

Tupper 4pm seminar

Tuesday, March 20, 4pm seminar speaker will be Jeff Brawn, University of Illinois at Urbana-Champaign
Life histories of tropical birds: Is it all life in the slow lane?

Bambi seminar

No bambi seminar is scheduled for Thursday, March 22. If you wish to give a Bambi, please contact Adam Roddy, at rodya@si.edu

Arriving next week

Larissa Albrecht, University of Ulm, to study figs and keystone species in tropical forests: The role of *Ficus* as calcium resource for frugivorous bats on Barro Colorado Island.

Carmen Zinssmeister, J.W. Goethe-Universität, to study the biodiversity of the *Opisthobranchia* (Mollusca, Gastropoda) of the interstitial sand of Panama, at Bocas.

Larisa Grave, University of Florida, to plan a visit to Panama to establish a partnership in Neotropical Paleobiology and Biodiversity, at CTPA.

Nicole Cannarozzi, University of Florida, to study the evolution of the Neotropical rainforests in deep time: Evidence from stable isotopes and fossil mammals.

Bruce McFadden, Harvey Mudd College, to assemble the tree of life - an integrative approach to investigating cnidarian phylogeny, at Bocas del Toro.



Smithsonian Tropical Research Institute, Panamá www.stri.org March 16, 2007

New book by Turner and colleagues

STRI staff scientist Benjamin Turner and colleagues Alan E. Richardson from CSIRO Plant Industry in Canberra, Australia, and Edward J. Mullaney, of the US Department of Agriculture in New Orleans edited the book: *Inositol phosphates: Linking agriculture and the environment*, published by Cab International, Oxfordshire, UK and Cambridge, MA.

Inositol phosphates are a group of organic compounds found widely in the natural environment. They are important in agriculture because they constitute most of the phosphorus in grain seeds, but they cannot be digested by some animals. As a result, considerable research has been directed towards improving the digestibility of inositol phosphates in animal diets.

Written by leading experts, this book brings together critical reviews on inositol phosphates in agriculture, ecology, and the environment. The sixteen chapters cover a diverse range of topics, including the synthesis and hydrolysis of inositol phosphates, their role in animal nutrition, and their fate in soils and aquatic ecosystems. It will prove valuable to a wide readership in the agricultural and biological

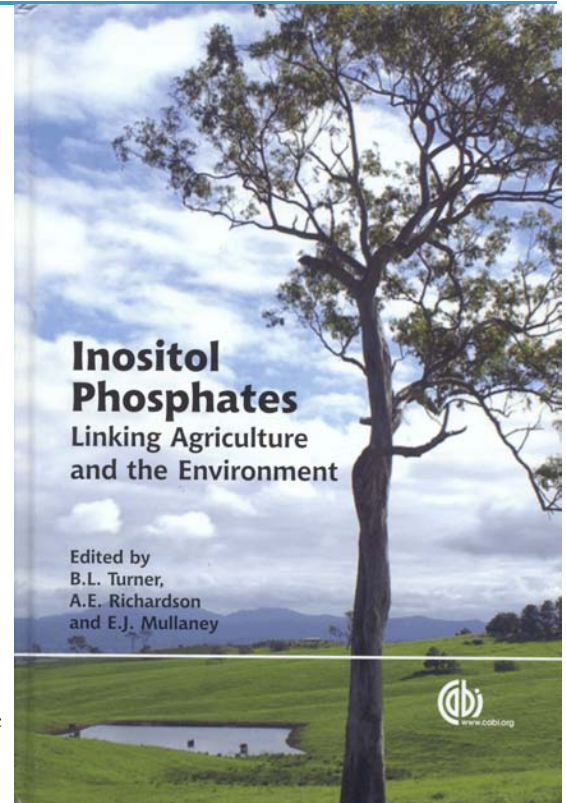
sciences, and will serve as a unique reference source on this emerging topic.

El científico de STRI, Benjamin Turner y colegas Alan E. Richardson de CSIRO Plant Industry en Canberra, Australia, y Edward J. Mullaney, del Departamento de Agricultura de los EU en New Orleans editaron el libro: *Inositol phosphates: Linking agriculture and the environment*, publicado por Cab International, Oxfordshire, UK y Cambridge, MA.

Los fosfatos de inositol son un grupo de compuestos orgánicos ampliamente encontrados en ambientes naturales. Son importantes para la agricultura debido a que constituyen la mayoría de los fósforos en las semillas de granos, pero no pueden ser digeridos por algunos animales. Debido a esto se han llevado a cabo considerables investigaciones dirigidas hacia el mejoramiento de la digestibilidad de los

fosfatos de inositol en las dietas de los animales.

Escrito por expertos, este libro reúne reseñas importantes sobre fosfatos de inositol en agricultura, ecología y ambiente. Los 16 capítulos cubren un rango diverso de tópicos, incluyendo la síntesis e hidrólisis de fosfatos de inositol, su papel en la nutrición animal, y su destino en los suelos y ecosistemas acuáticos. El documento será de amplia lectura en el campo de la agricultura y las ciencias biológicas y servirá como una fuente de referencia singular en este nuevo tópico.



More arrivals

Douglas Jones, University of Florida, to work with the Jason Project.

Gary Morgan, New Mexico Museum of Natural History, to study the evolution of the Neotropical rainforests in deep time: Evidence from stable isotopes and fossil mammals.

Departures

Richard Cooke to Boston to attend the PhD thesis defense of Ilean Isaza. Then to Harvard and Boston University to give a seminar.

New publications

Comita, Liza S., Aguilar, Salomón, Perez, Rolando, Lao, Suzanne, and Hubbell, Stephen P. 2007. "Patterns of woody plant species abundance and diversity in the seedling layer of a tropical forest." *Journal of Vegetation Science* 18(2): 163-174.

Contrera, Felipe A.L., and Nieh, James C. 2007. "The effect of ambient temperature on forager sound production and thoracic temperature in the stingless bee, *Melipona panamica*." *Behavioral Ecology and Sociobiology* 61(6): 887-897.

D'Croz, Luis, and O'Dea, Aaron. 2007. "Variability in upwelling along the Pacific shelf of Panama and implications for the distribution of nutrients and chlorophyll." *Estuarine, Coastal and Shelf Science Online*.

Dickau, Ruth, Ranere, Anthony J., and Cooke, Richard G. 2007. "Starch grain evidence for the preceramic dispersals of maize and root crops into tropical dry and humid forests of Panama." *Proceedings of the National Academy of Sciences* 104(9): 3651-3656.

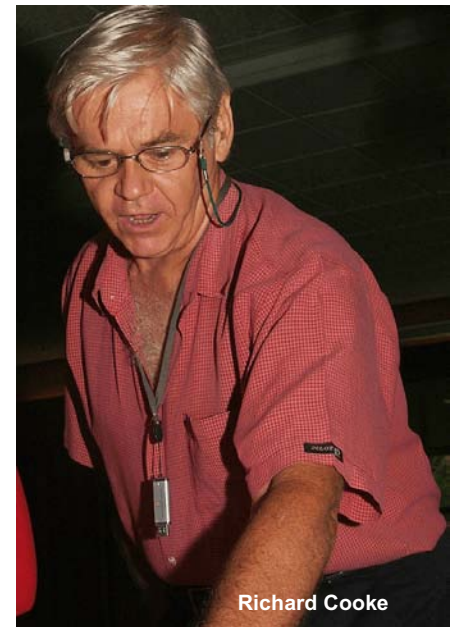
Preceramic dispersals of maize and root crops in Panama 7,800 years ago

One of the most hotly debated issues in the discipline of archaeology is how and why certain human societies switched from hunting and gathering to producing their own food through agriculture. The Central American isthmus was a major dispersal route for plants of southern Mexico and northern South America.

Ruth Dickau, from the University of Calgary, STRI research associate Anthony Ranere from Temple University and STRI staff scientist Richard Cooke authored a new article "Starch grain evidence for the preceramic dispersals of maize and root crops into tropical dry and humid forests of Panama" in the February 27 issue of *Proceedings of the National Academy*

of Sciences (vol. 104: 3651-3656). The researchers used a new technique called starch grain analysis to recover microscopic residues of plants directly off the stone tools that people were using in Panama as early as 7,800 years ago, much earlier than previously thought.

Daniel H. Sandweiss, from the Department of Anthropology and Climate Change Institute, at the University of Maine, published "Small is big: The microfossil perspective on human-plant interaction" in the same issue of *PNAS* (pages 3021-3022) commenting how this and other studies have benefitted from the analysis of phytoliths (plant



Richard Cooke

opal silica bodies) and starch grain, thus greatly contributing to the reconstruction of past environments.

The article was distributed by Neal Smith. It can also be obtained from: calderom@si.edu

Plant pathogens spread to distant relatives far more readily than thought

The first systematic test of how widely pathogens can spread among distantly related plants reveals far greater range than conventional wisdom would suggest, raising questions about the adequacy of current regulatory approaches for plant quarantine and international trade. The results also represent a powerful new tool for predicting the likely host range of pathogens, useful in agriculture, environmental restoration, and ecology.

Plant pathologist Gregory S. Gilbert, a professor of environmental studies at the University of California, Santa Cruz and STRI research associate, and coauthor Campbell O. Webb of Harvard University's Arnold Arboretum

report their findings in the paper "Phylogenetic signal in plant pathogen host range," in the March 12 edition of the *Proceedings of the National Academy of Sciences*.

Gilbert conducted his research during 2005-06 in Panama, where he examined the impact of 53 fungal pathogens on plants across the range of "phylogenetic distance," or the estimated time of independent evolution between plant species. He first conducted a study in a nursery setting where he used seedlings of 45 species of tropical forest trees grown for PRORENA reforestation projects, all native to Panama's forests but not a naturally



Greg Gilbert

occurring mix of species. The second study took place in three CTFS plots in mature rain forest. Pathogens were cultured from specimens gathered from each location, and leaves inoculated in the field. Overall, there were 384 fungus-plant pairs in the nursery and 578 pairs in the forest study.

More publications

Duval, Emily H. 2007. "Social organization and variation in cooperative alliances among male lance-tailed manakins." *Animal Behaviour* 73(3): 391-401.

Gilbert, Gregory S., and Webb, Campbell O. 2007. "Phylogenetic signal in plant pathogen-host range." *Proceedings of the National Academy of Sciences* 104(12): 4979-4983.

Lombardi, Duccio Dani, Francesca R., Turillazzi, Stefano, and Boomsma, Jacobus J. 2007. "Chemical mimicry in an incipient leaf-cutting ant social parasite." *Behavioral Ecology and Sociobiology* 61(6): 843-851.

Richards, Lora A., and Windsor, Donald M. 2007. "Seasonal variation of arthropod abundance in gaps and the understorey of a lowland moist forest in Panama." *Journal of Tropical Ecology* 23(2): 169-176.

Miscellaneous

Diane Hope, a professional, freelance sound recorder has offered to come to Panama for 2-3 weeks beginning around the end of May in order to make sound recordings for STRI. If you have any recording project suggestions. Please restrict your suggestions to recording sessions of no more than one day that have a high probability of success. Please send your suggestions to patons@si.edu

Gisele Didier, from SENACYT (cel. 6486-0754) sells her white Toyota 4runner, 1994. 156.000 kms, Diesel, A/C, New battery, Excellent conditions, \$4750 negotiable.

New at CTFS' PRORENA

Tupper Center receptionist Jeanette Egger was selected for the position of secretary/administrative assistant for the Center for Tropical Forest Science effective Monday, March 19. Jeanette has more than 13 years of experience as administrative assistant and studied two years of Advertising at the University of Panama. She worked for the US Army in Panama as a purchase agent and administrative assistant in the Theater Support Brigade. At STRI Jeanette has performed duties as receptionist, secretary and assistant to special events.

With the CTFS, Jeannette will work at the Tupper Center, Gamboa and Colón. We wish her all success in this new phase of her career.

While a replacement for Jeannette is found, the position of receptionist will be filled by

Ana Matilde Ruiz and Yvette McKenzie.

Jeanette Egger, recepcionista del Centro Tupper fue seleccionada para la posición de secretaria/asistente administrativa del Centro de Ciencias Forestales del Trópico a partir del lunes, 19 de marzo. Jeanette tiene más de 13 años de experiencia como asistente administrativa, y estudió dos años de Publicidad en la Universidad de Panamá. Trabajó para las Fuerzas Armadas de los EU como agente de compras y asistente administrativa de la Brigada de Apoyo al Teatro. En STRI, Jeanette ha llevado a cabo tareas como recepcionista, secretaria, y asistente de eventos especiales.

Con el CTFS Jeanette trabajará en el Centro Tupper, Gamboa y



Colón. Le deseamos mucho éxito en esta nueva etapa de su carrera.

Mientras se encuentra un reemplazo para Jeanette, la posición de recepcionista será cubierta por Ana Matilde Ruiz e Yvette McKenzie.

Third International Workshop on Crocodilian Genetics and Genomics

STRI, Panama's Environmental Authority (ANAM) The Crocodile Specialist Group (CSG), Texas Tech University (TTU), and the Savannah River Ecology Lab (SREL) are pleased to announce and invite the participation of the STRI community to the Third International Workshop on Crocodilian Genetics and Genomics, to be held at STRI from April 13-15.

The success of the previous two workshops, which included contributors representing science, industry and the business community

and resulting research projects has expanded the range of topics to be discussed at the Workshop, namely systematics and evolution of Crocodilia; the use of nuclear genes vs. mitochondrial genes in crocodilian studies; population genetic analyses of crocodilians; genomic studies; gene expression studies and immunity systems of crocodilians; crocodilian conservation biology and management efforts; the skin industry.



There will be invited talks and poster session for students presenting their results. Participants from the Caribbean, South, Central and North America are expected.

For more information visit: <http://striweb.si.edu/crocodile/>

Digging deeper

Story: Aaron O'Dea
Edited by M Alvarado
& ML Calderon
Photo: MA Guerra

STRI postdoctoral fellow Aaron O'Dea (also with Scripps) and colleagues present new data that are the first environmental and ecological records of the consequences for Caribbean shallow-water marine communities when the Isthmus of Panama was formed in a study published online by the *Proceedings of the National Academy of Sciences* on March 12. They concluded that extinctions resulting when one ocean became two were delayed by two million years.

Three to four million years ago, the Isthmus of Panama land bridge rose to connect North and South America. A major extinction of marine animals that had flourished under open seaway conditions occurred on the Caribbean side of the new Isthmus.

"We may be way off-track when we search for the causes of extinctions by looking only at the time the extinctions occur in the fossil record, which is what paleontologists normally do," says O'Dea. "In our case, we see that most coral and snail species died off a good two million years after the environmental change that caused their demise."

The researchers don't yet know why extinction was delayed for such a long time. According to O'Dea, the species probably underwent severe reductions in their abundances and geographical ranges but managed to cling on until some sort of threshold was reached. O'Dea said their results suggest paleontologists may need to "dig deeper when searching for the causes of the great events in the history of life."

"The results also may be taken as a warning because right now we are seeing similar reductions in ranges and abundances of many animals and plants due to anthropogenic influences, but we still don't know where the thresholds are that lead to irreversible extinction."

More at:
<http://scienow.sciencemag.org/cgi/content/full/2007/312/3>

Aaron O'Dea, becario postdoctoral de STRI (también con Scripps) y colegas presentan nueva información, que son los primeros registros ecológicos y ambientales de las consecuencias evolutivas para las comunidades de aguas someras del Caribe cuando el Istmo de Panamá emergió, en un estudio publicado en el número virtual de *Proceedings of the National Academy of Sciences* el 12 de marzo. Concluyen que las extinciones resultaron de que un océano se convirtiera en dos demoraron dos millones de años.

El puente terrestre que es el Istmo de Panamá emergió de tres a cuatro millones de años atrás, conectando Norte y Suramérica. En el lado del Caribe del nuevo istmo se dio una extinción de grandes proporciones de animales marinos que habían florecido bajo las condiciones de un océano abierto.

"Es posible que estemos bien equivocados cuando buscamos las causas de las extinciones en el momento en que ocurrieron en los registros fósiles, que es lo que los paleontólogos hacen normalmente, indica

O'Dea. "En nuestro caso, vemos que la mayoría de los corales y las especies de caracoles murieron unos buenos dos millones de años después del cambio ambiental que causó su muerte."

Los investigadores no saben aún por qué la extinción demoró tanto tiempo. De acuerdo a O'Dea, las especies probablemente sufrieron reducciones severas en su población y rangos geográficos, pero lograron mantenerse hasta cierto umbral. O'Dea cree que sus resultados sugieren que los paleontólogos "deben cavar más profundo cuando buscan las causas de los grandes eventos en la historia de la vida."

"Estos resultados también deben tomarse como una advertencia, ya que ahora mismo estamos presenciando reducciones similares en rangos y abundancia de muchos animales y plantas debido a influencias antropomórficas, pero todavía no sabemos dónde están los umbrales que llevan a una extinción irreversible."

Safe driving // Manejo seguro

In the past few months there have been several accidents involving STRI vehicles. Therefore, the STRI Safety Committee would like to remind all STRI drivers of the following:

—Check your vehicle's condition before driving it: tires (good thread depth, air pressure, don't forget the spare tire and the tools to fix a flat tire), fluids (oil, brake, water-coolant, power steering), lights (headlights, taillights, break lights, signal lights), etc. **do not** drive a vehicle that has obvious problems.

—The driver and every passenger must wear a seat belt at all times. The occupant load will be limited to the number of working seat belts in the vehicle.

—**Do not** ride in pick-up truck beds.

—Make appropriate adjustments for the road and weather conditions. Beware that roads are more slippery during the first rains. **Most of the oil and other fluids that accumulated in and on the road surface during the dry season will float with the first rains.**

—**Do not** speed. The same vehicle will behave differently under variable loads, and pick-up trucks, not infrequently, have rolled over on what appear to be minor curves.

—Cell phones and drivers are not compatible. **Do not** drive

and talk on the cell phone. According to the new driving law the fine is \$75 and three accumulative points to lose your driver's license.

—**Do not** drink or do drugs and drive. The fine can reach \$2500 and you might get your license cancelled according to the new driving law.

In order to drive a STRI vehicle you must:

—Be authorized in writing by your supervisor or principal investigator

—Have a valid Panamanian driver's license (a foreign license is only valid for 90 days from the date of entrance to Panama)

—Have a valid US Government Motor Vehicle Operator's Identification Card issued by your facility manager.

—**Do not** turn your vehicle over an unauthorized or unlicensed driver.

En meses pasados han ocurrido varios accidentes con vehículos de STRI. Por lo tanto, el Comité de Seguridad desea recordarles lo siguiente a todos los que conducen vehículos de STRI:

—Revise las condiciones de su vehículo: llantas (que no estén lisas, presión de aire, y asegurarse de tener una llanta de repuesto llena y las herramientas para cambiar una llanta), fluidos (aceite, frenos, enfriador de agua, timón hidráulico), luces (de noche, traseras, de freno, para girar), etc. No conduzca un automóvil que cumpla dichas condiciones.



—El conductor y cada pasajero deben usar el cinturón de seguridad en todo momento. La cantidad de pasajeros debe estar limitada al número de cinturones de seguridad en buenas condiciones que haya en el vehículo.

—No viaje en los vagones de camiones “pick-up”.

—Haga los ajustes necesarios para los caminos y condiciones de clima. Recuerde que los caminos están más resbalozos durante las primeras lluvias. **Gran parte del aceite y otros fluidos que se acumular en la superficie de los caminos durante la estación seca salen a la superficie durante las primeras lluvias.**

—No vaya a velocidad. El mismo vehículo se comportará de diferente manera de acuerdo a la carga, y los “pick-ups” con frecuencia se vuelcan en lo que parecen ser curvas poco cerradas.

—Los teléfonos celulares y los conductores no son

compatibles. No hable por teléfono mientras conduce. De acuerdo a las nuevas leyes de tránsito, la multa es de \$75 y tres puntos acumulables para perder su licencia de conducir.

—No tome o ingiera drogas mientras maneja. De acuerdo a las nuevas leyes de tránsito la multa puede llegar a \$2500 y puede perder su licencia

Para conducir un vehículo de STRI, usted debe:

—Estar autorizado por escrito por su supervisor o investigador principal

—Tener una licencia de conducir panameña (una licencia extranjera es válida únicamente por 90 días después de la entrada a Panamá)

—Portar una identificación de conductor de vehículos del gobierno de los EU válida que haya sido expedida por el administrador de su lugar de trabajo.

—No permita que un conductor sin autorización conduzca su automóvil.