

## Tupper 4pm seminar

Tuesday, July 13, Tupper seminar speaker will be Ximena Bernal, Texas Tech University

**Frogs, frog-biting midges and trypanosomes: A three-level perspective on signal evolution**

## BCI specials on Wed

Miércoles, 14 de julio a las 2:30pm, Fernando Santos-Granero dará una charla para la comunidad de BCI

**El Estudio Biológico de la Zona del Canal (1910-1912): 100 Años de Amistad entre Panamá y el Instituto Smithsonian**

Wednesday, July 14 at 7pm, Bambi seminar speaker will be Fernando Santos-Granero, STRI

**The Panama Canal Zone Biological Survey (1910-1912): 100 Years of Friendship between Panama and the Smithsonian Institution**

## Arrivals

Diego Fernando Parra Carrillo, Universidad del Valle, to apply the speciation concept in mollusk differentiation of the family Muricidae: *Plicopurpura pansa*, *Plicopurpura patula*, on Bocas del Toro.

Joseph Luczkovich, Stacy Armentrout, East Carolina University, to participate as instructors in the 2010 East Carolina University Field Course on Marine Field Ecology, at Galeta.

Steven Vollmer, Northeastern University, to study the ecological genetics of reef-building corals on both sides of the Isthmus, on Bocas del Toro.



Smithsonian Tropical Research Institute, Panamá

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

July 9, 2010

## Smithsonian Inside Out

Huge summer tents were set up on the Washington DC National Mall from June 24 to July 5, to feature what we do every day at STRI, and shared it with about a million people.

STRI's David Roubik and his bees and flowers; Allen Herre and Sunshine Van Bael with chocolate, fungi and birds; the World's biggest snake from Cerrejón presented by Edwin Cadena; ocelots and cats by Jackie Giacalone; Stuart Davies and the Global Earth Observatories: a sample of STRI research along with the *Panamanian Passages* exhibit and information on the 100 years of Smithsonian research in Panama, provided by Wendy Almillategui.

The "Smithsonian Inside Out" program of the 2010 Smithsonian Folklife Festival celebrated the culture of Smithsonian workers. The program explored daily tasks of the Institution's employees, volunteers, interns, and research fellows.

"Talked to about 600 or so people, all of whom thought giant green tropical bees were neat, and who wanted to find out if any bees really were disappearing or if the Africanized honey bee had gotten less aggressive" said Roubik, "our brave 10-day hero" who attended every

single day of the fair, from 11am to 5:30pm. The event was considered to be a great success both for STRI and SI.

Tiendas de campaña enormes se levantaron el National Mall de Washington DC del 24 de junio al 5 de julio, para compartir lo que hacemos en STRI todos los días, con un millón de personas.

David Roubik y sus abejas y flores; Allen Herre y Sunshine Van Bael con sus chocolates, hongos y aves; la culebra más grande del mundo presentada por Edwin Cadena; ocelotes y gatos de Jackie Giacalone y Stuart Davies

y los Observatorios Globales de la Tierra: una muestra de las investigaciones de STRI, junto con la exhibición *Pasajes panameños* e información sobre los 100 años de ciencias del Smithsonian en Panamá por Wendy Almillategui.

El programa de "Smithsonian Inside Out" del Festival Folclórico 2010 del Smithsonian celebró la cultura de los empleados de SI. El programa exploró las actividades diarias de



## More arrivals

Oyomoare and Nosayaba Osazuwa-Peters, University of Missouri, to study the radial variation in wood density and xylem anatomy of twenty canopy trees, on BCI.

Vincent Fugère, McGill University, to study bats and frogs: Sensory cues underlying predator eavesdropping on sexually-selected Túngara frog calls, in Gamboa.

Maria Helbig, University of Ulm, Germany, to make comparisons of behavior, physiology, and ecology of sympatric bat species, on BCI.

Derek Haselhorst, University of Illinois, Urbana-Champaign, to study Neotropical biostatigraphy, at the CTPA.

John Travis Thayer, Claire Perry, Anna Yeager, Carolina University, to participate in the 2010 East Carolina University Field Course on Marine Field Ecology, at Galeta.

Nina Wurzburger, Cleo Chou and Silvia Newell Bulow, Yale University, to work on the nutrient limitation in lowland tropical forests, on BCI.

Kristina Cohen, Boston University, to study fear, death and life history switch points: cumulative effects of phenotypic plasticity and predation across three life stages, in Gamboa.

Krzysztof Kozak, Cambridge University, to study the genetics and behavioral basis of speciation in *Heliconius* butterflies, in Gamboa.

Megan Eckles, University of California-San Diego, to study the food recruitment communication of stingless bees, on BCI.

los empleados, voluntarios, pasantes y becarios de investigación.

“Hablé con cerca de 600 personas, y todos pensaron

## Laurance wins Australian Laureate Fellowship

STRI's research associate William F. Laurance is one of 15 scientists to receive the prestigious 2010 Australian Laureate Fellowship, a \$1.6 million award from Australia which will advance Laurance's environmental research program in tropical forests in Australia, the Asia-Pacific region and Latin America.

The Fellowship supports excellence in research by attracting world-class researchers and research leaders to key positions, and creating new incentives for the application of their talents in Australia. Six months ago, Bill and Susan Laurance moved from Panama to Australia, where both accepted permanent professorships at James Cook University.

One of the goals of the Fellowship is to foster international collaborations. To this end, Laurance plans to continue working actively with colleagues at STRI, “especially in the Amazon, where I help to lead the Biological Dynamics of Forest Fragments Project (BDFFP, co-managed by STRI and Brazil's National Institute for Amazonian Research.”

Laurance was one of the first biologists to sound the alarm that frogs and other amphibians were suffering serious declines from an unknown pathogen—later attributed to a lethal fungal disease that has now decimated nearly 200 species worldwide.

que las abejas verdes gigantes son nítidas, y querían saber si alguna abeja está realmente desapareciendo o si la abeja de miel africanizada se está

poniendo menos agresiva” comentó Roubik, “nuestro valiente héroe de 10 días” quien asistió todos los días de la feria de 11a a 5:30pm

A fellow of the AAAS, Laurance won in the prestigious BBVA Frontiers of Ecology and Conservation Biology Award with Thomas Lovejoy in 2008. He also holds the Prince Bernhard Chair in International Nature Conservation, intended to foster high-profile collaborations with European scientists.

*Adapted from Beth King*

William F. Laurance, investigador asociado a STRI, es uno de los 15 científicos en recibir la prestigiosa beca “Australian Laureate Fellowship 2010.” La beca, que incluye \$1.6 millones del gobierno de Australia, adelantará el programa de estudios ambientales de Laurance en bosques tropicales de Australia, la región pacífica de Asia, y América Latina.

La beca apoya la excelencia en la investigación al atraer investigadores de talla mundial y líderes científicos a posiciones clave, creando nuevos incentivos para la aplicación de sus talentos en Australia. Hace seis meses, Bill y Susan Laurance se mudaron de Panamá a Australia, donde ambos aceptaron posiciones permanentes como profesores en James Cook University.

Uno de los objetivos de la beca es mantener la colaboración internacional. En este sentido, Laurance planea continuar



trabajando activamente con colegas en STRI, “especialmente en el Amazonas, donde ayudé a liderar el Proyecto de Dinámica de Parcelas de Bosques (BDFFP), coordinado entre STRI y el Instituto Nacional para Investigaciones en el Amazonas de Brasil (INPA).

Laurance fue uno de los primeros biólogos en sonar la alarma de que las poblaciones de ranas y otros anfibios disminuían debido a un patógeno desconocido—más adelante atribuido a una enfermedad mortal debido al hongo que ha diezmando cerca de 200 especies alrededor del mundo. Miembro de AAAS, Laurance ganó el prestigioso premio BBVA Foundation Frontiers of Knowledge en Ecología y Biología de la Conservación de 2008 junto con Thomas Lovejoy. También ostenta la posición Prince Bernhard en Conservación Internacional de la Naturaleza, diseñado para mantener la colaboración de científicos europeos de alto perfil.

## Departures

Fernando Pascal to Washington DC on official business at SI.

## New publications

Bittleston, L.S., Brockmann, F., Wcislo, William T., and Van Bael, Sunshine. 2010.

"Endophytic fungi reduce leaf-cutting ant damage to seedlings." *Biology Letters* Online.

Bravo, Adriana, Harms, Kyle E., and Emmons, Louise H. 2010. "Preference for *Collpa* Water by frugivorous bats (*Artibeus*): An experimental approach." *Biotropica* 42(3): 276-280.

Calderon, Angela I., Romero, Luz I., Ortega-Barria, Eduardo, Solis, Pablo N., Zacchino, Susana, Gimenez, Alberto, Pinzon, Roberto, Caceres, Armando, Tamayo, Giselle, Guerra, Carlos, Espinosa, Alex, Correa A., Mireya D., and Gupta, Mahabir P. 2010. "Screening of Latin American plants for antiparasitic activities against malaria, Chagas disease, and leishmaniasis." *Pharmaceutical Biology* 48(5): 545-553.

Evangelista, Dennis, Fernandez, Maria Jose, Berns, Madalyn S., Hoover, Aaron, and Dudley, Robert. 2010. "Hovering energetics and thermal balance in Anna's Hummingbirds (*Calypte anna*)."  
*Physiological and Biochemical Zoology* 83(3): 406-413.

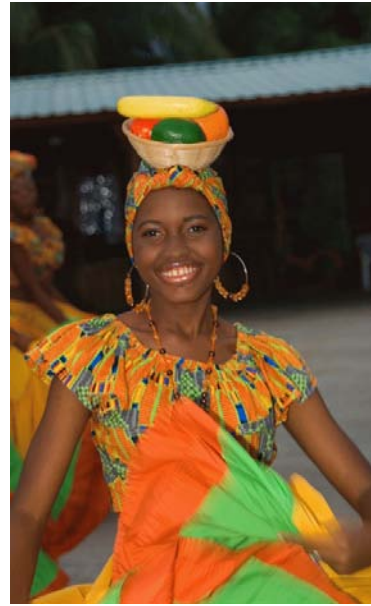
Fiske, Ian J., and Bruna, Emilio M. 2010. "Alternative spatial sampling in studies of plant demography: consequences for estimates of population growth rate." *Plant Ecology* 207(2): 213-225.

## III Environmental Fair of the Archipelago of Bocas del Toro

STRI's Research Station on Bocas del Toro organized the third Annual Environmental Fair with the participation of national and international environmental organizations working on Bocas, from June 25-27, at the Station.

Personnel from the Station organized all-day activities for children, regional dances and reggae music with environmental songs. The traditional Guara-Guara dance was interpreted by indigenous communities visiting from Salt Creek.

A series of talks were presented during the fair. Cristina Ordóñez gave a talk on the role of the indigenous communities and their effect on the conservation of marine turtles in Playa Chiriquí, at the Ngobe Bugle reservation, on Friday, June 25. On Saturday, June 26, Jerry Howard talked about the creolization and culture change in Bocas del Toro, Panama: an historical archaeological investigation; on the last day, Arturo Dominici presented a talk on coral reef fish on the Isthmus of Panama, their associations and habitat characteristics.



La Estación de Investigaciones de STRI en Bocas del Toro organizó la Tercera Feria Ambiental con la participación de organizaciones ambientales internacionales y nacionales que trabajan en Bocas, del 25 al 27 de junio, en los predios de la Estación en Isla Colón.

El personal de la Estación organizó actividades de un día para los niños, danzas regionales y música reggae con canciones ambientales. Los bailes Guara-Guara tradicionales fueron interpretados por las comunidades indígenas de visita desde Salt Creek.

Cristina Ordóñez dio una charla sobre el rol de las comunidades indígenas y sus efectos sobre la conservación de tortugas marinas en Playa Chiriquí, en la Comarca Ngobe Buglé, el viernes 25 de junio. El sábado 26, Jerry Howard habló sobre los cambios culturales en Bocas del Toro, Panamá: investigaciones arqueológicas históricas; y el último día, Arturo Dominici presentó una charla sobre los peces de arrecifes coralinos en el Istmo de Panamá, sus asociaciones y características de su hábitat.

## More publications

Goutte, S., Kime, N.M., Argo, T.F., and Ryan, Michael J. 2010. "Calling strategies of male tungara frogs in response to dynamic playback." *Behaviour* 147(1): 65-83.

Herrera, Fabiany, Manchester, Steven R., Jaramillo, Carlos A., MacFadden, Bruce, and da Silva-Caminha, Silane A. 2010. "Phytogeographic history and phylogeny of the Humiriaceae." *International Journal of Plant Sciences* 171(4): 392-408.

Kanzaki, Natsumi, Giblin-Davis, Robin M., Herre, Allen, and Center, Barbara J. 2010. "Redescription of two Panamanian nematodes, *Parasitodiplogaster citrinema* Poinar & Herre, 1991 and *P. popenema* Poinar & Herre, 1991 (Nematoda: Diplogastrina)." *Nematology* 12(1): 89-104.

Larjavaara, Markku. 2010. "Maintenance cost, toppling risk and size of trees in a self-thinning stand." *Journal of Theoretical Biology* 265(1): 63-67.

Latrubesse, Edgardo M., Cozzuol, Mario, da Silva-Caminha, Silane A. F., Rigsby, Catherine A., Absy, Maria Lucia, and Jaramillo, Carlos A. 2010. "The Late Miocene Paleogeography of the Amazon Basin and the evolution of the Amazon River system." *Earth-Science Reviews* 99(3-4): 99-124.

O'Dea, Aaron, Ostrovsky, Andrew N., and Rodriguez, Felix. 2010. "Embryonic brooding and clonal propagation in tropical eastern Pacific cupuladriid bryozoans." *Journal of the Marine Biological Association of the United Kingdom* 90(2): 291-299.

# The five drivers that will determine the future

Smithsonian Tropical Research Institute, July 9, 2010

## Story:

S. Joseph Wright  
Edited by M Alvarado  
and ML Calderon  
Photos: MA Guerra

Five anthropogenic drivers— land use change, wood extraction, hunting, atmospheric change, climate change— will largely determine the future of tropical forests. The geographic scope and intensity of these five drivers are in flux.

Contemporary land use change includes deforestation (~64,000 km<sup>2</sup> yr<sup>-1</sup> for the entire tropical forest biome) and natural forests regenerating on abandoned land (~21,500 km<sup>2</sup> yr<sup>-1</sup> with just 29% of the biome evaluated).

Commercial logging is shifting rapidly from Southeast Asia to Africa and South America, but local fuelwood consumption continues to constitute 71% of all wood production. Pantropical rates of net deforestation are declining even as secondary and logged forests increasingly replace old-growth forests.

Hunters reduce frugivore, granivore and browser abundances in most forests. This alters seed dispersal, seed and seedling survival,

and hence the species composition and spatial template of plant regeneration.

Tropical governments have responded to these local threats by protecting 7% of all land for the strict conservation of nature. Protected status often fails to stop hunters and is impotent against atmospheric and climate change.

There are increasing reports of stark changes in the structure and dynamics of protected tropical forests. Four broad classes of mechanisms might contribute to these changes. Predictions are developed to distinguish among these mechanisms.

You may read about them in: Wright, Joseph S. 2010. "The future of tropical forests." *Annals of the New York Academy of Sciences* 1195 (The Year in Ecology and Conservation Biology): 1-27, which may be obtained from [calderom@si.edu](mailto:calderom@si.edu)



La caza reduce la abundancia de frugívoros, granívoros y recolectores en muchos bosques. Esto altera la dispersión y sobrevivencia de semillas y plántones, lo que cambia la composición de especies y el orden espacial de la regeneración de plantas.

Los gobiernos de países tropicales responden a las amenazas locales protegiendo el 7% de toda la tierra para la estricta conservación de la naturaleza. Frecuentemente el estatus de protección no evita la cacería, y es importante ante el cambio atmosférico y el cambio climático.

Cada vez hay mas informes que preocupan sobre cambios en la estructura y dinámica de los bosques tropicales protegidos. Hay cuatro clases de mecanismos que podrían contribuir a estos cambios. Las predicciones se desarrollan para distinguir entre estos mecanismos.

Lea sobre ellos en Wright, 2010. Puede pedirlo a [calderom@si.edu](mailto:calderom@si.edu)

Cinco variables antropogénicas—los cambios en el uso de la tierra, la extracción maderera, la caza, el cambio atmosférico y el cambio climático serán, en gran responsables por determinar el futuro de los bosques tropicales. El rango geográfico y la intensidad de estas cinco variables están siempre en movimiento.

El cambio en el uso contemporáneo de la tierra incluye tanto deforestación como la regeneración natural de los bosques en áreas abandonadas.

El comercio de la madera cambia rápidamente del sureste de Asia hacia Africa y Suramérica, pero el consumo local de madera como combustible aún utiliza el 71% de toda su producción. Las tazas pantrópicas de la deforestación neta están declinando aún cuando los bosques secundarios y de madera reemplazan cada vez mas a los bosques de viejo crecimiento.