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## TOP STORIES

**CHRISTENSEN FUND FELLOW CORNEILLE EWANGO** *is recognized as an environmental hero with award of the 2005 Goldman Environmental Prize for Africa. This prestigious prize is the world's largest award for grassroots environmentalists.*

**ICTE DEVELOPMENT BOARD MEMBER LEO A DREY** *to receive Honorary Doctorate of Humane Letters from the University of Missouri-St. Louis in recognition of his leadership by example in protecting forests in Missouri.*

**WHITNEY AND ANNA HARRIS SUPPORT CONSERVATION FORUM** *with new endowment.*

**MISSOURI SCIENCE TEACHING AND EDUCATION PARTNERSHIP (MO-STEP)** *program nears completion of first year.*



*Corneille Ewango (left), recipient of the 2005 Goldman Environmental Prize for Africa sorts plant specimens for pressing at one of his field sites, Abono inselberg in the Ituri Forest, Democratic Republic of Congo. Assisting Corneille is Claude Aloto.*

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*2005 ICTE Research  
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*News of ICTE faculty,  
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## CORNEILLE EWANGO RECEIVES GOLDMAN PRIZE

**Corneille Ewango** received the 2005 Goldman Environmental Prize at a ceremony held at the War Memorial Opera House in San Francisco on April 18, 2005. This prestigious prize is the world's largest award for grassroots environmentalists. The prize is given each year to environmental heroes from each of six regions: Africa, Asia, Europe, Island Nations, North America and South/Central America.

Corneille Ewango joined the graduate program in the Department of Biology as a **Christensen Fund Fellow** in August 2003. He completed his Bachelor of Science degree at the University of Kisangani in the Democratic Republic of Congo in 1995 and was employed as botanist and herbarium curator by the **Centre de Formation et de Recherche en Conservation Forestière** (CEFRECOF) adjacent to the Ituri Forest Reserve. The **Wildlife Conservation Society** and other conservation groups established the reserve in 1992.

In 1996 civil war broke out in the region and in spite of great personal danger, Corneille remained in the area, working in the reserve collecting plant specimens. Further civil unrest occurred in 2002 and Corneille was the only senior staff member left in the Okapi Wildlife Reserve. Demonstrating incredible bravery and resourcefulness, Corneille was able to save precious plant specimens and data books as the station infrastructure was vandalized. He worked with local people to feed fourteen okapi at the Ipu Zoo and during this time one okapi was born.

For four months, isolated from any outside support, he reported on the status of the reserve and poaching activities. As the situation worsened he was forced to leave the reserve and spent several days walking through the forest to safety and being reunited with his family.

**Dr. Patrick Osborne** said "We are thrilled to have Corneille in our graduate program. He is an excellent scientist and dedicated conservationist—few people can legitimately claim that they have put their lives on the line for conservation, but Corneille is one of these people."

The **Goldman Environmental Prize** recognizes sustained and significant efforts to preserve the natural environment by protecting endangered ecosystems and species; combating destructive development projects; promoting sustainability; influencing environmental policies; and striving for environmental justice.



*Corneille Ewango (right) and Asani Mapilanga on a plant-collecting trip in the Democratic Republic of Congo. They are sitting on the trunk of *Encephalartos ituriensis*, a gymnosperm endemic to the Ituri Forest.*

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## LEO A. DREY TO RECEIVE HONORARY DOCTORATE

Environmentalist and ICTE Development Board Member, **Leo A. Drey** will receive an Honorary Doctorate of Humane Letters from the University of Missouri-St. Louis on May 14, 2005.

Leo Drey graduated from Antioch College, in Yellow Springs, Ohio, in 1939 and during World War II he served as assistant to the General Staff Officer in charge of the New York Port of Embarkation. In 1950, he began the speculative



acquisition of forests in Missouri's Ozarks and created Pioneer Forest with 150,000 acres. For over fifty years he managed these forests using a carefully designed, sustainable program of selective harvest rather than clear cutting. He has spent decades protecting trees, endangered species and natural rivers from loggers and the chip mill industry. He designated the first natural area on his land in 1954 working with the then fledgling Natural Areas Program of the Society of American Foresters. Later, as the Missouri Natural Areas System began to develop, Drey was one of its strongest supporters. He formed the L-A-D Foundation in 1962 in order to hold title to lands of unique natural, geologic, cultural and historic interest.

In 2004, Leo, and his wife Kay, announced their donation of Pioneer Forest, the largest private land holding in Missouri, to the L-A-D Foundation. The donation includes more than 146,000 acres in six Missouri counties and is the largest private gift of its kind in Missouri history. This strategy will ensure that Pioneer Forest continues to be managed using ecologically sustainable practices.

Leo Drey has actively promoted interest in conservation and environmental issues. In particular, he was instrumental in the creation of wild rivers legislation that led to the establishment of the **Ozark National Scenic Riverways**. He founded and helped support the **St. Louis Coalition for the Environment** and the **Open Space Council for the St. Louis Region**. He funded the Natural Areas Survey for the State of Missouri and the Natural Streams Act campaign. Drey helped create the Ozark Trail, a 150-mile long hiking trail through Missouri and Arkansas, by donating critical easements through parts of his working forests.

He has received many awards and honors including the Conservation Service Award from the U.S. Department of the Interior, a Citation of Merit and Honorary Membership from the Forestry Alumni Association of the University of Missouri, the Forest Conservation Award from the Conservation Federation of Missouri, the Environmental Quality Award from the Environmental Protection Agency, Elijah P. Lovejoy Award (with **Kay Drey**), Citizen's Award, Missouri Chapter American Fisheries Society, Ethical Humanist of the Year, the St.

Louis Ethical Society (with **Kay Drey**). He was awarded an honorary Doctor of Humane Letters from Antioch University.

He has served on numerous boards: School of Forestry, Fisheries, and Wildlife Advisory Council of the University of Missouri, Missouri Parks Association, International Center for Tropical Ecology Development Board (UM-St. Louis) and is a Member and Trustee Emeritus, Antioch University, Board of Trustees.

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## WHITNEY AND ANNA CONSERVATION FORUM

The International Center for Tropical Ecology has received an endowed gift from ICTE Development Board members **Whitney** and **Anna Harris** that will ensure the future of the Center's annual Conservation Forum. In recognition of this generosity, the annual Conservation Forum has been named the **Whitney and Anna Harris Conservation Forum**. The Conservation Forum has been held each year since 1997 when **David Shores** organized the first event held at Powder Valley Nature Center. The forum provides a venue to raise public awareness of conservation issues and an opportunity for local, regional, national and international conservation organizations to interact and exchange ideas and information. Over twenty-five conservation organizations have participated in each forum with displays, short talks and lectures. Funds from this endowment will bring guest speakers to St. Louis.



*Whitney and Anna Harris*

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## MO-STEP PROGRAM COMPLETES FIRST YEAR

The Department of Biology and the International Center for Tropical Ecology continue to implement the \$1.6 million grant from the National Science Foundation that teams graduate fellows with experienced and energetic high school biology teachers.

The MO-STEP fellows, in addition to their research and graduate program activities, partner with their high-school teacher to develop novel programs that encourage open-ended research investigations and excite interest in science and greatly facilitate student transition from high school to college.

**Dr. Patricia Parker**, Chair of the Department of Biology and program leader said “what makes this program different from many others is that it is explicitly not about “science education”. It is about science itself, and the idea is that the graduate student “scientists” bring their natural curiosity, science knowledge and experimental skills into high school classrooms full of people who are at pivotal points in their lives, thinking about what comes after high school.”

**Noah Whiteman**, a Ph.D candidate in biology and a MO-STEP participant, says the program has strengthened his teaching skills and honed his research experience into a valuable learning tool for students.

“Typically, teaching assistants have a cookie-cutter routine where just about everything is set in stone,” Whiteman said. “MO-STEP has helped me think on my feet—I have to really know what I’m talking about because high school students are very inquisitive. I’ve learned how to organize my thoughts, lectures, labs, research projects and the structure of the classroom so the students truly benefit.”

MO-STEP fellows have a variety of duties including writing lesson plans, lectures, syllabi, conducting research, and guiding school field trips. **Dr. June Bourque**, chair of the Science Department at Eskridge Memorial High School in Wellston, said the presence of the graduate students has been overwhelmingly positive.

“The MO-STEP students come in with so much enthusiasm about their specific areas of study and have so much in-depth knowledge that

we can accomplish semester-long projects that we were not able to do before,” Bourque said. “In addition, they relate to our students very well, giving these kids a real view into the opportunities that a college program can offer. It’s unfortunate that every high school biology student in America, and particularly those in underprivileged school systems, cannot be part of this project.”

MO-STEP also has taken scientific research and put it directly into the hands of high school students. **Nick Barber**, a Ph.D student in biology and another MO-STEP participant, relates his experiences in teaching a Birds and Mammals class at McCluer High School.

“Last semester, we set up a banding station at Little Creek Nature Center,” Barber said. “We were able to demonstrate banding to the students and they got the chance to hold birds in their hands and release them back into the wild.”



*Noah Whiteman and Dr. June Bourque working with students at Eskridge Memorial High School.*

**Cherie McNutt**, Biology Teacher at McCluer High School, praises Barber for his work and his affect on her teaching. “I feel like my students are privileged to have Nick as a resource and a coach in their educational experience in my class,” McNutt said. “He brings knowledge and a perspective that is new and innovative to me and my fellow science teachers. Nick reminds me of the scientist in me, and gets me out of the ‘teacher’ mode.”

In March several members of the MO-STEP program attended the Fifth Annual Meeting of participants in the National Science Foundation



program: *Graduate Teaching Fellows in K-12 Education*. **Dr. Patricia Parker** (Department of Biology), **Dr. Patrick Osborne** (ICTE), **Dr June Bourque** (Head of Science, Eskridge Memorial High School) and **Noah Whiteman**, a MO-STEP Fellow and graduate student in the Biology Department at UM-St. Louis represented MO-STEP at the meeting held in Washington DC.



*Jeff Norris, MO-STEP Graduate Fellow, Bart Kensinger, MO-STEP Undergraduate Fellow, Cathie Kane, Biology Teacher, McCluer North High School and Mark Tulley, MO-STEP Undergraduate Fellow (from left, all standing) work with biology students at McCluer North High School.*

## 2004 CONSERVATION FORUM

The 2004 Conservation Forum was held at the Living World, **Saint Louis Zoo** on Wednesday, October 27 with the theme: *Conversations on conservation in Missouri: Issues and challenges*. The keynote address, given by **John D. Hoskins** (Director, Missouri Department of Conservation): *Missourians—Leading the nation in conservation* put the development of the

Missouri Department of Conservation into an historical context. The lecture by **Dr. Robert Marquis** (Professor of Biology, University of Missouri-St. Louis) described *Issues in conservation: Missouri insects* and focused on the large, long-term forestry project being carried out in the Missouri Ozarks. His talk described the effects of different forest management strategies on insect diversity and ecology. **Douglas Ladd** (Director of Conservation Science, The Nature Conservancy-Missouri Chapter) in his talk *Do our local conservation efforts have a global impact?* contrasted biodiversity in Missouri with that of tropical ecosystems and made the case that conservation efforts to protect natural landscapes both at home and abroad need to be enhanced.

The forum is co-sponsored by the **International Center for Tropical Ecology, University of Missouri-St. Louis, Saint Louis Zoo, Missouri Botanical Garden, The Nature Conservancy (Missouri Chapter)** and the **Missouri Department of Conservation**.

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## 2004 JANE AND WHITNEY HARRIS LECTURE

The 2004 **Jane and Whitney Harris Lecture** was presented by **Dr. Terese Hart**, Senior Conservation Scientist and Congo Program Director, **Wildlife Conservation Society** of New York (Bronx Zoo). The lecture, entitled *Why conservation—and basic botany—must continue in the war torn center of Africa*, was held in the Shoenberg Auditorium at the **Missouri Botanical Garden** on Wednesday, November 3, 2004.

Terese Hart first visited the Democratic Republic of Congo (then Zaire) in 1974 as a Peace Corps volunteer. She returned to do her Ph.D. research on regeneration of different forest types in the Ituri region in the early 1980s. Her husband, **Dr. John Hart**, was simultaneously doing his dissertation on forest antelope ecology. Following completion of their respective dissertations, the Harts returned to the Ituri Forest with the **Wildlife Conservation Society** to carry out research on Okapi, the rain forest giraffe. With a permanent base in the Congo, they were able to document long term botanical and



faunistic change and their commitment to and knowledge of the area has greatly facilitated their ability to lobby for African conservation.



Chancellor Tom George, Dr. Terese Hart and Whitney Harris after the 2004 Jane and Whitney Harris Lecture at the Missouri Botanical Garden.

## 2005 ICTE RESEARCH SCHOLARSHIP AWARDS

The following graduate students have been awarded ICTE Research Scholarships for 2005: **Beatriz Baker:** *Christensen Fund in Plant Conservation Scholarship* (Antagonists, mutualists, and the fitness of *Chamaecrista desvauxii brevipes* (Fabaceae)); **Humberto Dutra:** *Stephen M. Doyle Memorial Scholarship* (Ant-flower interactions in the Brazilian cerrado); **David Kenfack:** *Jane Harris Scholarship in Tropical Botany* and *Jorie Butler Kent Scholarship in Tropical Ecology*; (Field study of the genus *Carapa* (Meliaceae) in Gabon); **Andrea Loayza:** *Jane and Stanley Birge Scholarship* (Spatial patterns of seed dispersal and seedling recruitment of *Guettarda viburnoides*); **Jeffrey Norris:** *Mallinckrodt Scholarship in Tropical Ecology* (An ecological niche model for *Melozone biacutum cabanisi*: a future conservation concern); **Rosa del C. Ortiz-Gentry:** *ICTE Tropical Research Scholarship* (Phylogenetic affinities and implications for

endocarp diversification in the Menispermaceae inferred from chloroplast gene sequences); **Wendy Tori:** *Goldie Millstone Scholarship* (The influence of genetic heterozygosity on female mate choice); **Felipe Zapata:** *Parker-Gentry Fellowship* (Molecules and morphology: species delimitation and diversification in the plant genus *Escallonia* (Escalloniaceae)); **Caroline Duffie:** *Faucett Family Foundation Scholarship in Tropical Ornithology* (Determining the population structure of the flightless cormorant (*Phalacrocorax harrisi*) using micro-satellite markers); **Marcela Fernandez:** *Stokes Family Scholarship in Tropical Conservation* (Scent marking and sonic-ultrasonic calling in the Neotropical montane rodent *Scotinomys teguina*); **Cynthia Hong-Wa:** *Christensen Fund in Plant Conservation Scholarship* (Taxonomy and conservation of *Leptolaena sensu lato*); **Shane Siers:** *ICTE Tropical Research Scholarship* (Comparing gene flow estimates in arboreal and terrestrial lemurs).

## FLOWERING SYNCHRONY IN EQUATORIAL TREES EXPLAINED

**Dr. Susanne Renner** and colleagues have proposed a new mechanism for timekeeping near the equator that explains the precise synchronization of reproductive events observed in many species of tropical trees. In tropical rain forests, 30-65% of tree species grow at densities of less than one individual per hectare. At these low population densities, successful cross-pollination relies on synchronous flowering.

In equatorial rain forests with low climatic seasonality, photoperiodic control is the only reliable mechanism for inducing synchronous flowering but this poses a problem since there is no variation in day length at the Equator. Data from equatorial forest plots analyzed by Borchert *et al.* (2005) show that the annually repeated synchronous flowering of many tree species in these forests is clustered just after the equinoxes, when the small shifts in sunrise and sunset times that occur twice a year are steepest and hence provide a celestial flowering signal. These annual variations of sunrise and sunset times at the Equator correspond to the difference between





apparent solar time measured by a sundial and mean time measured by chronometers. It appears that cumulative changes in sunset time of 57 minutes over 20 days are sufficient to induce flowering at the Equator.

Rolf Borchert, Susanne S. Renner, Zoraida Calle, Diego Navarrete, Alan Tye, Laurent Gautier, Rodolphe Spichiger and Patricio von Hildebrand (2005). Photoperiodic induction of synchronous flowering near the Equator. *Nature* 433, 627-629.

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## NEWS OF FACULTY, STUDENTS AND ALUMNI

**Lucio Malizia** (Ph.D., 2004) is working as the Technical Coordinator of *Proyecto Alto Bermejo*, a \$4 million project coordinated by *Fundacion Proyungas* and supported mainly by the French Fund for the Global Environment and other institutions, including national and local governments, national parks, private companies and NGOs. His main task is to coordinate activities that deal with the development of the system of protected areas and monitoring biodiversity components (*e.g.*, small mammals, birds, trees).

**Dr. Elizabeth A. Kellogg** was awarded \$100,000 by the National Science Foundation for a project titled: *Phylogeny, development, and taxonomy of Setaria and its relatives*

**Dr. Bette A. Loiselle** and **Seema N. Sheth** were awarded \$3,000 for *Habitat utilization and distribution of a primate community in Amazonian Ecuador* by Conservation International.

**Drs. Elizabeth Kellogg** and **Peter Stevens** have been awarded \$78,846 by Cold Spring Harbor Laboratory for their participation in the Plant Ontology Consortium.

**Patty Baiao** was awarded a 4-year CAPES scholarship by the Brazilian Government and will enroll in the Ph.D. program following completion of her master's degree in Biology at UM-St. Louis.

**Dr. James Hunt** was awarded \$6,250 by the University of Missouri Research Board for his

project *A first test of a new paradigm of social evolution: Development times in worker and gyne wasps*.

**Paulo Camara** has been appointed Research Associate in the Department of Botany at the University of Brasilia and in August 2005 will teach a graduate class there on moss systematics.

ICTE alum **Bee Gunn** spent the summer of 2004 in northwest Yunnan Province, China and Tibet carrying out ethnobotanical and ecological research. She received the 2004 Phyllis Sneed Travel Award from the **International Palm Society** (\$3,570) to study variation in *Prestoea* in the Lesser Antilles. She indicates that this award stemmed from the support she received from the ICTE as recipient of the 2001 **Jane and Stanley Birge Scholarship** that enabled her to collect *Syagrus amara* and other palms in the Lesser Antilles. It was during this collecting trip that Bee encountered the variation in Antillean *Prestoea*.

**Bee Gunn** presented a paper: *Phylogeny of the Cocoeae with emphasis on Cocos nucifera* at the International Conference of Ethnobiology at the University of Kent, United Kingdom. This paper was based on her master's thesis and will be published in the *Annals of the Missouri Botanical Garden*.

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This biannual Newsletter describes recent activities of the **International Center for Tropical Ecology**. Established in cooperation with the **Missouri Botanical Garden**, the Center promotes research and education in biodiversity conservation and the sustainable use of tropical ecosystems. The Center provides an academic, international environment for graduate education in tropical ecology, evolution, systematics and conservation. The Center supports undergraduate education in conservation biology and promotes awareness within the St. Louis community of the importance of conservation and environmentally sustainable policies and practices.

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