



Smithsonian

# 100 years of science in Panama



Smithsonian Tropical Research Institute, Panamá

STRI news

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

December 17, 2010

## STRI on holiday

STRI's headquarters, Library and the administration personnel will be on holiday leave from Monday, December 20, through Sunday, January 2<sup>nd</sup>. The next STRI news number will be issued on Friday, January 7<sup>th</sup>.

La sede de STRI, la Biblioteca y el personal administrativo estará de vacaciones de fin de año del lunes, 20 de diciembre al domingo, 2 de enero. El próximo número del STRI news saldrá el viernes, 7 de enero.

## Tupper seminar

Tuesday, January 4, 4pm  
Tupper seminar speaker will be Kendra Walker, STRI Fellow from the University of Michigan

**Protected-area monitoring dilemmas: a new tool to assess success**

## Paleo-talk

The next Paleo-talk is scheduled for Wednesday, January 15.

## Bambi seminar

If you wish to give a Bambi seminar on BCI, or become Bambi "Jefe", please contact Belkys Jimenez.

## Message from the Director

In 1910, Panamanian President Pablo Arosemena invited the Smithsonian Institution to explore the Isthmus of Panama, setting in motion a legacy of generosity that continues to this day.

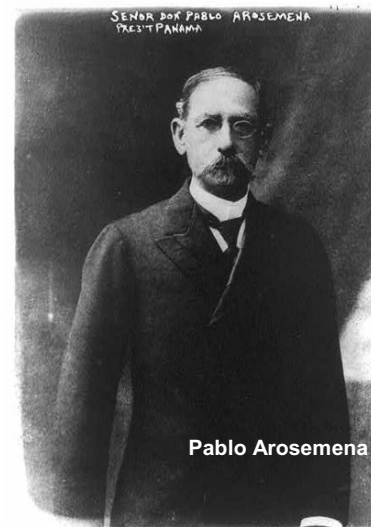


STRI Director  
Eldredge 'Biff' Bermingham

One hundred years later, 43 permanent and emeritus scientists, 1200 scientific visitors and nearly 400 employees of the Smithsonian Tropical Research Institute in Panama are mission-bound to increase understanding of the past, present and future of tropical biodiversity and its relevance to human welfare. A powerful example is the Smithsonian Institution Global Earth Observatories (SIGEO), an international collaboration, which the growth of 4.5 million trees representing 8500 species in 21 countries around the

world. In Panama, our SIGEO studies take advantage of the extraordinary opportunity provided by the Panama Canal watershed, where we have worked with HSBC Bank, the Panama Canal Authority and private philanthropists to establish a 25-year experiment that quantifies the management of biodiversity, carbon and water in degraded and intact forest ecosystems. Given the central role of the Panama Canal in global commerce, our aim is to focus international attention on the STRI experiment and thus on the ecosystem services provided by forests around the world.

In other ways, we are focusing our science on making a difference for the planet. Working alongside our colleagues from the National Zoological Park and zoos in the Americas, the government of Panama, the Mars family,



Pablo Arosemena

Maersk Shipping and the Smithsonian Women's Committee, we are working to rescue amphibian species from the brink of extinction. Using DNA barcoding for the first time to characterize an entire amphibian community, we revealed that 30 frog species, five of which were new to science, were wiped out by a fungal disease epidemic as it swept through Panama. Crossing intellectual boundaries



Video-conferencia en Panamá

Video-conference in Panama

## Arrivals

Sam Dupre, Frostburg State University, to conduct a comparison of behavior and microhabitat use by two sympatric species of echimyid rodents, spiny rats (*Proechimys semispinosus*) and armored rats (*Hoplomys gymnurus*), in Central Panama.

Moritz Klose, Humboldt-University, Berlin, to study open flowers-closed flowers: a mixed reproductive strategy in the epiphytic orchid *Caularthron bilamellatum*, in Fortuna.

Jacog Dittel, University of Wisconsin, Oshkosh, to join the project "Do lianas cause chronic disturbance and alter successional trajectories in tropical forests?" on Barro Colorado Island.

Laura Lagomarsino, Harvard University, to study the phylogeny and evolution of pollination syndromes in Neotropical Lobeliodeae, in Fortuna.

Ashley Winker, University of Wisconsin, Oshkosh, to conduct a comparison of behavior and microhabitat use by two sympatric species of echimyid rodents, spiny rats (*Proechimys semispinosus*) and armored rats (*Hoplomys gymnurus*) in Central Panama, in Gamboa.

Jessica Stapley and Stuart Dennis, University of Sheffield, to identify genes underlying a color polymorphism in *Anolis* lizards using next generation transcriptome sequencing and SNP genotyping, in Gamboa and Naos Island Laboratories.

**Safety number:  
212-8211**

between the zoo husbandry practices and tropical ecology, we are now working to develop new approaches to amphibian conservation.

A STRI goal is to use our global perspective to inspire and engage learners. New technologies enable us to bring our scientists into classrooms around the world to reach younger audiences and to involve them in learning about science and the spectacular diversity of the tropics. This year, young students from Panama and the US shared video-conferences with STRI scientists from our Punta Culebra Nature Center in highly successful exchanges to learn about animal behavior and natural processes in the tropics. We also began a collaboration with Arizona State University to use a new Internet technology called Vidyo to link researchers at STRI with scientists and classrooms in the United States, the kind of interaction that will reduce our carbon footprint while shaping research programs in the future and radically increase learning and intellectual interactions across borders.

The New Year will begin with STRI hosting more than 100 botanists in an international meeting of the Global Plants Initiative (GPI), which is making plant type specimens from herbaria around the world available to researchers and students via the Internet. GPI is a capstone program marking



Ira Rubinoff and Tony Coates celebrate the 'Big Bet'

Ira Rubinoff y Tony Coates celebran el fondo "Big Bet"

the longstanding support of botanical research by the Mellon Foundation, which aims to better understand and communicate the fundamental role plants play in global ecosystems.

Celebrating a century of science naturally draws our attention to the accomplishments of the past. It is important, however, to keep our advancements in knowledge and the advancements yet to come in context: We are here because of the generosity of the people of Panama, the generosity of James Smithson and the generosity of those who support our mission. Our deeply felt gratitude is not enough. We are driven to deliver new knowledge and greater understanding for the benefit of human welfare. That is our gift to give.

I want to express my deepest appreciation to all of our friends and supporters and to extend a heartfelt acknowledgment to the dozens who have helped us to establish the "Big Bet"

Endowment in honor of Ira Rubinoff and the spirit of innovation and scholarship that he instilled at STRI. Many thanks for your involvement in helping us to celebrate Ira, and for setting the stage for the next 100 years of science on the Isthmus.

I could not be more proud of our science over the past year and how naturally it builds upon previous work in Panama. Simultaneously, I am predisposed to looking ahead. As we take our first steps into the next century of research at STRI, we are focused on the environmental challenges faced by our planet and the still huge gaps in our knowledge of tropical nature. Our mission continues.

For all of STRI, wishing you my warmest regards for the holidays,

Biff  
Director

A handwritten signature in black ink, appearing to read "Biff".



The Panama Canal

El Canal de Panamá

## More arrivals

Mirkka Jones, University of Turku, Finland, to study the hydraulic architecture and physiology of fern species with contrasting distributions on a rainfall gradient in Panama.

Sandra Rehan, Brock University, Canada, to study the sociality of the Neotropical small carpenter bees, on BCI.

Andrés Quiñones, Groningen University, Netherlands, to join studies on sensory systems of nocturnal and diurnal bees, on Barro Colorado Island.

Instructors and students from the University of Wisconsin, Green Bay, to participate in a Field Course - Research Experience in Panama. They will visit Gamboa, BCI, Bocas del Toro and Fortuna.

Instructors and students from Arizona State University to participate in the 2011 Current Topics in Tropical Biology Field Course, in Gamboa and Fortuna.

## New publications

Corbara, Bruno. 2010. "Recherches en canopée." *Biofutur* 315(1): 26-29.

Cheesman, Alexander W., Turner, Benjamin L., Inglett, Patrick, and Rameshreddy, K. 2010. "Phosphorus transformations during decomposition of wetland macrophytes." *Environmental Science and Technology* 44(24): 9265–9271.

Deichmann, Jessica L., Lima, Albertina P., and Williamson, G. Bruce. 2010. "Effects of geomorphology and primary productivity on Amazonian leaf litter herpetofauna." *Biotropica* doi:10.1111/j.1744-7429.2010.0683.x

En 1910, el presidente panameño Pablo Arosemena, invitó al Smithsonian a explorar el Istmo de Panamá, poniendo en marcha un legado de generosidad que se mantiene hasta nuestros días. Cien años después, 43 científicos permanentes y eméritos, 1200 científicos visitantes y cerca de 400 empleados del Instituto Smithsonian de Investigaciones Tropicales en Panamá tienen como misión enriquecer los conocimientos sobre el pasado, presente y futuro de la biodiversidad tropical y su influencia en el bienestar del ser humano.

Un ejemplo contundente de nuestra misión son los Observatorios Globales de la Tierra del Smithsonian (SIGEO), una colaboración internacional que se deriva de 4.5 millones de árboles que representan 8500 especies en 21 países alrededor del mundo. En Panamá, nuestros estudios de SIGEO aprovechan la extraordinaria oportunidad que brinda la Cuenca del Canal de Panamá. Aquí hemos trabajado con el Banco HSBC, la Autoridad del Canal de Panamá y filántropos privados, para establecer un experimento de 25 años que cuantifica el manejo de la biodiversidad, el carbono y el agua en ecosistemas degradados y en ecosistemas de bosques intactos.

Dado el papel preponderante que juega el Canal de Panamá en el comercio global, nuestro objetivo es enfocar la atención internacional en el experimento de STRI, y por lo tanto en los servicios del ecosistema que suministran los bosques alrededor del mundo.

Desde otra perspectiva, estamos enfocando nuestra ciencia en hacer una diferencia en el planeta. Trabajamos hombro con hombro con nuestros



HSBC and STRI partners

Socios de HSBC y STRI

colegas del Parque Zoológico Nacional de los Estados Unidos y otros zoológicos en América, el gobierno de Panamá, la familia Mars, Maersk Shipping y e Comité de Mujeres del Smithsonian, para rescatar especies de anfibios de una extinción inminente. Al utilizar códigos de barra de ADN para caracterizar a una comunidad entera de anfibios, descubrimos que 30 especies de ranas de las cuales habían cinco nuevas para la ciencia, habían desaparecido debido a la llegada a Panamá de una epidemia causada por una enfermedad micótica.

permiten llevar a nuestros científicos alrededor del mundo. Este año, jóvenes estudiantes de Panamá y Estados Unidos pudieron compartir conocimientos con nuestros científicos en exitosos intercambios para aprender sobre comportamiento animal y procesos naturales. También empezamos una colaboración con la Universidad del Estado de Arizona para usar una tecnología de Internet llamada Vidyo para poner en comunicación a los científicos de STRI con otros científicos y con salones de clase en los Estados Unidos, una clase de



Endangered species of frogs

Especies de ranas en peligro

Cruzando las fronteras intelectuales entre las prácticas de cría de animales de los zoológicos y la ecología tropical, estamos trabajando para desarrollar nuevas formas de conservación de anfibios.

Uno de los objetivos que tenemos es usar la perspectiva global de STRI para inspirar y reclutar nuevos estudiantes. Nuevas tecnologías nos

interacción que reduce nuestra huella de carbono y al mismo tiempo le da forma a nuestros programas de investigación en el futuro que aumenta radicalmente el aprendizaje y las interacciones que cruzan fronteras.

Empezaremos el año nuevo reuniendo a más de 100 botánicos en un congreso internacional de la Iniciativa

## New publications

Fitzpatrick, J. M., Carlon, D.B., Lippe, C., and Robertson, D. Ross. 2010. "The West Pacific diversity hotspot as a source or sink for new species? Population genetic insights from the Indo-Pacific parrotfish *Scarus rubroviolaceus*." *Molecular Ecology*: Online. doi:10.1111/j.1365-294X.2010.04942.x

Nehring, Volker, Evison, Sophie E.F., Santorelli, Lorenzo A., d'Ettorre, Patrizia, and Hughes, William O.H. 2010. "Kin-informative recognition cues in ants." *Proceedings of the Royal Society B: Biological Sciences* Online. doi:10.1098/rspb.2010.2295

Stapley, Jessica, Wordley, Claire, and Slate, Jon. 2010. "No evidence of genetic differentiation between Anoles with different dewlap color patterns." *Journal of Heredity* 102(1): 118-124. doi:10.1093/jhered/esq104

## STRI in the news



From *The Economist*

### The 20-year experiment

"Uncharacteristically heavy rains have sparked states of emergency in Columbia and Venezuela. There were massive, and hugely disruptive, mudslides in Panama. But it is when the Panama Canal closes that people start paying attention. This is what happened last week, for the first time since the US invasion in 1989."

*Continues on column at right*



Scientists in Agua Salud

Científicos en Agua Salud

Global de Plantas (GPI) que se dedica a poner a disposición de investigadores y estudiantes plantas tipo de especímenes de herbarios alrededor del mundo vía Internet. GPI es el programa estrella que marca el apoyo de mucho tiempo ofrecido por Mellon Foundation a las investigaciones botánicas, cuyo objetivo es la obtención de mejores conocimientos y la comunicación del papel fundamental que juegan las plantas en los ecosistemas globales.

Al celebrar un siglo en las ciencias nuestra atención se dirige naturalmente a los logros del pasado. Sin embargo es importante mantener nuestro avance en los conocimientos y los avances que llegan en contexto: Estamos aquí gracias a la generosidad de la gente de Panamá, la generosidad de James Smithson y la generosidad de aquellos que apoyan nuestra misión. La gratitud que sentimos de todo corazón no es suficiente. Debemos entregar nuevos conocimientos y mejores entendimientos para el beneficio de la raza humana. Este es el regalo que debemos ofrecer.

Quiero expresar mi más profundo aprecio a todos nuestros amigos y colaboradores y extender un

agradecimiento de corazón a los que nos ayudaron a establecer el fondo "Big Bet" en honor a Ira Rubinoff y al espíritu de innovación y colegiatura que él inyectó en STRI. Ira, muchas gracias por tu participación en ayudarnos a celebrar, y por preparar la plataforma de los próximos 100 años de ciencia en el Istmo.

Yo no podría estar más orgulloso de nuestra ciencia durante este año en Panamá. Sin embargo, estoy predispuesto a mirar hacia adelante. Mientras que damos nuestros primeros pasos en el próximo siglo de investigaciones en STRI, estamos enfocados en los retos ambientales que enfrenta nuestro planeta y en los aún enormes vacíos en nuestros conocimientos sobre la naturaleza tropical. Nuestra misión continúa.

A todos en STRI, mis mejores saludos y deseos para estas fiestas,

Biff  
Director

## STRI in the news

*Cont.*

"About 5% of world trade passes through the canal's locks every year. So the closure is a timely reminder of the extent to which the world economy is tied to services provided to mankind by nature. Maintaining a steady supply of water from the hills around the canal is crucial to its operation. Too much water and the canal stops as gates are opened to allow the flood water to subside. Too little water, though, and there is not enough to operate the locks and allow ships to travel between the Atlantic and Pacific Oceans.

It turns out that if the watershed around the canal is well forested, this evens out the water supply throughout the year. Cut the trees down, and there the variability in the water supply rises. And the canal needs reliability, not variability. That is why the Smithsonian Tropical Research Institute in Panama and the HSBC Climate Partnership are working on a 20-year study to understand the water-storage services provided by the surrounding forests, and 140,000 tree seedlings have been planted. It is important to understand how land-use decisions in this area affect the vital waterway—and how they may respond to climate change. The local chopping down of trees near the Panama canal could yet have global consequences."

[http://www/economist.com/blogs/babbage/2010/12/panama\\_canal](http://www/economist.com/blogs/babbage/2010/12/panama_canal)