



Smithsonian

# 100 years of science in Panama



Smithsonian Tropical Research Institute, Panamá

STRI news

[www.stri.si.edu](http://www.stri.si.edu)

October 28, 2011

## Gamboa seminar

Monday, October 31st, noon seminar speaker will be

Janeene Touchton, Princeton University

**Competitive release in a guild of ant-following birds**

## CTFS/SIGEO talk

Tuesday, November 1 at 10:30am, CTFS/SIGEO talks speaker will be Martijn Slot, University of Florida

**Foliar respiration in a tropical forest canopy**

## Tupper seminar

Tuesday, November 1<sup>st</sup>, 4pm Tupper seminar speaker will be Kaoru Kitajima, University of Florida

**Functional traits and ecological strategies of plants in tropical forests**

## Paleo-Talk

Wednesday, November 2, 4pm

Paleo-talk speaker will be

Alejandra Restrepo, STRI

**Climate and landscape change on the Galápagos during the late Holocene**

## Arrivals

Mary Jane West-Eberhard to Panama, on official business at STRI.

## “Magic plants” and functional diversity

Senior staff scientist Klaus Winter gave a talk to the general public as part of the Centennial Celebrations of Smithsonian Science in Panama. The presentation, which was the 10<sup>th</sup> of the Centennial Cycle Conferences, was given on Wednesday, October 26, at the Tupper Center Auditorium.

The talk, “Plants, stress and climate change” focused on the different functional responses of tropical plants to short-term and long-term changes in the environment. Winter demonstrated that on sunny days, tropical forest outer canopy leaves show photosynthetic features known from desert plants. He also explained why some legume trees could be winners in a world of rising atmospheric CO<sub>2</sub> concentrations.

Winter highlighted *Clusia* trees as “magic plants.” Certain species of this Neotropical genus are able to switch from the regular metabolism of obtaining CO<sub>2</sub> during the day, or C<sub>3</sub> photosynthesis, to a modified water-conserving pathway, CAM photosynthesis, which allows for CO<sub>2</sub> uptake at night.

Winter suggested that these *Clusia* species are an attractive option for reforestation in the Panama Canal Watershed because during the dry season the plants consume little water, whereas in the rainy season they consume a lot.

Winter emphasized that the tropics are not only species rich but also contain a great functional diversity.

Aurelio Virgo, who presented Winter, invited the community to attend the next Centennial seminar by Meg Crofoot, on November 23rd.

Klaus Winter, científico senior de STRI, dio una charla para el público en general dentro del marco de la Celebración del Centenario de las Ciencias del Smithsonian en Panamá. La presentación, que fue la décima del Ciclo de Conferencias del Centenario, se presentó el miércoles 26 de octubre en el Auditorio del Centro Tupper.

La conferencia “Plantas, Stress y Cambio Climático” se enfocó en las diferentes respuestas funcionales de las plantas tropicales a los cambios ambientales a corto y largo plazo. Winter demostró que en



Photo: Marcos Guerra

días soleados las hojas externas del dosel de los bosques tropicales muestran características de fotosíntesis que se conocen en plantas desérticas. También explicó por qué algunos árboles leguminosos pueden ser los ganadores en un mundo donde las concentraciones atmosféricas del CO<sub>2</sub> están aumentando.

Winter calificó a los árboles de *Clusia* como “plantas mágicas.” Algunas especies de este género neotropical pueden cambiar del metabolismo regular que obtiene CO<sub>2</sub> durante el día, o fotosíntesis C<sub>3</sub>, a una fórmula que conserva agua, fotosíntesis CAM, que permite obtener el CO<sub>2</sub> durante la noche.

Winter sugiere que estas especies de *Clusia* son una

# Arrivals

Perot Saelao, University of California, Davis, to study clinical variation in *Drosophila melanogaster*.

Jennifer Jones, Aerie Nature Series, to participate in a workshop on Pacific Meiofauna, at Tupper, Naos and Gamboa.

Jamie Moy, University of Arizona, to join the project "Tropical Disease Drug Discovery from Marine and Plant Sources in Panama," part of the existing ICBG project.

Zuoqiang Yuang, Chinese Academy of Sciences, to study soil organic carbon in an old-growth temperate forest spatial pattern, determinants and bias in its quantification; and annual variation in tree growth and mortality on the forest dynamics plot on BCI.

Heinrich Krause, Heinrich-Heine University, Duesseldorf, to study physiological responses of tropical plants to high solar radiation, at Tupper.

Stefania Gutierrez, Universidad de Los Andes, Colombia, to conduct an evaluation of chimerism in pregnant colonies of botryllid ascidians, at Bocas del Toro.

Adriana Tapia, STRI pre-doctoral fellow from Universidad de Los Andes, Colombia, to study the evolution of mimicry in *Heliconius*, in Gamboa.

Daisy Serrano, César Barrios, Marianne Ricord, Mariam Trejos, Gina Nuñez, Claudio Monteza, Sariah Burgos, Universidad de Panamá, to participate in a field course on Introduction to Biological Sciences, at Galeta and Gamboa.

opción atractiva para la reforestación en la Cuenca del Canal de Panamá ya que durante la estación seca, las plantas consumen poca agua, mientras que en la estación lluviosa consumen mucha agua.

Winter enfatizó que los trópicos no son solamente ricos en especies, sino que también contienen una gran diversidad funcional.

Aurelio Virgo, quien presentó a Winter, invitó a la comunidad a asistir al próximo seminario del Centenario por Meg Crofoot, el próximo 23 de noviembre.



Photo: Klaus Winter

*Clusia pratensis*, growing at the Plant Physiology Outdoor Research Facilities in Gamboa.

*Clusia pratensis*, plantada en las instalaciones de Fisiología Vegetal en Gamboa.

## OBIO launches new cartographic web page <http://mapserver.stri.si.edu/2>

STRI's Office of BioInformatics (OBIO) launched an Interactive Map Server on Thursday, October 26, at the Tupper Center Auditorium. STRI associate director for Science and Administration Oris Sanjur offered welcoming words to the audience including representatives from Panama's Environmental Authority and other government and non-government agencies.

BioInformatics director Steve Paton (at right in the photo) made an introduction to the project and thanked ANAM for their contribution to the Interactive Map Server, a tool for cartographic data that includes all the Panamanian territory.

Milton Solano (at left in the photo above), in charge of developing the server gave an introduction to the use of the bilingual server and explain some of the many applications the server offers its users.

La Oficina de BioInformática de STRI lanzó un Servidor de Mapas Interactivos, el jueves, 26 de octubre, en el Auditorio del Centro Tupper. Oris Sanjur ofreció palabras de bienvenida a la audiencia que contó con representantes de la Autoridad Nacional del Medio Ambiente (ANAM) y otras organizaciones gubernamentales y no-gubernamentales.

El director de BioInformática, Steve Paton, hizo una introducción del proyecto y agradeció a la ANAM por sus contribuciones al Servidor de Mapas Interactivos. Esta



Photo: Marcos Guerra

herramienta para información cartográfica incluye todo el territorio panameño.

Milton Solano, a cargo del desarrollo del servidor, explicó el uso de este servidor bilingüe y algunas de las aplicaciones que posee el mismo.



## More arrivals

Francesca Protti, Universidad Nacional de Costa Rica, Heredia, to participate in a field course on Introduction to Biological Sciences, at Galeta and Gamboa.

Anthony Hynes, STRI, to participate in a field course on Introduction to Biological Sciences, at Galeta and Gamboa.

Virna Moran, Javier Ibarra Isassi, Universidad de El Salvador, to participate in a field course on Introduction to Biological Sciences, at Galeta and Gamboa.

## STRI in the news

“Bees’ migration holds clues to geologic history,” by Sindya N. Bhanoo. *The New York Times* (October 24):

[http://www.nytimes.com/2011/10/25/science/25bee.html?\\_r=1](http://www.nytimes.com/2011/10/25/science/25bee.html?_r=1)

“Smithsonian Tropical Research Institute and EDF partner to show on-the-ground realities of reducing emissions from deforestation (REDD+) in Panama” by Chris Meyer. 2011. *Environmental Defense Fund* (October 25):

<http://blogs.edf.org/climatetalks/2011/10/25/>

## New publications

Baresch, Andres, Smith, J. Andrew C., Winter, Klaus, Valerio, Ana Lucia, and Jaramillo, Carlos. 2011. "Karatophyllum bromelioides L.D. Gómez revisited: A probable fossil CAM bromeliad." *American Journal of Botany* doi:10.3732/ajb.1100261

## More STRI researchers join SNI

STRI long-term visiting researcher Yves Basset (photo at right) and research associate Héctor Barrios, joined Panama’s National Research System (SNI), as distinguished researcher and national researcher respectively, on Thursday, October 13 at Hotel Miramar, Panama city, as did associate scientist Aaron O’Dea (see STRI news of October 21, 2011). Panama’s Secretariat for Science and Technology (SENACYT) established the SNI in 2008, to promote and recognize researchers in Panama. Today, the program includes 62 researchers. Thirty four local and international researchers joined the project this year.

STRI has had a presence in the SNI since its beginnings, with senior staff scientist Richard Cooke as distinguished researcher. Roberto Ibáñez, director of the Amphibian Rescue and Conservation Center (ARC), associate scientist Sunshine Van Bael and postdoctoral fellow Hermógenes Fernández-Marín received their memberships as distinguished researchers in 2010.

The category of distinguished researcher is given to scientists that have published more than 15 contributions to science. They receive a monthly grant



Photo: Marcos Guerra

of \$2000 for two years, from which \$800 must be invested in their research. The categories of student and national researcher I and II receive monthly grants of \$500, \$900 and \$1200 respectively.

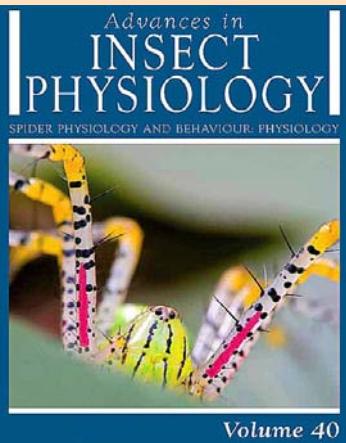
According to SENACYT secretary Ruben Berrocal, the SNI has proved to be an excellent motivator in the Panamanian society, providing the necessary tools to researchers doing work on the Isthmus of Panama.

Yves Basset, académico visitante a largo plazo en STRI (foto de arriba) y el investigador asociado a STRI, Héctor Barrios, fueron seleccionados por el Sistema Nacional de Investigación de Panamá como investigador distinguido e investigador nacional respectivamente, el jueves, 13 de octubre en el Hotel Miramar de la ciudad de Panamá. Al mismo, Aaron O’Dea también fue seleccionado (ver STRI news del 21 de octubre). La

Secretaría Nacional para Ciencia y Tecnología de Panamá (SENACYT) estableció el SNI en 2008, para promover y reconocer a los investigadores en Panamá.

Desde comienzos del SNI, los investigadores de STRI han formado parte de este selecto grupo. Richard Cooke, científico senior de STRI el primero en ser seleccionado como investigador distinguido. Roberto Ibáñez, director del Proyecto de Conservación y Rescate de Anfibios (ARC), la científica Sunshine Van Bael, y el becario postdoctoral Hermógenes Fernández Marín, recibieron sus membresías como investigadores distinguidos, en 2010.

De acuerdo a Rubén Berrocal, secretario de SENACYT, el SNI ha probado ser un motivador excelente para la sociedad panameña, pues ofrece las herramientas necesarias a los investigadores para hacer trabajos en el Istmo de Panamá.



## New publications

Eberhard, William G., and Wcislo, William T. 2011. "Grade changes in brain-body allometry: Morphological and behavioural correlates of brain size in miniature spiders, insects and other invertebrates." *Advances in Insect Physiology* 40: 155-214.

Medina, Daniel, Sosa Bartuano, Angel, Ibanez D., Roberto, and Osburn, Ernie. 2011. "Geographic distribution: *Dermophis glandulosus*." *Herpetological Review* 43: 387.

Ryu, Youngryel, Baldocchi, Dennis D., Black, T. Andrew, Detto, Matteo, Law, Beverly E., Leuning, Ray, Miyata, Akira, Reichstein, Markus, Vargas, Rodrigo, Ammann, Christof, Beringer, Jason, Flanagan, Lawrence B., Gu, Lianhong, Hutley, Lindsay B., Kim, Joon, McCaughey, Harry, Moors, Eddy J., Rambal, Serge, and Vesala, Timo. 2011. "On the temporal upscaling of evapotranspiration from instantaneous remote sensing measurements to 8-day mean daily-sums." *Agricultural and Forest Meteorology* 152(0): 212-222.

## Update, 2010

Kanzaki, Natsumi, Giblin-Davis, Robin M., Wcislo, William T., Zeng, Yongsan, Ye, Weimin, Center, Barbara J., Esquivel, Alejandro, and Thomas, W. Kelley. 2010. "*Acrostichus megaloptae* n. sp (Nematoda: Diplogastridae), a phoretic associate of *Megalopta* spp. (Hymenoptera: Halictidae) in Central America." *Nematology* 12(3): 453-468.

# Comparative Genomics Workshop



Photo: Kenneth Wurdack

A total of 13 STRI fellows participated in a workshop on Comparative Genomics from October 3 through October 7 at the National Museum of Natural History in Washington, DC, including: Ivania Ceron-Souza, Iona Chiver, Simon Coppard, Luis Fernando-de Leon, Alexandra Hiller, Kate Ihle, Marina Lesoway, Luis Mejia, Matt Miller, III, Oscar Puebla, Carlos Restrepo, Juan Armando Sánchez-Muñoz and Simon Tierney.

The workshop was organized by the SI Biodiversity Genomics Initiative, with sponsorship from the Grand Challenges Biodiversity Consortium and the Office of the Undersecretary for Science. Participants largely derived from the Smithsonian Natural History Museum, National Zoo, STRI and affiliated institutions such as the US Department of Agriculture and the University of Maryland.

The workshop was designed to entice scientists into the

21st century, divulging methodologies and data management related to the rapidly developing field of genomic science. Topics covered whole genome assembly, transcriptomics (gene expression), metagenomics (exploratory genetic profiling) and related sub-disciplines. It presented a broad overview of next-generation sequencing technologies and their comparative applications, as they relate to evolutionary and biodiversity research.

Un total de 13 becarios de STRI participaron en un seminario taller sobre Genómica Comparativa del 3 al 7 de octubre en el Museo de Historia Natural de los Estados Unidos (NMNH) en Washington DC, incluyendo a Ivania Ceron-Souza, Ioana Chiver, Simon Coppard, Luis Fernando de Leon, Alexandra Hiller, Kate Ihle, Marina Lesoway, Luis Mejia, Matt Miller, III, Oscar Puebla, Carlos Restrepo, Juan Armando Sánchez-Muñoz y Simon Tierney.

La Iniciativa de Genómica de Biodiversidad del Smithsonian organizó el taller con el financiamiento de Grand Challenges Biodiversity Consortium y la Oficina de la Subsecretaría para las Ciencias de SI. Los participantes fueron en gran medida del MNHN de SI, el Zoológico Nacional, STRI e instituciones afiliadas como el Departamento de Agricultura de los Estados Unidos y la Universidad de Maryland.

El taller se diseñó para ofrecer ventajas del siglo XXI a los científicos, divulgar metodología y manejo de datos relacionados con el campo de la ciencia genómica, cuyo desarrollo avanza rápidamente. Se cubrieron los tópicos de ensamblaje genómico entero, transcriptómicos (expresión genética), metagenómica (perfiles genéticos exploratorios) y sub-disciplinas relacionadas. Se presentó una amplia introducción de próxima generación de tecnología y sus aplicaciones comparativas, y cómo se relacionan con investigaciones evolutivas y de biodiversidad.