists, a man who established and maintained one of the most renowned and long-running research sites of the world, and yet we never detected in him the slightest hint of arrogance.

Toshi, we already miss you.

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