

## Tupper 4pm seminar

Tuesday, June 16, 4pm seminar speaker will be Egbert Leigh, STRI  
**The group selection controversy: A second look**

## Bambi seminar

Thursday, June 18, Bambi seminar speaker will be Michael McCoy, Boston University.

**Title to be announced**

## Arrivals

Marie-Soleil Turmel, McGill University, to study the phosphorus dynamics and mycorrhizal fungi in rice production systems of Panama, at Tupper.

Steven Wilkening, University of Mississippi, to study the brain and behavior relationships in birds, in Gamboa.

Amy Moran, Elizabeth Whitehill, and Justin McAlister, Clemson University, to study the evolution of life histories in geminate echinoderms: a comparative approach to unscrambling the relationships among environment, egg size, and the energetics of development, at Naos.

Monica Ramirez Carvalho, Universidad de Antioquia, to study the geological history of a Neotropical forest, at the CTPA.

Justin Lawrence, Michigan State University, to study the conservation of a Polymorphic frog (*Dendrobatidae: Oophaga pumilio*) in Western Panama in Bocas del Toro.

Hamilton Farris, Louisiana State University, to work in the female choice in the Túngara frog project, in Gamboa.



Smithsonian Tropical Research Institute, Panamá

[www.stri.org](http://www.stri.org)

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## ANAM administrator elect Javier Arias visits STRI

Javier Arias, who will be the new administrator of Panama's Authority for the Environment (ANAM), visited STRI on Thursday, June 11. STRI Academic Programs coordinator Nélide Gómez (not in the photo) gave a presentation on STRI's activities in the Isthmus and highlighted the crucial role ANAM plays in the research activities conducted by STRI in Panama.

A group of STRI representatives visited with Arias (from the left): ELTI director Javier Mateo-Vega, Juan L. Maté, Marine Technical Agreements coordinator, and STRI acting deputy director William T. Wcislo, Javier Arias, (previously with Global Offshore Services Corporation) who will replace Ligia Castro de

Doens effective July 1st, and general secretary Patrick Faye; Elena Lombardo from STRI's Office of External Affairs, Eva Garen, ELTI's Neotropical Training Program coordinator, and Carla Chizmar, Program coordinator assistant.

Javier Arias, quien será el nuevo administrador de la Autoridad Nacional del Medio Ambiente (ANAM) visitó STRI el jueves, 11 de Junio. Nélide Gómez, coordinadora de los Programas Académicos de STRI (no aparece en la foto) hizo una presentación sobre las actividades de STRI en el Istmo y destacó el papel crucial que ANAM juega en las actividades de investigación que STRI realiza en Panamá.

Un grupo de representantes de STRI participaron en la visita

de Arias (de izquierda a derecha): Javier Mateo-Vega, director de ELTI, Juan L. Maté, coordinador de Acuerdos Técnicos del Programa Marino de STRI, el subdirector encargado William T. Wcislo, Javier Arias, anteriormente con Global Offshore Services Corporation y quien reemplazará a Ligia Castro de Doens a partir del 1ro de julio, y Patrick Faye, secretario general; Elena Lombardo, de la Oficina de Asuntos Externos de STRI, Eva Garen, coordinadora del Programa de Capacitación Neotropical de ELTI, y Carla Chizmar, asistente del Programa.

R, R & R

## More arrivals

Ilka Feller, Smithsonian Environmental Research Center (SERC) and Kennedy Warne, to study the latitudinal variations in ecological stoichiometry in mangrove communities, on Bocas del Toro.

Emily Dangremond, University of California at Berkeley, to study the latitudinal variations in ecological stoichiometry in mangrove communities, on Bocas del Toro.

David Luther, University of Maryland, to study the latitudinal variations in ecological stoichiometry in mangrove communities, on Bocas del Toro.

John Styrsky, Kaitlin Marvin and Loriann Garcia, Lynchburg College, to study the utilization of an ant-defended acacia by an orb-weaving spider: potential mechanisms and consequences for an ant-acacia mutualism, in Gamboa.

Isaac Standish, Michigan State University, and Craig and Keith Erickson, to collaborate in a project of conservation of a polymorphic frog (*Dendrobatidae: Oophaga pumilio*) in Western Panama, on Bocas del Toro.

Luis Santiago, University of California, Riverside, to study the nutrient limitation of physiological processes in lowland tropical forest trees, at Tupper.

Carlos Aguilar, Universidad de El Salvador, to study the interactions between mycorrhizal fungi and *Rhizobium* bacteria and their influence on host success, on BCI.

## "Rainforestation": Training in the Philippines



The Environmental Leadership & Training Initiative (ELTI)—a joint program of STRI and the Yale School of Forestry & Environmental Studies (F&ES)—held two field-based courses on native species reforestation (known as “rainforestation”) with Visayas State University (VSU) in the Philippines, on April 22-27 and May 18-22, respectively. The courses were designed by ELTI’s Asia staff, coordinator David Neidel and assistant Hazel Consunji, and colleagues from VSU, in order to strengthen the capabilities of governmental and civil society organizations to design, implement, and monitor “Rainforestation” sites, as well as to train other key actors.

The Philippines has lost approximately one-third of its forest cover since the early 1990s. Reforestation projects have been implemented throughout the country, but most have used fast-growing, exotic tree species which are not particularly well-suited to the country’s ecosystems. Starting in the 1990s, VSU and other collaborators developed “Rainforestation” as a way to rehabilitate degraded landscapes and restore key ecosystem services and functions while

providing forest-dependent communities with an alternative source of livelihood. Subject to extensive research and experimentation, “rainforestation” has been refined into a very cost-effective and widely-applicable method for reforestation.

“Rainforestation” has been endorsed as the country’s official reforestation strategy, but dissemination has been limited. In order to overcome this hurdle, ELTI and VSU joined forces to develop these field-based courses with the aim of increasing the adoption of this conservation strategy throughout the country. It is also expected that through this partnership, further research on landscape-level restoration with native tree species will be promoted, making use of and building upon the experience and expertise of VSU, STRI and Yale-F&ES.



La Iniciativa de Capacitación y Liderazgo Ambiental (ELTI)—un esfuerzo conjunto entre STRI y Yale School of Forestry and Environmental Studies (F&ES)—llevó a cabo dos cursos de campo sobre reforestación con especies nativas (conocido como "rainforestation") con Visayas State University (VSU) en Filipinas, del 22-27 de abril y del 18-22 de mayo, respectivamente. Los cursos fueron diseñados por el personal de ELTI en Asia, el coordinador David Neidel, y la asistente Hazel Consunji, con

colegas de VSU, con la idea de desarrollar y fortalecer la capacidad de organizaciones locales y la comunidad para diseñar, implementar, y monitorear los sitios donde se practica la "rainforestation", así como entrenar a otros actores claves.

Filipinas ha perdido cerca de un tercio de su cobertura boscosa, desde principios de la década de 1990. Se han llevado a cabo proyectos de reforestación a través del país, pero la mayoría utilizaban especies exóticas de rápido crecimiento, los que no fueron particularmente acordes con las condiciones del país. A partir de los 90, VSU y otros colaboradores desarrollaron la "rainforestation" como una forma de rehabilitar paisajes degradados y restaurar los servicios y las funciones de los ecosistemas, mientras se ofrecían fuentes alternas de trabajo a las comunidades que dependen de los bosques. Gracias a la experimentación y extensa investigación, la "rainforestation" ha sido refinada como un método de reforestación efectivo en cuanto a su costo y amplitud de uso.

Filipinas adoptó este tipo de reforestación como estrategia oficial, pero la divulgación de la medida en el interior del país ha sido limitada. Para contrarrestar el problema, ELTI y VSU unieron sus esfuerzos para desarrollar estos cursos de campo con el objetivo de aumentar la adopción de esta estrategia de conservación a través del país. También se espera que, a través de esta asociación, se promuevan las investigaciones sobre la restauración con especies nativas a nivel de paisaje, basadas en la experticia de VSU, F&ES y STRI.



## Departures

Ben Turner to Ecuador, to conduct soil sampling at the Yasuní 50-ha plot project in Lago Agrio.

## New publications

Calderon, Isabel, Turon, Xavier, and Lessios, Harilaos A. 2009. "Characterization of the sperm molecule bindin in the sea urchin genus *Paracentrotus*." *Journal of Molecular Evolution* 68(4): 366-376.

Camacho, Regina, Boyero, Luz, Cornejo Remice, Aydee, Ibanez, Alicia, and Pearson, Richard G. 2009. "Local variation in shredder distribution can explain their oversight in tropical streams." *Biotropica* Online.

Carvajal-Ortiz, H., Mora, G., and Jaramillo, Carlos. 2009. "A molecular evaluation of bulk organic carbon-isotope chemostratigraphy for terrestrial correlations: An example from two Paleocene-Eocene tropical sequences." *Palaeogeography, Palaeoclimatology, Palaeoecology* 277(3-4): 173-183.

Helson, Julie E., Capson, Todd L., Johns, Timothy, Aiello, Annette, and Windsor, Donald M. 2009. "Ecological and evolutionary bioprospecting: using aposematic insects as guides to rainforest plants active against disease." *Frontiers in Ecology and the Environment* 7(3): 130-134.

MacFadden, Bruce J. 2009. "Three-toed browsing horse *Anchitherium* (Equidae) from the Miocene of Panama." *Journal of Paleontology* 83(3): 489-492.

**Safety number: 212-8211**

## BRS organizes Bocas Fair

STRI's Bocas del Toro Research Station (BRS) is organizing the II Bocas del Toro Archipelago Environmental Fair, to be celebrated during June, the Month of Natural Resources, from Saturday, June 13 to Sunday, June 14. Everyone is invited to attend.

Eighteen national and international environmental organizations working in Bocas del Toro will participate in the fair: The Nature Conservancy, Fundación Natura, ANVECONA, US Agency for International Development (USAID), the International Union for Conservation of Nature (IUCN), Mar Viva Panamá, Universidad Tecnológica de Panamá, ANAM, CCC, World Wildlife Fund (WWF), WSC, ARAP, SBT, Programa Multifase de Desarrollo Sostenible de la Provincia de Bocas del Toro, ADEPESCO, PRORENA, Alianza Bocas, PROMAR; the University of Panama and other institutions will feature their achievements in the area during the event.

La Estación de Investigaciones de STRI en Bocas del Toro está organizando la II Feria Ambiental del Archipiélago de Bocas del Toro, del sábado 13



al domingo 14 de junio. Todos están invitados.

La feria contará con la participación de 18 organizaciones ambientalistas nacionales e internacionales que trabajan en la zona como The Nature Conservancy, Fundación Natura, ANVECONA, Programa de Desarrollo Internacional de EU (USAID), la Unión Internacional para la Conservación de la Naturaleza (IUCN), Mar Viva Panamá, Universidad Tecnológica de Panamá, ANAM, CCC, WWF, WSC, ARAP, SBT, Programa Multifase de Desarrollo sostenible de la Provincia de Bocas del Toro, ADEPESCO, PRORENA, Alianza Bocas, PROMAR; Universidad de Panamá y otras organizaciones que exhibirán los resultados de su trabajo durante el evento.

## More publications

Oestreicher, Jordan S., Benessaiah, Karina, Ruiz-Jaen, Maria C., Sloan, Sean, Turner, Kate, Pelletier, Johanne, Guay, Bruno, Clark, Kathryn E., Roche, Dominique G., Meiners, Manfred, and Potvin, Catherine. 2009. "Avoiding deforestation in Panamanian protected areas: An analysis of protection effectiveness and implications for reducing emissions from deforestation and forest degradation." *Global Environmental Change* 19(2): 279-291.

Parra, Mauricio, Mora, Andres, Jaramillo, Carlos, Strecker, Manfred R., Sobel, Edward R., Quiroz, Luis, Rueda, Milton, and Torres, Vladimir. 2009. "Orogenic wedge advance in the northern Andes: Evidence from the Oligocene-Miocene sedimentary record of the Medina Basin, Eastern Cordillera, Colombia." *Geological Society of America Bulletin* 121(5-6): 780-800.

Peters, Maureen B., Hagen, Cris, Snyder, Brian, Glenn, Travis C., and Adair Gowaty, Patricia. 2009. "Microsatellite markers isolated from *Drosophila hydei*." *Molecular Ecology Resources* 9(3): 817-819.

Salguero-Gomez, Roberto, Whiteside, Matthew D., Talbot, Jenny M., and Laurance, William F. 2009. "After 'eco' comes 'service'" *Frontiers in Ecology and the Environment* 7(5): 277-278.

Seid, Marc A. and Wehner, Ruediger. 2009. "Delayed axonal pruning in the ant brain: A study of developmental trajectories." *Developmental Neurobiology* 69(6): 350-364.



### La Autoridad Nacional del Ambiente y El Instituto Smithsonian de Investigaciones Tropicales

Tienen el agrado de invitarle a la presentación del Plan de Manejo del Parque Nacional Coiba

Fecha: 23 de junio de 2009  
Hora: 9:00 a.m. a 11:00 a.m.  
Lugar: Instituto Smithsonian de Investigaciones Tropicales  
Salón: Auditorio del Centro Earl S. Tupper



Story: UPI.com  
based on A. Rincón  
and C. Jaramillo  
Edited by M Alvarado  
and ML Calderon  
Photos:

# Horses before “mules” at the Panama Canal

Aldo Rincón, STRI paleontology intern, unearthed a set of fossil teeth in the Panama Canal that Bruce MacFadden, curator of vertebrate paleontology at the Florida Museum of Natural History, describes as belonging to *Anchitherium clarencei*, a three-toed browsing horse the size of the modern donkey, living 15 to 18 million years ago.

Once processed, the fossil will return to Panama.

Expanding the Panama Canal to make way for super-sized ships is providing geologists and paleontologists with rare finds. Carlos Jaramillo, STRI stratigrapher, has, in collaboration with the University of Florida and the Panama Canal Authority, organized a team of researchers and students who move in following dynamite blasts to map and collect exposed fossils.

“This is one of very few places in the tropics where we have access to fresh outcrops

before they are washed away by torrential rains or overgrown by vegetation, and we expect the fossils that we have been salvaging to resolve some major scientific mysteries,” said Jaramillo.

“What geological forces combined to create the Panama land bridge? Were the flora and fauna of Panama before the land bridge closed similar to those of North America, or did they include other elements?”

The latest finding appears in the *Journal of Paleontology*, vol. 83: 489-492.

Aldo Rincón, pasante en paleontología de STRI, descubrió un juego de dientes en estado fósil en el Canal de Panamá, que Bruce MacFadden, curador en paleontología vertebrada del Museo de Historia Natural de Florida, describió como *Anchitherium clarencei*, un caballo forrajero de tres dedos del tamaño del burro moderno, que vivió hace 15 a 18 millones de años. Una vez procesados, todos estos restos fósiles regresan a Panamá.

La expansión del Canal de Panamá, para permitir el paso de barcos super grandes está permitiendo que geólogos y paleontólogos hagan interesantes encuentros. En colaboración con la Autoridad del Canal de Panamá y la Universidad de Florida, Carlos Jaramillo, estratigrafo de STRI ha organizado a un grupo de investigadores y estudiantes quienes siguen el paso de las

explosiones para hacer mapas y coleccionar fósiles expuestos.

“Este es uno de los pocos lugares de los trópicos donde tenemos acceso a rocas recién expuestas antes de que se pierdan por lluvias torrenciales o queden enterradas por la vegetación, y esperamos que los fósiles que hemos estado salvando, puedan resolver algunos misterios científicos de gran importancia” aseguró Jaramillo.

“Qué fuerzas geológicas se combinaron para crear el punte de tierra panameño? ¿Erá la flora y fauna en Panamá similar a la de Norteamérica antes de que se cerrara el punte, o tenía otros elementos?”

Este último descubrimiento aparece en *Journal of Paleontology*, vol. 83: 489-492.

